

Product Market Competition and the Disclosure of Information about Customers

Jesse A. Ellis^a, C. Edward Fee^b, Shawn E. Thomas^{a,*}

^a*Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA 15260*

^b*Department of Finance, Eli Broad College of Business, Michigan State University, East Lansing, MI 48824-1121*

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Abstract

In deciding how much information about customers to disclose, firms face a trade-off between the benefits of reducing information asymmetry with capital markets participants and the costs of aiding rivals by revealing proprietary information. This paper investigates the determinants of firms' choices to disclose information about their customers using a comprehensive dataset of firms' customer disclosures over the period 1976-2006. We find that many firms' customer reporting practices do not satisfy the minimum requirements of U.S. Securities and Exchange Commission regulations. Further, we find that firms in less competitive product markets are significantly more likely to fail to meet minimum disclosure requirements. We also examine the decision by firms to report customer information beyond the minimum required and find that firms in less competitive product markets are significantly less likely to voluntarily reveal information about customers. Taken together, our findings offer strong support for the hypothesis that, all else equal, firms operating in less competitive product markets adopt less informative disclosure policies consistent with higher proprietary costs in industries where strategic interactions among rivals are more prevalent.

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*Corresponding author.

E-mail address: shthomas@katz.pitt.edu (S.Thomas)

1. Introduction

Information about the market for a firm's products is highly relevant to investors. For instance, the degree of concentration of a firm's sales to its customers is an important consideration for capital markets participants when assessing the risks inherent in a firm's current and future revenues. Information about a firm's customers is particularly useful to investors in assessing how the loss of a significant customer would affect firm revenues. Thus, there is demand from capital markets for disclosure by firms of information about their customers and, absent any other considerations, value-maximizing managers have an incentive to supply information about their customers to investors. However, given that such disclosures to investors can also be observed by a firm's current and potential rivals, these disclosures can aid rivals in competing with the disclosing firm. Thus, in deciding how much information about a firm's customers to disclose, managers face a trade-off between the benefits of reducing information asymmetry with capital markets participants and the costs of aiding rivals.

This paper investigates the determinants of firms' choices to disclose information about their customers. We analyze a sample of customer disclosures that is, to the best of our knowledge, the most comprehensive assembled to date. We document widespread variation in reporting by firms in terms of the content of customer information disclosed, i.e., identities of the customers and dollar amount of sales to the customers. For example, we find that many firms' customer reporting practices are contrary to the requirements of U.S. Securities and Exchange Commission (SEC) Regulation S-K. Specifically, while most firms are required by the SEC to report the sales to and identity of any customer that comprises more than 10% of a firm's consolidated sales revenues, we document that the identities of such major customers are not disclosed approximately 19% of the time. Conversely, we also observe frequent instances of

firms disclosing the identities of and sales to customers that do not comprise 10% of firm sales, i.e., non-major customers, which reflects decisions on the part of management to voluntarily exceed minimum reporting requirements.¹ Thus, we further investigate the decisions by firms to report respectively less or more customer information than mandated by disclosure requirements.

We find that the likelihood that a firm fails to report the identity of a major customer varies significantly with the degree of product market competition faced by the firm and other firm-level characteristics. Specifically, firms in industries with greater sales concentration, industries with greater advertising expenditures, and industries with more persistent abnormal profits are significantly more likely to withhold the identities of major customers. Given industries with the aforementioned characteristics are generally characterized as being less competitive, these findings offer strong support for the hypothesis that, all else equal, firms operating in less competitive product markets adopt less informative disclosure policies consistent with proprietary costs being higher in industries where strategic interactions among rivals are more prevalent. Further, firms with higher levels of discretionary accruals are also less likely to report the identity of a major customer, suggesting that the decision to conceal relevant customer information is part of a broader effort to limit or otherwise manipulate disclosed information. In contrast, we find that larger firms and firms that employ the services of top auditors are less likely to withhold the identity of a major customer.

We find that many of the individual factors shown to be important in the decision to withhold the identity of a major customer are also important in the decision to voluntarily report information about a non-major customer. Specifically, firms in more concentrated industries, industries with greater advertising expenditures, and industries with more persistent abnormal

¹ For ease of exposition, we refer to individual customers that comprise 10% or more of firm sales as major customers and customers that comprise less than 10% of firm sales as non-major customers.

profits are significantly less likely to reveal the identity of a non-major customer. Again, these findings offer strong support for the hypothesis that firms operating in less competitive product markets adopt less informative disclosure policies. An additional factor that appears to influence voluntary disclosure is the pending desire to access the capital markets. All else equal, firms are more likely to voluntarily disclose information about non-major customers in years immediately prior to announcing seasoned equity offerings (SEOs). These results are consistent with capital market concerns influencing reporting choices in addition to proprietary concerns.

In those instances where voluntarily disclosed customers are publicly traded firms, we are able to compare the characteristics of these non-major customers with other firms in their respective industries, i.e., rivals of the customer firms or, alternatively, other potential customers for the output of the disclosing firm. Consistent with a desire on the part of disclosing firm management to report positive information, voluntarily disclosed non-major customers are significantly larger, more profitable, more intensive advertisers, and less subject to financial distress risk than the average firm in their respective industries. Further, voluntarily disclosed non-major customers are significantly more likely to be in the top quartile of their industries in terms of performance than chance alone would predict. In short, the probability that a purchasing firm will be disclosed as a non-major customer even when not mandated by reporting requirements is increasing in the quality of the purchasing firm consistent with the notion that a desire to benefit by association from the strong relative performance of customer firms in part determines managers' decisions to voluntarily report information about customers.

Our findings contribute generally to the large literature on disclosure choice and specifically to the nascent empirical literature on the interaction between product market competition and disclosure choice. Notably, our paper is the first to examine disclosure choice

in the context of information about customers, which is somewhat surprising given the clearly proprietary nature of this information, the potential importance of this information for investors in assessing firm revenues, and the prominence of this information in annual reports and regulatory filings. Further, our evidence that firms routinely and persistently fail to satisfy SEC reporting requirements raises important concerns about the capacity or inclination of the SEC to enforce compliance by firms with existing mandates related to disclosures of information that managers deem particularly proprietary in nature. Finally, our findings have implications for the growing number of papers that use disclosures of customer information to investigate a variety of issues in the context of customer-supplier relationships.² Our results suggest that strategic disclosure choices may result in researchers constructing samples of customer-supplier relationships that are not entirely free of certain biases and, thus, certain caveats should be considered when interpreting the findings of these papers.

This paper proceeds as follows. In Section 2, we review the related literature and develop the hypothesis to be tested. We describe our sample construction in Section 3. We report results in Section 4 and offer a concluding discussion in Section 5.

2. Hypothesis Development and Related Literature

There is a large literature examining disclosure as a means to reduce information asymmetries between firm managers and capital market participants, e.g., see Healy and Palepu (2001) for a review. Absent disclosure about operating performance and governance, a firm faces, at a minimum, a higher cost of capital, and, at a maximum, an inability to attract external capital, e.g., see Akerlof (1970). However, given that such disclosures to investors may include

² A short list of recent papers using disclosures of customer information includes Fee and Thomas (2004), Hertzler, Li, Officer and Rodgers (2008), and Raman and Shahrur (2008).

proprietary information and can also be observed by a firm's current and potential rivals, these disclosures may aid rivals in competing with the disclosing firm. Thus, managers' decisions as to whether or not to report information are expected to be influenced by the conflicting objectives of informing capital markets to reduce information asymmetry and avoiding proprietary costs related to informing rivals, e.g., see Verrecchia (1983, 2001) and Dye (1985, 2001).

In the particular case of disclosures regarding customers, this information would primarily reduce information asymmetry by assisting investors in evaluating the characteristics of firm's current and future sales revenues. For instance, the degree of concentration in a firm's customer base is informative to investors in gauging the potential impact on sales revenues of losing a major customer. Further, given that a high degree of concentration among customers likely reflects significant relationship specific investment by the parties to the trading relationships and that these investments should increase the stability of the relationships, this information is also relevant in assessing the expected variability of firm revenues, e.g., see Fee, Hadlock, and Thomas (2006).

To the extent that firms are subject to reporting requirements imposed by regulators, the trade-off faced by managers in deciding how much information to disclose about customers will include the expected costs associated with noncompliance if discovered.³ As described in Appendix A, SEC Regulation S-K requires publicly traded firms to report the sales to and

³ Conversations with SEC staff revealed that firms who fail to comply with customer reporting requirements and are brought to the attention of the SEC by a third party complaint will likely be the target of a staff comment to remedy the reporting deficiency. Staff also indicated that, unless other additional noncompliance was discovered, a required restatement or enforcement action would be unlikely. A search of SEC enforcement actions revealed no instances of firms being targeted for enforcement actions as a result of solely failing to report required information about their customers. The resolution of staff comments are reviewed by the SEC when firms seek approval to register new securities issues. Also, a former member of the audit committee of a Fortune 500 firm indicated that a well-functioning audit committee would not allow a staff comment to go unremedied given the potential to affect the firm's ability to access capital markets with registered securities.

identity of any customer that comprises more than 10% of a firm's consolidated revenues. These disclosures are made as part of firms' business segment information.⁴

While disclosed information about major customers is expected to reflect the minimum requirements of Regulation S-K, firms may choose to voluntarily disclose information about non-major customers in an effort to enhance capital market participants' perceptions of the firm, i.e., to benefit from the positive association of being in a trading relationship with a well-managed customer. If customer firms are discerning in their choices of suppliers and there is variation in quality choice, then disclosing that a firm who is known to be discerning is a customer may provide some signal of quality perhaps in advance of a securities offering.⁵ Consistent with a desire on the part of management to reduce information asymmetry in advance of securities offerings, Frankel, McNichols, and Wilson (1995) and Sengupta (1998) find that firms increase disclosure in anticipation of securities issues and Verrecchia and Weber (2006) find that firms are less likely to redact information from filings detailing material contracts prior to issuing securities.

Disclosing information about customers may also permit investors to infer information about disclosing-firm revenues from revelations of information by customer firms, e.g., see Olsen and Dietrich (1985), Cohen and Frazzini (2006), and Pandit, Wasley, and Zach (2007). Knowing the identities of publicly traded customers who report information at time intervals and levels of detail that do not perfectly coincide with those of the supplier firm can indirectly

⁴ While SFAS No. 14 (FASB 1975) and subsequently SFAS No. 131 (FASB 1997) offer firms guidance on reporting segment information, SEC Regulation S-K supersedes these pronouncements for firms with publicly traded equity. See Appendix A for information on the required disclosures under each respective regulation and accounting pronouncement.

⁵ Along these same lines, the reputation of the investment bank used as an underwriter in a securities issuance has been shown to be a determinant of the degree of underpricing, e.g., Carter and Manaster (1990). While in a slightly different context, Billett, Flannery, and Garfinkel (1995) find that firms announcing that they have obtained a bank loan (from arguably a discerning supplier of capital) experience positive abnormal returns. Further, these returns are increasing in the credit rating of the bank which primarily reflects the stringency of the bank's screening process for potential borrowers.

provide investors with more timely and complete information than relying solely on the supplier firm's own reporting. In sum, the benefit of disclosure of customer information is to reduce information asymmetry regarding current and expected sales revenues.

Note that there is a potential downside to providing information about the firm's customers to capital markets since these disclosures are observable by others that might use the information to the disadvantage of the disclosing firm. For instance, management could be concerned that revealing information about their customers will be helpful to current and potential competitors. At a minimum, revealing the identities of a firm's customers would facilitate a rival in approaching these customers in an effort to capture the trading relationships. Also, to the extent that customer information is informative about the sources of revenues in an industry, revealing this information would assist potential entrants to the industry in discerning their prospects of competing for these customers. Disclosing the identities of customers can aid competitors in estimating the productive capacity of the disclosing firm. For instance, the first time a firm identifies Wal-Mart as a major customer it signals to its rivals that the firm has acquired sufficient scale to produce enough output to adequately supply such a large retailer and also that it has the wherewithal to sustain the increased investments in accounts receivable and inventory that often accompany supplying a large retailer with significant bargaining power.

In the extreme, firms may want to avoid naming their customers to prevent a competitor from engaging in an acquisition of the customer resulting in vertical foreclosure, e.g., see Hart, Tirole, Carlton, and Williamson (1990). Also, a customer may request the supplier firm not disclose its identity or amount purchased if the inputs to the customer's products are proprietary since this information may aid the customer's competitors in reverse engineering their product. Lastly, firms may wish to avoid identifying customers to spare themselves or their trading

partners from situations where, by way of their affiliation, they become the subject of scandal or the targets of stakeholders advancing a cause that may or may not be in the interests of shareholders, e.g., labor unions, regulators, politicians, activists, etc. For instance, a U.S. firm that reported South African companies among its customers in the late 1970s was likely to become the target of activists pressuring the firm to end the trading relationships as part of the anti-Apartheid movement; however, not disclosing these South African customers may have allowed the firm to avoid the negative association and any resulting boycotts of its products that reduced its cash flows available to shareholders.

In sum, the cost of disclosure of customer (proprietary) information is that the information can aid rivals and others that would use the information to the firm's disadvantage. While the present paper is the first to systematically examine the determinants of disclosure of information about customers, there is anecdotal evidence that the concerns described above are relevant to managers. For instance, the corporate counsel of Lucent Technologies Inc., in a letter to the SEC, argued that the SEC should "propose elimination of the requirement to identify major customers by name" in Regulation S-K to avoid "the possible competitive harm both to the issuer and the customer from identifying the customer by name."⁶

Theoretical models of the competitive effects of information disclosure suggest that the proprietary costs of increased disclosure will vary with the degree of product market competition faced by the firm. While there are formal arguments in the literature that suggest less competition will be associated with greater disclosure, the preponderance of the models suggest that less competition will be associated with less disclosure. Stigler (1964) notes that, while the potential rents to firms in an oligopoly sharing information among themselves to facilitate collusion may be sizeable, there are practical impediments to the sharing of information among

⁶ <http://www.sec.gov/rules/proposed/s71798/hollida1.txt>

competitors that will significantly limit disclosure. Further, Clarke (1983) and Gal-Or (1985) show that, in an environment of demand uncertainty and private information, it is optimal for rivals in concentrated industries to adopt policies of non disclosure of their private information. Along these same lines, Campbell (1979), Bhattacharya and Ritter (1983), and, more recently, Spiegel and Tookes (2008) demonstrate that a firm in a more concentrated industry might find it advantageous to disclose less information to delay rivals from responding to the firm's attempts to increase market share via product development thereby allowing the innovating firm to capture the rents associated with the innovation for a longer period of time before being competed away. Hayes and Lundholm (1996) argue that, in industries where rivals produce differentiated products (i.e., less competitive product markets), firms should protect their competitive advantages by hiding proprietary information, and only choose to disclose when rivals produce similar products and, thus, have a similar information set and would have little to gain by observing incremental disclosure. Darrough and Stoughton (1990) provide a model of disclosure choice in which greater competition results in greater disclosure as a means to discourage entry by a rival.⁷ The above mentioned models have in common the prediction that we will observe less disclosure by firms operating in less competitive product markets. In contrast, Verrecchia (1983, 1990) contends that we will observe more disclosure by firms operating in less competitive product markets.⁸

We refer to the possibility that the degree of product market competition faced by a firm is, in part, a determinant of its managers' choices regarding how much information to disclose about the firm's customers as the *strategic reporting hypothesis*. The particular sign of the

⁷ Wagenhofer (1990) also develops a model of voluntary disclosure in the presence of a strategic opponent.

⁸ In large part, the difference in predictions between Verrecchia (1983, 1990) and Darrough and Stoughton (1990) is attributable to differences in assumptions about the nature of competition faced by the firm, i.e., the threat of competition from potential entrants vs. competition post-entry.

expected relation between competition and customer disclosure choice is, at this point, uncertain and thus is an empirical question. Clearly, the relevance of the strategic motivation will potentially vary with the characteristics of the customer and supplier firms themselves as well as the product markets in which they operate.

Previous literature has investigated the relation between competition and disclosure in the context of segment reporting choices. Consistent with the predictions that there will be less disclosure in less competitive product markets, Harris (1998) finds that, prior to SFAS No. 131 (FASB 1997) which increased segment reporting requirements for firms, firms were less likely to voluntarily report detailed segment information when they operated in less competitive industries. Similarly, Botoson and Stanford (2005) study the impact of SFAS No. 131 on segment reporting by examining firms that previously reported only one segment but were forced to report multiple segments following adoption of SFAS No. 131. They find that the firms forced to reveal more information about segments under the new revised requirements had tended to use the latitude of the previous requirements (SFAS No. 14, FASB (1976)) to conceal information about their more profitable segments which operated in less competitive industries.

Previous papers have also investigated the relation between competition and management earnings forecasts. Bamber and Cheon (1998) find that managers in more concentrated product markets are significantly more likely to opt to make less informative “qualitative” forecasts rather than point estimate or range forecasts. In a recent paper, Ali, Klasa, and Yeung (2009) find that firms in more concentrated industries are less likely to provide voluntary management earnings forecasts. Taken together, these findings suggest that firms in concentrated industries are less likely to disclose information.

Verrecchia and Weber (2006) examine the frequency with which firms redact information from filings detailing material contracts. They find that managers of firms operating in more concentrated industries are less likely to redact information they deem proprietary from these disclosures. Similarly, Lennox (2007) finds that private-firm managers who indicate on surveys that they face greater competition in the product markets are more likely to opt to file “abbreviated profit and loss accounts” which do not detail components of gross profit with the central repository, Companies House, where these reports are available to the public. Given these abbreviated statements must be prepared by auditors in addition to the full accounts that are required to be prepared and distributed to shareholders, the decision to file the abbreviated accounts represents a decision on the part of managers to incur additional expense in order to avoid revealing more detailed information to rivals. Thus, in contrast to the evidence from segment reporting and management forecasts, Verrecchi and Weber (2006) and Lennox (2007) conclude that, all else equal, firms in less competitive industries disclose more information.⁹

The present paper makes several unique contributions to the literature summarized above. First, as opposed to managers’ forecasts of earnings per share which, by virtue of their summative nature, do not necessarily reveal information that a rival could act on directly, the detailed information about a firm’s customers that we examine is clearly proprietary in nature and its disclosure would be expected to prompt rivals to capitalize on the information.¹⁰ Second, our sample includes the vast majority of publicly traded firms in unregulated industries over a 30 year time series. Examining changes in segment disclosure choices around changes in reporting requirements necessarily limits the analysis to those firms that actually change their segment

⁹ Jin (2005) finds that while health maintenance organizations use voluntary disclosure to differentiate themselves from rivals, firms disclose less in highly competitive markets.

¹⁰ While anecdotal, we note that we were unable to document any trade associations that require their members to disclose their customers and sales to those customers, but there are a number of trade associations where managers share forecasts of their firm’s revenues.

reporting and to the time period immediately around the change in requirements. Similarly, the necessity to hand-collect data on firms that redact information in their filings limits the number of firms that can be included and the time period over which their choices can be examined. Finally, we employ three measures of product market competition that each reflects different aspects of competition. The conflicting results in prior literature are likely in part due to inconsistency among researchers in the measures used and frequent omission of some variables that capture different aspects of competition, e.g., see Verrecchia (1990) for a discussion of the differing implications of competition pre- and post-entry by a rival.

3. Sample Construction and Summary Statistics

The sample we use for this paper includes all Compustat firms reporting segment information over the period 1976-2006, excluding utilities and financial firms, i.e., Standard Industrial Classification (SIC) codes 4900-4999 and 6000-6999, respectively. Note that while we require the reporting firms to not be utilities or financial firms since firms from these industries are not generally subject to segment reporting requirements, we place no such restriction on the firms identified as customers.

Data on customer-supplier relationships are obtained from the Compustat Customer file, a subset of the Compustat Segment Database. Compustat records the identity of and sales to customers as they are disclosed in the company's original filings with the SEC. Unfortunately, the raw customer data available from Compustat is not in an immediately useable form. First, only the customer name is reported without any permanent identifier associated with the customer. Second, there is no standard naming convention for any particular customer across supplier firms or even through time for the same supplier, e.g., a supplier may in one year refer

to AT&T as “American Telephone & Telegraph” and then in a subsequent year change that naming convention to “AT&T.” Third, some suppliers report a division as a customer (e.g., G.E. Health) rather than its parent company (General Electric). Finally, there are many cases where the Compustat customer name is not an actual organization but is instead a descriptive term indicating that the firm had a major customer but did not reveal the customer’s identity, e.g., “NOT REPORTED.”¹¹

We reformat the raw customer data to make it useable for our purposes by first matching each of the 24,993 unique disclosed customer names to all of its variants (both across disclosing firms and time) and then manually classifying each customer as being a public firm, private firm/organization, government entity, or not identified by name. Our classification scheme is as follows. We first attempt to identify public customers by visually matching the customer name to a company name from the CRSP/Compustat Merged database. Obviously this matching entails some discretion on our part, but we err on the side of caution in matching public customer names. If an appropriate match is found, then we link that customer identity with its Compustat permanent identifier (GVKEY). If no immediate match is found, we then perform a search of the customer name on LexisNexis Academic and the Directory of Corporate Affiliations to determine if the customer is a subsidiary of a public parent. If the reported customer is confirmed to be a valid subsidiary of a public company, then we consider the parent company to be the identified customer.¹² For those customers not identified as public firms, we then

¹¹ An example of such a non-disclosure is included in Appendix B as is an excerpt from the Compustat User Guide regarding how Compustat treats these non-disclosures.

¹² Note that there is also a timing dimension that we account for in this step. We attempt to match subsidiaries to their parents for the years in which the parent owns the subsidiary, as well as keep customer relationships consistent across mergers. For example, if Chrysler is a customer firm from 1996-1998 and Daimler Chrysler is a customer from 1999-2002, then we would consider that to be one consistent customer relationship lasting seven years. If the supplier sold to two different subsidiaries of the same parent over time, the supplier would be considered to have had one customer relationship over that period.

determine if the customer is a government entity. Finally, for those customers that are not identified as public firms or government, we determine if the disclosed name is that of an actual organization or is instead a descriptive term to indicate nondisclosure. If the customer name is that of a valid organization and was not public or government, then we classify the customer as private.¹³

Of the 184,854 firm-years included in the segment database, 83,467, or 45.15%, are instances in which a firm reported at least one customer. Thus, the frequency of firms reporting at least some information about its customers is quite high. For firms reporting customers, the largest customer on average represents 26.74% of the companies' sales. Thus, the potential loss of their largest customers is a significant business risk for these firms.

Panel A of Table 1 details the characteristics of our sample firms, broken down into those who report the existence of a customer and those who do not. As is evident in the table, firms reporting at least one customer are smaller, both in terms of sales and book assets, than firms that do not report a customer. Given the large number of sample observations, all differences in the table are significant at the 1% confidence level or greater. While the subsample of firms reporting a customer includes any firm that reports information about a customer, it is not too surprising given the nature of the reporting requirements that smaller firms are more likely report a customer since smaller firms are more likely to be affected by the requirement to disclose information about major customers than are larger firms. The customer-reporting firms also tend to be slightly younger and have somewhat higher market-to-book ratios.¹⁴ In short, the statistics

¹³ By convention, the private classification may include foreign firms that are not also included in the CRSP/Compustat Merged database.

¹⁴ Firm age is the number of years the firm has been on Compustat (which starts coverage in 1950), and Market-to-Book is the ratio of market equity to book equity taken at the end of the fiscal year, where book equity is defined following Fama and French (1993).

in panel A of Table 1 indicate that the firms reporting customers are likely not a random sample of Compustat firms.

Firms reporting customers also do not appear to represent a random sample of industries (defined as in Fama and French 1997). We report in panel B of Table 1, the five industries with the highest fraction of their participants reporting customers and the five industries with the lowest fraction of their participants reporting customers. The industries where participants most frequently report customers are aircraft manufacturers and defense, which tend to sell to a few large airlines and governments. The industries where participants least frequently report customers are dominated by those that sell directly to many individual consumers, e.g., retailers, restaurants, hotels, etc. Naturally, the threat posed by losing a single customer will tend to be lower for these types of industries.

Table 2 details the frequencies with which various types of customers are reported. As indicated in panel A, a sizeable fraction, 27.56%, of companies who report the existence of a customer do not disclose the customer's identity. This fact raises the question of whether this group contains firms that are not in compliance with SEC customer reporting requirements. It is worth noting, however, that a firm is not necessarily under-reporting by SEC standards simply because they do not disclose a customer's identity. First, SEC Reg. S-K only applies to customers representing 10% or more of firm sales, so a firm need not disclose the identities of customers representing less than 10% of their sales. Second, there are some Compustat firms for which the customer reporting requirements may be somewhat less stringent. In particular, small businesses qualifying under Reg. S-B (those firms with inflation adjusted sales and market capitalization less than \$25 million) file the less demanding form 10-KSB, rather than form 10-

K.¹⁵ Finally, financial information for foreign firms listed in the U.S. is generally detailed in annual reports filed under form 20-F.¹⁶ Although not compelled to follow SEC Regulation S-K, disclosure made by foreign firms must comply with generally accepted accounting principles (GAAP) which require that firms disclose the fact that they have a major customer, but not the customer's identity (see Appendix A for details). Thus, as a group, firms without major customers, small firms, and foreign firms are not compelled by regulation to report customer identities. For these reasons, in panel A of Table 2 we also describe frequencies of customer types for the subsample of reporting firms where; (1) the customer represents at least 10% of reporting firm sales, (2) the reporting firm is incorporated in the United States, and (3) the reporting firm is not a "small business reporter" and thus does not qualify to file the less detailed form 10-KSB. Even for this subsample, there are still 19.09% of supplier firm years where the supplier firms are not identifying their major customers as required by Reg. S-K. It thus appears that for a sizeable number of firms, the gains to avoiding the proprietary costs associated with the disclosure of information about their customers are seen as exceeding the potential penalties for noncompliance with reporting requirements. In section 4.1 of the paper, we investigate the cross-sectional determinants of the non-disclosure of major customer identities.

Among all firms reporting information about their customers, 41.05% of reported customers are public firms, which is the most populous category. Private entities and government customers are somewhat less populous, at 21.30% and 10.09%, respectively. Among the subsample where small business reporters, foreign firms, and non-major customers

¹⁵ Regulation S-B indicates that a company must disclose its "dependence on one or a few major customers." However the regulation does not anywhere explicitly indicate that the identity of the customer must be disclosed. See Appendix A.

¹⁶ Firms qualifying as "foreign private issuers" under the Securities Exchange Act of 1934 file form 20-F rather than 10-K. Foreign firms not categorized as foreign private issuers are those in which (1) U.S. shareholders own or control more than 50 percent of the voting securities and in which (2) the managers or directors are predominantly U.S. citizens, more than half the assets are located in the U.S., or the business is principally administered in the U.S.

are excluded, 50.38% are public, whereas private and government customers are 16.93% and 13.61%, respectively.

Panel B of Table 2 presents summary statistics on the fraction of reporting firms' consolidated sales that are made to each customer type. Again we see that the firms concealing the identities of their customers are not simply those for which the customers represent less than 10% of sales as the mean, median, and maximum sales to customers whose identities are not disclosed are each greater than 10%. There are 25,658 instances of firms failing to reveal the identities of their major customers.

As indicated in panel B of Table 2, there are also a sizeable number of cases when firms disclose the names of customers even when these customers represent less than 10% of sales revenues, i.e., customers identified voluntarily when they are not required to be identified according to reporting standards. In section 4.2 of the paper, we investigate the cross-sectional determinants of the voluntary disclosure of the identities of non-major customers.

4. Results

4.1. Determinants of Non-Disclosure

As revealed above, a sizeable fraction of companies choose not to report the identities of major customers, even when SEC requirements mandate that they do so. While it appears the SEC has not made a special point of enforcing this requirement, there is reason to suspect that firms perceive a non-zero cost of noncompliance. Hence, we expect firms to conceal major customer identities only when the managers perceive a net benefit to shareholders of doing so.

In Table 3, we present the results of logit regressions investigating the determinants of firms' decisions to not disclose major customer identities. The sample is restricted to firms

reporting at least one customer representing 10% or more of their sales and the observations are at the supplier firm-year level. The dependent variable is a dummy variable equal to one if the firm fails to report the names of any major customers and equal to zero if the company reports the identity of all such customers.¹⁷ The independent variables are firm and industry characteristics that we conjecture will be related to the decision to not disclose customer identity. A positive coefficient thus indicates that the variable is associated with an increased likelihood of non-disclosure (and hence negatively related to disclosure).

Specification (1) includes several variables reflecting the firms' reporting requirements and the expertise of the firm in financial reporting. Consistent with the univariate results above, small business reporters and foreign firms are significantly more likely to not disclose customer identities. We additionally include two variables potentially reflecting the sophistication of the audit capabilities of the firm and its external auditors. The first is the natural logarithm of firm total assets, as larger firms may be expected to have more specialized reporting personnel or attract more experienced accounting professionals to their audit committees. The second is whether the firm's external auditor is a Big-N accounting firm, as larger accounting firms may be better versed in the nuances of reporting requirements.¹⁸ Both of these variables are highly significant, with the hypothesized negative sign. The variables introduced in specification (1) serve as control variables for each subsequent specification.

Healy and Whalen (1999), in describing the literature on discretionary accruals note that, "In general, the evidence is consistent with firms managing earnings to window-dress financial

¹⁷ We experimented with altering the definition of non-disclosure to only equal one when all, as opposed to any, major customer identities are not reported. The results using this alternate measure are qualitatively unchanged from those reported in Table 3.

¹⁸ An auditor is a Big-N accounting firm if it has auditor code of one through eight from Compustat. For the earlier part of our sample period there were eight major auditing firms, known as the Big-8. Four of those firms merged in 1989 leading to the creation of the Big-6, and another merger in 1998 reduced the number of Big-N accounting firms to five: Deloitte and Touche, Ernst and Young, Price Waterhouse Coopers, KPMG and Arthur Andersen. The Big-5 was reduced to the Big-4 after the demise of Arthur Andersen in 2002.

statements prior to public securities' offerings, to increase corporate managers' compensation and job security, to avoid violating lending contracts, or to reduce regulatory costs or to increase regulatory benefits.” Thus, in specification (2), we control for managers’ overall choices of disclosure informativeness by including a discretionary-accrual-based measure of the firm’s tendency to manage earnings. We measure abnormal discretionary accruals following Kothari, Leone, and Wasley (2005) and Louis (2004), who use the modified-Jones (1991) discretionary accrual model augmented to adjust for the effect of performance on discretionary accruals. Details on how this variable was constructed are provided in Appendix C. We focus on the absolute value of abnormal accruals as we are interested in a firm’s general tendency to manage earnings, rather than the specific direction a firm might manage earnings in a given period. In order to smooth out year-to-year variations in this measure, we calculate a 3-year moving average. The coefficient on the 3-year average absolute discretionary accrual measure is positive and highly significant in specification (2). Thus, the decision to not disclose major customer names appears at least partly driven by the same factors that influence managers’ choices to manage earnings.¹⁹

Even managers with a tendency to under-report might potentially be inclined to increase disclosure if they anticipate a need to access the external capital markets. In these cases, under-reporting might lead to prohibitively high costs of capital.²⁰ To investigate this possibility, in specification (3) we add an additional dummy variable indicating whether the company announces an SEO in the following fiscal year (and information regarding the offering is

¹⁹ As a robustness check, not reported in the table, we experimented with a single year measure of discretionary accruals as well as a five-year moving average. The coefficient remains positive and highly significant regardless of which measure is used. In general, the longer the term over which the measure is computed, the larger the coefficient. The longer-term measures, however, require more data availability to compute, and hence reduce sample sizes more than shorter-term measures. To balance these considerations, we settled on reporting the results using the average calculated over three years.

²⁰ As the theory of Myers and Majluf (1984) would suggest, reducing information asymmetry prior to an SEO will also tend to work to the benefit of existing shareholders if the firm is of high quality.

included in the Thomson SDC database). To the extent that this offering is anticipated by management, one might expect increased disclosure prior to the event. As indicated in specification (3), the coefficient on the SEO within next year variable is small and insignificant. Thus, it appears that managers do not generally reverse under-reporting of major customers in years prior to SEOs. As discussed below, however, the results are quite different when we investigate management's decisions to voluntarily report information about non-major customers.

In specification (4) of Table 4, we add our product market competition variables, all calculated at the four-digit SIC level. Under the strategic reporting hypothesis, the degree of competition in the product market should have an important impact on the decision to report although a priori the nature of the relation is uncertain. The first variable proxying for industry competitive conditions is the supplier industry Hirschman-Herfindahl Index (HHI), calculated as the sum of the squared market shares of all industry competitors. Higher values of HHI indicate more concentrated industries. The second variable is supplier industry advertising intensity, calculated as the mean advertising-to-asset ratio for industry firms (setting missing advertising figures to zero). Greater industry advertising expenditures are consistent with firms competing on differentiated products. Also, higher expenditures on advertising serve as a potential barrier to entrants suggesting that industries with greater advertising expenditures are less competitive, e.g., see Bagwell and Ramey (1990).

Our final measure of industry competitive conditions is based on the industry average profit adjustment speed. Competition should drive firm's rates of return to converge to an industry average over time, and the rate of convergence should be faster in more competitive industries, e.g., see Mueller (1977). We follow Harris (1998) and define our measure of

abnormal profit persistence to be the partial correlation coefficient resulting from a pooled time series regression (one for each industry) of current abnormal profits regressed on lagged abnormal profits. A high correlation between current and lagged abnormal profits means abnormal profits converge to a normal rate of return more slowly indicating the industry is less competitive. Thus, similar to HHI, our measure of abnormal profit persistence is *negatively* related to industry competition. Further details on the construction and definition of abnormal profit persistence can be found in Appendix C.

As reported in specification (4) of Table 3, the coefficients on all three industry competitiveness variables are positive and significant. Consistent with the strategic reporting hypothesis, these results suggest that firms tend to conceal information more often in less competitive industries where proprietary costs are arguably higher. Specifically, in supplier industries with greater concentration (HHI) and more persistent abnormal profits, competitors are protective of the rents they capture and thus reveal less information about their customers. Additionally, to the extent that higher advertising is also associated with greater barriers to entry and higher rents, the positive and significant coefficient on supplier industry advertising intensity can be interpreted similarly.

4.1.1. Goodness of Fit, Robustness, and Extensions

As a measure of goodness of fit, we compare predicted probabilities from specification (4) to actual frequencies of customer identity concealment. Specifically, we compute frequencies of customer identity concealment for firms in the 1st and 10th decile of predicted probability. For firms in the 1st decile of predicted probability of nondisclosure, the average rate of nondisclosure is 11.21%, as compared to an average predicted probability of 11.92%. For

firms in the 10th decile of predicted probability of nondisclosure, the average rate of nondisclosure is 43.03%, as compared to an average predicted probability of 44.34%. Thus, there appears to be high degree of correspondence between the predicted probabilities and observed frequencies of customer concealment.

Given that it is likely more difficult to hide the identity of a customer that accounts for a very large portion of sales, we also investigated the relation between nondisclosure and major customer sales intensity. Adding sales intensity to our regressions requires a modification of our sample because the Table 3 regressions are at the supplier-firm-year level, but many firms report more than one major customer and sales intensity will differ by customer. Thus, for this analysis, not reported in the tables, we restrict our sample to firms with only one reported customer. As expected the coefficient on the sales intensity variable is negative and significant consistent with firms being more likely to report the identities of customers accounting for larger fractions of firm sales. However, possibly related to the reduction in sample size due to restricting the sample to firms reporting only one major customer, the coefficients on industry HHI and advertising intensity drop in significance to the 20% level in this specification. The abnormal profit persistence measure of industry competitiveness remains highly significant, however.

One potential statistical concern is that the decision to conceal customers may not be entirely independent for a given supplier from year to year. As an additional robustness check, we therefore rerun specification (4) of Table 3 clustering standard errors by supplier. In this model, all of the coefficients significant in specification (4) are also significant, with the exception of supplier industry HHI. It thus appears that, as regards the decision to conceal customer identities, abnormal profit persistence is generally the most robust measure of industry

competitive conditions. Since most theory would suggest less disclosure in industries with more rents, this finding could indicate that abnormal profit persistence is a better measure of industry rents than HHI or industry advertising intensity.

As discussed above, our sample covers all Compustat firms reporting segment information from 1976 to 2006. However, the frequency of segment disclosures in fiscal years 1976 and 1977 is substantially less than that in the years starting in 1978. We therefore also rerun the analysis in Table 3 restricting the sample to fiscal years 1978 and later. The results of Table 3 are qualitatively unchanged in the presence of this restriction on the sample.

As an indication of which competition variables are the most economically significant, we investigate the implied marginal importance of these variables in specification (4) of Table 3. We measure the relative impact of each of these variables by examining the change in implied probability when the relevant variable is varied from its 10th to 90th percentile, holding all other variables at their means. Of these variables, the supplier industry abnormal profit persistence variable appears to be the most important. When this variable is varied as described, the implied probability of concealing a customer increases from 21.17% to 25.19%. This 4.02% change in implied probability represents an 18.99% increase compared to the baseline probability. The industry HHI and advertising intensity measures appear somewhat less significant, generating 4.31% and 0.42% increases compared to the baseline when they are varied. Again the decreased power of these measures compared to the abnormal profit persistence measure might suggest that the abnormal profit persistence measure is more closely related to levels of industry rents.

We perform a similar analysis on the control variables, varying the continuous variables as described above and the dummy variables from zero to one. The changes in implied probabilities for the small business reporter, foreign firm, and Big-N auditor dummies are 2.58%,

28.30%, and -4.06% (representing changes compared to the baseline of 11.54%, 128.49%, and -15.47%). Here the results for foreign firms clearly stand out. The requirement for U.S. firms to comply with SEC regulations as well as GAAP clearly has a dramatic impact on the quality of information disclosure. The effect of having a Big-N auditor also appears to have a fairly significant impact on the probability that firms properly adhere to SEC standards. Supplier size also has a dramatic impact on reporting quality, as varying Ln(Assets) from its 10th to 90th percentile decreases the probability of non-disclosure by 15.21%, a 48.60% reduction compared to the baseline. The 3-year average absolute discretionary accrual measure is also economically important. When this variable is varied in the corresponding way, the implied probability increases by 1.75%, a 7.79% increase compared to the baseline probability.

It is important to note that quantitative measures of industry competitive conditions, such as those used in specification (4) are, by nature, somewhat imprecise. As an alternative way to investigate the relative importance of industry competition, in specifications not reported in the table we replace our measures of industry conditions with a measure of the average level of non-disclosure for other firms in the same industry. Specifically, for each supplier-firm year, we calculate the frequency with which its rivals (same four-digit SIC code) fail to disclose the names of major customers. To the extent that industry competitive factors influence disclosure decisions, one would expect firms' disclosure choices to mimic those of other firms in its industry, e.g., see Brown, Gordon, and Wermers (2006). The coefficient on industry non-disclosure is positive and highly significant. Economically, when we vary the industry level of non-reporting from its 10th to 90th percentile, the predicted probability of a given firm concealing the identity of a major customer increases from 17.14% to 30.20%, a difference of 13.06% (a 76.21% increase compared to the baseline). These figures give an idea of the importance of

industry factors on customer reporting while those reported in the Table 3 give an idea of *how* industry conditions affect reporting.

In summary, the results in Table 3 offer evidence in support of the strategic reporting hypothesis. Specifically, the decision to conceal the identities of major customers is related to several measures of industry rents suggesting that reporting choice is in part driven by proprietary concerns. Additionally, the decision to not disclose the identities of major customers is made more frequently by firms engaged in higher levels of earnings management, as measured by 3-year average absolute discretionary accruals, suggesting that the decision to conceal the identities of customers is part of an overall strategy of less informative disclosure.

4.2 Determinants of Voluntary Disclosure

In the previous section we focused on the decision to conceal the names of major customers despite an SEC Regulation to the contrary. We now turn our attention to the decision to voluntarily disclose the identities of customers that reporting requirements do not mandate be disclosed. The sample we use for this analysis includes all Compustat firms reporting segment information over the period 1976-2006, excluding utilities and financial firms. The dependent variable is a dummy variable set equal to one if a company voluntarily discloses at least one customer which represents less than 10% of its sales revenues, i.e., a non-major customer, and is set equal to zero for all other firms. The independent variables are the same as those of Table 3 with one exception. We include in all specifications of Table 4 an indicator variable equal to one when the company reports the identity of a major customer. We add this variable because the costs of disclosing non-major customers for firms already identifying major customers are likely to be less. In all specifications, the coefficient on this variable is positive and highly significant

suggesting that conditional on reporting a major customer, firms are more likely to report a non-major customer.

As reported in specification (1) of Table 4, small business reporters and foreign firms are significantly less likely to disclose information about non-major customers. The sophistication of the firms' internal and external accountants appears less important for the voluntary disclosure decision as $\text{Ln}(\text{Assets})$ and the Big-N auditor indicator variable are generally insignificant. Comparing the results of Tables 3 and 4, it appears that external auditors from big accounting firms are helpful in ensuring companies follow disclosure rules, but do not necessarily encourage companies to report more information than is required.

To the extent that managers adopt a general policy of concealing information, it might be expected that firms with greater discretionary accruals would be less likely to voluntarily report customer information. However, given that managers can choose which customers to selectively reveal information about, we might observe firms that manage earnings voluntarily disclosing more customer information, especially if the customers that are disclosed are strong performers. Hence, the sign on the 3-year average absolute discretionary accrual variable is somewhat difficult to predict a priori. Empirically, it appears that, if anything, firms that engage in greater earnings management are weakly more likely to report information about non-major customers. Given the results in section 4.2.2 below reveal that voluntarily disclosed customers are disproportionately strong performers in their industries, it is perhaps not too surprising that managers inclined to manage earnings also more frequently disclose these customers in filings.

While in the previous section we found evidence that managers do not generally reverse under-reporting of major customer identities in years prior to SEOs, the positive and significant coefficient on the SEO within next year indicator variable in specification (3) suggests that firms

do increase voluntary disclosure of non-major customers in advance of equity offerings, e.g., see Jo and Kim (2007) and Lang and Lundholm (2000). Taken together, the contrasting results from Tables 3 and 4 are consistent with, all else equal, the net benefits to securities issuers of revealing non-major customers in advance of issuing being greater than the net benefits of reversing a policy of non-disclosure of mandatory customer information in advance of a securities issue.

The theoretical predictions for the effects of product market competition on the voluntarily disclosure decision are largely opposite those for the nondisclosure decision. As reported in specification (4) of Table 4, all three variables related to supplier industry competitiveness (HHI, advertising intensity, and abnormal profit persistence) are negative and significant. In this respect the results in Table 4 are the mirror reflection of those in Table 3. Taken together, these findings provide strong support for the strategic reporting hypothesis. That is, the degree of product market competition faced by the firm appears to have an important effect on both the extent to which firm managers fail to disclose information required by regulators and on the extent to which they voluntarily exceed customer disclosure requirements.

4.2.1. Goodness of Fit, Robustness, and Extensions

We evaluate the goodness of fit of specification (4) of Table 4 by comparing predicted to actual frequencies of voluntary disclosure. For firms in the 1st decile of predicted probability of disclosure, the average rate of disclosure is 7.37%, as compared to an average predicted probability of 7.67%. For firms in the 10th decile of predicted probability of disclosure, the average rate of disclosure is 21.21%, as compared to an average predicted probability of 23.84%. Thus, the correspondence between predicted and observed frequency appears to be quite high.

Non-independence of reporting decisions by the same supplier from year-to-year is a potential statistical concern. For this reason we rerun specification (4) clustering standard errors by supplier. In this specification, the SEO within next year effect remains significant at the 5% level. As in the corresponding test for Table 3, the significance of the coefficient on the supplier industry HHI measure of competitiveness drops below conventional significance levels while the coefficients on both abnormal profit persistence and advertising intensity remain significant at conventional levels. We additionally rerun the results of Table 4 restricting the sample to fiscal years 1978 and later, with no material impact on the results.

We also examine the economic significance of the variables reported in Table 4. Turning first to the SEO within next year dummy variable, the probability of voluntarily reporting a non-major customer increases from 11.30% to 12.74% in years prior to SEOs. The 1.44% difference represents a 12.74% increase compared to non pre-SEO years. Similar to the results for Table 3, the abnormal profit persistence measure of industry competitive conditions appears the most impactful. When we vary this measure from its 10th to 90th percentile, the probability of voluntary disclosure decreases by 0.82%, or 7.01% compared to the baseline level.

In results not reported in the table, we replace our measures of industry competitive conditions with a measure of the average level of voluntary disclosure for other firms in the same industry. The coefficient on this measure is positive and highly significant. When we vary this measure from its 10th to 90th percentile, the predicted probability of voluntary disclosure increase from 8.51% to 14.46%. The 5.95% difference is 69.88% of the baseline probability. This result reinforces those of the table suggesting industry competitive factors appear to have a significant effect on the decision to voluntarily reveal customer identities.

4.2.2. Characteristics of Voluntarily Disclosed Customers

As discussed above, managers may have a motivation to selectively disclose “better” non-major customers. We are unfortunately unable to observe non-major customers that are never disclosed, so a logit model predicting which non-major customers to reveal is infeasible. As an alternative, we report in Table 5 the characteristics of the non-major customers that are voluntarily reported. As an indication of how these customers differ from other potential customers of our sample firms, we also report the characteristics of the identified-customers’ industry peers (mean four-digit SIC industry characteristics).²¹ As reported in the table, the voluntarily reported customers tend to be larger (in terms of assets and sales), more profitable (operating ROA), more highly valued (Tobin’s Q), and perhaps more visible (advertising to sales). Although we do not observe significant differences in leverage ratios, the voluntarily identified customers do have significantly higher interest coverage ratios and slightly higher Altman’s Z scores, again suggesting they are stronger financially than their industry peers.²²

As a further indication of the types of firms that are reported as non-major customers, we also calculated the frequency with which the customers were among the top quartile of firms in their industries in terms of size, profitability, etc. Assuming that reported customers are randomly drawn from their respective industries, the reported customers should fall into the top quartile approximately 25% of the time. As indicated in the last column of Table 5, firms reported as non-major customers are included in the top quartile of their industries significantly more frequently than chance would suggest based on the results of a binomial test assessing

²¹ Results are very similar when we use identified-customer industry medians as the basis for comparison between identified and potential customers.

²² Altman’s Z score is a measure of financial soundness inversely related to the probability of bankruptcy. We calculate this as $1.2 * \text{Working Capital} / \text{Total Assets} + 1.4 * \text{Retained Earnings} / \text{Total Assets} + 3.3 * (\text{Pre-tax Income} + \text{Interest Expense} - \text{Interest Income}) / \text{Total Assets} + 0.6 * \text{Market Capitalization} / \text{Total Liabilities} + 0.999 * \text{Sales} / \text{Total Assets}$.

whether the observed frequency is significantly greater than 25%. One interpretation of these findings is that firms selectively report those customers that reflect favorably on the business prospects of their own firm, perhaps prior to SEOs. Further, these results suggest that studies using these customer disclosures to construct samples of customer-supplier relationships should take into account that the relationships identified via non-major customer disclosures are likely to be those where the customers are superior performers in their respective industries.

5. Conclusion

We examine the determinants of the disclosure of customer information, finding evidence consistent with a strategic rationale for concealing and revealing customer identities. We first investigate the decision of firms to conceal the identities of their major customers contrary to SEC reporting requirements. Consistent with the strategic reporting hypothesis, we find a greater propensity to hide information in less competitive industries where proprietary costs are expected to be particularly large. We also find that firms with a greater tendency to manage earnings tend to also conceal customer identities more frequently. We then investigate the propensity of firms to voluntarily reveal the identities of customers beyond those required by reporting requirements. The results here mirror those of the decision to conceal customer identities, particularly in regards to the effect of industry competitive conditions. We additionally find that firms tend to voluntarily reveal customers in years prior to SEOs, consistent with the idea that managers believe that increased disclosure can facilitate access to external capital markets. These results suggest that the effectiveness of regulatory reporting requirements in producing information is not entirely divorced from a firm's product market environment given the trade-off between complying with reporting requirements and avoiding

the proprietary costs of aiding rivals. Thus, securities regulators should consider the interactions of reporting requirements and product market competition in structuring regulation intended to improve the transparency of capital markets,.

Appendix A: Customer Reporting Regulations

REG S-K (17 C.F.R. § 229.101) (Item 101) Description of business)

(vii) The dependence of the segment upon a single customer, or a few customers, the loss of any one or more of which would have a material adverse effect on the segment. The name of any customer and its relationship, if any, with the registrant or its subsidiaries shall be disclosed if sales to the customer by one or more segments are made in an aggregate amount equal to 10 percent or more of the registrant's consolidated revenues and the loss of such customer would have a material adverse effect on the registrant and its subsidiaries taken as a whole. The names of other customers may be included, unless in the particular case the effect of including the names would be misleading. For purposes of this paragraph, a group of customers under common control or customers that are affiliates of each other shall be regarded as a single customer.

REG S-B (17 C.F.R. § 228.101) (Item 101) Description of business)

(b) Business of Issuer. Briefly describe the business and include, to the extent material to an understanding of the issuer: ...6) Dependence on one or a few major customers;

SFAS No. 14 (FASB 1975) Information about Major Customers

39. If 10 percent or more of the revenue of an enterprise is derived from sales to any single customer, that fact and the amount of revenue from each such customer shall be disclosed. (For this purpose, a group of customers under common control shall be regarded as a single customer.) Similarly, if 10 percent or more of the revenue of an enterprise is derived from sales to domestic government agencies in the aggregate or to foreign governments in the aggregate, that fact and the amount of revenue shall be disclosed. The identity of the industry segment or segments making the sales shall be disclosed. The disclosures required by this paragraph shall be made even if the enterprise is not required by this Statement to report information about operations in different industries or foreign operations.

SFAS No. 131 (FASB 1997) Information about Major Customers

39. An enterprise shall provide information about the extent of its reliance on its major customers. If revenues from transactions with a single external customer amount to 10 percent or more of an enterprise's revenues, the enterprise shall disclose that fact, the total amount of revenues from each such customer, and the identity of the segment or segments reporting the revenues. The enterprise need not disclose the identity of a major customer or the amount of revenues that each segment reports from that customer. For purposes of this Statement, a group of entities known to a reporting enterprise to be under common control shall be considered as a single customer, and the federal government, a state government, a local government (for example, a county or municipality), or a foreign government each shall be considered as a single customer.

Appendix B:

1. Customer Data Excerpt From JLG Industries 10-K for fiscal period ending July 31, 1997:

INDUSTRY AND EXPORT DATA

The Company operates in one dominant industry segment--the manufacture, sale and rental of aerial work platforms. The Company manufactures its products in the U.S., and the majority of its customers are U.S.-based equipment rental firms. Additionally, its receivables from these customers are generally not collateralized. One customer accounted for 13% of sales for 1997, 1996 and 1995.

2. Compustat User Guide Excerpt

- If a company derives 10 percent or more of its revenue from a single customer, the customer's name should be reported by the company. However, it is not unusual for a company to neither report the name of a principal customer (CNAME) nor the dollar amount of revenue (CSALE) derived from the customer.
- If a company doesn't report a customer's name but does give the amount of sales to that customer, we show the data in this way:

| CNAME | CSALE |
|--------------|--------|
| Not Reported | 182.00 |

- When the customer's name is reported without a corresponding sales figure, we input the customer name in CNAME and a Not Available data code (.0001) in CSALE.

Appendix C: Variable Construction

Discretionary Accruals

We measure abnormal discretionary accruals following Kothari, Leone, and Wasley (2004) and Louis (2004), who use the modified-Jones (1991) discretionary accrual model augmented to adjust for the effect of performance on discretionary accruals. Conceptually, the modified-Jones model estimates discretionary accruals by regressing total accruals on variables which would determine the normal level of accruals, and uses the residual of those regressions as the proxy for discretionary accruals. Specifically, we define total accruals (TA) as: the change in current assets minus the change in cash and short term investments, minus the change in current liabilities plus the change in the current portion of long-term debt, minus depreciation and amortization, all scaled by lagged total assets:

$$TA_{it} = \frac{(\Delta \text{Current Assets}_{it} - \Delta \text{Cash}_{it} - \Delta \text{Current Liabilities}_{it} + \Delta \text{Debt in Current Liabilities}_{it} - \text{Depreciation}_{it})}{\text{Assets}_{it-1}}$$

For every 2-digit SIC code industry and year, we estimate the following regression using all firm years from that industry year with non-missing data:

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{\text{ASSETS}_{it-1}} \right) + \beta_2 \left(\frac{\Delta \text{SALES}_{it} - \Delta \text{AR}_{it}}{\text{ASSETS}_{it-1}} \right) + \beta_3 \left(\frac{\text{PPE}_{it}}{\text{ASSETS}_{it-1}} \right) + \varepsilon_{it}$$

The residual from the above regression is the standard estimate of discretionary accruals from the modified-Jones model. We follow Kothari et al. (2005) and Louis (2004) and adjust our discretionary accrual measure for performance in the following way: For each industry-year, we sort firms into five portfolios based on lagged ROA quintiles and match each firm-year to its appropriate industry/ROA quintile. We then define abnormal discretionary accruals as the discretionary accrual from the modified-Jones model minus the average (not including own firm)

discretionary accrual from the matched industry portfolio. Note that this measure of abnormal accruals is a signed measure, such that positive values indicate positive earnings management and negative values indicate negative earnings management. Thus we focus on the absolute value of abnormal accruals as we are interested in a firm's general tendency to manage earnings, rather than the specific direction a firm might manage earnings in a given year. Finally, in order to smooth out year-to-year variations in the measure, we calculate a 3-year moving average of this measure.

Abnormal Profit Persistence Measure

Since HHI only measures industry competition using the distribution of firm sizes in an industry, it does not paint a complete picture of an industry's competitive landscape. For instance, two industries with identical HHIs could have vastly different levels of intra-industry rivalry. Thus, relying on HHI alone limits our understanding of how industry competition influences a firm's choice to disclose customer information. In order to identify a different dimension of industry competition from the HHI, we calculate a measure inversely related to each industry's average speed of profit adjustment, which we refer to as "abnormal profit persistence." This measure comes from the industrial organization literature which hypothesizes that competition should drive firm's rates of return to converge to an industry average over time, and that the rate of convergence should be faster in more competitive industries.²³

Harris (1998) uses this measure as an additional measure of industry competition in her study of disclosure choice surrounding the adoption of SFAS No. 131 and finds it to be significantly negatively related to a firm's choice to disclose additional segment information,

²³ See Mueller (1977, 1986) and Connelly and Schwarz (1985) for examples. This measure has been used in recent disclosure papers by Harris (1998), Botosan and Stanford (2005) and Berger and Hann (2007).

consistent with the hypothesis that in less competitive industries firms could have more to lose (namely the abnormal profits) by increased disclosure. Following Harris (1998) we construct abnormal profit persistence using operating income scaled by assets (ROA) and define abnormal profits to be a firm's ROA minus the industry average. For each four-digit SIC industry we calculate the following pooled time series regression using all sample firm years:

$$ABROA_{ijt} = \beta_0 + \beta_1(D_L * ABROA_{ijt-1}) + \beta_2(D_P * ABROA_{ijt-1}) + \varepsilon_{ijt}$$

Where:

$ABROA_{ijt}$ = Firm i's ROA minus industry j's average ROA in year t

D_L = An indicator variable equal to 1 if $ABROA_{ijt-1}$ is less than or equal to zero, implying the firm did not have abnormal profits in year t-1

D_P = An indicator variable equal to 1 if $ABROA_{ijt-1}$ is greater than zero, implying the firm had abnormal profits in year t-1.

The coefficient β_2 from the above regression measures the correlation that current abnormal profits have with previous year abnormal profits and is our measure of abnormal profit persistence. If that correlation is low that implies that abnormal profits quickly converge to 0 for firms in an industry and it implies that industry is more competitive. Conversely, if that correlation is high, then this implies that abnormal profits tend to be sticky over time and converge to normal rates of return more slowly. Thus higher values of abnormal profit persistence imply a lower level of competition.

Note that although both abnormal profit persistence and HHI are decreasing in industry competition, theoretically abnormal profit persistence measures a different dimension of industry competition than does HHI. Where HHI reflects competitive industries to be those with many small firms, and non-competitive industries to be those controlled by a few large firms, abnormal

profit persistence measures how industry rivals can compete away abnormal profits regardless of firm size. For instance, an oligopolistic industry that is characterized by a few large players would be considered concentrated and non-competitive using the Herfindahl index, but if that industry tends to quickly drive abnormal profits of industry rivals to zero, then that industry would be considered competitive using the speed of profit adjustment measure. In fact, although HHI and abnormal profit persistence are both theoretically decreasing in competition, empirically, they are negatively correlated in our sample (correlation coefficient -0.13, significant at the 1% level).

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Table 1: Characteristics of firms reporting customers

| <i>Panel A: Firm characteristics</i> | | | | | | |
|--------------------------------------|----------------------------------|-------------------------------|--------------|------------------------------------|-------------------------------|------------|
| | <u>Mean firm characteristics</u> | | | <u>Median firm characteristics</u> | | |
| | Firms reporting customers | Firms not reporting customers | Difference | Firms reporting customers | Firms not reporting customers | Difference |
| Assets | 728.78 | 1,870.23 | -1,141.44*** | 45.77 | 88.13 | -42.36*** |
| Sales | 624.49 | 1,676.58 | -1,052.08*** | 45.78 | 98.75 | -52.97*** |
| Age | 11.75 | 13.12 | -1.37*** | 8.00 | 9.00 | -1.00*** |
| Market-to-book | 3.08 | 2.84 | 0.24*** | 1.67 | 1.52 | 0.15*** |

| <i>Panel B: Industry representation</i> | |
|--|---|
| <u>High reporting frequency industries</u> | <u>Customer reporting frequency (%)</u> |
| Aircraft | 82.06 |
| Defense | 77.17 |
| Electronic equipment | 73.80 |
| Coal | 73.43 |
| Computers | 63.49 |
| <u>Low reporting frequency industries</u> | <u>Customer reporting frequency (%)</u> |
| Restaurants, Hotel, Motel | 4.60 |
| Retail | 7.94 |
| Gold | 21.28 |
| Printing and Publishing | 22.45 |
| Recreational Products | 23.30 |

The sample includes all firms with segment data on Compustat from 1976-2006 excluding utilities and financial firms, i.e., Standard Industrial Classification (SIC) codes 4900-4999 and 6000-6999. The unit of observation is the firm-year. Firms reporting customers consist of those firm-years that have at least one customer (either identified or name not disclosed) in the Compustat Customer File, whereas firms not reporting customers are those firm-years with no customers in the Compustat Customer File. Assets is book value of total assets. Assets and sales are from Compustat and are reported in \$(millions). Age is the number of years the firm has been on Compustat (starting in 1950) and market-to-book is the ratio of market equity to book equity taken at the end of the fiscal year, where book equity is defined as in Fama and French (1993). In panel B, we report the five industries, defined as in Fama and French (1997), with the highest fraction of their participants reporting customers and the five industries with the lowest fraction of their participants reporting customers. The significance of differences in means (medians) across subsamples is assessed using *t*-tests (Wilcoxon rank-sum tests). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 2: Frequency and sales intensities of customers by type

| <i>Panel A: Frequency of customer by type</i> | | | | | | |
|--|--------------------|-------------|----------------|-------------------|--|--|
| | Name not disclosed | Public firm | Private entity | Government entity | | |
| Number of observations | 44,109 | 65,690 | 34,086 | 16,143 | | |
| % of Total (full sample) | 27.56% | 41.05% | 21.30% | 10.09% | | |
| % of Total (subsample where U.S. firm, non-small business reporter, and sales intensity \geq 10%.) | 19.09% | 50.38% | 16.93% | 13.61% | | |

| <i>Panel B: Sales intensity of customer by type</i> | | | | | | |
|---|--------|--------|------|------|-----------------------|-----------------------------|
| | Mean | Median | Min. | Max. | N with intensity <10% | N with intensity \geq 10% |
| Name not disclosed | 14.61% | 11.00% | <1% | 100% | 18,451 | 25,658 |
| Public firm | 17.36% | 13.00% | <1% | 100% | 21,944 | 43,746 |
| Private entity | 16.82% | 12.00% | <1% | 100% | 12,891 | 21,195 |
| Government entity | 33.29% | 23.59% | <1% | 100% | 3,880 | 12,263 |

All customer and supplier information is derived from Compustat segment data. In both panels the unit of observation is the customer-supplier relationship-year. The sample includes all relationship-years identified on Compustat over the period 1976-2006. Sales intensity is the percentage of supplier revenue accounted for by a customer in each relationship-year. Panel A reports the relative frequency of customer types for all relationship-years as well as the subsample of relationship-years where the supplier firm is incorporated in the U.S., does not qualify as a small business reporter under SEC regulations, and where sales intensity is at least 10% (i.e., relationship is with a major customer). Panel B reports summary statistics for sales intensity by customer type.

Table 3: Determinants of non-disclosures of major customer identities

| Specification | (1) | (2) | (3) | (4) |
|--|--------------------|--------------------|--------------------|--------------------|
| Small business reporter | 0.15*** (0.03) | 0.13*** (0.03) | 0.13*** (0.03) | 0.14*** (0.03) |
| Foreign firm | 1.12*** (0.04) | 1.28*** (0.05) | 1.28*** (0.05) | 1.28*** (0.05) |
| Ln(Assets) | -0.15*** (0.01) | -0.16*** (0.01) | -0.16*** (0.01) | -0.15*** (0.01) |
| Big-N auditor | -0.25*** (0.02) | -0.22*** (0.03) | -0.22*** (0.03) | -0.22*** (0.03) |
| 3-Year average absolute discretionary accruals | | 0.60*** (0.15) | 0.60*** (0.15) | 0.59*** (0.20) |
| SEO within next year | | | 0.01 (0.07) | 0.01 (0.07) |
| Supplier industry HHI | | | | 0.14** (0.07) |
| Supplier industry advertising intensity | | | | 0.14*** (0.04) |
| Supplier industry abnormal profit persistence | | | | 0.56*** (0.08) |
| Constant | -0.52*** (0.03) | -0.57*** (0.05) | -0.57*** (0.05) | -1.09*** (0.09) |
| Observations | 64,045 | 46,121 | 46,121 | 46,121 |
| Pseudo R-squared | 0.040 | 0.043 | 0.043 | 0.044 |

This table presents the results of logit regressions of the determinants of firms' decisions to not disclose major customer identities. The sample is restricted to firms reporting at least one customer representing 10% or more of their sales and the observations are at the supplier firm-year level. The dependent variable is a dummy variable equal to one if the firm fails to report the names of any major customers and equal to zero if the company reports the identity of all such customers. Asymptotic heteroskedasticity-robust standard errors are reported in parentheses. Small business reporter is a dummy variable that takes a value of one if the supplier firm has sales and market capitalization less than \$25 million and zero otherwise. Foreign firm is a dummy that takes a value of one for those supplier firms incorporated in any country other than the U.S. and zero otherwise. Ln(Assets) is the log of book value of total assets. The Big-N auditor is a dummy that takes a value of one if the supplier firm uses one of the Big-N auditors and zero otherwise. 3-Year average absolute discretionary accruals is the trailing three year average of the absolute value of performance adjusted discretionary accruals (see Appendix C). SEO within next year is a dummy variable which takes a value of one if the firm announces an SEO the year following fiscal year end and zero otherwise, based on Thomson SDC data. Supplier industry HHI is the sales based Hirschmann-Herfindahl index calculated at the four-digit SIC code level. Supplier industry advertising intensity is the average ratio of advertising expense to sales for each four-digit SIC code industry. Missing values for advertising expense are treated as zeros. Supplier industry abnormal profit persistence is the partial correlation coefficient resulting from a pooled time series regression (one for each four-digit SIC code industry) of current abnormal profits on lagged abnormal profits (see Appendix C). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Determinants of voluntary disclosure of non-major customers

| Specification | (1) | (2) | (3) | (4) |
|--|--------------------|--------------------|--------------------|--------------------|
| Firm identifies a major customer | 1.21*** (0.01) | 1.14*** (0.02) | 1.14*** (0.02) | 1.14*** (0.02) |
| Small business reporter | -0.13*** (0.02) | -0.08*** (0.03) | -0.08*** (0.03) | -0.08*** (0.03) |
| Foreign firm | -0.11*** (0.03) | -0.11*** (0.04) | -0.11*** (0.04) | -0.11*** (0.04) |
| Ln(Assets) | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) | -0.01 (0.01) |
| Big-N auditor | 0.07*** (0.02) | 0.03 (0.02) | 0.03 (0.02) | 0.03 (0.02) |
| 3-Year average absolute discretionary accruals | | 0.20 (0.12) | 0.20 (0.12) | 0.21* (0.12) |
| SEO within next year | | | 0.14*** (0.05) | 0.14*** (0.05) |
| Supplier industry HHI | | | | -0.11** (0.05) |
| Supplier industry advertising intensity | | | | -0.13** (0.07) |
| Supplier industry abnormal profit persistence | | | | -0.22*** (0.06) |
| Constant | -2.44*** (0.03) | -2.39*** (0.04) | -2.39*** (0.04) | -2.17*** (0.07) |
| Observations | 181,991 | 131,526 | 131,526 | 131,526 |
| Pseudo R-squared | 0.050 | 0.045 | 0.045 | 0.045 |

This table presents the results of logit regressions of the determinants of firms' decisions to disclose non-major customer identities. The sample consists of all firm-years with segment data on Compustat from 1976-2006 excluding utilities and financial firms. The dependent variable takes a value of one if the supplier discloses the identity of at least one customer which has sales intensity strictly less than 10% and zero otherwise. Asymptotic heteroskedasticity-robust standard errors are reported in parentheses. Firm identifies a major customer is a dummy variable which takes a value of one if the supplier firm reports at least one customer with sales intensity greater than or equal to 10% and zero otherwise. Small business reporter is a dummy variable that takes a value of one if the supplier firm has sales and market capitalization less than \$25 million and zero otherwise. Foreign firm is a dummy that takes a value of one for those supplier firms incorporated in any country other than the U.S. and zero otherwise. Ln(Assets) is the log of book value of total assets. The Big-N auditor is a dummy that takes a value of one if the supplier firm uses one of the Big-N auditors and zero otherwise. 3-Year average absolute discretionary accruals is the trailing three year average of the absolute value of performance adjusted discretionary accruals (see Appendix C). SEO within next year is a dummy variable which takes a value of one if the firm announces an SEO the year following fiscal year end and zero otherwise, based on Thomson SDC data. Supplier industry HHI is the sales based Hirschmann-Herfindahl index calculated at the four-digit SIC code level. Supplier industry advertising intensity is the average ratio of advertising expense to sales for each four-digit SIC code industry. Missing values for advertising expense are treated as zeros. Supplier industry abnormal profit persistence is the partial correlation coefficient resulting from a pooled time series regression (one for each four-digit SIC code industry) of current abnormal profits on lagged abnormal profits (see Appendix C). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Characteristics of voluntarily reported customers

| | Reported customer mean | Customer industry mean | Difference | % Reported customers greater than industry 75 th percentile |
|----------------------|---------------------------|---------------------------|--------------|---|
| Assets | 11,473.48 | 3,892.12 | 7,581.362*** | 72.80%*** |
| Sales | 7,878.88 | 2,754.51 | 5,124.37*** | 75.21%*** |
| Operating ROA | 0.13 | 0.05 | 0.087*** | 33.46%*** |
| Tobin's Q | 1.75 | 1.68 | 0.068*** | 28.00%*** |
| Advertising to sales | 0.01 | 0.01 | 0.001*** | 60.31%*** |
| Leverage ratio | 0.20 | 0.20 | 0.002 | 26.68%*** |
| Interest coverage | 8.76 | 1.32 | 7.439*** | 32.34%*** |
| Altman's Z score | 3.41 | 3.02 | 0.389*** | 24.71% |

The above table reports differences in means between the sample of non-major public customers and an industry matched control group over the full sample period of 1976-2006. Customer data is measured at the customer-year level. The customer sample consists of all voluntarily reported customers with Compustat data and where the supplier was not a utility or financial firm, i.e., SIC codes 4900-4999 and 6000-6999. Voluntarily reported customers are those customer-years where at least one supplier reports the customer's identity in Compustat in that year and that customer's sales intensity is less than 10%. Each customer-year is counted only once, regardless of how many different suppliers report the customer's identity. The control sample is created in the following manner: for each customer-year we record the mean value of the customer's four-digit SIC code industry for each variable of interest. We then average these mean values to create the customer industry mean. All customer and customer industry data are derived from Compustat and have been winsorized at the 1% and 99% levels. Assets is book value of total assets. Assets and sales are reported in \$(millions). Operating ROA is operating income before depreciation divided by total assets. Tobin's Q is equal to total assets plus market equity minus book equity minus deferred taxes, all divided by total assets; where book equity is defined as in Fama and French (1993). Advertising to sales is the ratio of advertising expense to sales. Missing values for advertising expense are treated as zeros. Leverage ratio is the ratio of long term debt to total assets. Interest coverage is the ratio of earnings before interest to total interest expense. Altman's Z score is a measure of financial soundness inversely related to the probability of bankruptcy. We calculate this as $1.2 * \text{Working Capital} / \text{Total Assets} + 1.4 * \text{Retained Earnings} / \text{Total Assets} + 3.3 * (\text{Pre-tax Income} + \text{Interest Expense} - \text{Interest Income}) / \text{Total Assets} + 0.6 * \text{Market Capitalization} / \text{Total Liabilities} + 0.999 * \text{Sales} / \text{Total Assets}$. Significance in the last column is from a binomial test assessing whether the observed frequency is significantly greater than 25%. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.