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Perceived competition, profitability and the withholding of information about sales and the cost of sales

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ABSTRACT

We investigate the relation between perceived competition and voluntary disclosure in the absence of capital market incentives by examining private UK companies, which have the option to withhold sales and costs of sales information from their publicly-filed accounts. We survey managers about their companies' competitive environments and we calculate archival measures of industry competition. We find that managers are more likely to withhold information about sales and costs if they perceive that current or potential competition is strong. Consistent with disclosure being costlier for successful firms, we also find that more profitable companies are more likely to withhold information.

1. Introduction

Disclosure has been found to benefit companies in various ways, for example, by reducing the cost of capital, improving liquidity, enhancing risk-sharing, or sustaining collusive agreements (Clarke, 1983; Diamond, 1985; Hviid, 1989; Diamond and Verrecchia, 1991; Hayes and Lundholm, 1996; Francis et al., 2005; Verrecchia and Weber, 2006). However, disclosure is potentially costly because the revelation of commercially sensitive information can be helpful to rivals (Verrecchia, 1983; Healy and Palepu, 2001; Jansen, 2005).

While it is often argued that disclosure results in competitive costs, prior empirical studies fail to find consistent evidence that competition explains the decision to withhold information (Harris, 1998; Verrecchia and Weber, 2006; Botosan and Stanford, 2005). These studies measure competition using industry concentration. However, there are both theoretical and empirical problems with this approach (discussed in Section 2.4 below). To circumvent these problems, in this paper we use measures of competition based on the results of a large-scale survey of managers. Similar to economics studies that use survey data to measure competition (e.g., Haskell and Martin, 1994; Nickell, 1996; Carlin et al., 2001; Aucremanne and Druant, 2005), our mail-based questionnaire asks about the following: (1) the number of competitors currently operating in the company's main product market, (2) the threat of entry from new rivals, and (3) the company's own price elasticity of demand. We therefore focus on the association between managers' perceptions of competition, both

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current and potential, and their disclosure decisions.[1] Further, we investigate whether industry concentration relates to managers' perceptions of competition.

Related to the question of whether managers' perceptions of competition explain their disclosure decisions is the question of whether the competitive costs of disclosure, if any, are greater for companies that are more profitable. The extant literature again provides inconclusive evidence as to the association between profitability and disclosure (Harris, 1998; Verrecchia and Weber, 2006; Botosan and Stanford, 2005). These studies examine the disclosure decisions of public companies. The effect of profitability on the disclosure decision, however, is ambiguous for public firms: on the one hand, a highly profitable company has an incentive to hide information relating to its profits in order to prevent imitation by less successful rivals; on the other hand, a profitable publicly traded company has an incentive to signal its good performance in order to increase its market value. Since it is unclear whether high profits encourage or deter disclosure by public companies, we examine the voluntary disclosures of private companies, where capital market incentives are minimal.

Our empirical setting is the UK, where private companies are required by law to file financial statements with a central depository that makes these statements publicly accessible, but where the companies in our sample have the option to withhold information from the public domain about their sales and cost of sales by filing abbreviated accounts. Crucially, shareholders are unaffected by the disclosure decision because private companies are legally required to supply the full accounts to their own shareholders, regardless of what they choose to publicly disclose. Further, banks do not rely on the accounts that are filed at the central depository since companies directly supply banks with timely information that is withheld from the public (Fama, 1985). The disclosure decision in our setting is thus unaffected by the need to provide information to shareholders and banks. Instead, the companies are faced with deciding whether to disclose their sales and costs to the general public, including their competitors. In this private company setting, we argue that competitive considerations are likely to be an important determinant of the decision to withhold information from the public. Non-disclosure is costly in our setting because a company that files abbreviated accounts must bear a small cost from having an auditor certify that it meets the eligibility criteria for the reduced filing (Mayes, 1993). Moreover, the abbreviated accounts require the preparation of an additional set of financial statements since firms are required in any event to deliver the full accounts to their own shareholders.[2]

The sample, which is drawn from the FAME (''Financial Analysis Made Easy'') database, consists of private companies that qualify for the option to file abbreviated accounts. We mail the survey to 3197 companies and receive usable replies from 1010 (31.6%) of the companies.

In our first analysis, we compare managers' perceptions of competition with the archival proxies used in prior research, namely, industry concentration and profit persistence (Harris, 1998). We find that industry concentration is not strongly correlated with managers' perceptions of current competition, while the profit persistence proxy is not significantly correlated with any measure of competition. In contrast, the three survey variables are significantly positively correlated with each other, indicating that they capture related aspects of competition, at least according to managers' perceptions. Moreover, the survey responses of a given company are significantly positively correlated with the responses of other companies in the same industry, providing some assurance as to the consistency of managers' perceptions.

Next, we examine the relationship between the survey measures of competition and companies' disclosure decisions. We find that perceived competition is positively and significantly associated with the withholding of information about sales and the cost of sales. In particular, a company is less likely to reveal this information when managers state that: (a) the company has more current competitors; (b) there is a higher threat of entry into its main product market; or (c) the company's main product has a higher own price elasticity of demand. A company is also less likely to be forthcoming when: (a) competition is intense for the industry as a whole; or (b) the company faces a high degree of competition relative to other companies in the same industry. In contrast to the survey measures of competition, the archival proxies are either weak or insignificant predictors of disclosure.

In our third analysis, we investigate whether the perceived competitive costs of disclosure are greater for companies that are more profitable. We argue that successful companies potentially have more to lose by releasing commercially sensitive information about their sales and costs into the public domain. Consistent with this argument, we find that companies are significantly less likely to file full accounts if they are more profitable. Overall, our results suggest that information is more likely to be withheld from the public domain if managers perceive a strong threat of competition or if their companies are more profitable.

This paper makes three contributions to the literature. First, we show that the archival measures of competition (industry concentration and profit persistence) do not accurately reflect managers' perceptions of competition. In fact, the archival competition variables are not even significantly correlated with each other, casting doubt on the standard assumption that they accurately capture competition. Second, through use of a large-sample survey we are able to

[1] The survey affords us an additional advantage over archival proxies in that it enables us to distinguish between managers' perceptions of current competition and the threat of entry, a distinction that has proved important in determining the disclosure outcome in theoretical models (Healy and Palepu, 2001).

[2] According to the Department of Trade and Industry (DTI, 1995, p. 12), the time and cost associated with preparing the abbreviated accounts and the extra fee paid to the external auditor explains why some companies file full rather than abbreviated accounts. In a follow-up survey that asks companies the reasons for their filing choices, nearly a third of the full-account respondents identify these incremental costs as the major reason for their disclosure decision (Section 5.6).

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distinguish between companies' perceptions of the competitive threat from rivals currently operating in the same market and the threat of entry from new competitors, which is instructive given that these two different types of competition lead to different outcomes in theoretical studies.[3] Our empirical finding that perceived competition deters disclosure prevails, however, regardless of whether managers believe that the competition comes from existing or from potential rivals. Finally, we exploit a setting in which the decision to withhold information is unaffected by the company's need to communicate with the providers of finance because full financial information is privately available to these parties. Perceived competition therefore dominates capital market considerations in our empirical setting.

Two important caveats to this study should be noted. First, our survey relies on managers' perceptions of competition, and it is not necessarily the case that their impressions correspond with actual or potential competition. We mitigate this concern by showing that managers' responses are consistent with theoretical predictions with respect to the associations between profitability and perceived competition. Nevertheless, we caution that our survey variables may not correctly represent the competition that companies actually face. Second, the additional monetary cost of filing abbreviated rather than full accounts is low (£100–250), although nearly half of the sample companies choose not to pay that cost and instead file full accounts. The low cost of non-disclosure raises doubts about the economic significance of the decision to withhold information about sales and costs and the magnitude of the competitive costs of disclosure. Further, our study does not show that there are meaningful consequences to any managers who make the disclosure decision sub-optimally. While we find a relation between managers' perceptions of competition and the decision to withhold information in a setting where the costs and benefits of disclosure seem to be small, this finding might not translate into a relation between competition and disclosure in an alternative setting where the disclosure decision is more economically meaningful.

The rest of the paper is organized as follows. Section 2 discusses the institutional setting for our empirical analysis and prior empirical evidence. Section 3 explains the research design, while Section 4 describes the sample and provides univariate results, including evidence on the reliability of managers' judgments. The main results are presented in Section 5, and Section 6 concludes with a discussion of the study's findings.

2. Institutional setting and related literature

2.1. Voluntary versus mandated financial reporting in the UK

A key premise of our study is that the mandatory disclosure of sales and cost of sales would impose competitive costs on companies that would not otherwise choose to disclose this information. We further posit that the competitive costs of disclosure stem largely from the risk that the disclosure can lead competitors to mimic the business strategies of more successful companies. Such external knowledge spillovers arise when the disclosures of successful companies help their less efficient rivals catch up (Jansen, 2005). We conjecture that a company can better hide the source of its success if it chooses to withhold information about its sales and the cost of sales. For example, a company with abnormally low costs would not wish to reveal to rivals that such a high level of efficiency is possible: if the company were to disclose its low costs, competitors may try to recruit the company's production manager in order to discover and imitate its production advantage. Similarly, a company with abnormally high sales would prefer to conceal this from rivals in order to prevent them from copying its sales and marketing strategies. We therefore expect that more profitable companies withhold proprietary information about their sales and cost of sales.

Historically, these competitive cost arguments have been instrumental in setting the boundaries between voluntary and mandated financial reporting in the UK. The increasing divergence of ownership and control during the nineteenth century led shareholders to demand greater access to audited accounts (Watts and Zimmerman, 1983). Consequently, the Companies Act of 1900 required that companies disclose a limited amount of audited balance sheet information to their shareholders. Companies successfully lobbied against these disclosures being made public, however, arguing that withholding proprietary information was in the interests of shareholders (Aranya, 1974). A 1907 revision to the Companies Act made it mandatory for public companies to file balance sheets with a central registry, Companies House (Flower, 2004). However, the competitive costs arguments resulted in the revised Companies Act stopping short of requiring companies to reveal their profit and loss accounts.

In 1918, the Wrenbury Committee considered potential reforms of the Companies Act and concluded that the policy of limited public disclosure should continue: "To require from a corporation a public disclosure of profit and loss account which is not required from a company or individual, gives an unfair advantage to the competition in trade" (Company Law Amendment Committee, (Wrenbury Committee, 1918, p. 11)). The Institute of Chartered Accountants in England and Wales (ICAEW) took a similar stand in 1925: "that there should be in addition a Profit and Loss account is considered to do more harm than good [...] The business done by Limited Companies is on the whole transacted by Directors and Managers, who are honest, and if in some cases they disclose less in the published accounts than some people desire, the absence of detail is in most cases wise and is generally supported by shareholders. To give in a balance sheet such detailed information [...] might mean giving of a mass of detail of material value to competitors" (ICAEW, 1925, p. 1069).

[3] For instance, Darrough (1993) finds that current competition deters disclosure, while Darrough and Stoughton (1990) show that disclosure is more likely when there is a higher threat of entry.

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In 1967, private companies, in addition to those publicly traded, were required to start filing their accounts with Companies House (Flower, 2004).[4] The rationale for this mandatory public disclosure was that private companies benefit from limited liability and, in turn, they should be required to disclose sufficient information to protect external stakeholders such as suppliers, customers, and employees. Nevertheless, the UK government recognizes that the public disclosure requirements imposed on private companies could be costly in terms of making information available to competitors (DTI, 1995). The government also acknowledges that some countries (e.g., the US and Japan) do not require private companies to make their financial statements publicly available and that such companies "may be at a competitive advantage to UK companies, in that they do not have to disclose any information to competitors" (DTI, 1995, p. 51).[5]

2.2. Disclosure choices available to small and medium-sized private companies

Under current UK legislation, a small private company is required to publicly disclose only an abbreviated balance sheet, while a large private company or any publicly traded company is required to file full statutory accounts. A medium-sized company is required to file a full balance sheet but it has the choice to file either an abbreviated or full profit and loss (P&L) account. The abbreviated P&L account does not disclose information on the components of gross profit, namely, sales and the cost of sales, but instead reports gross profits in the "top line" (Mayes, 1993). Except for this, medium-sized companies must publicly disclose full statutory accounts including notes. Further, all companies regardless of size are required to deliver the full financial statements to their own shareholders.

A company is classified as small, medium-sized, or large depending on its sales, assets, and number of employees, with these statutory size thresholds being periodically altered in response to changing economic and regulatory circumstances. For example, the European Union (EU) increased its size thresholds in 1994 and the UK government subsequently did the same, thereby exempting more companies from mandated disclosure "in order to avoid placing UK companies at a competitive disadvantage" (DTI, 1995, p. 8).

In this study, we examine the decision by medium-sized companies to file either full or abbreviated accounts (i.e., disclosure or non-disclosure of sales and the cost of sales). We conjecture that the competitive costs of disclosure are positively related to profitability since successful companies potentially have more to lose by releasing commercially sensitive information into the public domain. Further, we expect that a high degree of perceived competition in the product market increases the reluctance of companies to publicly disclose their proprietary information.

Choosing to file abbreviated accounts results in a small monetary cost as companies are legally required to pay an auditor to certify that they meet the size thresholds for the reduced filing (Mayes, 1993). A little extra time is also involved in preparing the additional set of abbreviated accounts given that private companies are obligated to prepare full accounts for their own shareholders. While the incremental cost of filing abbreviated rather than full accounts is small, we expect that managers would not be willing to pay any extra amount unless they perceive some benefit to selecting the abbreviated accounts option.[6]

Filing full accounts would be the rational option for any company that is unconcerned about the competitive costs of disclosure. Further, filing full accounts could be beneficial as a means to reassure external users of the accounts, such as suppliers and customers. Although companies could simply provide suppliers and customers with the financial statements directly, it is more efficient for them to file one set of accounts at a public depository than to respond to multiple requests for this information. Later in the paper (Section 5.6), we provide supplemental survey evidence indicating that there are various idiosyncratic explanations for full disclosure in addition to the incremental monetary cost that is incurred by filing abbreviated accounts.

[4] The accounts are held at Companies House rather than at the company's registered office to ensure that those accessing the information do not have to disclose to the company that they have done so (DTI, 1995). In addition, it is easier for the government to enforce companies' compliance with the public disclosure requirements if the accounts are held at a central depository (ICAEW, 1995a, 1995b).

[5] Given that private companies in the US are not required to make their financial statements publicly available, there are incentives for US companies to remain private in order to avoid the costs of complying with securities regulations, especially the requirement to disclose proprietary information. As the costs of complying with these disclosure requirements have risen following the Sarbanes-Oxley Act, more companies have gone private (Engel et al., 2007). In contrast, most European countries require that private companies make their financial statements publicly available. As noted by Flower (2004, p. 100), "The [European] requirement to publish accounts is one of the most important of the obligations imposed by governments on enterprises. In general, enterprises are reluctant to reveal much about their affairs in their published accounts for fear of aiding their competitors […]. Since, in a common [European] market, there should be no restrictions on where enterprises may establish themselves, there would be a tendency for enterprises to set themselves up in a member state that offered the most favorable financial reporting regime, that is, the regime that did not require the publication of much significant information."

[6] The ICAEW has observed that some companies "do not bother to convert the accounts they have to send to shareholders into abbreviated accounts because there is an attendant expense" (ICAEW, 1995a, 1995b, p. 4). In 1995 the DTI estimated that "it costs approximately £100–250 on top of the costs of preparing full accounts to convert them to abbreviated accounts for filing […]. Such additional costs would recur annually if companies continued to choose this option" (DTI, 1995, pp. 12 and 50). Although these costs are small, Adams and Ferreira (2008) provide evidence from board meeting fees and meeting attendance that directors respond to even small monetary incentives.

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2.3. Theoretical models

In line with prior empirical studies (e.g., Berger and Hann, 2007), we do not attempt to test the predictions of a specific theoretical model of disclosure. There are two reasons for this design choice. First, as emphasized by Vives (1990), theoretical models of disclosure are highly stylized with predictions that are sensitive to arbitrary assumptions. For example, some models suggest that companies have less incentive to disclose when product market competition is more intense (Darrough, 1993; Clinch and Verrecchia, 1997; Arya and Mittendorf, 2007; Board, 2008). However, this prediction is sensitive to the nature of the assumed competition since Darrough and Stoughton (1990) find that disclosure is more likely when the threat of competition comes from potential entry.

Second, there are important disconnects between our empirical setting and the assumptions of extant theoretical models. For instance, the valuation benefits of disclosure are largely absent in our sample because shareholders and banks do not rely on the information disclosed in publicly filed accounts, whereas theoretical studies typically incorporate the valuation benefits of disclosing information to investors.[7] Further, in most theoretical models a company chooses to disclose or hide its profitability (e.g., Hayes and Lundholm, 1996; Darrough and Stoughton, 1990), whereas the companies in our sample are required to disclose their gross profits and everything below this line item. Accordingly, the disclosure choice in our setting involves the company deciding whether to reveal the components of gross profit, namely, sales and the cost of sales, rather than the profit number itself, which is the subject of most theoretical studies.

2.4. Empirical literature

Prior empirical studies test the association between competition and disclosure using industry concentration variables as proxies for competition (Harris, 1998; Verrecchia and Weber, 2006; Botosan and Stanford, 2005). In these studies, it is assumed that concentrated industries are less competitive. Although support for this assumption is found in the Cournot model of oligopoly, we argue that there are both theoretical and empirical problems with using concentration to measure competition.

From a theoretical perspective, it is possible that there is no relation between concentration and competition. In the Bertrand model the competitive outcome is obtained as long as there are at least two suppliers in the market. Even in a monopoly, the contestable markets school (Baumol et al., 1982) would argue that the threat of entry from new rivals can lead the monopolist to charge a competitive price. Thus, the competitive outcome can obtain with just one or two suppliers in the market. Some theoretical studies even suggest that the relation between concentration and competition could be positive rather than negative as is commonly assumed by empiricists. Sutton (1990) demonstrates that intense competition can be associated with higher concentration because, in a cut-throat pricing environment, relatively inefficient companies fail to cover their costs and exit, leaving fewer companies remaining in the market. Additionally, Stiglitz (1987) uses a customer search model to demonstrate that concentrated markets can be more competitive than atomistic markets. He points out that it is less costly for customers to search for all available prices when there are few suppliers, which means that customers are better informed about price differentials. Consequently, price competition among suppliers can be more intense in concentrated markets because customers are better informed about the prices on offer. Collectively, these theoretical models suggest that high industry concentration does not necessarily correspond with low competition intensity.

Using industry concentration to measure competition could also be problematic from an empirical perspective. First, doing so assumes that all companies within a given industry face the same level of competition. In practice, however, the degree of competition is likely to vary across companies operating in the same industry. For example, in an industry containing one very large company and a competitive fringe of many smaller companies, the large company might perceive little threat of competition while the smaller companies would perceive competition to be very intense. Second, companies are likely to perceive that their markets are much narrower than SIC codes would otherwise indicate. For example, two companies trading at different ends of the country might not be competing with each other given the geographical distance between them; similarly, a high-end restaurant is unlikely to see itself as competing with a fast food restaurant despite the fact that both operate in the same industry sector.

Extant empirical studies that measure competition using industry concentration provide inconsistent evidence as to the consequences for disclosure. For example, Verrecchia and Weber (2006) report that companies in less concentrated industries are more likely to withhold information, while the opposite finding is reported in Harris (1998) and Botosan and Stanford (2005). Although these studies obtain conflicting results, we note that they each draw the same conclusion that companies attempt to withhold information from their competitors. Verrecchia and Weber (2006) argue that the association between concentration and disclosure is positive because companies in less concentrated industries face more competition, which reduces the incentive to disclose. In contrast, Harris (1998) claims that the relation is negative because companies in concentrated industries make abnormally high profits, which they seek to protect by choosing not to disclose.

[7] Hayes and Lundholm (1996), for example, model the segment disclosure decision when companies have two industry segments and one rival. They find that if the segments exhibit similar performance, then the company's value is highest under full disclosure; in contrast, if one segment significantly outperforms the other, then a disclosing company would suffer costs as the rival would be able to invest in the more profitable industry.

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Harris's (1998) interpretation of the negative relation rests on two critical assumptions: (1) more profitable companies are less likely to disclose; and (2) companies make higher profits in concentrated industries. Since she does not include company-level profits as an independent variable in her disclosure model, the first assumption is not tested. Moreover, she does not test the assumption that profits are higher in industries that are more concentrated, and there is mixed evidence on this question in the industrial organization literature.[8] Therefore, the conclusion that companies in concentrated industries choose not to disclose in order to protect their profits is arguably premature. More generally, we believe that further evidence is needed on the relation between competition and disclosure given the contradictory findings in prior research that uses the industry concentration measure.[9]

In addition to measuring competition using industry concentration, Harris (1998) measures the speed with which abnormal profits adjust to the industry mean. Specifically, she estimates:

$$X_{ijt} = \beta_{0j} + \beta_{1j} D_n X_{ijt-1} + \beta_{2j} D_n X_{ijt-1} + e_{ijt},$$

where X_{ijt} is the difference between company i's return on assets (ROA) and the mean ROA in i's three-digit industry in year t; D_n=1 if X_{ijt-1} is less than or equal to zero, and 0 otherwise; and D_p=1 if X_{ijt-1} is greater than zero, and 0 otherwise. The coefficient β_{2j} captures the persistence of abnormally high ROA in industry j, where a low value of β_{2j} is assumed to indicate less intense competition. Surprisingly, Harris (1998) reports a negative and insignificant correlation between industry concentration and β_{2j}, even though the correlation would be positive and significant if both archival variables were accurately measuring the same underlying construct of competition. The construct validity of these different proxies for competition is therefore suspect.

3. Research design

Our dependent variable (*ABBREV*) equals one if the company files an abbreviated P&L account (i.e., the company does not disclose sales or the cost of sales) and zero if the company discloses this information by filing full accounts. The treatment variables capture managers' perceptions of the intensity of competition faced by their company (*COMP*) and the company's gross profitability (*GPROFIT*). In our model, we expect that companies are more likely to withhold sales information if they face greater competition or they are more profitable, so we predict positive coefficients for *COMP* and *GPROFIT* ($\alpha_1 > 0$, $\alpha_2 > 0$):

$$ABBREV = \alpha_0 + \alpha_1 COMP + \alpha_2 GPROFIT + CONTROL\_VARIABLES + u. \quad (1)$$

Our survey follows prior studies that measure companies' perceptions of competition (e.g., Haskell and Martin, 1994; Nickell, 1996; Carlin et al., 2001; Aucremanne and Druant, 2005). Similar to Nickell (1996), the first question asks about the number of competitors currently faced by the company. The second question asks about potential competition; i.e., the threat of new companies entering the product market. The third question is similar to the inquiry made by Carlin et al. (2001) in their face-to-face survey and relates to the price elasticity of demand for the company's main product.[10] A higher own price elasticity of demand implies that demand is more sensitive to changes in price because customers can easily switch to other products that are close substitutes. A higher price elasticity is therefore associated with greater competition and lower monopoly profits. Our survey is deliberately brief consisting of just three questions in order to encourage a high response rate (see Appendix A). We estimate Eq. (1) using competition variables (*COMP1–COMP3*) that correspond with these three survey questions. The gross profitability variable (*GPROFIT*) equals gross profits divided by total assets. In sensitivity tests, we also report results using alternative measures of profitability.

3.1. Archival measures of competition

We supplement the survey measures of competition with the profit persistence and industry concentration variables used in prior studies. We measure abnormal profit persistence by estimating β_{2j} for each three-digit industry. These

[8] Reviewing the empirical literature on the concentration–profit relation, Schmalensee (1989) notes that industrial organization studies find mixed results as to the sign and statistical significance of this relation. Further, contrary to the assumption that high concentration leads to greater profitability, several US and UK studies report that the association is either insignificant or significantly negative (e.g., Grabowski and Mueller, 1978; Hart and Morgan, 1977; Clarke, 1984; Connolly and Hirschey, 1984; Hirschey, 1985).

[9] The contradictory findings are not limited to studies that examine disclosure. Prior studies of relative performance evaluation (RPE) also obtain mixed results using concentration as a measure of competition. DeFond and Park (1999) and Kim (1996) argue that competition enhances the usefulness of RPE because it enables boards to better measure executives' relative performance. In contrast Aggarwal and Samwick (1999) argue that RPE increases the intensity of price competition, which makes RPE a less useful device for incentivizing managers. Using industry concentration to measure competition, the empirical findings of these studies yield opposite inferences about the direction of the association between competition and a company's use of RPE.

[10] After obtaining feedback regarding the design of the questionnaire, a pilot survey was sent to 93 companies and, as the survey enjoyed a response rate of 25% within 3 weeks, we proceeded with the main survey. The cover letter accompanying the survey guaranteed participants that all information provided would be confidential and would only be presented in aggregate form, preserving the anonymity of all companies. The letter did not reveal that we intended to correlate their responses about competition with companies' disclosure choices, so our approach diverges from survey studies that directly ask managers about the underlying research question. Rather, our method combines the archival and survey data, which is similar to studies that examine, for example, analysts' perceptions of companies' disclosures (Lang and Lundholm, 1993).

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regressions are estimated using the population of UK companies with data available from FAME (24,769 observations). The resulting industry measure of profit persistence is labeled *PERSIST*. Following Harris (1998), we measure concentration using the Herfindahl index (*HERF*):

$$HERF = \sum_{i=1}^{n} [s_i/S]^2,$$

where s_i is the company *i*'s sales, S the aggregate sales for all companies in *i*'s industry, s_i/S the company *i*'s market share, and n the number of companies in the industry.[11] Higher values of this ratio indicate greater concentration of sales within an industry, which is generally assumed to imply that the industry is less competitive.

3.2. The company's information environment

Competitors may know a lot about their rivals even when information is not publicly disclosed. To the extent that rivals can accurately estimate a company's non-disclosed sales and costs, the decision to file full or abbreviated accounts would be inconsequential. We therefore posit that the incentive to withhold information depends on how much is already publicly known about the company. Prior work finds that approximately 68% of companies read the statutory accounts of their major competitors (Collis et al., 2001). This suggests that competitors do in fact rely on the accounts filed at Companies House as an important source of information.

Even if a company withholds information from its accounts, more is likely to be known about the company if it is larger, older, and has long-term debt financing. We therefore control for these factors in our research design. Consistent with larger companies being better known, prior research finds a negative relation between company size and the withholding of proprietary information (Ashbaugh et al., 1999; Chow and Wong-Boren, 1987; Lang and Lundholm, 1993). Similarly, we expect that larger companies are less likely to file abbreviated accounts. UK law defines a company's size in terms of sales, assets, and number of employees, but the sales variable is unavailable for companies that file abbreviated accounts. We therefore control for company size using the log of assets (*Ln(ASSETS)*) and the log of (one plus) the number of employees (*Ln*(*EMP*)). A company's incentive to withhold information could also depend on its relative size within a given market since a company that is a "major player" may already be well known by competitors, reducing its incentive to file abbreviated accounts. The *RELATIVE_SIZE* variable equals the total assets of company *i* divided by the aggregate total assets of all other companies in *i*'s three-digit industry.

To control for the company's age (*AGE*), we use the log of the number of years since the company's incorporation. We do not form a prediction for the sign of the *AGE* coefficient due to two competing arguments. On one hand, older companies are better known (Diamond, 1989) and their lower information asymmetry reduces the incentives of older companies to withhold information by filing abbreviated accounts. On the other hand, a company's longevity may be partially attributable to its success at hiding the idiosyncratic advantages that it holds over its rivals.

To control for a firm's long-term debt financing, we use the ratio of long-term debt to total liabilities (*LTDEBT*). Again, we do not predict the sign of the coefficient as there are two competing arguments. According to the first argument, companies have easier access to long-term debt finance if they have more established reputations because lenders are more willing to supply capital to companies that are known to be trustworthy (Datta et al., 1999). In turn, more is publicly known about companies that have long-term debt and thus such companies would benefit less by withholding information from the public domain. On the other hand, the second argument suggests that long-term relationships between private companies and banks obviate the need for public disclosure because banks can obtain information from these companies directly, without the companies having to make the information available to the public (Diamond, 1984; Fama, 1985; Petersen and Rajan, 1994). In contrast, other types of creditors, such as suppliers rely on the accounts publicly filed at Companies House. According to this second argument, we expect that companies are more likely to file abbreviated accounts if a larger proportion of their liabilities is financed through long-term debt.

The company's decision to withhold information could also depend on the extent to which the industry is composed of homogeneous companies (Berger and Hann, 2007). If gross profit margins are similar within a given industry, outsiders can more accurately estimate the components of gross profits using sales/cost of sales data from disclosing firms in the same industry, reducing an individual company's incentive to withhold this information. Accordingly, we expect that a company is more likely to file abbreviated accounts if there is greater heterogeneity of profits within that company's industry. We investigate this using σ(*GPROFIT*), which equals the standard deviation of gross profitability across all companies that operate within the three-digit industry of company *i*.

3.3. Product diversification

The DTI (1995, p. 7) states that the major benefit of filing abbreviated accounts "particularly [for a company with a] single product, is that it makes much less information available to potential competitors". According to this view, the

[11] In untabulated tests, we also use a concentration ratio that captures the fraction of industry sales attributable to the four largest companies. This alternative measure of industry concentration is insignificant in every disclosure model that we estimate.

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benefit of non-disclosure is greater for a company that sells a single product because disclosure would more strongly signal to competitors the cost and demand for that product. In a similar vein, Hayes and Lundholm (1996) show that companies facing intense competition have stronger incentives to withhold detailed segment disclosures when the segments have more divergent operating results. Data limitations do not permit us to measure how many products a company manufactures, so we instead measure diversification using the number of three-digit SIC codes in which the company has operations (*DIVERSE*). We expect that less diversified companies have stronger incentives to file abbreviated accounts, which would translate into a negative coefficient on the *DIVERSE* variable.

4. Descriptive statistics and univariate results

4.1. The sample

We collect data from the FAME database, which contains a data field indicating whether the company filed abbreviated or full accounts in the most recent fiscal year. We restrict our sample to private companies whose primary activity is within manufacturing as there is substantial variation in production costs and sales volume among manufacturing companies, which helps to ensure that the information withheld from abbreviated accounts is commercially sensitive.

The definition of what constitutes a medium-sized company was changed for fiscal year-ends falling after January 29, 2004: the assets (sales) threshold was raised from £5.6 million (£11.2 million) to £11.4 million (£22.8 million), while the employee size threshold remained unchanged at 250.[12] As a result, some of the companies that were ineligible to file abbreviated accounts before January 2004 became eligible subsequently. According to Collis and Jarvis (2006), some companies were not immediately aware of the change in the size thresholds, so they continued to file full accounts. Moreover, many formerly ineligible companies continued to provide full accounts because the earlier disclosures reduced the benefit of subsequently withholding information. We therefore conduct our tests on companies that were eligible to file abbreviated accounts under both the old and new size thresholds. To ensure that companies qualify as medium-sized under both sets of thresholds, we require that at least two of the following three conditions hold: (1) £5.6 million $<$ sales $\leqslant$ £11.2 million, (2) £2.8 million $<$ assets $\leq$£5.6 million, and (3) 50 $<$ employees $\leq$250.

FAME reports the company's filing choice for the most recent financial statements only. Because of the size threshold changes, we restrict the sample to companies whose most recent fiscal year-ends are after January 29, 2004. The data were collected from FAME in 2006. Given the lag between the fiscal year-end date and the data becoming available on FAME, most sample companies have year-ends in 2004 or 2005. Of the 3197 companies in the final sample, 1569 have fiscal year-ends in 2004, 1624 in 2005, and 4 in 2006, with one observation per company. None of these private companies approach the public capital market for funds during the 2-year period subsequent to their fiscal year-ends. Table 1 reports the industry composition and the filing choices for our sample. The overall frequency of filing abbreviated accounts is 54.1% and we find no major clustering of the filing choices by industry.

4.2. The survey

The competition survey was mailed to all 3197 sample companies. We received 1010 full responses (8 companies provide partial responses to the three questions and are not included in the survey response sample), yielding a usable response rate of 31.6%, which exceeds most other survey studies.[13] We attribute the high response rate to the fact that the survey is brief, consisting of three simple questions. Since not all companies responded to the survey, we later include tests (reported in Section 5.4) that account for potential non-response bias.

Table 2 provides a breakdown of companies' responses to each of the three survey questions and the percentages of companies that file abbreviated accounts. The responses to questions 1–3 form our three competition variables (*COMP1*, *COMP2*, *COMP3*) and responses are scored such that higher levels of reported competition lead to higher scores on each *COMP* measure. Responses to question 1 reveal that many companies consider themselves to be in a competitive environment, with 777 (76.9%) claiming to have at least four competitors. Interestingly, the median company in our survey responds that it has between four and seven competitors. This is much lower than the median number of companies within the industry, which numbers 83 if we define industries using three-digit SIC codes and we treat only public and large private companies as competitors. The median number of competitors rises to 500 if we also include in each three-digit industry the small and medium-sized companies that have available sales data. Therefore, it appears that companies perceive their markets to be much narrower than SIC codes would imply, supporting the argument that industry-level variables such as concentration and profit persistence do not precisely capture managers' perceptions of competition.

The responses to question 2 show 697 (69.0%) companies perceive that they are operating under either a moderate (54.7%) or serious (14.4%) threat of entry. Answers to question 3 indicate that 564 companies (55.8%) believe sales would

[12] The size definition was also changed for small companies on January 30, 2004: the assets (sales) threshold was raised from £1.4 million (£2.8 million) to £2.8 million (£5.6 million) and the employee threshold remained at 50.

[13] Trahan and Gitman (1995) receive replies from only 12% of the 700 recipients in their mail-based survey of Chief Financial Officers. In a survey of 700 UK manufacturing companies, Nickell (1996) obtains 147 (21%) usable replies.

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Table 1
Industry composition and the filing choices of the sample companies.

Primary SIC code	Industry descriptions	Number of companies	Abbreviated accounts (%)
15	Manufacture of food products and beverages	277	69.0
16	Manufacture of tobacco products	3	66.7
17	Manufacture of textiles	141	56.7
18	Manufacture of wearing apparel; dressing and dyeing of fur	57	63.2
19	Leather, luggage, handbags, saddles, harnesses and footwear	13	38.5
20	Wood, wood products except furniture, straw materials	98	64.3
21	Manufacture of paper and paper products	103	51.5
22	Publishing, printing and reproduction of recorded media	307	43.0
23	Manufacture of coke, refined petroleum products, nuclear fuel	5	60.0
24	Manufacture of chemicals and chemical products	180	55.0
25	Manufacture of rubber and plastic products	193	54.9
26	Manufacture of other non-metallic mineral products	85	49.4
27	Manufacture of basic metals	86	58.1
28	Manufacture of fabricated metal products, except machinery	552	57.6
29	Manufacture of machinery not elsewhere classified	208	55.3
30	Manufacture of office machines and computers	25	32.0
31	Manufacture of electrical machinery not elsewhere classified	156	46.8
32	Radio, television and communication equipment	85	32.9
33	Medical, precision and optical instruments, watches, clocks	97	34.0
34	Manufacture of motor vehicles, trailers and semi-trailers	58	51.7
35	Manufacture of other transport equipment	51	45.1
36	Manufacture of furniture	399	56.1
37	Recycling	18	77.8
	Total	3197	54.1

Table 2
Answers to questions 1–3 from the 1010 companies that responded to the competition survey.

	No. of companies	Abbreviated accounts (%)
Q1: "Thinking of your firm's major product line in the domestic market, how many competitors do you currently face?" (COMP1)		
1. Zero competitors	5	40.0
2. One to three competitors	228	47.8
3. Four to seven competitors	320	58.1
4. Eight or more competitors	457	60.8
Total	1010	
Pearson χ^2 test for independence between *COMP1* and the filing of abbreviated accounts	χ^2=11.3	*p*-Value=0.01
Q2: "With respect to your main product line, how great is the threat of competition from companies not currently operating in that market?" (COMP2)		
1. Low – it would be very difficult for new companies to enter the market	313	51.4
2. Moderate – there are companies who could enter the market but there would be some entry costs	552	57.8
3. Serious – new companies could enter our main product market very easily	145	65.5
Total	1,010	
Pearson χ^2 test for independence between *COMP2* and the filing of abbreviated accounts	χ^2=8.4	*p*-Value=0.01
Q3: "If you were to raise prices of your main product line 10% above their current level (after allowing for any inflation and assuming that your competitors maintained their current prices), which of the following would best describe the result?" (COMP3)		
1. No change in sales	24	33.3
2. Sales would fall slightly	209	46.9
3. Sales would fall a lot	564	58.9
4. Most sales would be lost	213	64.3
Total	1010	
Pearson χ^2 test for independence between *COMP3* and the filing of abbreviated accounts	χ^2=19.6	*p*-Value=0.00

fall a lot if they raised their prices by 10%, with 213 respondents (21.1%) anticipating the loss of most sales as a result of such a price rise. However, there is considerable heterogeneity in our sample with respect to all three measures of competition.

Consistent with competition motivating companies to withhold information, Table 2 reveals significant positive associations between our three survey variables and the decision to file abbreviated accounts. To illustrate, abbreviated accounts are filed by 40.0% of companies that say they have no competitors, by 47.8% of companies with 1–3 rivals, 58.1% of companies with 4–7 competitors, and 60.8% of companies with at least eight rivals (*COMP1*). Similarly, Table 2 documents

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Table 3
Mean values for the independent variables among companies that disclose abbreviated or full P&L accounts.

	Abbreviated P&L accounts (*ABBREV*=1) (1)	Full P&L accounts (*ABBREV*=0) (2)	*t*-Statistics for differences in means (1)–(2)
COMP1	3.287	3.124	3.19***
COMP2	1.885	1.766	2.90***
COMP3	3.040	2.846	4.31***
GPROFIT	0.500	0.447	2.76***
PERSIST	0.656	0.628	1.62
HERF	0.163	0.197	−2.18**
Ln(EMP)	4.145	4.508	−6.85***
Ln(ASSETS)	8.362	8.535	−5.50***
RELATIVE_SIZE	0.002	0.002	0.01
AGE	3.150	3.110	0.78
LTDEBT	0.130	0.115	1.40
σ(GPROFIT)	0.301	0.303	−0.56
DIVERSE	1.363	1.375	−0.22
Observations	575	435	

***Statistically significant at the 1% level (two-tailed). **Statistically significant at the 5% level (two-tailed). *Statistically significant at the 10% level (two-tailed).
ABBREV=one if the company files an abbreviated P&L account (i.e., the company does not disclose sales); zero if the company files a full P&L account (the company does disclose sales). *COMP1*=the firm's response to the survey question: "Thinking of your firm's major product line in the domestic market, how many competitors do you currently face?" 1=zero competitors, 2=1–3 competitors, 3=4–7 competitors, 4=eight or more competitors. *COMP2*=the firm's response to the survey question: "With respect to your main product line, how great is the threat of competition from companies not currently operating in that market?" 1=low – it would be very difficult for new companies to enter the market, 2=moderate – there are companies who could enter the market but there would be some entry costs, 3=serious – new companies could enter our main product market very easily. *COMP3*=the firm's response to the survey question: "If you were to raise prices of your main product line 10% above their current level (after allowing for any inflation and assuming that your competitors maintained their current prices), which of the following would best describe the result?" 1=no change in sales, 2=sales would fall slightly, 3=sales would fall a lot, 4=most sales would be lost. *GPROFIT*=gross profit divided by total assets. *PERSIST*=an estimate of the speed of abnormal profit adjustment in the firm's three-digit industry. *HERF*=Herfindahl index of concentration in the firm's three-digit industry, or$\Sigma_{i=1}^{n}[s_i/S]^2$, where s_i is the company *i*'s sales, *S* the sum of sales for all companies in *i*'s three-digit industry, s_i/S the company *i*'s market share, *n* the number of companies in the industry. *Ln(ASSETS)*=log of total assets. *RELATIVE_SIZE*=total assets of company *i* divided by the aggregate total assets of all companies within company *i*'s three-digit industry. *AGE*=log of the number of years since the firm's incorporation. *LTDEBT*=long-term debt divided by total liabilities. *σ(GPROFIT)*=standard deviation of gross profitability within company *i*'s three-digit industry. *DIVERSE*=the number of three-digit industry sectors in which the company has operations.

positive monotonic associations between the other competition variables (*COMP2* and *COMP3*) and companies' decisions to withhold sales information, and in each case we reject the null hypothesis of no relation at the 1% level.

4.3. Univariate tests

Except for the diversification variable, which does not present statistical problems of outliers, we winsorize all the continuous variables at the 1st and 99th percentiles. Table 3 reports the mean values of the variables for companies that file abbreviated or full accounts. The results for *COMP1* indicate that companies are significantly more likely to file abbreviated accounts if they have more current competitors (*t*-statistic=3.19), consistent with perceived competition discouraging disclosure. In addition, companies facing a greater apparent threat of entry are more likely to file abbreviated accounts (*t*-statistic=2.90). Companies that perceive a high price elasticity of demand (*COMP3*) are more likely to conceal information about their sales and cost of sales (*t*-statistic=4.31). Consistent with profitable companies providing minimal disclosures, we also find that companies are significantly more likely to file abbreviated accounts if gross profitability is higher (*t*-statistic=2.76).

Interestingly, companies' filing choices are not significantly associated with the profit persistence proxy for competition (*PERSIST*). On the other hand, the Herfindahl index (*HERF*) suggests that companies in less concentrated industries are more likely to file abbreviated accounts (*t*-statistic=−2.18). Consistent with larger companies being better known, we find that the two company size variables (*Ln(EMP)* and *Ln(ASSETS)*) are negatively and significantly associated with the filing of abbreviated accounts. The remaining control variables (*RELATIVE_SIZE*, *AGE*, *LTDEBT*, σ(*GPROFIT*), and *DIVERSE*) are statistically insignificant in Table 3.

4.4. Pair-wise correlations

A correlation matrix (Table 4) reveals that the survey variables (*COMP1*, *COMP2,* and *COMP3*) are positively and significantly correlated, though the correlations are not very large (0.26, 0.23, 0.16). These variables seem to capture different but related facets of competition, as understood by managers. The correlation between profitability (*GPROFIT*) and the survey measure of the threat of entry (*COMP2*) is positive (0.08) and statistically significant (*p*-value=0.01). This is

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Table 4
Correlation matrix for the independent variables (two-tailed *p*-values are in parentheses).

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. COMP1	1.00											
	(.)											
2. COMP2	0.26	1.00										
	(0.00)	(.)										
3. COMP3	0.23	0.16	1.00									
	(0.00)	(0.00)	(.)									
4. GPROFIT	0.05	0.08	−0.06	1.00								
	(0.12)	(0.01)	(0.04)	(.)								
5. PERSIST	−0.01	−0.01	0.01	−0.06	1.00							
	(0.86)	(0.80)	(0.82)	(0.06)	(.)							
6. HERF	−0.04	0.01	−0.09	0.00	−0.02	1.00						
	(0.18)	(0.64)	(0.00)	(0.99)	(0.48)	(.)						
7. Ln(EMP)	0.02	0.01	0.04	0.11	−0.03	−0.02	1.00					
	(0.56)	(0.82)	(0.25)	(0.00)	(0.31)	(0.60)	(.)					
8. Ln(ASSETS)	−0.07	−0.08	−0.05	−0.34	0.06	0.07	0.35	1.00				
	(0.02)	(0.01)	(0.13)	(0.00)	(0.07)	(0.02)	(0.00)	(.)				
9. RELATIVE_SIZE	0.02	0.06	0.03	−0.06	−0.08	0.12	0.04	0.12	1.00			
	(0.44)	(0.07)	(0.39)	(0.07)	(0.01)	(0.00)	(0.19)	(0.00)	(.)			
10. AGE	0.04	−0.02	−0.00	−0.03	0.03	0.01	0.10	0.14	0.01	1.00		
	(0.19)	(0.50)	(0.88)	(0.36)	(0.32)	(0.71)	(0.00)	(0.00)	(0.68)	(.)		
11. LTDEBT	0.04	0.02	0.03	−0.15	0.05	−0.05	0.05	0.13	0.01	−0.05	1.00	
	(0.24)	(0.57)	(0.30)	(0.00)	(0.11)	(0.12)	(0.09)	(0.00)	(0.65)	(0.14)	(.)	
12. σ(GPROFIT)	0.02	0.04	−0.05	0.16	−0.14	−0.09	0.04	0.01	0.00	−0.05	−0.03	1.00
	(0.62)	(0.18)	(0.13)	(0.00)	(0.00)	(0.00)	(0.24)	(0.73)	(0.97)	(0.11)	(0.28)	(.)
13. DIVERSE	0.01	0.06	−0.06	−0.03	−0.01	0.04	−0.11	−0.03	−0.01	0.08	−0.01	0.02
	(0.66)	(0.04)	(0.05)	(0.42)	(0.79)	(0.21)	(0.00)	(0.38)	(0.71)	(0.01)	(0.74)	(0.50)

COMP1=the firm's response to the survey question: "Thinking of your firm's major product line in the domestic market, how many competitors do you currently face?" 1=zero competitors, 2=1–3 competitors, 3=4–7 competitors, 4=eight or more competitors. *COMP2*=the firm's response to the survey question: "With respect to your main product line, how great is the threat of competition from companies not currently operating in that market?" 1=low – it would be very difficult for new companies to enter the market, 2=moderate – there are companies who could enter the market but there would be some entry costs, 3=serious – new companies could enter our main product market very easily. *COMP3*=the firm's response to the survey question: "If you were to raise prices of your main product line 10% above their current level (after allowing for any inflation and assuming that your competitors maintained their current prices), which of the following would best describe the result?" 1=no change in sales, 2=sales would fall slightly, 3=sales would fall a lot, 4=most sales would be lost. *GPROFIT*=gross profit divided by total assets. *PERSIST*=an estimate of the speed of abnormal profit adjustment in the firm's three-digit industry. *HERF*=Herfindahl index of concentration in the firm's three-digit industry, or $\Sigma_{i=1}^{n}[s_i/S]^2$, where s_i is the company *i*'s sales, *S* the sum of sales for all companies in *i*'s three-digit industry, s_i/S the company *i*'s market share, *n* the number of companies in the industry. *Ln(EMP)*=log of (one plus) the number of employees. *Ln(ASSETS)*=log of total assets. *RELATIVE_SIZE*=total assets of company *i* divided by the aggregate total assets of all companies within company i's three-digit industry. *AGE*=log of the number of years since the firm's incorporation. *LTDEBT*=long-term debt divided by total liabilities. *σ(GPROFIT)*=standard deviation of gross profitability within company *i*'s three-digit industry. *DIVERSE*=number of three-digit industry sectors in which the company has operations.

consistent with the contestable markets hypothesis, according to which high profits increase the threat of entry into the company's market (Baumol et al., 1982).

The relation between profitability (*GPROFIT*) and the own price elasticity of demand reported by managers (*COMP3*) is negative (−0.06) and significant (*p*-value=0.04), which supports the theoretical prediction that a company makes smaller profits if demand is more price elastic. In our sample, higher profits increase the perceived threat of competition from new rivals entering the market, which is consistent with the arguments made by the contestable markets school (Baumol et al., 1982). Accordingly, researchers need to recognize that high profits are not necessarily indicative of uncompetitive product markets.

As a check on the validity of the survey variables, we investigate whether a company's responses to the survey questions are corroborated by the responses of other companies operating in the same industry. For each company *i*, we calculate the average response of all *other* companies in *i*'s three-digit industry, which we label *AV_COMP1*, *AV_COMP2,* and *AV_COMP3*, respectively. Consistent with the survey responses measuring competition, we find significantly positive associations between the *COMP* and *AVCOMP* variables. For example, the correlation between *COMP1* and *AV_COMP1* is +0.16 and significant at less than the 1% level, implying that company *i* is more likely to perceive a high number of competitors if all other companies in the same industry also perceive a high number. Similarly, the correlations are positive and significant at less than the 1% level for the other two survey questions (the correlation between *COMP2* and *AV_COMP2* is +0.13 and the correlation between *COMP3* and *AV_COMP3* is +0.12). The significant positive correlations between the survey responses of a given company and the responses of other companies in the same industry indicate that managers' self-reported perceptions of competition corroborate each other. Although the correlations are fairly small, this is helpful in mitigating

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the concern that the survey variables might simply reflect idiosyncratic firm-specific or manager-specific characteristics such as paranoia.[14]

In Table 4, the industry concentration variable (*HERF*) is negatively associated with the reported number of existing competitors (*COMP1*) and the price elasticity of demand (*COMP3*). These negative associations indicate that managers operating in concentrated markets believe that they have fewer competitors and understand their demand curves to be less price elastic. While these findings suggest that higher concentration is associated with lower competition (as proxied by *COMP1* and *COMP3*), it should be noted that the correlations are small in economic magnitude and the levels of statistical significance are mixed. Moreover, industry concentration is insignificantly associated with the perceived threat of competition from new entrants (*COMP2*). Further, the profitability variable (*GPROFIT*) is insignificantly correlated with the Herfindahl measure of concentration (*HERF*). This is consistent with the industrial organization literature, which reports mixed and weak results regarding the association between profits and industry concentration (Bresnahan, 1989). Overall, these findings suggest that industry concentration alone may not be an adequate proxy for competition.

Profit persistence (*PERSIST*) is uncorrelated with industry concentration and we also find that *PERSIST* is orthogonal to managers' perceptions of competition (*COMP1*, *COMP2*, *COMP3*). This is inconsistent with the profit persistence variable being a reliable measure of competition. In addition, there is a negative correlation between gross profitability, which is measured at the company level, and profit persistence, which is measured at the industry-level. Therefore, the profit persistence variable (*PERSIST*) is not a valid surrogate for profitability at the company level, contrary to the untested assumption in Harris (1998).

The other correlations in Table 4 are plausible. For example, size (*Ln(EMP)*, *Ln(ASSETS)*) is significantly positively correlated with the company's age (correlation coefficients=0.10, 0.14), and companies with greater assets-in-place (*Ln(ASSETS)*) have a higher proportion of their liabilities financed through long-term debt (*LTDEBT*) (correlation coefficient=0.13), which is consistent with an extensive finance literature on the determinants of corporate borrowing (Myers, 1977).

5. Main results

5.1. Competition and the decision to withhold sales information

Table 5 reports the results of probit regressions examining the company's decision to file abbreviated, rather than full, accounts (*ABBREV*). Columns (1)–(3) show that the three survey measures of competition (*COMP1-3*) are positively and significantly associated with the filing of abbreviated accounts (*z*-statistics=2.76, 2.87, 4.53), consistent with the notion that managers will choose to withhold proprietary information if they consider their market to be highly competitive.

To assess the economic significance of these results, we estimate the predicted probability of filing abbreviated accounts for alternative values of the survey variables, with the other independent variables evaluated at their means. Using the coefficient estimates in column (1), the mean probability of filing abbreviated accounts is predicted to be 44.5% if companies state that they have no current competitors (*COMP1*=1), rising to 61.2% if companies have eight or more competitors (*COMP1*=4). In the second model, the probability rises from 50.9% when the threat of entry appears to be low (*COMP2*=1) to 61.2% when the threat of entry is serious (*COMP2*=3). When *COMP3*=1, the mean probability of filing abbreviated accounts is only 36.7% but this rises to 67.34% if managers believe that most sales would be lost as a result of a 10% price rise (*COMP3*=4). Therefore, the association between perceived competition and disclosure is economically large in addition to being statistically significant.[15]

In contrast to the survey measures of competition, which are highly significant predictors of the decision to file abbreviated accounts, the results are insignificant in Table 5 for the profit persistence measure of competition (*PERSIST*). The Herfindahl (*HERF*) coefficients are negative and significant at the 10% or 5% levels, which is consistent with the evidence in Verrecchia and Weber (2006) that companies in less concentrated industries are more likely to withhold information. However, in untabulated tests, we find that the four-firm concentration ratio is not statistically significant when it is used as an alternative measure of concentration. Moreover, as shown below, the results for the Herfindahl are not robust when the disclosure models are estimated on the full sample. These mixed results are not surprising given our evidence that the archival variables do not strongly correlate with managers' perceptions of competition (Table 4).

An important difference between the survey and archival variables is that the former are measured at the level of the company while the latter are measured at the industry-level. Clearly, competition at the industry-level is not the same as

[14] We also find significant positive correlations between a company's response and the responses of other companies in the same industry if we use 2 or 4 digit SIC codes.

[15] As shown in Table 2, 24 companies claim that a 10% increase in price would not lower their sales, which is surprising because profit-maximizing behavior requires that companies face negatively-sloped rather than vertical demand functions. One explanation is that these companies are maximizing the wealth of controlling shareholders rather than the wealth of all shareholders (e.g., selling goods cheaply to another company where one shareholder controls both companies). An alternative explanation is that these companies' responses reflect the expected short-term impact of a price rise and the companies are maximizing long-term value. Since the rationale for the responses of these 24 companies is unclear, we re-estimate the models in Table 5 after dropping them from the sample. We continue to find significant positive coefficients for the three competition variables (*z*-statistics=2.68, 2.73, 3.97) and for profitability (the *z*-statistics range from 2.32 to 2.92).

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Table 5
Determinants of the company's decision to withhold information from the public domain about its sales and the cost of sales (the dependent variable is *ABBREV*).

	Expected sign	(1) Coefft. (*z*-stat.)	(2) Coefft. (*z*-stat.)	(3) Coefft. (*z*-stat.)	(4) Coefft. (*z*-stat.)	(5) Coefft. (*z*-stat.)
COMP1	+	0.14 (2.76)***				
COMP2	+		0.18 (2.87)***			
COMP3	+			0.26 (4.53)***		
COMP	+				0.13 (4.77)***	
COMP–INDCOMP	+					0.13 (4.38)***
INDCOMP	+					0.14 (2.00)**
PERSIST	?	0.24 (1.58)	0.24 (1.57)	0.25 (1.62)	0.25 (1.59)	0.25 (1.60)
HERF	?	−0.35 (−2.07)**	−0.37 (−2.23)**	−0.30 (−1.83)*	−0.33 (−1.95)*	−0.32 (−1.92)*
GPROFIT	+	0.43 (2.68)***	0.42 (2.59)***	0.51 (3.14)***	0.45 (2.80)***	0.45 (2.79)***
Ln(EMP)	–	−0.43 (−7.06)***	−0.43 (−7.11)***	−0.45 (−7.28)***	−0.45 (−7.25)***	−0.45 (−7.25)***
Ln(ASSETS)	–	−0.22 (−2.22)**	−0.22 (−2.22)**	−0.19 (−1.92)*	−0.18 (−1.84)*	−0.18 (−1.84)*
RELATIVE_SIZE	–	8.15 (1.05)	7.26 (0.95)	7.65 (0.97)	6.19 (0.79)	6.06 (0.76)
AGE	?	0.09 (1.83)*	0.10 (2.03)**	0.10 (1.96)**	0.10 (1.88)*	0.10 (1.87)*
LTDEBT	?	0.59 (2.41)**	0.62 (2.50)**	0.61 (2.48)**	0.58 (2.36)**	0.58 (2.35)**
σ(GPROFIT)	+	−0.39 (−0.59)	−0.42 (−0.63)	−0.26 (−0.38)	−0.38 (−0.57)	−0.38 (−0.57)
DIVERSE	–	−0.04 (−0.86)	−0.05 (−0.99)	−0.03 (−0.57)	−0.04 (−0.84)	−0.04 (−0.85)
Intercept	?	2.90 (3.55)***	3.06 (3.80)***	2.32 (2.80)***	2.07 (2.45)**	2.01 (2.05)**
Observations		1,010	1,010	1,010	1,010	1,010
Pseudo-R^2		7.2%	7.2%	8.1%	8.3%	8.3%

The models are estimated by probit with standard errors that are robust to heteroskedasticity.
***Statistically significant at the 1% level (two-tailed). **Statistically significant at the 5% level (two-tailed). *Statistically significant at the 10% level (two-tailed).
ABBREV=one if the company files an abbreviated P&L account (i.e., the company does not disclose sales); zero if the company files a full P&L account (the company does disclose sales). *COMP1*=the firm's response to the survey question: "Thinking of your firm's major product line in the domestic market, how many competitors do you currently face?" 1=zero competitors, 2=1–3 competitors, 3=4–7 competitors, 4=eight or more competitors. *COMP2*=the firm's response to the survey question: "With respect to your main product line, how great is the threat of competition from companies not currently operating in that market?" 1=low – it would be very difficult for new companies to enter the market, 2=moderate – there are companies who could enter the market but there would be some entry costs, 3=serious – new companies could enter our main product market very easily. *COMP3*=the firm's response to the survey question: "If you were to raise prices of your main product line 10% above their current level (after allowing for any inflation and assuming that your competitors maintained their current prices), which of the following would best describe the result?" 1=no change in sales, 2=sales would fall slightly, 3=sales would fall a lot, 4=most sales would be lost. *GPROFIT*=gross profit divided by total assets. *PERSIST*=an estimate of the speed of abnormal profit adjustment in the firm's three-digit industry. *HERF*=Herfindahl index of concentration in the firm's three-digit industry, or $\Sigma_{i=1}^{n}[s_i/S]^2$, where s_i=company *i*'s sales, *S*=the sum of sales for all companies in *i*'s three-digit industry, s_i/S=company *i*'s market share, *n*=number of companies in the industry. *Ln(EMP)*=log of (one plus) the number of employees. *Ln(ASSETS)*=log of total assets. *RELATIVE_SIZE*=total assets of company i divided by the aggregate total assets of all companies within company *i*'s three-digit industry. *AGE*=log of the number of years since the firm's incorporation. *LTDEBT*=long-term debt divided by total liabilities. *σ(GPROFIT)*=standard deviation of gross profitability within company *i*'s three-digit industry. *DIVERSE*=number of three-digit industry sectors in which the company has operations.

competition at the company level. For example, a company that dominates its industry might perceive little threat of competition, while a competitive fringe of smaller companies in the *same* industry might perceive a high level of competition. Therefore, it could be that competition between companies within the same industry is what really matters. The archival competition variables (e.g., industry concentration) attempt to measure only the differences in competition across industries (i.e., each company within a given industry is assumed to face the same level of competition). Prior empirical studies are therefore unable to disentangle these industry-level and company-level competition effects because they measure competition at the industry-level only. In contrast, we investigate whether the decision to withhold information is associated with managers' perceptions of competition across industries or their perceptions of competition

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across companies within the same industry. We construct an aggregate measure of competition (*COMP*) that equals the sum of the three survey variables (*COMP1*+*COMP2*+*COMP3*). We then decompose the aggregate competition variable into industry-specific and company-specific components. The industry-specific component (*INDCOMP*) equals the mean value of *COMP* within company *i*'s three-digit industry.[16] The company-specific component (*COMP–INDCOMP*) measures the deviation between company *i*'s perception of competition and the perception of other companies within the same industry.

Column (4) of Table 5 reports the results for the aggregate measure of competition (*COMP*), which predictably has a positive association with the filing of abbreviated accounts (*z*-statistic=4.77). Column (5) reports the results for the company- and industry-specific components, namely, *COMP–INDCOMP* and *INDCOMP*. The coefficient on *COMP–INDCOMP* is positive and statistically significant (*z*-statistics=4.38), implying that a company is more likely to file abbreviated accounts when it perceives a high degree of competition relative to other companies in the same industry. The industry-level competition variable (*INDCOMP*) also has a positive and significant coefficient (*z*-statistic=2.00). Collectively, these results indicate that a company is less likely to disclose when: (a) the company perceives a high degree of competition relative to other companies in the same industry; or (b) competition is seen as intense for the industry as a whole.[17]

5.2. Gross profits and the decision to withhold sales information

We conjecture that a company is more likely to file abbreviated accounts if it is more profitable because a profitable company has more to lose by revealing to its rivals the sales and cost components of its gross profits. We investigate this idea in Table 5, where the gross profitability ratio (*GPROFIT*) is found to have positive and significant coefficients (the *z*-statistics range from 2.59 to 3.14). Therefore, highly profitable companies are more likely to withhold information about sales and costs, consistent with such companies being reluctant to disclose information about the source of their profitability.

Given that this profitability result is one of our main findings, we perform numerous sensitivity tests to check whether it is robust. First, we re-estimate the models in Table 5 after replacing the gross profits ratio (*GPROFIT*) with undeflated gross profits. In each case, the gross profits coefficients are positive and highly significant, with *z*-statistics ranging between 4.77 and 5.39. Results are similar if we rank transform the undeflated gross profits variable; the coefficients are again positive and highly significant (the *z*-statistics range from 3.85 to 4.33). Finally, we use a dummy variable set to one if gross profits are positive and zero otherwise. Again, the profit coefficients are positive and highly significant in every case (the *z*-statistics lie between 4.09 and 4.30).[18] Overall, we find consistent and strong evidence that profitable companies withhold information about sales and costs by filing abbreviated accounts. While prior disclosure studies report inconsistent results for the relation between profitability and disclosure among large public companies, we emphasize that there is no valuation benefit from disclosing high profits for the small private companies in our sample. Further, as shareholders have access to the full accounts, the agency incentives to disclose high profits examined by Berger and Hann (2007) are unlikely to be relevant in our setting. Taken together, we interpret this evidence as reinforcing the view that the disclosure decisions of private companies are primarily driven by their perceived competitive costs.

Next, we examine whether there is an interaction effect between competition and profitability. The rationale for this test is that highly profitable companies have no need to protect their positions by withholding information if they face no competitive threat. Therefore, the association between profitability and the filing of abbreviated accounts may be stronger if the company faces greater competition. We construct a dummy variable (*COMP_DUM*) equal to one if the company's aggregate competition score (*COMP*) exceeds the sample median (zero otherwise).[19] In a model that includes the interaction variable, *COMP_DUM*GPROFIT*, and the main effects, *COMP_DUM* and *GPROFIT*, the interaction variable has an insignificant coefficient while the coefficients are positive and significant for the main effects of profitability and perceived competition.[20]

Third, we examine whether companies are specifically trying to conceal the components of *gross* profits when they file abbreviated accounts. If they are, we should find that alternative measures of profitability lack incremental explanatory power in our regressions. We therefore re-estimate the models in Table 5 after sequentially adding one of four alternative

[16] The pair-wise correlations between *INDCOMP* and the archival proxies for industry competition (i.e., *PERSIST*, *HERF*) are all statistically insignificant. This further supports the argument that the archival variables fail to accurately reflect managers' perceptions of competition.

[17] Some sample companies belong to three-digit industries that have relatively few observations and in such cases there is a question as to whether we can effectively decompose the competition variable into industry-specific and company-specific components. We therefore re-estimate the model using only the industries that have at least five sample companies; the results using this smaller sample (*N*=906) are almost identical to those tabulated. As an additional test, we add dummy variables for each three-digit industry to the models reported in columns (1)–(4) of Table 5; the results are again very similar to those tabulated. Industry dummies are not included in the column (5) specification because they would be linearly correlated with the industry-specific measure of competition (*INDCOMP*).

[18] In all these untabulated tests, we continue to find significant positive associations between the survey measures of competition and the filing of abbreviated accounts.

[19] We measure competition using a dummy variable for two reasons. First, the *COMP* variable is ordinal while the *GPROFIT* variable is cardinal, implying that the interaction variable, *COMP*GPROFIT*, would be non-trivial to interpret. Second, the *COMP*GPROFIT* variable is subject to high collinearity problems, which are mitigated when we use a dummy variable for competition.

[20] Ai and Norton (2003, 2004) demonstrate that, in probit and logit models, the coefficient on the interaction variable does not equate to the marginal interaction effect. Our untabulated results indicate that both the interaction coefficient and the marginal interaction effect are statistically insignificant.

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profit variables, each of which is scaled by total assets: (1) operating profits, (2) profits before interest and tax, (3) profits after interest and before tax, and (4) profits after tax. In every regression, the alternative profitability ratios have statistically insignificant coefficients. That the *GPROFIT* coefficients are statistically significant while other profitability variables are insignificant suggests that companies are specifically trying to hide the components of gross profits (i.e., sales and the cost of sales) when they file abbreviated accounts.

5.3. Other determinants of the decision to withhold sales information

The incentive to file abbreviated accounts is likely to depend on the company's information environment, as well as its profitability and the intensity of competition. In particular, there is an incentive to file abbreviated accounts only if the withheld information cannot be obtained easily from other sources.

The results on our control variables in Table 5 are consistent with the company's information environment being important. The company size variables (*Ln(EMP)*, *Ln(ASSETS)*) have significant negative coefficients, implying that larger companies are less likely to withhold information about sales and the cost of sales. This is consistent with more information being publicly available on large companies, dampening the benefits of withholding information from the published accounts. In addition, companies are more likely to file abbreviated accounts when *LTDEBT* is high, implying that companies are less likely to put information in the public domain when a greater proportion of liabilities is financed through long-term debt. This makes sense because companies can privately disclose proprietary information to lenders and at the same time hide such information from the public. In other words, long-term lenders do not rely on the accounting information that is filed publicly because they have private access to the company's inside information (Fama, 1985).

The *AGE* coefficient is positive and statistically significant, which means that older companies are more likely to file abbreviated accounts. Since companies survive longer when they have greater intrinsic advantages, this finding is consistent with companies protecting their position by withholding information from competitors. The other control variables (*RELATIVE_SIZE*, σ*(GPROFIT)*, *DIVERSE*) in Table 5 are not found to have a significant association with the type of accounts filed by companies.

5.4. Results for the full sample

Thus far, the analysis has been based on the 1010 companies that responded to our competition survey, which represents only 31.6% of the companies in the full sample. Given the potential concern about response bias, we investigate whether our main conclusions hold in the full sample. To overcome the problem that most companies did not respond to our survey, we assign to *all* sample companies the mean score from the *respondent* companies in the same three-digit industry. Using these average scores to measure competition at the industry-level (*INDCOMP1*, *INDCOMP2*, *INDCOMP3* and *INDCOMP*) permits us to estimate the models on the full sample. Results for the full sample are reported in Table 6.

Consistent with Table 5, the coefficients on the industry competition variables are positive and significant (z-statistics=2.23, 3.01, 2.59, 3.50). Therefore, company i is more likely to file abbreviated accounts if competition is believed to be intense within i's industry. Again, we find highly significant positive coefficients for the *GPROFIT* variable (z-statistics=4.24, 4.25, 4.59, 4.29), indicating that more profitable companies tend to file abbreviated accounts. Since our results are similar in both the full sample (Table 6) and the survey response sub-sample (Table 5), we are confident that the conclusions are not driven by an unobservable response bias among the companies that complete our survey.

In fact, the inferences for all our independent variables are identical in Tables 5 and 6, with the exception of the product diversification variable (*DIVERSE*), whose negative coefficients become statistically significant at the 10% level or better in the larger sample. The negative association between diversification and abbreviated filings makes sense as the benefit of concealing information about sales is greater for companies that are less diversified.

5.5. Changes in filing decisions

In this section, we extend the analysis by investigating what happens when companies change their filing choices. In the cross-sectional tests (Tables 5 and 6), the dependent variable (*ABBREV*) was measured using data from the 2006 version of the FAME database.[21] We identify any companies that subsequently change their filing status by downloading companies' more recent filing choices from the 2008 version of FAME.

Of the 3197 companies in our original sample, we lose 81 (2.5%) that do not file more recent accounts in the 2008 database because they became inactive. We lose another 42 (1.3%) companies that cease to be eligible to file abbreviated accounts because their size increased beyond the thresholds required for medium-sized companies. Of the remaining 3104 companies, we find that 2422 (78.0%) do not change their filing decisions, indicating that disclosure decisions tend to be

[21] Our subscription to the online version of FAME provides information about the company's filing choice for the most recent fiscal year alone. Historic versions of the FAME database were previously available to CD-ROM subscribers (e.g., Ball and Shivakumar, 2005) but the data provider has since switched to an online version where historic data are unavailable.

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Table 6
Results for the full sample. The dependent variable (*ABBREV*) equals one if the company withholds information about its sales and the cost of sales, zero otherwise.

	Expected sign	(1) Coefft. (*z*-stat.)	(2) Coefft. (*z*-stat.)	(3) Coefft. (*z*-stat.)	(4) Coefft. (*z*-stat.)
INDCOMP1	+	0.19 (2.23)**			
INDCOMP2	+		0.35 (3.01)***		
INDCOMP3	+			0.24 (2.59)***	
INDCOMP	+				0.16 (3.50)***
PERSIST	?	−0.01 (−0.17)	−0.02 (−0.17)	0.00 (0.02)	−0.01 (−0.12)
HERF	?	−0.16 (−1.74)*	−0.19 (−2.12)**	−0.12 (−1.21)	−0.13 (−1.35)
GPROFIT	+	0.37 (4.24)***	0.37 (4.25)***	0.40 (4.59)***	0.37 (4.29)***
Ln(EMP)	–	−0.45 (−12.58)***	−0.45 (−12.69)***	−0.45 (−12.76)***	−0.45 (−12.64)***
Ln(ASSETS)	–	−0.32 (−6.30)***	−0.31 (−6.20)***	−0.31 (−6.08)***	−0.31 (−6.18)***
RELATIVE_SIZE	–	4.92 (1.31)	5.40 (1.50)	5.14 (1.33)	4.70 (1.30)
AGE	?	0.08 (2.95)***	0.08 (2.95)***	0.09 (3.01)***	0.08 (2.95)***
LTDEBT	?	0.40 (2.95)***	0.40 (3.01)***	0.40 (3.00)***	0.39 (2.88)***
σ(GPROFIT)	+	−0.69 (−1.82)*	−0.79 (−2.07)**	−0.47 (−1.22)	−0.67 (−1.77)*
DIVERSE	–	−0.06 (−1.86)*	−0.06 (−1.97)**	−0.06 (−1.91)*	−0.06 (−1.90)*
Intercept	?	3.94 (7.82)***	3.93 (8.26)***	3.66 (6.74)***	3.26 (5.78)***
Observations		3,197	3,197	3,197	3,197
Pseudo-R^2		7.4%	7.5%	7.5%	7.6%

The models are estimated by probit with standard errors that are robust to heteroskedasticity.
***Statistically significant at the 1% level (two-tailed). **Statistically significant at the 5% level (two-tailed). *Statistically significant at the 10% level (two-tailed). *INDCOMP1*=the mean response to the first survey question by respondent companies in the same three-digit industry. *INDCOMP2*=the mean response to the second survey question by respondent companies in the same three-digit industry. *INDCOMP3*=the mean response to the third survey question by respondent companies in the same three-digit industry. *COMP*=*COMP1*+*COMP2*+*COMP3*. *INDCOMP*=the mean value of *COMP* for all companies that are in the same three-digit industry as company *i*. See Table 6 for the definitions of the other variables.

sticky over time. Another 284 companies switch to filing abbreviated accounts as *small* companies because their size fell below the thresholds required for medium-sized companies.

Predictably, there is a strong association between the initial decision to file abbreviated accounts as a medium-sized company and the subsequent decision to file abbreviated accounts as a small company. Specifically, 13.4% of the companies that previously filed abbreviated accounts as medium-sized companies switch to filing abbreviated accounts as small companies. In contrast, only 4.4% of the companies that previously filed full accounts switch to filing abbreviated accounts as small companies. These findings make sense given that the companies that had earlier filed abbreviated (full) accounts had already revealed their preferences for limited (complete) disclosure.

Since a small company is not required to publicly disclose its income statement, we are unable to investigate the changes in profitability for companies that switch to filing under the small company option. Instead, we examine the companies that switch from abbreviated accounts to full accounts (or vice versa) and that continue to qualify as medium-sized. We explore whether these voluntary changes in filing choices are associated with changes in gross profitability. Consistent with the cross-sectional results in Tables 5 and 6, we expect that companies with increases (declines) in their gross profitability are more likely to switch from full to abbreviated (abbreviated to full) accounts.

The change in profitability variable (Δ*GPROFIT*) equals the gross profitability ratio (*GPROFIT*) in the more recent period (2008 version of FAME) minus gross profitability in the prior disclosure period (2006 version). The mean value of Δ*GPROFIT* is +2.06% for companies that switch from filing full to abbreviated accounts compared with −5.04% for companies that switch in the opposite direction. The difference in these means is statistically significant at the 1% level (*t*-statistic=2.68). The mean value of Δ*GPROFIT* for the 2422 companies that do not change their filing type is −0.89%. This is significantly different compared with the companies that switch from abbreviated to full accounts (*t*-statistic=3.00) but it is not significant when compared with companies that switch from full to abbreviated accounts (*t*-statistic=1.31). In another

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untabulated test conducted on the 368 companies that change their filing type, we estimate a multivariate model that controls for changes in company size, and we continue to find that the profitability change variable is significantly associated with the decision to switch between full and abbreviated accounts (z-statistic=2.85). The results are similar if we include in the sample the 2422 companies that do not change their filing type and we estimate a multinomial model for the three possible disclosure outcomes (i.e., no change in filing type, switch from full to abbreviated, switch from abbreviated to full).

Since companies sometimes change their filing decisions, we also re-estimate the tabulated models using the subset of companies that consistently made the same filing choices in both 2006 and 2008 (n=2422 for the full sample in Table 6; n=791 for the survey response sample in Table 5). In columns (1)–(4) of Table 5, the *COMP* variables load positively (z-statistics range from 2.30 to 4.67), and in column (5), the *COMP–INDCOMP* and *INDCOMP* coefficients are also positive and significant (z-statistics=4.35 and 1.85, respectively). In Table 6, the *INDCOMP* coefficients remain positive and significant in all four columns (the z-statistics stay within 2.47 and 3.69). In all these re-estimated models, the *GPROFIT* coefficients remain significantly positive (the z-statistics range from 2.61 to 5.26). Therefore, our cross-sectional results continue to hold when we estimate the models on companies that do not change their filing decisions.

In summary, our time-series tests indicate that companies which switch from filing full accounts to abbreviated accounts are experiencing an average increase in profits, while companies which switch in the opposite direction have declining profits – the gap between the mean gross profit changes of the two sets of switchers is a significant 7.1%. We note, however, that the inferences in our time-series tests are for the switchers only and not the companies that make the same filing decisions in successive years. Our cross-sectional results indicate that companies with high (low) gross profits are more likely to file abbreviated (full) accounts. Both sets of results suggest that more profitable companies have stronger incentives to withhold information about their sales and costs.

5.6. Supplementary survey evidence

We have argued that companies file abbreviated accounts in order to hide information about sales and costs because such information could prove valuable to competitors. As explained in Section 2, this argument was partly responsible for the evolution of statutory financial reporting in the UK and the reporting exemptions that are available. Moreover, our empirical results are consistent with companies filing abbreviated accounts in order to avoid disclosing this information to competitors. Nevertheless, one may question whether there really are competitive costs from disclosure, particularly as the companies in our sample are required to publicly disclose their gross profits and everything below this line item.

To shed more light on this issue, we send a follow-up survey to the companies that filed abbreviated accounts in order to learn what motivated their disclosure choice. We mail this second survey to companies whose most recent accounts (according to the 2008 version of FAME) continued to be abbreviated under the medium-sized exemption. In doing so we mail the survey to companies that had already responded to our earlier competition survey because we anticipate a low response rate from companies that had failed to answer the first survey.

As shown in Appendix B, the survey offers four alternative reasons for the decision to file abbreviated accounts. The first choice, "We were not aware that we had the option", is included because Collis and Jarvis (2006) document that some companies are unaware of the reporting exemptions that are available to them. The second choice, "We do not wish to reveal sales/cost of sales information to competitors" explicitly examines the validity of the competitive costs argument. The third choice, "We do not wish to reveal sales/cost of sales information to other parties" is included because some companies may want to hide information from suppliers, customers, or other external users of the accounts. Finally, we offer a fourth choice "Other: Please explain" to find out whether there are other reasons for the decision to file abbreviated accounts.

From the 177 replies, we find that 71 companies choose the second option "We do not wish to reveal sales/cost of sales information to competitors." A further 75 companies select both the second and third options, indicating that they wanted to hide information from both competitors and other users of the accounts. These findings indicate that the competitive costs argument is relevant in explaining the filing choices of 82.5% (146/177) of the companies that filed abbreviated accounts. Of the remaining replies, we find that 26 companies (14.7%) selected option three alone ("We do not wish to reveal sales/cost of sales information to other parties"), three (1.7%) appeared to be unaware of the filing options available to them, and two companies (1.1%) selected "Other".[22]

Some companies provided supplementary comments in the box marked "Other" in addition to selecting option two ("We do not wish to reveal sales/cost of sales information to competitors"). These comments further support the premise that competitive costs motivate the decision to withhold sales information, as evident from the following quotes: "Sales values and gross margins would potentially assist competitors in their benchmarking and market research"; "Our industry is very price sensitive and sales information would be valuable to competitors"; "We are part of a very small market with only three or four companies supplying that market. Sales and cost of sales information is very sensitive in such a

[22] One respondent who selected "Other" stated that it was obvious that a company would not want to disclose more than is legally required. The written response from the second company indicates that it may not have understood the question ("we prepare management accounts which provide all the details we need").

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competitive market."[23] Overall, the survey responses clearly indicate that an important motivation for filing abbreviated accounts is to limit the amount of information available to competitors, which is consistent with the regression results reported in Tables 5 and 6.

Given the benefits to withholding information, it is interesting that nearly half of the companies in our sample elect to disclose sales and the cost of sales by filing full accounts. To investigate the reasons for this disclosure, we send a similar follow-up survey to the companies that filed full accounts in the most recent fiscal year (according to the 2008 version of FAME). We again exclude any companies from the original sample that ceased to qualify as medium-sized and any that had failed to respond to our competition survey. As shown in Appendix C, the survey provides four options for companies to explain why they filed full accounts. The first choice, "We were not aware that we had the option", is included in case companies did not realize that they were allowed to file abbreviated accounts (Collis and Jarvis, 2006). The second option, "We do not want external users to conclude that we are the type of company that has something to hide", is motivated by the early theoretical argument presented by Grossman (1981) and Milgrom (1981) that, in the absence of disclosure costs, companies disclose in order to avoid being pooled with the non-disclosing types. The third choice, "We do not wish to incur the extra cost and time associated with preparing abbreviated accounts", is included because the ICAEW (1995a, 1995b) asserts that some companies provide full accounts to avoid the incremental cost. The final choice is again "Other: Please explain".

Of the 137 replies received from companies that filed full accounts, we find that the second option, "We do not want external users to conclude that we are the type of company that has something to hide", is cited most often (63 companies, 46.0%). In 42 cases (30.7%), companies indicate that they file full accounts because it would be more costly for them to file abbreviated accounts (option three). Six companies (4.4%) choose both options two and three, and six (4.4%) were unaware they had the option to file abbreviated accounts. Finally, 20 companies cite various "Other" idiosyncratic reasons for filing full accounts. These include the following: "We adopt a policy of acting as a large company"; "It is corporate policy and good practice to file full accounts"; "1. We want our customers and suppliers to be aware of our financial health; 2. personal discipline-keep up to date with UK GAAP"; and "Commercial information is made available to a wide audience to make a statement that the company has recovered from the devastating effect of the 2005 fire at a warehouse facility".

6. Conclusions

Prior empirical studies conjecture that companies are reluctant to disclose information about their operations if they face a high degree of competition or they enjoy superior performance. However, extant evidence, which focuses on public companies and measures competition using archival proxies, does not provide strong support for this intuitively appealing proposition.

This paper deviates from prior research by investigating the disclosure decisions of private companies. In our setting, capital market incentives are relatively unimportant because investors are privately informed and thus do not rely on companies' public disclosures. In another divergence from the extant literature, we survey managers to ascertain their perceptions of product market competition. This survey evidence is informative because economic theory does not make a clear prediction about the relation between industry concentration and competition, and prior empirical studies using this type of measure obtain mixed results.

We find that private companies withhold information from the public domain when gross profits are higher and when managers perceive that their markets are more competitive. Further, managerial beliefs regarding competition from existing rivals and the threat of entry have similar effects in deterring disclosure, which is interesting because theoretical models suggest that the effects of potential and current competition could be different (Verrecchia, 1990; Darrough and Stoughton, 1990). Overall, our evidence is consistent with the view that successful companies maintain their comparative advantage by hiding proprietary information from their rivals.

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[23] Interestingly, this quote supports the argument in Stiglitz (1987) that competition can be intense in highly concentrated markets.

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Appendix A. The competition survey instrument

Please complete the confidential survey by ticking the box which is most appropriate to your business and return it to us using the enclosed pre-paid envelope.

Q.1. Thinking of your firm's major product line in the domestic market, how many competitors do you currently face?

	Tick one
0 competitors	1
1–3 competitors	2
4–7 competitors	3
8 or more competitors	4

Q.2. With respect to your main product line, how great is the threat of competition from companies not currently operating in that market?

	Tick one
Low – it would be very difficult for new companies to enter the market e.g., due to strong customer relations	1
Moderate – there are companies who could enter the market but there would be some entry costs	2
Serious – new companies could enter our main product market very easily	3

Q.3. If you were to raise prices of your main product line 10% above their current level (after allowing for any inflation and assuming that your competitors maintained their current prices), which of the following would best describe the result?

	Tick one
No change in sales	1
Sales would fall slightly	2
Sales would fall a lot	3
Most sales would be lost	4

THANK YOU FOR YOUR TIME

Please tick this box if you would like a summary report. □

Appendix B. The second survey instrument for companies that filed abbreviated accounts

According to your records at Companies House, you chose to file abbreviated accounts for the fiscal year 200X, even though you are permitted by law to file full accounts. The difference between the two types of account is that abbreviated accounts do not contain sales or cost of sales information in the profit and loss account, while this information is contained in full accounts.

We are interested to learn why you chose to file abbreviated accounts and would be grateful if you would tick the appropriate response below. Your response will be kept confidential and no information you give us will be passed to a third party.

Please tick any box which describes the main reason behind your firm's decision to file abbreviated accounts:

1. We were not aware that we had the option of filing full accounts □
2. We do not wish to reveal sales/cost of sales information to competitors □
3. We do not wish to reveal sales/cost of sales information to other parties □

Other – please briefly describe your reason below:

Once again, we would like to thank you for your time.

Please post this survey back to us in the pre-paid envelope provided.

Appendix C. The second survey instrument for companies that filed full accounts

According to your records at Companies House, you chose to file full accounts for the fiscal year 200X, even though you are permitted by law to file abbreviated accounts. The difference between the two types of account is that abbreviated accounts do not contain sales or cost of sales information in the profit and loss account, while this information is contained in full accounts.

We are interested to learn why you chose to file full accounts and would be grateful if you would tick the appropriate response box below. Your response will be kept confidential and no information you give us will be passed to a third party.

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Please tick the box which describes the main reason behind your firm's decision to file full accounts rather than abbreviated accounts with Companies House:

1. We were not aware that we had the option of filing abbreviated accounts □
2. We do not want external users of the accounts to conclude that we are the type of firm that has something to hide □
3. We did not wish to incur the extra cost and time associated with preparing abbreviated accounts □

Other – please briefly describe your reason below:

Once again, we would like to thank you for your time.
Please post this survey back to us in the pre-paid envelope provided.

References

Adams, R.B., Ferreira, D., 2008. Do directors perform for pay? Journal of Accounting and Economics 46, 154–171.
Aggarwal, R.K., Samwick, A.A., 1999. Executive compensation, strategic competition, and relative performance evaluation: theory and evidence. Journal of Finance 54, 1999–2043.
Ai, C., Norton, E.C., 2003. Interaction terms in logit and probit models. Economics Letters 80, 123–129.
Ai, C., Norton, E.C., 2004. Computing interaction effects and standard errors in logit and probit models. Stata Journal 4, 154–167.
Aranya, N., 1974. The influence of pressure groups on financial statements in Britain. Abacus, June 3–12 (reprinted in Parker, R.H., Lee, T.A. (Eds.), 1979. The Evolution of Company Financial Reporting. Thomas Nelson and Sons, Ltd., pp. 265–274).
Arya, A., Mittendorf, B., 2007. The interaction among disclosure, competition among companies, and analyst following. Journal of Accounting and Economics 43, 321–339.
Ashbaugh, H., Johnstone, K.M., Warfield, T.D., 1999. Corporate reporting on the internet. Accounting Horizons 13, 241–257.
Aucremanne, L., Druant, M., 2005. Price-setting behavior in Belgium: what can be learned from an ad hoc survey? National Bank of Belgium Working Paper.
Ball, R., Shivakumar, L., 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. Journal of Accounting and Economics 39, 83–128.
Baumol, W.J., Panzar, J.C., Willig, R.D., 1982. Contestable Markets and the Theory of Industry Structure. Harcourt Brace Jovanovich, San Diego, CA.
Berger, P.G., Hann, R.N., 2007. Segment profitability and the proprietary and agency costs of disclosure. Accounting Review 82, 869–906.
Board, O., 2008. Competition and disclosure. Working Paper, University of Pittsburgh.
Botosan, C.A., Stanford, M., 2005. Managers' motives to withhold segment disclosures and the effect of SFAS no. 131 on analysts' information environment. Accounting Review 80, 751–771.
Bresnahan, T.F., 1989. Empirical studies of industries with market power. In: Schmalensee, R., Willig, R. (Eds.), Handbook of Industrial Organization, vol. 2. North-Holland, Amsterdam.
Carlin, W., Fries, S., Schaffer, M., Seabright, P., 2001. Competition and enterprise performance in transition economies: evidence from a cross-country survey. CEPR Working Paper.
Chow, C.W., Wong-Boren, A., 1987. Voluntary financial disclosure by Mexican corporations. Accounting Review 63, 533–541.
Clarke, R., 1983. Collusion and the incentives for information sharing. Bell Journal of Economics 14 (2), 383–394.
Clarke, R., 1984. Profit margins and market concentration in UK manufacturing industry. Applied Economics 16, 57–71.
Clinch, G., Verrecchia, R.E., 1997. Competitive disadvantage and discretionary disclosure in industries. Australian Journal of Management 22, 125–137.
Collis, J., Jarvis, R., 2006. Progress towards harmonization in filing options for SMEs and the case of the UK. Working Paper, Kingston University.
Collis, J., Dugdale, D., Jarvis, R., 2001. Deregulation of small company reporting in the UK. In: McLeay, S., Riccaboni, A. (Eds.), Contemporary Issues in Accounting Regulation. Kluwer, Boston.
Connolly, R.A., Hirschey, M., 1984. R&D, market structure and profits: a value-based approach. Review of Economics and Statistics 66, 678–681.
Datta, S., Iskandardatta, M., Patel, A., 1999. Bank monitoring and the pricing of corporate public debt. Journal of Financial Economics 51, 435–449.
Darrough, M.N., Stoughton, N.M., 1990. Financial disclosure policy in an entry game. Journal of Accounting and Economics 12, 219–243.
Darrough, M.N., 1993. Disclosure policy and competition: Cournot vs. Bertrand. Accounting Review 68, 534–561.
DeFond, M.L., Park, C.W., 1999. The effect of competition on CEO turnover. Journal of Accounting and Economics 27, 35–56.
Diamond, D.W., 1984. Financial intermediation and delegated monitoring. Review of Economic Studies 51, 393–4714.
Diamond, D.W., 1989. Reputation acquisition in debt markets. Journal of Political Economy 97, 828–862.
Diamond, D., 1985. Optimal release of information by firms. Journal of Finance 40, 1071–1094.
Diamond, D.W., Verrecchia, R.E., 1991. Disclosure, liquidity, and the cost of capital. Journal of Finance 46, 1325–1359.
DTI, 1995. Accounting Simplifications – A Consultative Document, May, URN 95/669. Department of Trade and Industry, London.
Fama, E., 1985. What's different about banks?. Journal of Monetary Economics 15, 29–39.
Engel, E., Hayes, R.M., Wang, X., 2007. The Sarbanes-Oxley Act and firms' going – private decisions. Journal of Accounting and Economics 44, 116–145.
Flower, J., 2004. European Financial Reporting: Adapting to a Changing World. Palgrave Macmillan.
Francis, J., Khurana, I.K., Pereira, R., 2005. Disclosure incentives and effects on cost of capital around the world. Accounting Review 80, 1125–1162.
Grabowski, H.G., Mueller, D.C., 1978. Industrial research and development, intangible capital stocks, and firm profit rates. Bell Journal of Economics 9, 328–343.
Grossman, S., 1981. The role of warranties and private disclosure about product quality. Journal of Law and Economics 24, 461–483.
Harris, M.S., 1998. The association between competition and managers' business segment reporting decisions. Journal of Accounting Research 36, 111–128.
Hart, P.E., Morgan, E., 1977. Market structure and economic performance in the United Kingdom. Journal of Industrial Economics 25, 177–193.
Haskell, J., Martin, C., 1994. Capacity and competition: empirical evidence on UK panel data. Journal of Industrial Economics 42, 23–44.
Hayes, R.M., Lundholm, R., 1996. Segment reporting to the capital market in the presence of a competitor. Journal of Accounting Research 34, 261–279.
Healy, P., Palepu, K., 2001. Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. Journal of Accounting and Economics 31, 405–440.
Hirschey, M., 1985. Market structure and market value. Journal of Business 58, 89–98.
Hviid, M., 1989. Risk averse duopolists and voluntary information transmission. Journal of Industrial Economics 38, 49–64.
Institute of Chartered Accountants in England and Wales, 1925. Proof of Evidence, Submitted to the Company Law Committee: Minutes of Evidence. H.M.S.O., London.
Institute of Chartered Accountants in England and Wales, 1995a. Accounting Simplifications. Technical Release FRAG 17/95, August. Institute of Chartered Accountants in England and Wales, London.
Institute of Chartered Accountants in England and Wales, 1995b. Memorandum submitted to the Department of Trade and Industry in response to the Department's consultative document of May 1995 (FRAG 17/95).
Jansen, J., 2005. The effects of disclosure regulation of an innovative firm. CESIFO Working Paper No. 1459.
Kim, J., 1996. Additional evidence on relative performance evaluation hypothesis. Working Paper, Carnegie Mellon University, Pittsburgh, PA.
Lang, M., Lundholm, R., 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. Journal of Accounting Research 31, 246–271.

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Mayes, R., 1993. Preparing Company Accounts: Practical Guidelines for Small and Medium-sized Companies, fourth ed. Institute of Chartered Accountants in England and Wales.
Milgrom, P., 1981. Good news and bad news: representation theorems and applications. Bell Journal of Economics 12, 380–391.
Myers, S.C., 1977. Determinants of corporate borrowing. Journal of Financial Economics 5, 147–175.
Nickell, S., 1996. Competition and corporate performance. Journal of Political Economy 104, 724–746.
Petersen, M.A., Rajan, R.G., 1994. The benefits of lending relationships: evidence from small business data. Journal of Finance 49, 3–37.
Stiglitz, J.E., 1987. Competition and the number of companies in a market: are duopolies more competitive than atomistic markets. Journal of Political Economy 95, 1041–1061.
Schmalensee, J.I.E., 1989. Intra-industry profitability differences in US manufacturing 1953-1983. Journal of Industrial Economics 37, 337–357.
Sutton, J., 1990. Sunk Costs and Market Structure: Price Competition, Advertising and the Evolution of Concentration. The MIT Press, Cambridge, MA.
Trahan, E.A., Gitman, L.J., 1995. Bridging the theory–practice gap in corporate finance: a survey of chief financial officers. Quarterly Review of Economics and Finance 35, 73–87.
Verrecchia, R.E., 1983. Discretionary disclosure. Journal of Accounting and Economics 5, 179–194.
Verrecchia, R.E., 1990. Endogenous proprietary costs through company interdependence. Journal of Accounting and Economics 12, 245–250.
Verrecchia, R.E., Weber, J., 2006. Redacted disclosure. Journal of Accounting Research 44, 791–814.
Vives, X., 1990. Trade association, disclosure rules, incentives to share information and welfare. Rand Journal of Economics 21, 409–430.
Wrenbury Committee, 1918. Company Law Amendment Committee, Report, London, H.M.S.O. Cd. 9138.
Watts, R.L., Zimmerman, J.L., 1983. Agency problems, auditing and the theory of the firm: Some evidence. Journal of Law and Economics 26, 613–634.

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