

Product Market Competition, Financial Accounting Misreporting and Corporate Governance: Evidence from Accounting Restatements*

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Abstract

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Keywords: Product Market Competition; Earnings Restatements; Corporate Governance; Relative Performance Evaluation.

JEL classification: D4; G34; L1; M40; M41

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Product Market Competition: Disciplining or Malefic role? Evidence from Earnings Restatements

Abstract

Product market competition has a dual trait: while it serves as an efficient disciplinary mechanism for firms' executives, it also exacerbates career concerns and heightens capital market pressures. We examine the effect of competition on financial accounting misreporting as manifested in earnings restatements. While on the one hand product market competition acts as a disciplinary mechanism in less competitive industries, on the other hand, it induces managers not to act in the best interest of shareholders in more competitive industries. These findings have implications for the design of corporate governance mechanisms and executive compensation contracts involving relative performance evaluation.

1. Introduction

Product market competition has long been argued as an efficient disciplinary corporate governance mechanism (Hart, 1983). Specifically, Shleifer and Vishny (1997) argue that “product market competition is probably the most powerful force towards economic efficiency in the world.” Yet, a number of recent accounting scandals (for example, Tyco, Enron, WorldCom, and MCI) have all occurred in industries with relatively high levels of competition which casts some doubt on the idea that product market competition has a positive disciplining effect on firms. Examining the effects of product market competition on financial accounting misreporting is imperative in furthering our understanding of not only the effectiveness of product market competition as a disciplining mechanism but also the role of and mechanisms through which information quality features into corporate governance design. In this paper, we examine the effect of product market competition on financial accounting misreporting and the alternate mechanisms through which product market competition could affect financial accounting misreporting.¹

Misreporting accounting information can be considered as a classic example of short-termism or managerial myopia where the firms’ managers forgo long-term shareholder value for short-term gains (e.g., Narayanan, 1985; Stein, 1989; von Thadden, 1995).² Given the theoretical arguments and recent empirical evidence (e.g., Guadalupe and Pérez-González, 2005; Grullon and Michaely, 2007) on the disciplinary effects of competition, we would expect that product market competition disciplines managers against interfering and manipulating the reported accounting information.

We examine two distinct mechanisms through which product market competition affects misreporting of accounting information – one is through agency conflicts while the other prevails even in the absence of agency costs. Under the agency cost view, misreporting accounting information can be considered as an outcome of an agency

¹ By financial accounting misreporting we refer to the willful misrepresentation of the true underlying economic performance measures. This notion is consistent with the views expressed in the earnings management literature (Healy and Wahlen, 1999).

² We must note that the term managerial myopia is not restricted to cases where managers take decisions that are in their self-interests and are detrimental to the shareholders. Cases where managers want to keep the stock price as high as possible prior to a new stock issuance or prior to a stock-based acquisition are also cases of managerial myopia.

problem, specifically, a moral hazard one relating to managers' career concerns. The existing literature argues that agency costs and firm-level corporate governance mechanisms vary with product market competition (e.g., Cremers, Nair and Peyer, 2007; Guadalupe and Pérez-González, 2005). In fact, some argue that managerial slack will not exist in highly competitive industries (e.g., Friedman, 1953; Stigler, 1958). Accordingly, one would expect that increased product market competition should reduce the agency problem of misreporting.

However, one should note that, managers view disclosures related to their firm performance as signals of their managerial abilities (Trueman, 1986) to the capital markets and to the board of directors. Acknowledging that the quality of accounting information the firm discloses is a choice variable, Hermalin and Weisbach (2007) show that heightened career concerns may cause managers to distort the disclosures they make. In the product market setting, DeFond and Park (1999) show that CEO turnover increases with product market competition and that departing CEOs are those from poorly performing firms. DeFond and Park (1999) further argue that since competitive environments are conducive to the use of relative-performance evaluation, it is easy for the board of directors to identify and replace poorly performing managers. This implies that managers in competitive industries face a constant pressure of beating their peers, or at least not falling behind. This suggests that product market competition would heighten managers' career concerns and, hence, increase the propensity of managers to misreport.

Even in the absence of agency costs, there are alternative mechanisms through which product market competition affects misreporting. One such mechanism is the ongoing interaction of the firm with public capital markets for obtaining limited capital. We refer to this competition for limited funds as capital market pressures.³ Shleifer (2004) argues that the discussion in the literature of accounting information manipulation has largely ignored the importance of this apparent competition for limited capital funds.

The most commonly discussed benefit of increased transparency and disclosures is that it reduces information asymmetry and, hence, lowers the cost of trading the firm's securities and the firm's cost of capital (e.g., Diamond and Verrecchia, 1991). Further,

³ There could be other sources of capital pressures such as the probability of takeover or the pressure to meet analysts' forecasts. While our arguments could be extended to such scenarios, we do not explicitly test these as they are beyond the scope of our study.

the presence of competitors subject to similar demand and supply constraints leads to information that helps investors assess the circumstances under which the firms operate thereby mitigating some of the adverse selection problems. This argument suggests that as the number of firms in an industry that compete for the limited funds increases, the quality of information also increases and, hence, the level of misreporting decreases. However, Stein (1989) shows that managers would sacrifice total cash flows to boost short-term earnings in an effort to influence the market's current assessment of the firm's value. Similarly, Bar-Gill and Bebchuck (2003) argue that firms are likely to misreport corporate performance when a firm is likely to issue stock. In an empirical setting, Teoh et al. (1998) find that managers in IPO firms adopt income-increasing accounting policies prior to stock issuance. This latter argument suggests that increased product market competition will result in greater levels of misreporting.

To summarize, managers' career concerns and capital market pressures are two alternative mechanisms through which product market competition affects misreporting of accounting information. The discussion so far implies that ex-ante, the net effect of product market competition on the quality of public financial accounting information is ambiguous and, thus, an empirical question. While it is possible that increased product market competition can serve as an efficient monitoring and disciplining mechanism, it might be that higher competition increases the costs of providing information of higher quality leading to adverse outcomes.

Summary of Results. Using earnings restatements as an ex-post manifestation of financial accounting misreporting, we examine the role of product market competition in affecting both the frequency of earnings restatements and their dollar value.⁴ On average, we find that product market competition does discipline managers in the sense that the frequencies of earnings restatements in a particular industry are constrained by competition. The tenure of our results are consistent with the empirical evidence in

⁴ On average, firms reporting an earnings restatement incur a market adjusted return of -10% during a three day window period surrounding such an announcement (see the GAO, 2002 and GAO, 2006 reports) suggesting that this event is significantly costly to shareholders.

Cohen (2006) and Harris (1998) who provide empirical evidence implying that firms in less competitive industries are less likely to report high-quality accounting information.⁵

Interestingly, we also find that this result depends on the level of product market competition. While on the one hand product market competition acts as a disciplinary mechanism in less competitive industries, on the other hand, it induces managers not to act in the best interest of shareholders in more competitive industries. This finding relates to the context-specific nature of the effectiveness of Relative Performance Evaluation (RPE) as discussed in the existing literature (e.g., DeFond and Park, 1999). Our evidence indirectly addresses the puzzle raised in these studies which question the infrequent use of these mechanisms in deriving executives' compensation contracts in more competitive industries. Furthermore, our evidence supports the views expressed by Friedman (1953) and Stigler (1958) that managerial slack cannot exist or survive in competitive environments.

We also investigate the interaction between the effects of competition for limited capital funds in public capital markets and the effects of product market competition on the extent of accounting misreporting as evidenced in earnings restatements. In other words, we examine the pressure from public capital markets and its effect on the quality of accounting information while acknowledging the role of product market competition in such a setting. We find that capital markets pressure adversely affect firms' reporting quality in highly competitive industries. This evidence indicates that product market competition affects financial misreporting both through agency mechanisms and capital market pressures.

Our study contributes to the existing literature in several ways. First, we characterize an empirical setting in which product market competition affects the quality of financial information as manifested in earnings restatements through two distinct mechanisms. In doing so, we introduce the concept of agency conflicts between managers and shareholders while investigating the relation between product market competition and financial reporting policies. In addition, our evidence contributes to the theory on

⁵ Overall, the results in these studies suggest that higher quality of information prevails in more competitive environments. Focusing on specific disclosure decisions related to segment reporting, Harris (1998) demonstrates that firms are less likely to disclose operations in less competitive industries as business segments. Cohen (2006) documents that the quality of accounting information, measured as the mapping between accruals and cash flows is higher in more competitive industries.

corporate governance by suggesting that capital market pressure considerations and career concerns should be taken into account when deriving executive compensation contracts that use Relative Performance Evaluation (RPE). Furthermore, we provide a research design that could be used to advance our understanding on the interaction across different corporate governance mechanisms including information quality and their effects in addressing agency costs due to the separation of ownership and control.

Finally, we make a methodological contribution to the literature that focuses on the relation between information quality and the nature of product market competition. One of the main criticisms advanced in the empirical literature on the consequences of financial accounting reporting and disclosures is the failure to properly adjust for the endogeneity problem apparent in these studies. The research design we employ in the current study indirectly addresses this problem by performing an industry-level analysis. Thus, many of the firm-specific variables determining the choice firms make regarding their reporting strategies are not affecting the results we report and make us confident that we are not merely documenting spurious relations.

The remainder of the paper is organized as follows. Section 2 provides a literature review and presents the hypotheses development. Section 3 describes the research design we employ and addresses methodological issues. Section 4 presents the sample selection criteria and discusses the empirical results. Section 5 concludes.

2. Literature Review and Research Questions

The quality of accounting information in a competitive product market setting has been a topic of interest to both theoretical and empirical researchers. Theoretical research (e.g., Dye, 1985 and 1986; Darrough and Stoughton, 1990; Wagenhofer, 1990) suggests that information quality and product market competition are related.⁶ The most common trade-off addressed in this strand of literature is between the expected benefits of reduced asymmetric information (for example, a reduction in the cost of raising capital) vis-à-vis the competitive costs arising due to disclosures providing potentially

⁶ Although extensive theoretical models address the relation between the nature of competition in the product markets and financial reporting and disclosure decisions, the predictions are mixed. On the one hand, studies like Darrough and Stoughton (1990) predict that firms in more competitive industries will follow better disclosure policies while on the other hand, studies like Wagenhofer (1990) predict that firms would restrict information in the presence of rivals.

useful information to current product-market rivals and future potential entrants (e.g., Darrough and Stoughton, 1990; Berger and Hann, 2007). There are two other important mechanisms through which product market competition could affect information quality and, specifically, financial accounting misreporting – agency conflicts and capital market pressures. These two mechanisms are summarized in Figure 1 and discussed in detail below.

2.1 Financial Accounting Misreporting, Product Market Competition and Agency Conflicts

The role of product market competition in reducing managerial slack dates back to Hart (1983). Several theoretical papers formalize this idea by examining the potential channels through which product market competition can have an effect on managerial incentives (e.g., Schmidt, 1997; Raith, 2003). Several recent empirical studies seem to support this idea that product market competition provides the incentives for managers to be more efficient and more closely aligned with shareholders' interests (e.g., Guadalupe and Pérez-González, 2005; Grullon and Michaely, 2007; Giroud and Mueller, 2007).⁷

An important mechanism through which product market competition reduces agency conflicts is by facilitating relative performance evaluation (RPE) of senior managers. In the CEO turnover literature, Gibbons and Murphy (1990) and DeFond and Park (1999) examine the relation between RPE and CEO turnover.⁸ DeFond and Park (1999) report direct evidence on how RPE is affected by product market competition which in turn affects CEO turnover. In particular, DeFond and Park (1999) document that the frequency of CEO turnover is positively related to the level of industry competition suggesting that RPE serves as a useful measure of performance evaluation in more competitive industries. Thus, this literature to date suggests that firms in more competitive industries, in equilibrium, will have higher quality of financial reporting and lower incidents of misreporting of accounting signals upon which performance evaluation is based. We refer to this effect as the 'monitoring effect' (denoted as link 1A in Figure 1)

⁷ Nickell (1996) and Berger and Hann (2007) provide evidence that an increase in product market competition leads to increases in productivity and cost efficiency.

⁸ A subset of the agency theory literature that explores CEO turnover (e.g., Warner et al., 1988; Murphy and Zimmerman, 1993) finds that poor firm performance contributes to non-routine CEO turnover.

through which the agency channel relates product market competition and financial reporting quality.

However, for the same reasons one could expect that product market competition will increase misreporting. As a support for this alternative view, a stream in the literature argues that increased product market competition raises top executives' career concerns. Fama (1980) examines how executives' career concerns might affect their incentives and thus their actions. Narayanan (1985) observes that top managers who are concerned with labor-market reputations may have incentives to take actions that boost measures of short-term performance at the expense of creating long-run shareholder value. von Thadden (1995) also alludes to managers' incentives to boost short-term performance. In the disclosure literature, Nagar (1999) shows that the manager's concerns about investors' assessment of his abilities can affect information quality. Recently, Hermalin and Weisbach (2007) show that career concerns may cause CEOs to manipulate the reported financial information disseminated to public capital markets. Using a signaling model, Rotemberg and Scharfstein (2003) show that product market competition increases managers' propensity to manipulate and misreport accounting information. In similar vein, Karuna (2007) finds that firms in more competitive industries tend to monitor their CEOs more closely thus exacerbating the career concern problem. In summary, this strand of literature which we refer to as link 1B in Figure 1, leads us to predict that, ex-ante, firms in more competitive industries will have lower levels of financial reporting quality and thus more incidences of financial accounting misreporting as evidenced ex-post in instances of earnings restatements.

The conflicting role of product market competition on the quality of accounting information leads us to our first empirical question: *does product market competition increase or decrease the extent of accounting misreporting as evidenced by the frequency of earnings restatements in a particular industry in a given period, after controlling for other agency mechanisms?*

While the view that product market competition mitigates managerial agency problems is widely held, there is considerable variation among economists on the extent

to which product market competition is effective. Specifically, Friedman (1953) and Stigler (1958) argue that managerial slack cannot exist in highly competitive industries. Giroud and Mueller (2007) provide empirical evidence along these lines. This suggests that the effect of competition on financial misreporting is likely to vary with the level of competition. Specifically, this stream of the literature suggests that the frequency of restatements should decrease as a function of competition within more competitive industries. An alternate reasoning for expecting a non-linear relationship between competition and financial misreporting arises from the literature relating to the role of noisy accounting signals used as performance measures in contracts that employ RPE. DeFond and Park (1999) argue that the accounting-based RPE measures are less noisy in more competitive industries. They find that the frequency of CEO turnover is more closely associated with RPE-based (firm-specific) accounting measures in high (low) competition industries than in low (high) competition industries. Based on the second argument, we would expect that the career concerns are higher in more competitive industries due to more prevalent use of RPE. Hence, we would expect to observe higher levels of restatements in these industries.

The above tension in the literature leads us to our second empirical question: *does the effect of product market competition on financial accounting misreporting as manifested in the frequency of earnings restatements vary with the level of product market competition?*

2.2 Financial Accounting Misreporting, Product Market Competition and Capital Market Pressures

A second mechanism through which product market competition affects information quality relates to the consequences arising due to the interaction between public capital markets and the product markets (link number 2 in Figure 1).⁹ Firms compete not only in the product market to maximize their economic profits and extract as much economic rents as possible, but also in public capital markets for the limited capital to fund their projects. The most commonly discussed benefit of increased disclosures is that it reduces information asymmetry, and hence lowers the cost of trading the firm's securities and the firm's cost of capital (e.g., Diamond and Verrecchia, 1991). This argument suggests that as the number of firms in an industry that compete for the limited funds increases, the quality of information also increases and, hence, the level of misreporting decreases (denoted as link 2A in Figure 1).

Taking an alternative view, the literature has also argued that manipulation and misreporting of accounting information might help sustain a high valuation and also reduce the cost of capital. Numerous papers, including DeGeorge and Zeckhauser (1993) and Loughran and Ritter (1997) find that firms typically have abnormally strong operating performance relative to their peers in the year or two preceding an equity issue and abnormally weak performance in the years after the issue. Stein (1989) advances a similar argument about firms' managers being concerned with their firms' stock prices performance over a short-term horizon. Teoh et al. (1998) show that firms that manipulate their earnings prior to IPOs tend to subsequently underperform more than those that do not manipulate. Erickson and Wang (1999) find that acquiring firms manage earnings upward in the periods prior to merger agreements. Bar-Gill and Bebchuck

⁹ There is a significant strand of literature that looks at how capital structure and firms' product market behavior is related (e.g., Harris and Raviv, 1991). However, we analyze a different kind of interaction, as we focus on the competition among firms for limited funds in the public capital markets.

(2003) present a model in which firms may commit to fraudulent reporting so as to obtain better terms when issuing shares to raise funds for further investments. Thus, capital needs pressurize managers to indulge in accounting manipulation and misreporting.¹⁰ We refer to this relation as link 2B in Figure 1.

Product market competition interacts with the above problem of misreporting of accounting information under capital market pressures, albeit ambiguously. On the one hand, competitive pressure in the product market reduces the firm's market power and profits thereby making it more difficult to obtain external financing. Thus, firms that seek to raise capital are incentivized to misreport to win a larger share of those limited funds. However, on the other hand, the presence of competitors subject to similar demand and supply conditions provides information that helps investors assess the circumstances under which the firms operate. This might mitigate some of the agency and adverse selection problems and, hence, facilitate better financing and efficient funds allocation. This leads us to our third empirical question: *does the effect of product market competition on accounting misreporting vary with the level of external financing raised?*

3. Data and Variables Definition

In this section we describe the data we use to test our hypotheses and address the empirical questions we raise. Since all of our tests are performed at the industry-level, we form a proxy for the industry level variables by taking the equal-weighted industry

¹⁰ A force that could deter misreporting in this setting is the negative consequences upon discovering financial misreporting. Empirical studies indicate a strong negative reaction by the capital markets upon detection of previous misreporting of financial accounting information and the need to restate previously reported earnings (e.g., Palmrose, Richardson and Sholz, 2002). Furthermore, earnings restatements involving intentional misstatements damage the long-term financial reporting credibility of the firm and may seriously jeopardize the firm's ability to access public capital markets in the future (Farber, 2005).

average of each firm's variable of interest. We use the 48 Fama-French industry classifications (Fama and French, 1997).

The primary data source for our tests is the data on earnings restatements collected by the General Accounting Office (GAO). We utilize two industry level measures relating to earnings restatements – the frequency of earnings restatements in a particular industry in a given year and the average dollar value of the earnings restatements as a fraction of the average total assets in an industry in a given year. The GAO published a report in 2005 in which it had compiled the list of firms that restated their earnings between July 1, 2002 and September 30, 2005.¹¹ The GAO identified 1,390 earnings restatements in this period. Later, the GAO appended this database on its website with 396 additional earnings restatements that occurred between October 1, 2005 and June 30, 2006. This yields a total of 1,786 firm-year observations representing 1,435 unique firms.

We were able to match 1,564 firm-year observations based on ticker identification with the CRSP database in order to obtain information on industry classification. These 1,564 observations fall into 201 Fama-French industry-year observations spanning the period between 2002 and 2006. Further, the GAO report provides information on the type of earnings restatements and the dollar value of restatements only for the restatements occurring between July 1, 2002 and September 30, 2005. This provides us with 150 Fama-French industry-year observations. Hence, all our tests that involve the frequency of earnings restatements are based on 201 observations while all those that involve the dollar value of earnings restatements are based on 150 observations.

¹¹ These announcements exclude stock splits, changes in accounting principles, and other restatements that were not made to correct mistakes in the application of accounting standards.

Richardson, Tuna and Wu (2003) argue that the SEC has recently been active in enforcement actions against firms suspected of financial accounting misreporting and show that the majority of firms from the later part of their sample of earnings restatements, i.e. 2001 and 2002, restate only one year's earnings. Accordingly, we assume that the earnings restatements in our sample affect only the prior year's reported earnings.¹²

The other main variables we employ in our analysis are industry measures of product market competition, for which we mainly use the Herfindahl-Hirshman Index based on the sales of all firms with data available in Compustat. The Herfindahl-Hirshman Index is defined as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of company i within a particular industry and the summation is performed over the total number of firms in the industry. Since the Herfindahl-Hirshman Index is directly related to the number of firms in a particular industry, we also use the Normalized Herfindahl-Hirshman Index. We define this variable as $(n \times \text{Herfindahl} - 1)/(n - 1)$, where n is the number of firms in a given industry. As an additional proxy for product market competition, we employ the inverse of the number of firms in the industry (see Cremers, Nair and Peyer, 2007).

As we noted earlier, the level of product market competition as an efficient monitoring mechanism can be substituted by other forms of corporate governance mechanisms. Hence, most of our other variables of interest relate to corporate governance. As a first proxy, we form a comprehensive measure of shareholder rights at the industry level by taking the equal-weighted industry average of each firm's G-index. We follow

¹² Our results hold even when we assume that the restatements affect two years prior.

Gompers, Ishii and Metrick (2003) in defining the G-index at the firm level by summing up the number of shareholder rights provisions that each firm has. The G-index is based on 24 provisions and is updated in 2000, 2002 and 2004. For the years where the information is not updated, we assume the last available value. This data is obtained from the Investor Responsibility Research Center (IRRC) database. As a robustness check, we also use the E-index measure provided by Bebchuk, Cohen and Ferrell (2004). The Bebchuk et al. (2004) index is based on 6 out of the 24 provisions in the IRRC database. We also employ a third measure of corporate governance, the ATI-index from Cremers and Nair (2005).

Institutional ownership has been identified in the literature as an additional monitoring mechanism that may act as a substitute for product market competition and/or other governance mechanisms (Gompers, Ishii and Metrick, 2003). Further, Jiambalvo, Rajgopal and Venkatachalam (2002) and Shang (2003) find that institutional ownership is associated with a reduced use of discretionary accruals and, hence, an increased level of financial reporting quality. Accordingly, we control for institutional ownership by including the fraction of shares owned by institutional investors. We obtain this data from 13F filings through the CDA Spectrum database.

As we argued earlier, CEO compensation, especially the fraction derived from stock options and equity ownership, is an important determinant of financial misreporting as evidenced ex-post in earnings restatements. In particular, it has been suggested that compensation “excesses” are associated with earnings manipulation. For example, Coffee (2003), Fuller and Jensen (2002), and Greenspan (2002), among others, assert that stock-based compensation and managerial ownership increased managers’ incentives to

hype and inflate reported earnings and, consequently, stock prices, which contributed to the 1990s stock market bubble. Consistent with these views, Efendi et al. (2007) find that the likelihood of a misstated financial statement increases when CEOs have sizable holdings of stock options. Furthermore, Cheng and Warfield (2005) and Bergstresser and Philippon (2006) provide evidence suggesting that equity incentives derived from stock options and restricted stock compensation are positively associated with managements' likelihood to engage in accrual-based earnings management activities. Following this evidence, we include the equity ownership of the CEO as a fraction of the total compensation as an additional variable of interest.¹³ We use the Execucomp database to calculate this variable.

Prior research examining the determinants of earnings manipulations indicates that capital structure and size are two important such determinants. The presence of agency costs gives rise to demand for monitoring, and the information a firm's financial statements provide may be used to mitigate agency costs (Jensen and Meckling, 1976). Highly leveraged firms have higher agency costs and thus a greater demand for monitoring.¹⁴ Therefore, we predict reporting quality and thus earnings restatements to vary with a firm's capital structure (e.g., Watts, 1977; Smith and Warner, 1979). In a recent study, Barton and Waymire (2004) provide evidence that managers' incentives to

¹³ For instance, Coffee (2003) asserts that the increase in stock-based executive compensation created an environment where managers became very sensitive to short-term stock performance. Greenspan (2002) opines that "the highly desirable spread of shareholding and options among business managers perversely created incentives to artificially inflate earnings to keep stock prices high and rising." Fuller and Jensen (2002, p. 42) also state that "[a]s stock options became an increasing part of executive compensation, and managers who made great fortunes on options became the stuff of legends, the preservation or enhancement of short-term stock prices became a personal (and damaging) priority for many CEOs and CFOs. High share prices and earnings multiples stoked already amply endowed managerial egos, and management teams proved reluctant to undermine their own stature by surrendering hard won records of quarter-over-quarter earnings growth."

¹⁴ There is no consensus in the corporate finance literature whether firms that are highly leveraged have higher agency costs (Jensen, 1986). It can be argued that debt holders provide additional monitoring and incentives that lower agency costs.

supply high quality financial statements increase with the level of shareholder-debtholder agency conflicts as proxied by the amount of leverage in the firm's capital structure. They show a significant positive association between firms' leverage and the quality of public accounting information and interpret this finding as consistent with debt contracting influencing financial reporting. If the financial information provided in the firm's financial statements is complementary to the monitoring information debt providers use, we expect more leveraged firms to provide financial information of higher quality. However, if debt providers use substitute information channels to acquire monitoring information, this will decrease the likelihood that the previous prediction holds true. Hence, we include leverage as an additional control variable. Leverage is defined as the sum of long term debt and debt in current liabilities divided by total assets (Compustat (data9 + data34)/data6).

Consistent with previous empirical studies, we control for the firm's informational environment, by including the firm's size. We use the market value of equity as the measure of the firm's size. We then compute the industry-level proxy for size (market equity value) as the natural log of the equal-weighted average size of all firms in Compustat in any particular industry-year.

4. Results

4.1 Descriptive Statistics

Figure 2 provides the distribution of earnings restatements in our final sample. Taking into account the fact that the earnings restatements reported for 2006 are only for the first six months of the year, Panel A shows a clear upward trend of the number of

restatements. According to the GAO (2002) and GAO (2006) reports, the number of identified restatements rose from 92 in 1997 to approximately 600 in the year ending in 2005. According to the GAO (2006) report, 6.8% of all listed public firms announced earnings restatements in 2005. While the frequency of restatements has been increasing over the years, the economic value and significance of these restatements is not apparent. The GAO (2006) report provides some evidence on the overall economic significance of restatements. According to the report, the market capitalization of the companies that were identified as announcing restatements of previously reported accounting information between July 2002 and September 2005 decreased by an estimated \$63 billion when adjusted for overall market movements in the days around the initial restatement announcement. Panel B provides additional evidence on the type of firms that restate their earnings. We can observe an upward trend in the market value equity of firms that restate as a fraction of the total market value of equity of all firms indicating that the economic value at stake is increasing from one year to another.

Table 1 Panel A provides the distribution of earnings restatements across the Fama-French 48 industries. The service-based industries seem to have the most number of restatements. The GAO also reports the specific reasons for the restatements. Panel B shows that the mix of restatements reasons varies across the period examined. While errors in revenue recognition accounted for the most restatements in 2002 and those due to improper cost accounting came in second, the mix is different in 2005. In 2005, errors in cost accounting constituted 54% of the restatements and revenue recognition accounted for only 14%. The change in mix may be attributed to the recent changes in accounting for leases and SAB 101 (see GAO, 2006).

4.2 Earnings Restatements and Product Market Competition

To better understand the relation between product market competition and earnings restatements we begin our analysis by exploring graphically the average numbers of restatements in an industry-year for different quintiles of the Herfindahl-Hirshman Index. The evidence in Figure 3, Panel A suggests a downward trend between the value of the Herfindahl-Hirshman Index and the average number of restatements in an industry. This finding persists even when we explore this relationship for each year in our sample, as evidenced from Figure 3, Panel B. However, we cannot draw any conclusions on the relationships between competition and earnings restatements because the relation could be spurious. Since the number of companies decrease with the Herfindahl-Hirshman Index, the documented relation could be mechanical. This, in fact, is true as evidenced from Table 2.

Table 2 Panel A documents the average frequency of earnings restatements in an industry-year across the competition quintiles. We notice that the relationship between competition and the frequency of earnings restatements could be non-linear. The number of restatements decreases as the Herfindahl-Hirshman Index increases till the third quintile and then the relation reverses. This observed non-linear relationship is interesting and we analyze in detail later. In Panel B, we provide evidence on the relationship between the average dollar values of the restatements as a fraction of average total assets. Though we are not able to pick any discernible trend in the data, it appears that the Herfindahl-Hirshman Index and the value of restatements are positively correlated.

Table 3 Panel A reports the univariate statistics on the variables that we use in our analysis. Panel B displays correlation coefficients between frequencies (percentage) of earnings restatements, the dollar value of restatement, and (Normalized) Herfindahl-

Hirshman Indices besides our proxies for average industry corporate governance measures. We find that all correlations between competition and the frequency of restatements are significantly positive. Thus, at the industry level, product market competition and financial reporting quality are positively correlated. In other words, the higher the level of product market competition (lower values of the Herfindahl-Hirshman Index), the lower the frequency of earnings restatements. This relationship also holds when we examine the association between the dollars values of earnings restatements and product market competition.

In Table 4, we report results of industry-level pooled panel regressions using a fixed effects model by including year dummies where the dependent variable is the frequency of earnings restatements in a given industry-year. Standard errors are clustered by industry to account for the possibility that observations within an industry (through time) are not independent. As can be observed from column 1, increases in industry concentration ratios are statistically significantly associated with higher percentages of earnings restatements. In column 2, we verify that this relation is robust to several control variables. We note that even after controlling for all the relevant variables we identified in the previous section, the relationship between product market competition and earnings restatements holds. As robustness checks, we use alternate measures of shareholder rights in Columns 3 and 4 and alternate measures for product market competition in Columns 5 and 6. Column 3 reports the results using a more refined measure of shareholder rights proposed by Bebchuk et al. (2004), which we refer to as the E-index. Column 4 uses the ATI index proposed by Cremers and Nair (2005). We note that the level of shareholder rights is not significantly associated with the percentage of earnings restatements within

an industry. We interpret this finding as suggesting that the level of product market competition serves as a stronger monitoring and restraining mechanism when compared to measures of shareholders rights. In other words, we can infer that corporate governance mechanism have no significant monitoring effect on earnings restatements, over and beyond the level of product market competition

In Table 4, Column 5 we use the Normalized Herfindahl-Hirshman Index as an alternate measure for product market competition. One argument against the use of a simple Herfindahl-Hirshman Index measure is that it cannot distinguish between asymmetric market share and the number of firms competing in a particular industry. By using a Normalized Herfindahl-Hirshman Index we can directly control for the number of firms competing in a specific industry. The relation between product market competition and percentage of earnings restatements holds under this alternative specification indicating that the number of firms in the industry is not driving the previously documented results. In column 6 we use the inverse of the number of firms as a third measure of product market competition. Our main results continue to hold under this specification as well. In sum, Table 4 provides strong empirical evidence that product market competition and financial reporting quality, as manifested in earnings restatements, are positively related, i.e., the higher the level of product market competition (lower concentration ratios) the less likely we are to observe earnings restatements (higher financial reporting quality practices).

In Table 5 we document results of industry-level pooled panel regressions using a fixed effects model by including year dummies where the dependent variable is the average dollar value of earnings restatements as a fraction of total assets in an industry-

year. Once again, standard errors are clustered by industry. As in the case with the frequency of earnings restatements, Column 1 indicates that increases in industry concentration ratios (lower product market competition) are statistically significantly associated with higher dollar values of earnings restatements. Column 2 reports the results after controlling for the effects of other monitoring mechanisms. As robustness check, consistent with our prior analysis, Columns 3 and 4 use alternate measures of shareholder rights and Columns 5 and 6 use alternate measures of product market competition. Overall, we observe that the main results hold in all cases and are not sensitive to these alternative empirical measures.

As we discussed in earlier sections, our main empirical question relates to the role of product market competition as a disciplining and monitoring mechanism. Given our research objectives, our study relates to the literature on the interaction between product market competition and corporate governance. For example, in a recent study, Cremers, Nair and Peyer (2007) argue that shareholder rights and product market competition interact. To incorporate this aspect into our model, we include an interaction term between the product market competition measures and shareholder rights variables. Table 6 provides the results of this regression. We note that our previously reported main results continue to hold.

In sum, we provide evidence suggesting that, on average, product market competition and financial reporting quality are positively associated and that, consistent with prior literature, product market competition, on average, acts as a monitoring and disciplining mechanism.

4.3 Non-Linear Effects of Product Market Competition

In this section, we seek to address our second empirical question: does the effect of product market competition on misreporting of accounting information vary with the level of product market competition? As we previously noted, there is evidence that firms in more concentrated markets have higher propensity to produce financial statements of poor quality compared to firms in less concentrated markets. However, as discussed in Section 3, the literature suggests that the role of product market competition may depend on the level of competition. Accordingly, we observe in Table 2 Panel A that the effect of product market competition is not the same across the Herfindahl-Hirshman Index quintiles. The data in Table 2, Panel A indicates a non-linear relationship between product market competition and the percentage of earnings restatements. In this section, we test whether this effect is spurious or statistically significant.

The evidence on the non-linearity has important implications for corporate governance mechanisms design. Based on the existing literature, we know little about how different shareholder governance mechanisms should be combined. More importantly, the literature is sparse on whether the mix between different shareholder governance mechanisms itself can be a function of product market competition. Cremers et al. (2007) provide evidence that product market competition and shareholder rights interact. The non-linearity effect, if proved, provides additional and more direct evidence that the corporate governance mix should be a function of product market competition. In addition, as we discussed earlier, there are compelling theories that argue that product market competition can have positive and negative effects on firms that compete against each other. The non-linear relation may also be indicative as to the observed empirical association between product market competition and financial reporting quality, and

whether indeed competition affects in any way the quality of financial information provided to the capital markets.

In order to understand whether the determinants of financial accounting misreporting change in high competition versus low competition industries, we follow an approach provided in Greene (2004, p. 130) that explains how to test structural breaks in data. The basic intuition behind this approach is to use the Chow test to test the hypothesis that all the regression coefficients are different in subsets of the data.¹⁵ The null hypothesis for this test is that the coefficients are equal. If the Chow test is rejected, a structural break in the data is apparent. We can then run separate regressions on the sub-samples to better understand the effects of the various mechanisms in each of the settings.

We notice in Table 2, Panel A that the point of inflection is in the third Herfindahl-Hirshman Index quintile. Hence, we use the median as the structural break point. We perform the Chow test at this break point for all the variables used in the industry-level regression explained in Section 5.2. We are able to reject the null hypothesis that the coefficients in the two sub-samples are the same at the 5% significance level for the regression involving the percentage of earnings restatements as the dependent variable.¹⁶ This confirms the presence of a non-linear effect of product market competition level.

To better understand how the various monitoring and disciplining mechanisms affect the percentage of earnings restatements as a function of product market

¹⁵ The Chow test is an econometric test of whether the coefficients in two linear regressions on different data sets are equal. The Chow test is most commonly used in time series analysis to test for the presence of a structural break (Chow, 1960).

¹⁶ We are not able to reject the null for the regression involving value of restatements. Further, going forward we do not split the sample into high and low competition sub-groups when the dependent variable is value of restatements.

competition, we run the industry-level regressions on sub-samples of data based on the levels of competition. Table 7 reports the results of this regression. We note that the Herfindahl-Hirshman Index has a significant negative coefficient in the low concentration industries while a significant positive coefficient in the high concentration industries. This evidence is indicative of the conflicting theories on the effects of product market competition on financial reporting quality. We leave the questions on the specific determinants of the nonlinearity and on the optimal governance mechanism mix for future research.

4.4 The Effects of Capital Markets Interactions

As discussed earlier, our framework provides an interesting setting to understand the interactions between public capital markets and product markets. One way to view financial reporting quality is to consider it as the quality of a signal that is simultaneously viewed by the product markets and the capital markets participants. In this section, we aim to answer our third empirical question: does the effect of product market competition on accounting misreporting vary with the level of external financing raised?

The extant literature is silent on how the two markets would interact and how this interaction would affect the signals observed by both markets. As discussed in the previous section, product market and capital markets interact because firms compete not only in the product market to maximize their economic rents but also in the capital markets for obtaining limited capital at the lowest possible costs. Specifically, the conventional wisdom is that firms need to provide as high financial reporting quality as possible in order to obtain capital at a lower cost. Taken together, this indicates that

product market competition will have a stronger effect in industries where firms have interacted with the capital markets, i.e. raised capital and accessed the capital markets.

In this section, we specifically examine this issue by estimating regressions relating percentage of earnings restatements and dollar value of earnings restatements to the Herfindahl-Hirshman Index and other control variables on sub-samples partitioned based on whether a firm has raised high or low levels of external financing. We define external financing raised as the sum of proceeds from sale of common and preferred stock (Compustat data 108) and from the issuance of long-term debt (Compustat data 111) scaled by average total assets. Table 8, Panel A provides the results for this regression. We find that the coefficient on the sub-sample that has raised high levels of external financing is significantly positive and higher than the coefficient on the sub-sample that has raised low levels of external financing. This provides evidence for the interaction between capital markets and product markets in a new setting as we explained earlier. Panel B provides the results of the same regression but further dividing the sub-samples into low and high levels of product market competition. We do this to control for the non-linearity effects of product market competition. Again, we notice that the effects of competition are more positive in the sub-samples that have raised high-levels of external financing.

5. Summary and Conclusions

Product market competition is viewed as an efficient monitoring and disciplinary corporate governance mechanism in a setting where agency conflicts due to the separation of ownership and control arise. Motivated by recent accounting scandals which occurred in highly competitive industries we elucidate the dual trait of product

market competition. We identify two mechanisms through which product market competition affects financial accounting misreporting – one that depends on agency conflicts and another that does not. We note that under both views, product market competition has a dual trait. Under the agency view, while increased competition could provide better information on executive performance evaluation and help align managerial incentives, it could also raise the career concerns for managers and may incentivize them to misreport accounting information. Similarly, even in the absence of agency costs, the competition for limited funds in the capital markets may force managers to misreport or to enhance the quality of reporting.

Building on the above, we explore the effect of product market competition on instances of financial accounting misreporting. Using data on earnings restatements, we find that on average, product market competition acts as a disciplining mechanism. This finding adds to and is consistent with recent empirical evidence implying that product market competition is an efficient corporate governance mechanism. We also find evidence that suggests that the effect of product market competition depends on the specific level of competition. In particular, we find that in highly competitive industries product market competition incentivizes managers to misreport. We also document results which imply that the effect of product market competition on misreporting is more positively pronounced in industries that have raised high-levels of external financing from public capital markets.

A direct implication of our study is that the level of product market competition and capital market pressures jointly determines the use of relative performance evaluation in executive compensation contracts. However, the most important implication of our study

relates to the role of information quality in corporate governance mechanism design. Much of the empirical evidence to date suggests that weak corporate governance mechanisms are associated with financial reporting fraud (e.g., Dechow, Sloan, and Sweeney, 1996). However, an explicit role for information quality in corporate governance mechanism design has not been explicitly formulated (Bushman and Smith 2001). Further, recent studies indicate that product market competition is an important aspect in the design of corporate governance mechanism (e.g., Cremers, Nair and Peyers, 2007; Giroud and Mueller, 2007). The framework we use in our paper which considers both the product market competition dimension and the information quality dimension could be adopted in future research to better understand the role of information quality in the design of optimal corporate governance mechanisms.

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Figure 1: Product Market Competition and Earnings Restatements

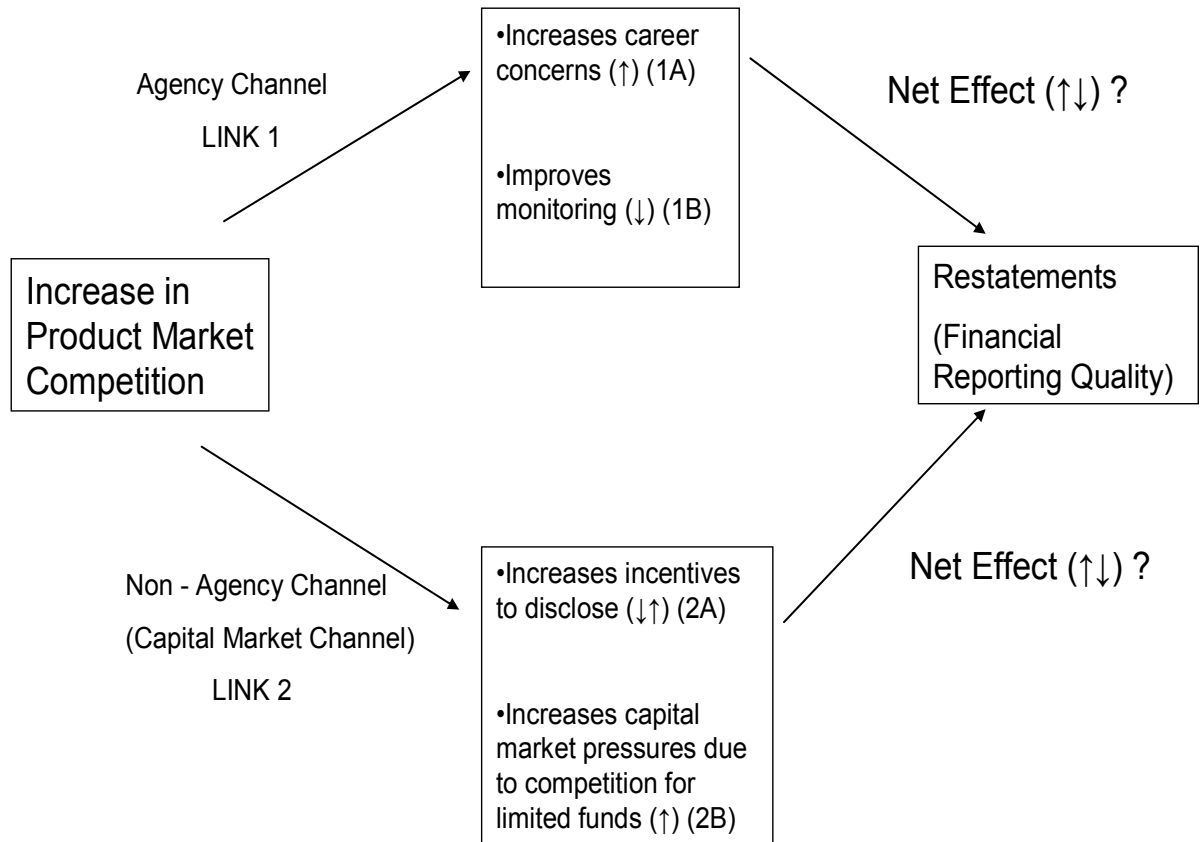
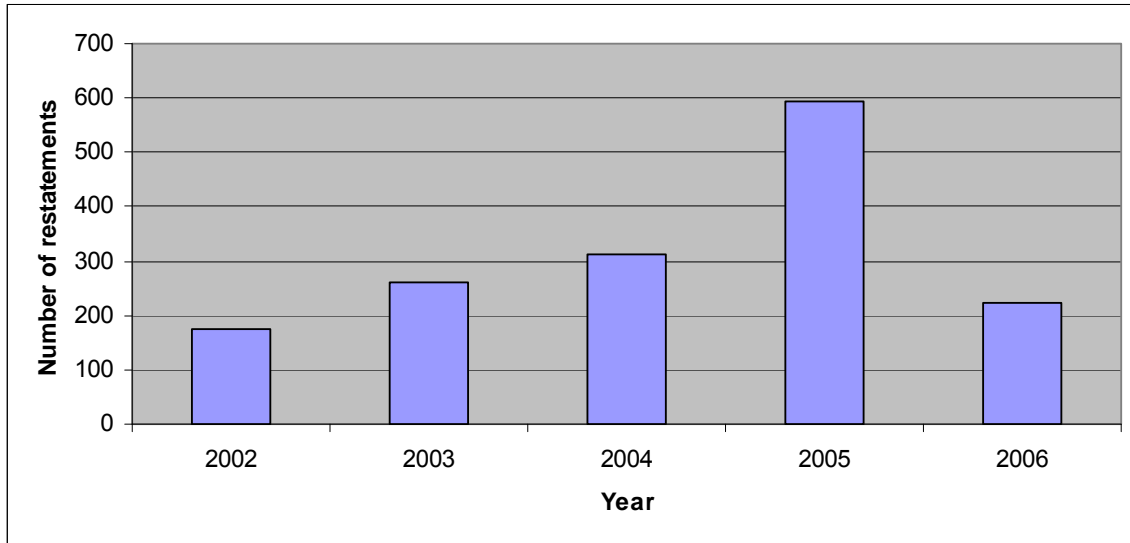


Figure 2: Distribution of Earnings Restatements

This figure provides distribution statistics on earnings restatements. Panel A presents the distribution of restatements for the period 2002 - 2006. The number of restatements in an industry is from the GAO report. Panel B presents market value of firms involved in restatements as a percentage of the total market value of all firms in that year that have information available in the COMPUSTAT database. Market value of equity is defined as the product of closing price at the end of the fiscal year and the common shares outstanding (Compustat data25 x data199).

Panel A: Frequency of Earnings Restatements by Year



Panel B: Economic Significance of Earnings Restatements

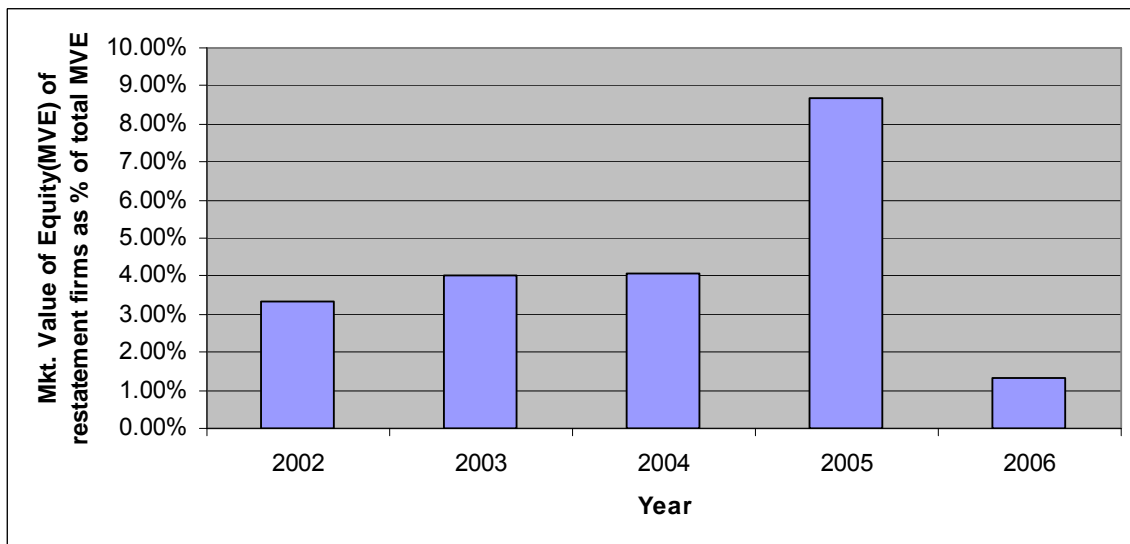
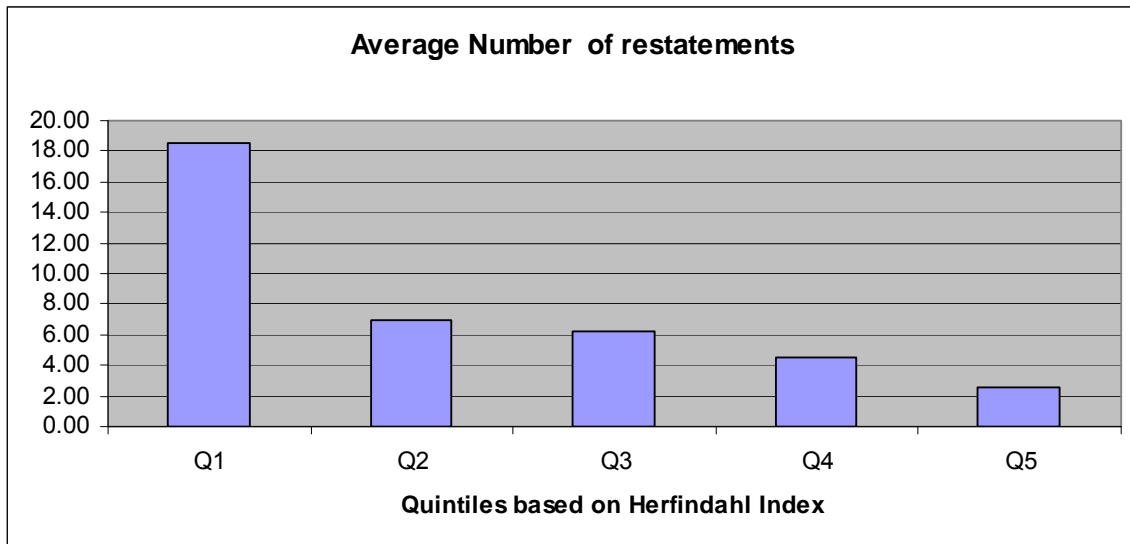


Figure 3: Earnings Restatements and Product Market Competition

This figure presents graphically the relation between the number of earnings restatements and product market competition. Panel A provides the average number of earnings restatements in the different quintiles of competition. Industries are classified based on the 48 Fama-French industry classification. The number of restatements in the industry is provided in the GAO report. Product market competition is proxied by the Herfindahl-Hirshman Index. The Herfindahl-Hirshman Index is based on the sales of all firms with data available in COMPUSTAT calculated as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of company i , and n is the number of firms in the industry. Q1-Q5 refers to the first to the fifth quintile of the Herfindahl-Hirshman Index. Panel B provides the average number of restatements in the different quintiles of competition in each year.

Panel A: Average Number of Earnings Restatements in Competition Quintiles



Panel B: Average Number of Earnings Restatements in Competition Quintiles by Year

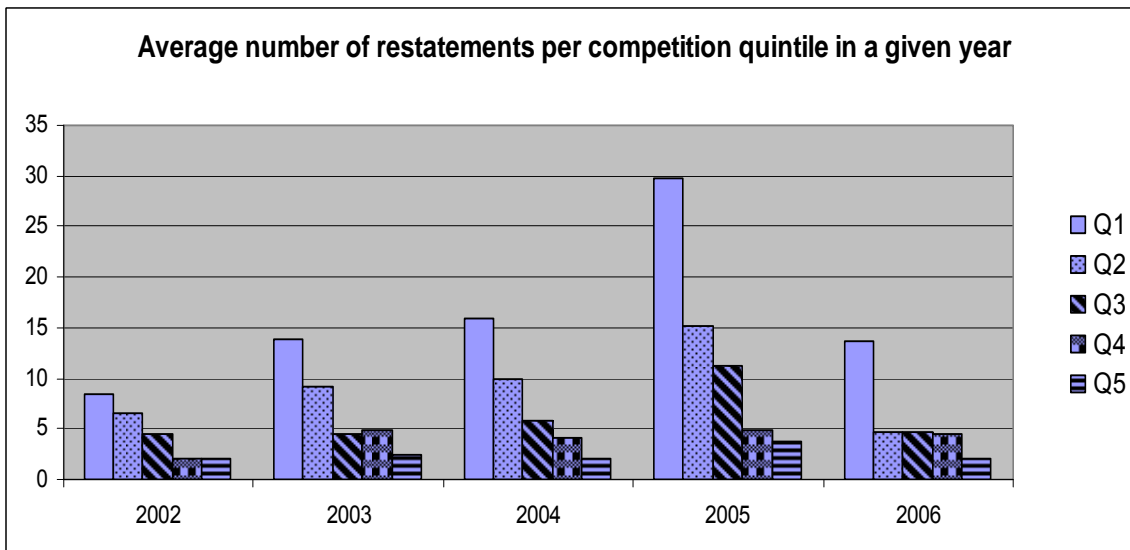


Table 1: Descriptive Statistics

This table provides descriptive statistics on earnings restatements. The number of restatements in the industry is calculated from the restatements data provided in the GAO report. Panel A provides the number of restatements classified by the Fama-French 48 industries (FFSIC) classification. Panel B provides the distribution of restatements by the type of restatement for the period 2002 - 2005. The GAO report provides this classification only for the firms that announced a restatement between July 2002 and September 2005. The GAO report classifies the type of restatement into 9 categories due to: (1) improper accounting for costs or expense (Cost or Expense), (2) improper revenue accounting (Revenue), (3) improper accounting for derivatives, warrants, stock options and other convertible securities (Securities-related), (4) errors relating to accounting treatment of investments, timing and amount of asset write-downs, goodwill and other intangibles, restructuring activity and inventory valuation, and inventory quantity issues (Restructuring, assets and inventory), (5) improperly classified financial statement items (Reclassification), (6) improper accounting for acquisitions or mergers (Acquisition or Merger), (7) inadequate disclosure or improper accounting of revenues, expenses, debts, or assets involving transactions or relationships with related parties (Related-party transaction), (8) instances in which improper accounting methodologies were used to value in-process research and development at the time of an acquisition (IP R&D), and (9) any restatement not covered by the listed categories (Other).

Panel A: Distribution of Earnings Restatements by Fama-French 48 Industries (FFSIC)

FFSIC	Number of Restatements in FFSIC	FFSIC	Number of Restatements in FFSIC
1	2	26	10
2	11	27	17
3	2	28	7
4	6	29	5
6	9	30	57
7	27	31	65
8	10	32	87
9	14	33	29
10	15	34	230
11	21	35	52
12	22	36	62
13	53	37	23
14	18	38	9
15	8	39	3
16	1	40	45
17	11	41	56
18	9	42	85
19	13	43	106
20	10	44	105
21	52	45	53
22	23	46	11
23	31	47	63
24	4	48	11
25	1		

Panel B: Distribution of Earnings Restatements by Type of Restatement over the Sample Period

<i>Type of restatement</i>	2002		2003	
	Number	Percentage	Number	Percentage
Acquisition or Merger	6	5.00%	9	4.84%
Cost or Expense	27	22.50%	52	27.96%
IP R&D	0	0.00%	0	0.00%
Other	10	8.33%	12	6.45%
Reclassification	8	6.67%	10	5.38%
Related Party Transaction	4	3.33%	4	2.15%
Restructuring, Assets or Inventory	22	18.33%	31	16.67%
Revenue	28	23.33%	46	24.73%
Securities Related	15	12.50%	22	11.83%
Total	120		186	

<i>Type of restatement</i>	2004		2005	
	Number	Percentage	Number	Percentage
Acquisition or Merger	6	2.75%	11	2.99%
Cost or Expense	70	32.11%	200	54.35%
IP R&D	0	0.00%	1	0.27%
Other	10	4.59%	15	4.08%
Reclassification	24	11.01%	17	4.62%
Related Party Transaction	4	1.83%	3	0.82%
Restructuring, Assets or Inventory	24	11.01%	29	7.88%
Revenue	50	22.94%	51	13.86%
Securities Related	30	13.76%	41	11.14%
Total	218		368	

Table 2: Earnings Restatements and Product Market Competition

This table reports the average percentage of earnings restatements and average dollar value of the earnings restatements in an industry-year for different quintiles of competition. Industries are classified based on the 48 Fama-French industry classification. Competition is proxied by the Herfindahl-Hirshman Index. The Herfindahl-Hirshman Index is based on the sales of all firms with data available in COMPUSTAT

calculated as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of company i , and n is the number of firms in the

industry. Q1-Q5 refers to the first to the fifth quintile of the Herfindahl-Hirshman Index. Percentage of earnings restatements refers to the percentage of firms within an industry that restate their earnings, calculated as the total number of restatements in the industry as provided in the GAO report divided by the total number of firms in the industry (per COMPUSTAT). Dollar value of earnings restatements is the equally weighted averages of the dollar value of the restatement scaled by the firm's average total assets.

Panel A: Mean Percentage of Earnings Restatements across Competition Quintiles

Quintile of Herfindahl Index	Mean % of restatements	t-stat
Q1	1.94%	13.15
Q2	1.77%	5.59
Q3	1.55%	6.73
Q4	2.01%	8.32
Q5	2.62%	4.23

Panel B: Mean Value of Earnings Restatements as Percentage of Total Assets across Competition quintiles

Quintile of Herfindahl Index	Mean value of restatements	t-stat
Q1	17.71%	5.43
Q2	21.11%	4.62
Q3	18.63%	5.59
Q4	30.57%	3.77
Q5	28.57%	3.54

Table 3: Industry Level Univariate Statistics and Pairwise Correlations

The table represents univariate statistics and correlations of equally-weighted averages at the industry level for the period 2001 - 2005. Industries are classified based on the 48 Fama-French industry classification. % of restatements refers to the percentage of firms within an industry that restate their earnings and is calculated as the total number of restatements in the industry as provided in the GAO report divided by the total number of firms in the industry per COMPUSTAT. Value of restatements is defined as the equally weighted averages of the dollar value of the restatement scaled by the firm's average total assets. The Herfindahl-Hirshman Index is based on the sales of all firms with data available in COMPUSTAT

calculated as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of company i , and n is the number of firms in the

industry. The Normalized Herfindahl- Hirshman Index is defined as $(n \times H - 1)/(n-1)$. $1/\#firms$ is the inverse of the number of firms in the industry. Gindex is the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003). Eindex is the entrenchment index of Bebchuk, Cohen and Ferrell (2004). The ATI governance index is constructed following Cremers and Nair (2005). The equally-weighted average per industry of the Gindex, Eindex and ATI index are computed based on firms with available information only and assessed in 2000, 2002 and 2004. We assume no change for the years where the provisions are not provided. Leverage is defined as the sum of long term debt and debt in current liabilities divided by total assets (Compustat (data9 + data34)/data6). Institutional ownership is the average fraction of shares held by institutional investors as identified by 13F filings from the CDA Spectrum database. CEO equity ownership is defined as the sum of restricted stock grants and Black-Scholes value of options granted divided by total compensation for the year as obtained from the EXECUCOMP database. Size is the natural logarithm of the average market value of equity in the industry in each year. Panel A provides the univariate statistics. Panel B provides the piece-wise correlation coefficients and their p-value underneath.

Panel A: Univariate Statistics

Industry Level Variables	N	Mean	Std. Dev.	Min	Max
% of restatements	201	0.020	0.022	0.002	0.240
Value of restatements	150	0.233	0.323	0.007	1.796
Herfindahl	201	0.098	0.118	0.008	0.829
Normalized Herfindahl	201	0.094	0.117	0.007	0.822
1/#firms	201	0.006	0.007	0.000	0.040
Gindex	201	9.025	0.956	6.000	12.000
Eindex	201	1.526	0.367	0.333	2.600
ATI	201	2.236	0.403	1.200	4.000
Leverage	201	0.237	0.094	0.070	0.501
Institutional Ownership	201	0.361	0.095	0.102	0.624
CEO Equity ownership	201	0.449	0.131	0.000	0.754
Size	201	7.547	0.961	4.550	9.673

Table 3 contd., Panel B: Correlations (p-value provided underneath in italics)

Industry level variables	% of restatements	Value of restatements	Herfindahl	Normalized Herfindahl	1/#firms	Gindex	Eindex	ATI	Leverage	Inst. Own	CEO Equity
Herfindahl	0.475 <i><0.001</i>	0.278 <i>0.001</i>	1.000								
Normalized Herfindahl	0.468 <i><0.001</i>	0.283 <i>0.001</i>	0.992 <i><0.001</i>	1.000							
1/#firms	0.547 <i><0.001</i>	0.111 <i>0.175</i>	0.671 <i><0.001</i>	0.642 <i><0.001</i>	1.000						
Gindex	0.001 <i>0.990</i>	0.098 <i>0.232</i>	-0.168 <i><0.017</i>	-0.164 <i><0.020</i>	-0.142 <i><0.044</i>	1.000					
Eindex	-0.171 <i>0.015</i>	-0.030 <i>0.232</i>	-0.409 <i><0.001</i>	-0.410 <i><0.001</i>	-0.248 <i><0.001</i>	0.790 <i><0.001</i>	1.000				
ATI	-0.150 <i>0.033</i>	-0.047 <i>0.712</i>	-0.260 <i><0.001</i>	-0.255 <i><0.001</i>	-0.269 <i><0.001</i>	0.564 <i><0.001</i>	0.580 <i><0.001</i>	1.000			
Leverage	-0.028 <i>0.691</i>	-0.368 <i><0.001</i>	-0.102 <i>0.151</i>	-0.110 <i>0.118</i>	0.079 <i>0.265</i>	0.033 <i>0.645</i>	0.072 <i>0.312</i>	0.160 <i>0.023</i>	1.000		
Institutional Ownership	0.293 <i><0.001</i>	-0.106 <i>0.198</i>	0.065 <i>0.356</i>	0.067 <i>0.343</i>	0.117 <i>0.097</i>	0.102 <i>0.151</i>	0.092 <i>0.193</i>	0.116 <i>0.100</i>	-0.159 <i>0.024</i>	1.000	
CEO Equity	-0.158 <i><0.001</i>	-0.029 <i>0.725</i>	-0.355 <i><0.001</i>	-0.351 <i><0.001</i>	-0.295 <i><0.001</i>	-0.157 <i>0.026</i>	-0.158 <i>0.026</i>	-0.250 <i><0.001</i>	-0.323 <i><0.001</i>	-0.129 <i>0.068</i>	1.000
Size	0.069 <i>0.332</i>	-0.079 <i>0.336</i>	-0.074 <i>0.297</i>	-0.067 <i>0.346</i>	-0.134 <i>0.058</i>	-0.184 <i>0.009</i>	-0.178 <i>0.012</i>	-0.123 <i>0.083</i>	0.126 <i>0.074</i>	0.101 <i>0.152</i>	0.170 <i>0.016</i>

Table 4: Industry Level Regressions (percentage/frequency earnings restatements)

The table reports coefficients and p-values of fixed effects panel data regressions with year-dummies. Standard errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms with available data between 2001 and 2005. The dependent variable in all regressions is the percentage/frequency of earnings restatements, calculated as the total number of restatements in the industry as provided in the GAO report divided by the total number of firms in the industry per COMPUSTAT. The Herfindahl-Hirshman Index is based on the sales of all firms with data available in COMPUSTAT

calculated as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of company i , and n is the number of firms in the industry. The Normalized Herfindahl-Hirshman Index

is defined as $(n \times H - 1)/(n-1)$. $1/\#firms$ is the inverse of the number of firms in the industry. Gindex is the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003). E-index is the entrenchment index of Bebchuk, Cohen and Ferrell (2004). The ATI governance index is constructed following Cremers and Nair (2005). The equally-weighted average per industry of the Gindex, Eindex and ATI index are computed based on firms with available information only and assessed in 2000, 2002 and 2004. Leverage is defined as the sum of long term debt and debt in current liabilities divided by total assets (Compustat (data9 + data34)/data6). Institutional ownership is the average fraction of shares held by institutional investors as identified by 13F filings from the CDA Spectrum database. CEO equity ownership is defined as the sum of restricted stock grants and Black-Scholes value of options granted divided by total compensation for the year as obtained from the EXECUCOMP database. Size is the natural logarithm of the average market value of equity in the industry in each year.

<i>Industry Level Variables</i>	<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>	
	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>Coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	0.086	0.058	0.096	0.007	0.092	0.017	0.088	0.014				
Normalized Herfindahl									0.095	0.009		
1/#firms											1.695	0.001
Gindex			0.002	0.148					0.002	0.179	0.003	0.060
Eindex					0.002	0.761						
ATI							-0.001	0.853				
Leverage			0.015	0.261	0.012	0.388	0.012	0.419	0.016	0.256	-0.016	0.346
Institutional Ownership			0.073	0.005	0.076	0.007	0.077	0.007	0.074	0.005	0.045	0.027
CEO Equity			0.011	0.484	0.004	0.823	0.001	0.921	0.009	0.546	0.000	0.983
Size			0.002	0.313	0.002	0.361	0.002	0.392	0.002	0.343	0.004	0.068
Errors Clustered	Industry		Industry		Industry		Industry		Industry		Industry	
R-squared	0.36		0.41		0.40		0.40		0.40		0.45	
Observations	201		201		201		201		201		201	

Table 5: Industry Level Regressions (dollar value of earnings restatements)

The table reports coefficients and p-values of fixed effects panel data regressions with year-dummies. Standard errors are clustered at the industry level. All variables are equally-weighted at the industry level using firms with available data between 2001 and 2004. The dependent variable in all the regressions is the dollar value of restatements calculated as the equally weighted averages of the dollar value of the restatement scaled by the firm's average total assets. The

Herfindahl-Hirshman Index is based on the sales of all firms with data available in COMPUSTAT calculated as $H = \sum_{i=1}^n (\Pi_i)^2$, where Π_i is the market share of

company i , and n is the number of firms in the industry. The Normalized Herfindahl-Hirshman Index is defined as $(n \times H - 1)/(n-1)$. $1/\#firms$ is the inverse of the number of firms in the industry. Gindex is the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003). Eindex is the entrenchment index of Bebchuk, Cohen and Ferrell (2004). The ATI governance index is constructed following Cremers and Nair (2005). The equally-weighted average per industry of the G-index, E-index and ATI index are computed based on firms with available information only and assessed in 2000, 2002 and 2004. Leverage is defined as the sum of long term debt and debt in current liabilities divided by total assets (Compustat (data9 + data34)/data6.). Institutional ownership is the average fraction of shares held by institutional investors as identified by 13F filings from the CDA Spectrum database. CEO equity ownership is defined as the sum of restricted stock grants and Black-Scholes value of options granted divided by total compensation for the year as obtained from the EXECUCOMP database. Size is the natural logarithm of the average market value of equity in the industry in each year.

<i>Industry Level Variables</i>	<i>Value of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>	
	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>Coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	0.734	0.001	0.078	0.002	0.816	0.006	0.633	0.033				
Normalized Herfindahl									0.795	0.001		
1/#firms											7.846	0.183
Gindex			0.079	0.008					0.078	0.007	0.064	0.051
Eindex					0.147	0.119						
ATI							0.063	0.504				
Leverage			-1.286	0.000	-1.325	0.000	-1.381	0.000	-1.279	0.000	-1.492	0.000
Institutional Ownership			-1.078	0.006	-1.032	0.024	-0.960	0.045	-1.075	0.006	-1.209	0.006
CEO Equity			0.111	0.669	-0.039	0.883	-0.126	0.604	0.110	0.669	-0.120	0.647
Size			0.008	0.660	0.009	0.669	0.004	0.849	0.007	0.695	0.012	0.611
Errors Clustered	Industry		Industry		Industry		Industry		Industry		Industry	
R-squared	0.09		0.30		0.28		0.26		0.30		0.27	
Observations	150		150		150		150		150		150	

Table 6: Interaction between Corporate Governance and Product Market Competition

The table reports coefficients and p-values of fixed effects panel data regressions with year-dummies. Standard errors are clustered at the industry level. All variables are equally-weighted at the industry level. Regressions 1 to 3 use percentage of earnings restatements as the dependent variable for the period 2001 - 2005. Regressions 4 to 6 use the dollar value of restatements as the dependent variable for the period 2001 - 2004. High Herfindahl Dummy is equal to 1 if the Herfindahl-Hirshman Index of the industry in which the firm operates is above the median Herfindahl-Hirshman Index in that year for all industries. See Table 3 for the description of the remaining variables.

<i>Industry Level Variables</i>	<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>	
	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	0.107	0.007	0.099	0.017	0.099	0.011
High Herfindahl Dummy * Gindex	-0.001	0.239				
High Herfindahl Dummy * Eindex			-0.002	0.323		
High Herfindahl Dummy * ATI					-0.002	0.228
Gindex	0.003	0.103				
Eindex			0.004	0.539		
ATI					0.002	0.720
Leverage	0.018	0.194	0.014	0.330	0.014	0.332
Institutional Ownership	0.066	0.012	0.070	0.011	0.070	0.011
CEO Equity	0.013	0.414	0.005	0.749	0.003	0.812
Size	0.002	0.426	0.002	0.447	0.001	0.503
Errors Clustered	Industry		Industry		Industry	
R-squared	0.42		0.41		0.41	
Observations used	201		201		201	

<i>Industry Level Variables</i>	<i>Value of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>	
	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	0.891	0.001	0.878	0.005	0.735	0.018
High Herfindahl Dummy * Gindex	-0.005	0.317				
High Herfindahl Dummy * Eindex			-0.019	0.525		
High Herfindahl Dummy * ATI					-0.020	0.346
Gindex	0.084	0.003				
Eindex			0.162	0.077		
ATI					0.083	0.364
Leverage	-1.276	0.001	-1.322	0.000	-1.372	0.001
Institutional Ownership	-1.158	0.005	-1.081	0.020	-1.030	0.035
CEO Equity	0.136	0.604	-0.025	0.925	-0.109	0.659
Size	0.005	0.786	0.007	0.742	0.001	0.956
Errors Clustered	Industry		Industry		Industry	
R-squared	0.30		0.28		0.28	
Observations used	150		150		150	

Table 7: Non-linear Effects of Product Market Competition

The table reports coefficients and p-values of fixed effects panel data regressions with year-dummies on sub-samples based on the level of competition. An industry is classified as High Concentration if the Herfindahl-Hirshman Index for that industry is above the median value of the Herfindahl-Hirshman Index and the industry is classified as Low Concentration if the Herfindahl-Hirshman Index for that industry is below the median value of the Herfindahl-Hirshman Index. Standard errors are clustered at the industry level. All variables are equally-weighted at the industry level. Regressions 1 and 2 use the percentage of restatements as the dependent variable for the period 2001-2005. Regressions 3 and 4 use the dollar value of restatements as the dependent variable for the period 2001 - 2004. See Table 3 for the definitions of the other variables.

	<i>% of restatements</i>		<i>% of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>	
	Low Concentration (i.e. Low Herfindahl index)		High Concentration (i.e. High Herfindahl index)		Low Concentration (i.e. Low Herfindahl index)		High Concentration (i.e. High Herfindahl index)	
<i>Industry Level Variables</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	-0.218	0.026	0.114	0.003	-0.726	0.760	0.731	0.003
Gindex	-0.001	0.776	0.004	0.074	0.049	0.351	0.062	0.119
Leverage	0.031	0.228	0.025	0.283	-0.566	0.325	-1.669	0.004
Institutional Ownership	0.061	0.034	0.073	0.008	0.029	0.936	-0.807	0.202
CEO Equity	0.027	0.345	0.019	0.241	0.945	0.009	0.287	0.374
Size	-0.002	0.473	0.002	0.349	-0.013	0.779	0.007	0.733
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.09		0.42		0.30		0.29	
Observations used	100		101		75		75	

Table 8: Earnings Restatements and Capital Market Effects

The table displays coefficients and p-values of fixed effects panel data regressions with year-dummies on sub-samples based on the average level of finance-raised by the industry. An industry is classified as High Finance-Raised if the level of average finance raised by that industry is above the median value and the industry is classified as Low Finance-Raised if the level of average finance raised by that industry is below the median value. Standard errors are clustered at the industry level. All variables are equally-weighted at the industry level. Regressions 1 and 2 use percentage of restatements as the dependent variable and uses available data between 2001 and 2005. Regressions 3 and 4 use the value of restatements as the dependent variable and uses available data between 2001 and 2004. See Table 3 for the definitions of the other variables. Finance raised is defined as the sum of the proceeds from sale of common and preferred stock (Compustat data 108) and from the issuance of long-term debt (Compustat data 111) scaled by average total assets. Panel A provides the results when the sample is partitioned by levels of finance-raised alone and not by competition. Panel B provides the results when the sample is partitioned by competition and then by the levels of finance-raised. Panel B uses percentage of restatements as the dependent variables.

Panel A: Separation into Low and High Levels of External Finance Raised

	<i>% of restatements</i>		<i>% of restatements</i>		<i>Value of restatements</i>		<i>Value of restatements</i>	
	Low Finance Raised		High Finance Raised		Low Finance Raised		High Finance Raised	
<i>Industry Level Variables</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	0.051	0.004	0.125	0.013	0.031	0.954	0.893	0.001
Gindex	-0.000	0.916	0.006	0.015	0.050	0.321	0.058	0.090
Leverage	0.023	0.207	0.028	0.129	-1.667	0.002	-1.261	0.000
Institutional Ownership	0.048	0.004	0.078	0.014	-1.322	0.067	-0.299	0.385
CEO Equity	0.012	0.318	0.019	0.434	-1.75	0.088	0.295	0.223
Size	0.002	0.271	0.001	0.753	-0.021	0.372	0.064	0.034
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.18		0.43		0.33		0.32	
Observations used	100		101		75		75	

Table 8, Contd.

Panel B: Separation into Low and High Levels of External Finance Raised Conditioned on Level of Competition

	<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>		<i>% of restatements</i>	
	Low level of concentration				High level of concentration			
	Low Finance Raised		High Finance Raised		Low Finance Raised		High Finance Raised	
<i>Industry Level Variables</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>	<i>coef</i>	<i>p-value</i>
Herfindahl	-0.271	0.007	-0.112	0.503	0.060	0.005	0.134	0.007
Gindex	-0.006	0.116	-0.002	0.438	0.000	0.843	0.009	0.015
Leverage	0.055	0.021	0.058	0.248	0.008	0.788	0.027	0.237
Institutional Ownership	0.089	0.021	0.062	0.102	0.048	0.056	0.100	0.028
CEO Equity	-0.007	0.706	0.088	0.096	0.018	0.152	0.009	0.758
Size	-0.002	0.274	-0.006	0.179	0.002	0.536	0.003	0.439
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.16		0.18		0.28		0.54	
Observations used	50		50		50		51	