Product Market Competition and Financial Accounting Misreporting

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Abstract

We show that, on average, the level of product market competition acts as a disciplining force constraining managers from misreporting accounting information. Further, in a quasi-natural experiment that uses shifts in import tariffs to identify exogenous intensification of competition, difference-in-difference estimations support the *causal* nature of the disciplining effect of competition on misreporting. Moreover, we find that the relation is stronger in industries with higher levels of financial statement comparability. Our findings are robust across alternate measures of misreporting including restatements and accounting irregularities as well as to measures of product market competition including those based on the U.S. Census data.

Keywords: Product Market Competition; Disclosure; Financial Reporting Quality; Earnings Restatements; Tariffs.

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

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1. Introduction

In this paper, we examine whether product market competition disciplines managers and reduces instances of financial accounting misreporting. Consistent with the views expressed in the existing literature (e.g., Healy and Wahlen, 1999), we define financial accounting misreporting as the willful misrepresentation of the true underlying economic performance of a firm. Our research question is motivated by opposing predictions advanced in theoretical studies across the accounting, economics and finance literatures as well as conflicting prior empirical evidence on the role of product market competition in shaping a firm's information environment and its financial reporting practices.

There are two different mechanisms that the literature advances through which product market competition can affect financial accounting misreporting. One can consider financial accounting misreporting as an outcome of a firm's overall disclosure decision to withhold the true underlying information about the firm's economic performance (Verrecchia 1999; Verrecchia 1983) given the costs and benefits of doing so.[1] Under this view, on the one hand, firms in more competitive industries face higher costs associated with disclosures and might find it optimal to misreport in order to provide less useful information to its current and future competitors (e.g., Gertner, Gibbons and Scharfstein, 1988; Verrecchia, 1983, among others). On the other hand,

[1] Although much of the accounting literature focusing on issues related to product market competition relates to voluntary disclosures, studies such as Verrecchia (1999) and Verrecchia (1983) argue that quality of public accounting information and the interpretation of GAAP can be considered as a part of the firm's overall discretionary disclosure policies. For example, Verrecchia (1999, p. 272) states "…commitment to a level of disclosure include: a commitment to a level of disclosure that achieves a particular quality of earnings under the auspices of a broad set of choices as allowed under generally accepted accounting principles (GAAP)…"

firms in more competitive industries are less likely to misreport and follow better disclosure and financial reporting practices since not providing information and misreporting could be interpreted by potential entrants to the product market as good news (e.g., Darrough and Stoughton, 1990).

In contrast, the focus of this study is on an alternative mechanism advanced in the economics and finance literatures on the interaction between product market competition and financial reporting. Prior research argues that product market competition can be an efficient disciplinary and monitoring mechanism to curb agency problems (e.g., Hart, 1983). For example, Shleifer and Vishny (1997) claim that "product market competition is probably the most powerful force towards economic efficiency in the world." Recent empirical studies seem to support the idea that product market competition provides incentives for managers to be more closely aligned with shareholders' interests (e.g., Guadalupe and Pérez-González, 2010; Giroud and Mueller, 2010). Misreporting of accounting information can be considered as a classic example of an agency problem where firms' managers forgo long-term shareholder value for short-term private gains (e.g., Narayanan, 1985; Stein, 1989; von Thadden, 1995). While the notion that product market competition disciplines managers' incentives with regards to financial reporting practices is appealing, it is harder to establish the precise mechanism by which this occurs.[2] Recent theoretical papers from the economics literature provide one mechanism through which product market competition disciplines reporting. Specifically, a firm releasing information that is competing with another firm that also releases information runs the risk that, if it distorts its public signal, the competitor's report will expose the

[2] Attempts to formalize the notion that product market competition mitigates managerial agency problems have proven difficult. For example, Holmström and Tirole (1989) conclude: "*Apparently, the simple idea that product market competition reduces slack is not as easy to formalize as one might think.*"

inaccuracy and thus reduce investors' assessments of the distorting firm's quality.[3] This suggests that competition can indeed discipline financial reporting. The above discussion implies that *ex-ante*, the relation between product market competition and financial accounting reporting is 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 financial information of higher quality. Examining the interplay between product market competition and financial accounting misreporting is imperative in furthering our understanding of the effectiveness of product market competition as a disclosure-shaping mechanism.

First, using earnings restatements as a proxy for financial accounting misreporting, we examine the relation between product market competition and the frequency of earnings restatements. On average, we find that product market competition does have a disciplining effect on managers in the sense that the frequencies of earnings restatements in a particular industry are constrained by the level of competition. Our findings are robust to employing accounting irregularities or dollar value of restatements rather than the frequency of earnings restatements as the measure of financial accounting misreporting as well as to alternate measures of product market competition including empirical measures based on U.S. Census data as well as to different attributes of product market competition such as entry costs, product substitutability and market size.

Establishing the link between product market competition and firms' information environment is a difficult task given the endogenous relationship between these two

[3] A few theoretical papers have in fact modeled this argument although not in the context of misreporting but in the context of bias in information in general (Gentzkow and Shapiro (2006), and Besley and Prat (2006)); and there is recent empirical evidence testing this interplay between competition and bias (Hong and Kacperczyk 2010).

constructs. Not surprisingly, extant empirical studies provide conflicting evidence on the relationship between competition and firms' disclosure and reporting practices. In this study, we use import tariff reductions as a source of an exogenous variation in product market competition with which we identify the causal effect of a change in competition on financial misreporting. As reported by Bernard, Jensen, and Schott (2006), the lessening of trade barriers triggers significant intensification of competitive pressures. As such, tariff reductions represent real-side shocks that exogenously shift the competitive landscape of industries (e.g., Fresard 2010). We find that subsequent to tariff reductions, the frequency of restatements declines providing causal evidence on the disciplining role of competition.

To further shed light on the disciplining role of competition, we investigate the extent to which competition affects misreporting in industries where financial statements are highly comparable. The theory underlying the disciplining channel of competition suggests that the effect of competition can be greatest when the financial statements of one firm provide information about that of other firms. We classify industries based on the comparability of financial statements as computed in DeFranco, Kothari and Verdi (2011) and find that the disciplining effect of competition is greater in industries with higher levels of financial statement comparability.

If competition indeed disciplined managers, then regulations that aim at increasing transparency and disclosure should have lower benefits in more competitive industries versus less competitive industries. In order to test this prediction, we conduct an event study analysis around the significant dates of rule-making related to the Sarbanes-Oxley Act of 2002 (SOX) that were examined in Zhang (2007). We find that

the stock market reactions to these events were more negative in more competitive industries implying that the net benefits of the regulations were lower in these industries.

While the negative relation between product market competition and the frequency of earnings restatements is inconsistent with a proprietary costs argument advanced in the disclosure literature, we nevertheless examine whether the documented relationship between product market competition and financial misreporting varies with the levels of proprietary costs. Using R&D expenditures as a proxy for proprietary costs, we find that the relation between product market competition and earnings restatements to be similar for the subsamples of industries with low as well as high levels of proprietary costs. This finding suggests that the proprietary cost mechanism is not driving the observed empirical relation between product market competition and financial accounting misreporting. Finally, we also find that the documented inverse relation between product market competition and earnings restatements is stronger in industries where high level of external financing is raised.

In this paper we make three contributions to the existing accounting literature. Foremost, we contribute to the literature that examines the relation between product market competition and disclosure and financial reporting policies by advancing an alternative mechanism through which product market competition affects managers' incentives to report truthfully. While the extant accounting literature has focused on a proprietary cost channel in the context of disclosure and reporting practices, our study takes an agency perspective advanced in the economics and finance literatures. In addition, prior empirical research examined the effect of product market competition on levels of voluntary disclosures such as the decision to issue earnings guidance (e.g.,

Frankel, McNichols and Wilson 1995) or segment reporting (e.g., Berger and Hann 2007) providing inconsistent and mixed results. Our study extends this literature by examining a firm's mandatory disclosure and reporting practices.

Second, to the best of our knowledge, this study is the first to use an exogenous shock to product market competition to understand the causal nature of relation between competition and firms' information environments. The extant empirical evidence is mixed and one potential explanation for the conflicting evidence, and a more general concern with the existing literature, is the endogenous relation between competition and a firms' information environment since these two constructs are expected to be jointly determined. By using reduction in tariffs as an exogenous increase in firms' competition, our results are less susceptible to endogeneity concerns that plague the existing literature.

Third, our study contributes to the literature understanding the disciplining role of product market competition. Theory suggests two channels through which product market competition disciplines managers – through the increased risk of firm failure associated with competition or through an enhanced information environment. Recent studies have aimed at examining empirically this theoretical notion, which suggests that product market competition is an efficient disciplining mechanism (e.g., Aggarwal and Samwick 1999; Guadalupe and Perez-Gonzalez 2010; Giroud and Mueller 2010). To date, there is no direct empirical evidence on the effect of product market competition on the information environment. We contribute to this burgeoning literature by focusing on how product market competition could affect a manager's financial reporting incentives and, hence, can affect the firm's information environment.

Our findings suggest that the level of competition in a firm's industry is a significant determinant of the corporate financial information environment. Given that the reduction in information asymmetry plays an important role in mitigating agency conflicts, our results are relevant for addressing stewardship problems (e.g., Jensen and Meckling, 1976) between owners and managers. Therefore, the evidence in our paper relates to studies addressing the design and implementation of certain monitoring mechanisms, such as relative and pay for performance evaluation. Our findings also suggest that policy efforts to improve transparency could benefit from focusing primarily on firms in non-competitive industries.

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. Related Literature and Hypothesis Development

The accounting literature to date has analyzed how product market competition shapes a firm's information environment solely through a proprietary cost mechanism. Although much of the literature is interpreted in the context of voluntary disclosure, Verrecchia (1999) argues that quality of accounting data released by a manager can be considered as a part of the firm's discretionary disclosure policies and as such is related to proprietary costs. For example, Verrecchia (1999, p.272) states "Interpretations of an entrepreneur's commitment to a level of disclosure include: a commitment to a level of disclosure that achieves a particular quality of earnings under the auspices of a broad set of choices as allowed under generally accepted accounting principles (GAAP)…"

Several analytical models advanced in the literature (e.g., Darrough and Stoughton, 1990; Wagenhofer, 1990; Gal-Or, 1985; Gertner, Gibbons and Scharfstein, 1988) investigate the costs associated with firms' disclosure and financial reporting decisions in the product market setting but their predictions are mixed. On the one hand, Darrough and Stoughton (1990) predict that firms in more competitive industries will follow better disclosure policies. Their analytical model predicts that in industries with low entry costs, potential entrants could interpret withholding information as possible future good news about the industry due to expected positive shocks to product demand. Accordingly, firms in more competitive industries will follow better disclosure policies and are less likely to misreport financial information. On the other hand, Gal-Or (1985) and Gertner, Gibbons and Scharfstein (1988) predict that firms in more competitive industries will have less forthcoming and informative disclosure policies and are more likely to misreport. Specifically, the implications of the models advanced in these studies suggest that in more oligopolistic industries in which incumbents have more interdependent investment strategies it is optimal for firms to have less informative disclosure policies since information disclosed by one firm could be subsequently used against it by its rivals. In a similar vein, Verrecchia (1990) argues that greater product market competition inhibits better disclosures in markets comprised of mature competitors. Further, Wagenhofer (1990) shows that although there is always a full-disclosure equilibrium, there might exist partial-disclosure equilibria suggesting that the relation between product market competition and a firm's disclosure policies is unclear *ex-ante*.

The existing empirical evidence building on the above analytical predictions is limited and unclear. For example, consistent with the view that more competitive industries will have more informative disclosures, Harris (1998) finds that the decision of a firm to provide separate segment disclosures of its operations is negatively related to industry concentration, thus positively related to the level of competition.[4] However, in a recent study, Verrecchia and Weber (2006) document that the probability of a firm to provide proprietary information is positively related to industry concentration consistent with the notion that product market competition and disclosure are negatively related. Interestingly, Berger and Hann (2007) find that proprietary costs related to product market competition are only a minor consideration in firms' decisions to provide segment disclosures. More importantly, in their survey paper, Healy and Palepu (2001) posit that the empirical literature offers little direct evidence on how competition relates to disclosure policies. Collectively, the literature thus far has solely focused on proprietary costs as the channel through which product market competition affects firms' disclosure policies and the empirical evidence on this channel is at best mixed.

In this study, we advance an alternative channel through which product market competition could affect a firm's financial reporting quality, especially misreporting. Several studies suggest that the disciplining role of product market competition is an important mechanism through which competition can relate to misreporting. Beginning with Hart (1983), it has long been argued that product market competition can be effective in curtailing manager's misbehavior. Numerous theoretical papers formalize this idea by examining the potential channels through which product market competition can

[4] Recall that a higher concentration ratio is suggestive of a less competitive industry. A concentration ratio of one suggests that the industry consist of a single monopolist.

have an effect on managerial slack (e.g., Schmidt, 1997; Raith, 2003). Recent empirical studies seem to support the idea that product market competition indeed provides incentives for managers to be more closely aligned with shareholders' interests (e.g., Guadalupe and Pérez-González, 2010; Giroud and Mueller, 2010). Under this disciplining/monitoring view, 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 private gains (e.g., Narayanan, 1985; Stein, 1989; von Thadden, 1995).

While the notion that product market competition disciplines managers' incentives with regards to financial reporting practices, it is harder to establish the precise mechanism by which this occurs. Recent literature in economics provides a convincing argument on how competition can reduce bias in the information provided. This literature argues that competition from suppliers of information makes it more difficult for a single supplier to suppress information (Hong and Kacperczyk, 2010; Gentzkow and Shapiro, 2006; Besley and Prat, 2006). In the context of firms in a product market setting, the larger the number of firms, the more costly it will be for a single firm to keep unfavorable news suppressed or present a overly rosy picture of a firm's prospects. For example, Gentzkow and Shapiro (2006) provide an "independence rationale" for how competition can eliminate bias. Competition means a greater diversity of preferences among suppliers of information (i.e., firms or managers in our context) and hence a greater likelihood of drawing at least one independent supplier (i.e., manager) whose preference is such that she does not want to withhold news and instead provide the highest quality of financial reports. This supplier's independence can have a disciplining effect on other suppliers. In

other words, higher levels of competition suggest that there are more firms in the industry to benchmark performance against and, hence, detecting a fraud becomes easier. Hong and Kacperczyk (2010) provide empirical evidence in the context of analysts and document that competition reduces the biases in analyst earnings forecasts. Thus, this literature suggests that one should observe fewer instances of misreporting in competitive industries.

Building on the above predictions and findings, our primary research objective is to examine whether product market competition decrease the extent of accounting misreporting in a particular industry. One should note that the implicit assumption underlying our research objective is that the effect of competition under the information channel discussed in Hong and Kacperczyk (2010) can be greatest when the financial statements of one firm provide information about that of other firms. To this extent, we expect that the role of product market competition as a disciplining force to be greater in industries where financial statements are comparable. We examine this question and provide evidence on this related issue as well.

One should also note that there is an additional tension in this context. In addition to proprietary costs, there are other conflicting forces that might, in fact, lead to opposite predictions. The catering view suggests that competition can increase bias if the end users (i.e., investors) want to receive financial reports that conform to their priors (e.g., Mullainathan and Shleifer, 2005). Product market competition can also increase misreporting by inducing opportunistic behavior. For example, Narayanan (1985) observes that top managers may take actions that boost measures of short-term performance at the expense of creating long-run shareholder value if they are concerned

with their personal position in the labor market of top executives. Such concerns may increase with product market competition because profitability and the ability to achieve superior performance declines with the increase in competition. In a product market setting, DeFond and Park (1999) find that CEO turnover is higher in more competitive industries. Additionally, managers with stock-based compensation may misreport to boost stock prices (e.g., Burns and Kedia 2006) and thus obtain private gains. This strand in the existing literature suggests that financial reporting quality is expected to be lower in more competitive industries. Thus, the net effect of product market competition on misreporting is an interesting empirical question.

3. Data and Variables Definition

In this section we describe the data we use in this study. Since all of our tests are performed at the industry-level, we form a proxy for industry level variables by taking the equal-weighted industry average of each firm's variable of interest. We use the 48 Fama-French industry classifications (Fama and French, 1997).

The primary data source is the information on earnings restatements collected by the General Accounting Office (GAO). We utilize two industry level measures relating to earnings restatements – the frequency/percentage 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. 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.[5] As an alternate proxy for misreporting we use accounting irregularities. The GAO restatement database includes both restatements due to accounting errors i.e., unintentional interpretation of GAAP and restatements due to irregularities i.e., intentional misreporting of financial information as defined by SAS No. 53, AICPA (1988). Since the objective of our study is to understand intentional misreporting, it is important to examine the sensitivity of our results focusing on earnings restatements that are due to intentional misreporting and not merely unintentional errors. We identify accounting irregularities based on Hennes et al. (2008) who provide a detailed and comprehensive analysis of the different restatements covered in the GAO report.

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. 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

[5] The conclusions in this study are unaltered when we append the sample with data on restatements from audit analytics for years later than 2006.

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.[6]

The other main variables we employ in our analysis are industry measures of product market competition, for which we mainly use the Herfindahl-Hirschman Index based on the sales of all firms with data available in COMPUSTAT. The Herfindahl-Hirschman 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-Hirschman Index is directly related to the number of firms in a particular industry, we also use the Normalized Herfindahl-Hirschman Index. We define this variable as (n x Herfindahl – 1)/(n – 1), where n is the number of firms in a given industry. As an additional proxy for product market competition, we utilize the inverse of the number of firms in the industry.

In order to shed light on the causal nature of the relation between competition and misreporting, we employ tariff reductions to identify exogenous increases in product market competition. According to the vast literature on barriers to trade, the globalization of economic activities and trade openness bring major changes in the competitive configuration of industries; see Tybout (2003) for a survey. In particular, as reported by Bernard, Jensen, and Schott (2006), the lessening of trade barriers triggers significant intensification of competitive pressures. As such, tariff reductions represent real-side shocks that exogenously shift the competitive landscape of industries. More recently,

[6] Our results are not sensitive to this choice. For example, our results hold even when we assume that the restatements affect two years prior.

studies that examine questions on the interaction between product market competition and corporate finance have turned to tariff reductions to help better understand causality (e.g., Fresard 2010). The tariff data used in this study are the same that were used in Fresard (2010). Specifically, Feenstra (1996) and Feenstra, Romalis, and Schott (2002) compile product-level U.S. import data. These data span the period 1972–2001 and include 67 of the 105 manufacturing industries (2000–3999 SIC range). For each industry-year, Fresard (2010) computes the ad valorem tariff rate as the duties collected by U.S. Customs divided by the Free-on-Board value of imports. Next, to identify sizeable variation in barriers to trade, we characterize tariff reductions in terms of the deviations in the yearly changes in tariffs from their median level. Accordingly, a tariff cut occurs in a specific industry-year when a negative change in the tariff rate is two or three times larger than its median change.

We include several control variables that have been documented in prior research to affect financial accounting misreporting. We include a measure of corporate governance that may discipline and monitor managers. 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 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. These data are 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 discipline managers (e.g., 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 these data from 13F filings through the CDA Spectrum database.

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, 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. We use the Execucomp database to calculate this variable.

Prior research examining the determinants of earnings manipulations indicates that capital structure and firm size are two important such determinants. The presence of agency costs gives rise to demand for monitoring, and the information provided in a firm's financial statements may be used to mitigate agency costs (e.g., Jensen and Meckling, 1976). Highly leveraged firms have higher agency costs and thus a greater demand for monitoring.[7] Therefore, we predict financial reporting practices 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 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 overall firm's information environment, by including the firm's size. We use the market value of equity

[7] 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.

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 1 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. Figure 1, Panel B provides additional evidence on the type of firms that restate their earnings. We can observe an upward trend in the equity market value 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. In

Table 1 we provide the distribution of earnings restatements across the Fama-French 48 industries. The service-based industries seem to have the highest number of restatements followed by the hospitality industry.

4.2 Product Market Competition and Misreporting

In Table 2, Panel A we document the average frequency of earnings restatements in an industry-year across the competition quintiles.[8] In Table 2, 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 document any discernible trend in the data, it appears that the Herfindahl-Hirschman Index and the value of restatements are positively correlated.

In Table 3, Panel A we document the univariate statistics on the variables that we use in our analysis. In Table 3, Panel B we provide a detailed correlation matrix. We find that all correlations between measures of 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-Hirschman Index), the lower the frequency of earnings restatements.

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 a measure of misreporting. In Panel A, the proxy for misreporting is the frequency of earnings restatements in a given industry-year. Standard errors are clustered by industry

[8] We notice that the relation between competition and the frequency of earnings restatements could be non-monotonic. The number of restatements decreases as the Herfindahl-Hirschman Index increases till the third quintile and then the relation reverses. This observed non-monotonic relation is interesting and we explore it further in Section 4.9.

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 relation 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.

In Table 4 Panel A, Column 5 we use the Normalized Herfindahl-Hirschman Index as an alternate measure for product market competition. One argument against the use of a simple Herfindahl-Hirschman 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-Hirschman Index we can directly control for the number of firms competing in a specific industry. The relation between product market competition and the 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 alternative specification as well.

In Table 4 Panel B, we use accounting irregularities as an alternate proxy for misreporting. As discussed in Section 3, we identify accounting irregularities based on Hennes et al. (2008) who provide a detailed and comprehensive analysis of the different restatements covered in the GAO report. Accordingly, we analyze a sub-sample of 575 accounting irregularities spanning 126 industry-year observations and document our findings in Tables 4 Panel B. As evidenced from Table 4 Panel B Column 1, increases in industry concentration ratios are statistically significantly associated with higher percentages of accounting irregularities. In Column 2, we verify that this relation is robust to the inclusion of 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 accounting irregularities continues to hold. In Columns 3 through 6 we verify the robustness of the results to additional measures of product market competition. To summarize, the last set of findings further bolsters the earlier conclusion that, on average, product market competition and financial reporting quality are positively associated. We interpret these findings to suggest that, on average, product market competition acts as a monitoring and disciplining mechanism for managers.

In Table 4 Panel C, we employ the average dollar value of earnings restatements as a fraction of total assets in an industry-year as the measure of misreporting. As before, standard errors are clustered by industry. Consistent with our results on the frequency of earnings restatements and accounting irregularities, Column 1 indicates that increases in industry concentration ratios (lower product market competition) are significantly

associated with higher dollar values of earnings restatements. In Column 2 we report the findings after including the control variables we identified before based on the evidence in prior research. As robustness checks, consistent with our previous analysis, in Columns 3 and 4 we use alternate measures of shareholder rights and in Columns 5 and 6 we use alternate measures of product market competition. Overall, we observe that the main results still hold in all cases and are not sensitive to these alternative empirical measures and controls.

In sum, Table 4 provides strong empirical evidence suggesting that, on average, product market competition and financial reporting quality are positively associated and that, product market competition, on average, acts as a monitoring and disciplining mechanism.

4.3 Tariff Reductions: A quasi-natural experiment

The extant empirical literature that has examined the relation between product market competition and a firm's information environment has been plagued by endogeneity concerns and overcoming this concern has been a major challenge in understanding the nature of the relation between the two constructs. In this section, we exploit a quasi-natural experiment setting to provide evidence on the causal nature of the relation between product market competition and misreporting. Specifically, we examine how the percentages of restatements change in industries in response to unexpected variations in industry-level import tariffs reductions. As discussed above, tariff reductions represent shocks that exogenously shift the competitive landscape of industries and hence modify reporting incentives for firms. To identify the effect of product market

competition on misreporting, we estimate the following difference-in-difference regression:

$$\Delta restatements_{jt} = \alpha_t + \beta CUT_{jt} + \sum_{k=1}^{5} \gamma_k Control_{kjt} + \varepsilon_{jt}$$

where *j* indexes industry and *t* indexes time. $\Delta restatements$ is the year-on-year change in the percentage of restatements in a given industry.[9] The variable *CUT* is a dummy variable that equals one if industry *j* has experienced a tariff cut in the year *t* and zero otherwise. As discussed above, a tariff cut occurs in a specific industry-year when a negative change in the tariff rate is two or three times larger than its median change. Since tariff reductions occur in different industries in different periods, the control group comprises of industries that do not experience a reduction in tariff in year *t*, even if they have already experienced one or will experience one later on. The above equation essentially represents a differences-in-differences specification. As discussed by Bertrand, Duflo, and Mullainathan (2004), the differences-in-differences approach has become an increasingly popular research design for identifying causal effects.

Table 5 presents the estimates of the difference-in-difference regressions for the two alternate definitions of tariff reduction. Notably, the coefficient on *CUT* is negative and significant in Columns 1 and 2. This suggests that a reduction in tariffs, i.e., an increase in product market competition causes a decline in the percentage of restatements. Further, we observe that the coefficient is larger in Column 2 than in Column 1 indicating that the effect is proportional to the extent of the tariff cut. Columns 3 and 4 examine the possibility that firms optimally anticipate tariff reductions, in which case we would expect an "effect" of tariff reductions prior to their implementation.

[9] We arrive at identical conclusions when we use accounting irregularities as the proxy for misreporting.

Specifically, we replace *CUT* by its lagged value and find no evidence in favor of an anticipated effect.

In sum, this quasi-natural experiment provides strong evidence that a casual relation exists between product market competition and financial misreporting.

4.4 Role of Financial Statement Comparability

Thus far, we have presented evidence regarding the disciplining effect of product market competition on misreporting. While the tariff reduction tests above are designed to shed light on causality, the interpretation of our results would be more convincing if evidence on the mechanism through which competition influences misreporting can be provided. In this section we examine the hypothesis that the effect of product market competition will be stronger in industries with greater comparability amongst financial statements. We employ the industry-level financial statement comparability score (FSC) as computed in DeFranco et al. (2011). As discussed in DeFranco et al. (2011), the measure is built on the concept that for a given set of economic events, two firms have comparable accounting systems if they produce similar financial statements.

For each year, we rank the sample industries according to either their mean or median industry level FSC and assign industries below and above median values to “low” and “high” comparable industries, respectively. We then examine the relation between percentage restatements and competition in these sub-samples. The results are presented in Table 6 where Columns 1 and 3 correspond to industries with low financial statement comparability. We find that the coefficient on competition is insignificant in these subsamples. In contrast, the coefficients are positive and significant in Columns 2 and 4 that correspond to industries where financial statement comparability is high. In other

words, product market competition is a disciplining force in industries with high levels of financial statement comparability. This finding provides evidence on the underlying mechanism through which product market competition influences financial accounting misreporting.

4.5 Costs of transparency regulations in competitive industries

In this section, we examine whether transparency and governance regulations are less needed in more competitive industries relative to less competitive industries. If indeed product market competition disciplines firms' financial reporting practices then regulations that aim at increasing transparency are unnecessary in more competitive industries. We test this prediction in the setting of the Sarbanes-Oxley Act of 2002 (SOX) using an event study methodology. SOX regulations were passed in July 2002, in response to a number of high-profile accounting frauds starting in late 2001. SOX has been widely considered the most far-reaching securities legislation since the Securities Acts of 1933 and 1934. It not only imposes additional disclosure requirements, but also imposes substantive corporate governance mandates (e.g., Romano, 2004). By requiring more oversight, imposing greater penalties for managerial misconduct, and dealing with potential conflicts of interest, SOX aims to prevent deceptive accounting and management misbehavior. Accordingly, examining the differential impact of these regulations in competitive vis-à-vis noncompetitive industries can shed further light on the role of product market competition in curbing financial accounting misreporting. We adopt an event study approach to examine the net benefits of the SOX regulations on competitive and noncompetitive industries. Zhang (2007) examines the abnormal stock returns of the U.S. market around seventeen significant SOX legislative event dates and

documents an overall negative stock market reaction implying that investors viewed these regulations as overly burdensome on firms and as a net cost to firms. If product market competition disciplines financial reporting then SOX regulations would be imposing greater net costs on more competitive industries. Thus, we examine whether the stock market reaction to the passage of SOX laws varies with the level of competition.

We examine the stock market reaction to the seventeen events (*All Events*) as well as the four significant events (*Significant Events*) leading up to the passage of the SOX laws as identified in Table 2 of Zhang (2007). We measure abnormal returns, AR, for firm *i* over *n* trading days, as follows:

$$AR_{in} = \prod_{t=1,n} (1 + R_{it}) - \prod_{t=1,n} (1 + ER_{it})$$

where, R_{it} is the daily return for firm *i* on day *t*, inclusive of dividends and other distributions, and ER_{it} is the expected return on day *t* for that firm. To obtain expected returns, we estimate the Fama and French (1997) market model augmented with the momentum factor (Carhart, 1997) using CRSP daily return data over 255 days starting 46 trading days prior to the event date,

$$R_{it} - RF_t = a_i + b_i(RMRF_t) + s_i(SMB_t) + h_i(HML_t) + p_i(UMD_t) + e_{it}$$

where R_{it} is the daily raw return for firm *i*, RF_t is the one-month T-bill daily return, $RMRF_t$ is the daily excess return on a value-weighted aggregate equity market proxy, SMB_t is the return on a zero-investment factor mimicking portfolio for size, HML_t is the return on a zero-investment factor mimicking portfolio for book-to-market value of equity; and UMD_t is the return on a zero-investment factor mimicking portfolio for momentum factor. We then use the estimated slope coefficients from the above model to compute the expected return for firm *i* on day *t* as follows:

$$ER_{it} = RF_t + b_i(RMRF_t) + s_i(SMB_t) + h_i(HML_t) + p_i(UMD_t)$$

The above methodology of examining the abnormal stock returns around SOX events yields an estimate of the average impact of the SOX laws on stock prices. To examine if the price impact is different for firms in competitive and non-competitive industries, we divide each event portfolio into equal-sized smaller portfolios. We form a Bottom- and Top-HHI portfolio by sorting firms based on whether their HHI is in the bottom or top quintile, respectively.

The abnormal stock returns presented in the first column of Table 7 suggest that on average, the stock market reacted negatively to SOX regulations. Specifically, for the [-1,0] window we observe an average market reaction of -0.05% for all seventeen events and this reaction is statistically significant. The economic magnitude of this reaction increases when we focus on the significant events as identified in Zhang (2007). Our findings are consistent with Zhang (2007) although we employ a different methodology.

The second and third columns show the average abnormal returns for the bottom- and top-HHI portfolios. The average two-day event abnormal return over the [-1,0] window, for the top-HHI portfolio is small and insignificant, while that for the bottom-HHI portfolio is -0.16% and significant. Thus, while firms in noncompetitive industries experience no negative stock price impact around the SOX regulations, firms in competitive industries experience a significant abnormal stock price decline. The results in the fourth column suggest that a hedge portfolio that goes long on bottom-HHI and short on top-HHI produces returns that is negative and significant as well. This difference is stronger for the significant events (-0.62% and significant). Consistent with our prediction, we find that the stock market viewed SOX regulations as imposing greater net

costs on more competitive industries. We arrive at similar conclusions when we examine the [-1,1] return window. Collectively, the evidence in this section further bolster our conclusion that product market competition disciplines financial accounting reporting.

4.6 Role of Proprietary Costs

As discussed in Section 2, the extant accounting literature has examined the relation between product market competition and a firm's disclosure policy focusing solely on the role of proprietary costs. A natural question arises at this point - how do our results compare with the proprietary costs view? Next, we examine this relation. First, we note that under the proprietary costs argument, more competitive industries are expected to have higher incidents of misreporting. However, the results thus far are precisely the opposite suggesting that proprietary costs are not driving the relation between product market competition and financial accounting misreporting. Still, in order to better understand the extent to which proprietary costs shape this relation, we partition our sample based on their level of proprietary costs.

We define an industry to have high proprietary costs if the level of R&D undertaken in that industry is high. Specifically, we classify industries as high proprietary costs industries if the average R&D expense over the last 3 years is above the sample median. In Table 8, we document that the coefficient on the Herfindahl measure is positive and significant for both the low proprietary costs as well as the high proprietary cost industries. This suggests that the disciplining effect of product market competition is distinct from the proprietary cost effect.

4.7 Effects of Capital Markets Interactions on the Relation between Product Market Competition and Financial Misreporting

In addition to competing in the product markets firms also seek to raise limited funds in the public capital markets. The incentives firms face in terms of providing financial information differ between the product market and the capital markets. In this section, we examine the role of capital markets in affecting the relation between product market competition and financial misreporting.

The most commonly cited benefit of reporting information of higher quality is an expected improvement in the firm's stock liquidity due to the reduced information asymmetry that might even translate into a reduction in the cost of capital (e.g., Diamond and Verrecchia, 1991). For example, Frankel, McNichols, and Wilson (1995) find that firms that regularly access capital markets are more likely to provide earnings forecasts. 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 raising 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 period preceding an equity issue and abnormally weak performance in the years after the issue. Korajczyk, Lucas, and McDonald (1991) find that disclosures preceding equity issues are more likely to contain favorable information. Bar-Gill and Bebchuk (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. Evans and Sridharan (2002) document analytically that when the expected capital markets benefits outweigh the product market effects, firms raising more capital will misrepresent accounting information. Thus, capital needs

pressurize managers to indulge in accounting manipulation and misreporting. The above notion that the capital markets and product markets rely on the same information channels but introduce different set of incentives which in turn affect managers' reporting decisions leads us to our next empirical question: *does the relation between product market competition and accounting misreporting vary with the level of external financing raised?*

In the following analysis we examine this issue by estimating regressions relating percentage of earnings restatements and dollar value of earnings restatements to the Herfindahl-Hirschman Index and other control variables on sub-samples partitioned based on whether firms have raised high or low levels of external financing. We define external financing raised as the level of equity obtained measured as the proceeds from the sale of common and preferred stock (COMPUSTAT data108) scaled by average total assets.[10] In Table 9, we document that the coefficient on the sub-sample that has raised high levels of equity financing is significantly positive and higher than the coefficient on the sub-sample that has raised low levels of equity financing. This provides some evidence of the interaction between capital markets and product markets in this specific setting as we explained earlier.

4.8 Alternate Measures and Attributes of Product Market Competition

In this section, we further examine the robustness of our results to alternate measures and attributes of product market competition.

[10] The results are robust to an alternate definition of financing raised as the sum of proceeds from sale of common and preferred stock (COMPUSTAT data108) and from the issuance of long-term debt (COMPUSTAT data111) scaled by average total assets. These results are available by request.

4.8.1 Alternate Measures of Product Market Competition

First, we consider a measure of product market competition based on U.S. Census data. The measures of competition provided by the U.S. Census are broader since they cover both public as well as private firms.[11] However, there are some limitations in using the census-based concentration measure. First, the U.S. Census data are only available in the year 2002 and, hence, the same level of competition is maintained throughout our sample period. Second, this measure is available only for manufacturing industries and, thus, limits our sample size. Third, the census Herfindahl index includes only the top 50 firms in each industry. Finally and most important to our context, misreporting as well as fraud relate to financial reporting practices of public companies and not of private companies. The agency channel through which we posit that product market competition affects financial misreporting affects only public companies. Accordingly, it is not clear how the census-based measurers are applicable to our setting. Still, we examine the impact of competition on restatements using the U.S. Census Herfindahl-Hirschman Index. The results presented in Table 10 Panel A, indicate that the results are consistent with our prior findings that product market competition disciplines managers from misreporting financial information.

We next consider the sensitivity of our results to variations of the Herfindahl-Hirschman Index. Specifically, we consider the 3-digit SIC Herfindahl-Hirschman Index which is constructed at the 3-digit industry SIC level and 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

[11] Further, recent studies (e.g., Ali et al 2009) argue that research that uses Compustat-based industry concentration measures may lead to incorrect conclusions.

share of company *i*, and *n* is the number of firms in the industry. We also consider the Herfindahl-Hirschman Index constructed using only the top five firms in a 3-digit SIC industry by sales.

We present the results from these two of alternate measures of the Herfindahl-Hirschman Index in Panel A of Table 10. The evidence suggests that our earlier finding that product market competition and financial reporting quality are positively associated is robust to these alternate measures of the Herfindahl-Hirschman Index.

4.8.2 Attributes of Product Market Competition

Recent studies suggest that product market competition has several dimensions and attributes, including product substitutability, market size, and entry costs (e.g., Raith, 2003, Karuna 2007). By using the determinants of competition, we shed additional light on the structural aspects of the product market that affect financial reporting quality.

Consistent with prior literature, we define product substitutability as the extent to which close substitutes exist for a particular product in a given industry. We use profit margin as a proxy for product substitutability in an industry (e.g., Demsetz, 1997). Low (high) levels of the price-cost margin signify high (low) levels of substitutability and competition. In other words, the greater is the intensity of price competition due to higher substitutability, the smaller is the price-cost margin. We define product substitutability as earnings (COMPUSTAT data18) scaled by sales (COMPUSTAT data12). We construct this measure at the 3-digit SIC industry level and use a log-transformed measure. We also use return on assets (ROA) as an alternate measure for product substitutability and calculate it as net income scaled by book value of assets (COMPUSTAT data6) in a given 3-digit SIC industry. We report our findings in Panel B of Table 10. We document

that price-cost margin i.e., product substitutability and price competition is positively associated with the percentage of restatements in an industry. The findings are similar when we use ROA as an alternate measure of price competition. The evidence suggests that greater product market competition along the dimension of price competition is associated with lower frequencies of earnings restatements.

The second attribute of product market competition is entry costs. Higher entry costs may discourage firms from entering into an industry resulting in lower product market competition. Entry costs are defined as the costs of investments that firms incur in entering an industry. We measure entry costs as the log-transformed average gross plant, property and equipment (COMPUSTAT data7) of a firm in the 3-digit SIC industry. We find that the coefficient on the entry cost variable is positive and statistically significant. This suggests that higher levels of product market competition, as measured by lower entry costs, are associated with lower frequencies of restatements.

Finally, we examine market size as a measure of product market competition. Market size reflects the density of consumers in a market or industry. As market size increases, more firms are attracted to the industry by the prospects of higher profitability. This leads to an increase in price competition (Sutton, 1991). We calculate market size as the log-transformed total sales (COMPUSTAT data12) in the 3-digit SIC industry. The results in Panel B of Table 10 indicate that an increase in market size, which suggests an increase in product market competition, is associated with a decline in percentage of earnings restatements.

5. Summary and Conclusions

Motivated by competing theoretical predictions and mixed empirical evidence, we examine the relation between product market competition and financial accounting misreporting as manifested in earnings restatements. Our results indicate that on average, product market competition constrains managers from misreporting financial information and as such has a disciplining effect. This main finding is robust to a battery of sensitivity tests. Most important, using tariff reductions as exogenous shocks to competition, our study is the first to provide evidence on the causal nature of the relation between competition and misreporting.

Our study contributes to the existing literature in furthering our understanding on the role of product market competition in shaping the corporate financial information environment. Specifically, our paper advances the notion that product market competition operates through an agency channel. This effect is incremental to and distinct from the proprietary cost view examined thus far in the accounting literature. The documented evidence we report has implications for future research analyzing the interplay between financial information quality, product markets, capital markets and the mechanisms used to monitor and discipline firms and managers.

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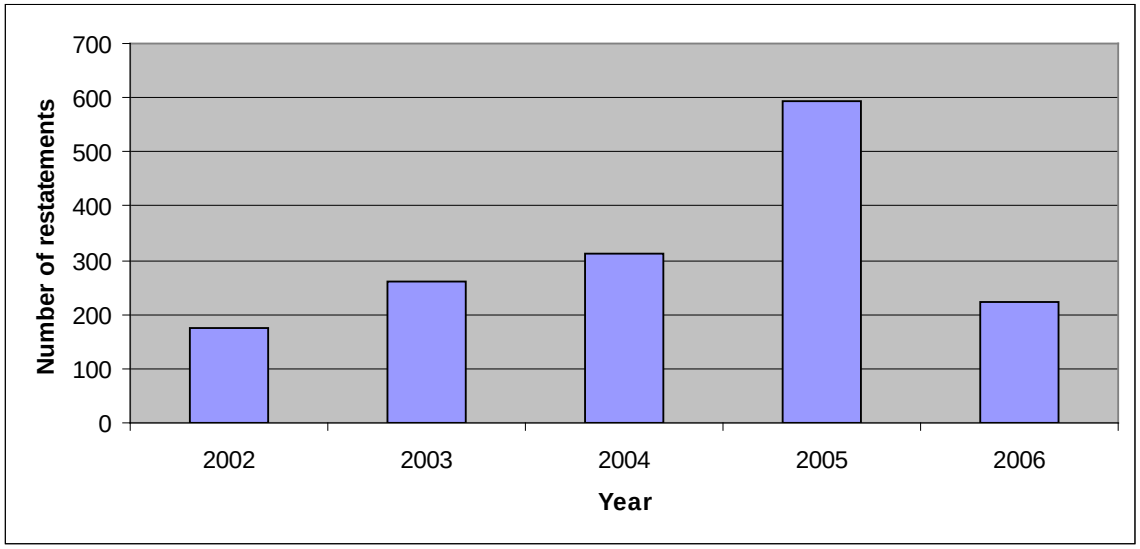
Figure 1: Distribution of Earnings Restatements

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 the market value of firms involved in restatements as a percentage of the total market value of equity of all firms in that year that have information available in the COMPUSTAT database. Market value of equity is defined as the product of fiscal year-end price and the number of common shares outstanding (COMPUSTAT data25 x data199).

Panel A: Frequency of Earnings Restatements by Year



Panel B: Economic Significance of Earnings Restatements

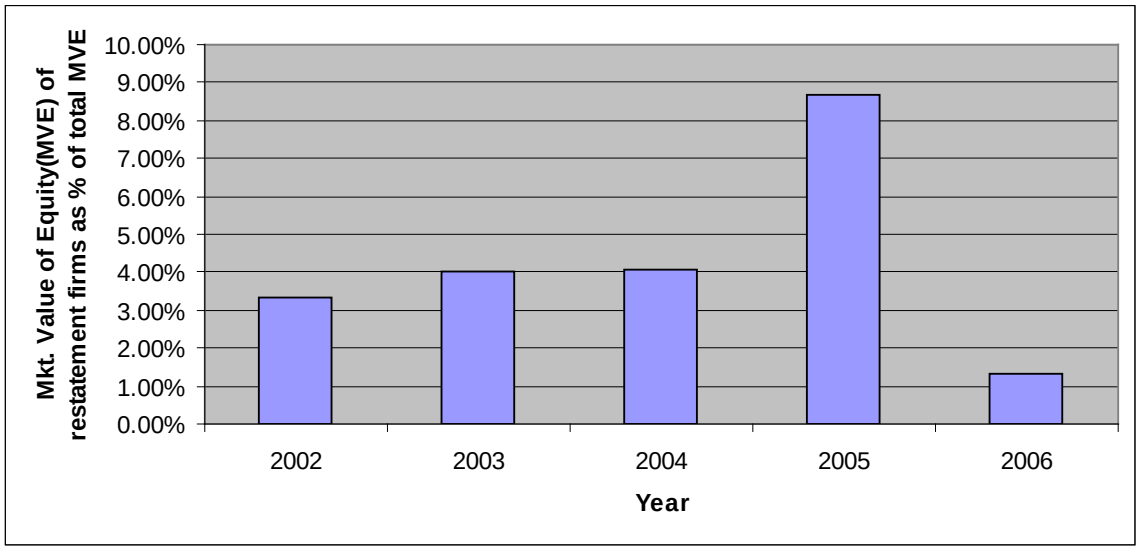


Table 1: Distribution of Earnings Restatements by Fama-French 48 Industries

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 classifieds by the Fama-French 48 industries (FFSIC) classification for 2002-2006.

FFSIC	Number of Restatements in FFSIC	FFSIC	Number of Restatements in FFSIC
1	2	25	1
2	11	26	10
3	2	27	17
4	6	28	7
5	0	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

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-Hirschman Index. The Herfindahl-Hirschman 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-Hirschman 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 2002 - 2006. 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-Hirschman 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- Hirschman Index is defined as (n x 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 Ferell (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. 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-Hirschman Index	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 *<0.001*	0.278 *0.001*	1.000								
Normalized Herfindahl	0.468 *<0.001*	0.283 *0.001*	0.992 *<0.001*	1.000							
1/#firms	0.547 *<0.001*	0.111 *0.175*	0.671 *<0.001*	0.642 *<0.001*	1.000						
Gindex	0.001 *0.990*	0.098 *0.232*	-0.168 *<0.017*	-0.164 *<0.020*	-0.142 *<0.044*	1.000					
Eindex	-0.171 *0.015*	-0.030 *0.232*	-0.409 *<0.001*	-0.410 *<0.001*	-0.248 *<0.001*	0.790 *<0.001*	1.000				
ATI	-0.150 *0.033*	-0.047 *0.712*	-0.260 *<0.001*	-0.255 *<0.001*	-0.269 *<0.001*	0.564 *<0.001*	0.580 *<0.001*	1.000			
Leverage	-0.028 *0.691*	-0.368 *<0.001*	-0.102 *0.151*	-0.110 *0.118*	0.079 *0.265*	0.033 *0.645*	0.072 *0.312*	0.160 *0.023*	1.000		
Institutional Ownership	0.293 *<0.001*	-0.106 *0.198*	0.065 *0.356*	0.067 *0.343*	0.117 *0.097*	0.102 *0.151*	0.092 *0.193*	0.116 *0.100*	-0.159 *0.024*	1.000	
CEO Equity	-0.158 *<0.001*	-0.029 *0.725*	-0.355 *<0.001*	-0.351 *<0.001*	-0.295 *<0.001*	-0.157 *0.026*	-0.158 *0.026*	-0.250 *<0.001*	-0.323 *<0.001*	-0.129 *0.068*	1.000
Size	0.069 *0.332*	-0.079 *0.336*	-0.074 *0.297*	-0.067 *0.346*	-0.134 *0.058*	-0.184 *0.009*	-0.178 *0.012*	-0.123 *0.083*	0.126 *0.074*	0.101 *0.152*	0.170 *0.016*

Table 4: Product Market Competition and Misreporting: Industry Level Regressions

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 2002 and 2006. In Panel A, 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. In Panel B, the dependent variable in all regressions is the percentage/frequency of accounting irregularities, calculated as the total number of irregularities in the industry as identified in Hennes et al. (2008) divided by the total number of firms in the industry per COMPUSTAT. In Panel C, 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- Hirschman 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- Hirschman Index is defined as (n x 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 Ferell (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.

Panel A: Percentage/Frequency of Restatements

	% of restatements		***% of restatements***		***% of restatements***		***% of restatements***		***% of restatements***	
	coef	*p-value*	*coef*	*p-value*	*Coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Herfindahl	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	
R-squared	0.41		0.40		0.40		0.40		0.45	
Observations	201		201		201		201		201	

Table 4 (Contd.)

Panel B: Percentage/Frequency Earnings Accounting Irregularities

	% of irregularities		***% of irregularities***		***% of irregularities***		***% of irregularities***		***% of irregularities***	
	coef	*p-value*	*coef*	*p-value*	*Coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Herfindahl	0.026	0.017	0.023	0.032	0.025	0.026				
Normalized Herfindahl							0.025	0.023		
1/#firms									0.914	0.001
Gindex	-0.001	0.110					-0.001	0.104	-0.001	0.146
Eindex			-0.004	0.050						
ATI					-0.003	0.369				
Leverage	0.002	0.806	0.001	0.838	0.002	0.708	0.001	0.839	-0.003	0.503
Institutional Ownership	0.024	0.003	0.023	0.003	0.024	0.003	0.024	0.004	0.009	0.140
CEO Equity	-0.011	0.051	-0.013	0.030	-0.009	0.069	-0.012	0.042	-0.004	0.391
Size	0.001	0.440	0.001	0.528	0.001	0.469	0.001	0.444	0.001	0.307
Errors Clustered	Industry		Industry		Industry		Industry		Industry	
R-squared	0.36		0.37		0.36		0.36		0.53	
Observations	126		126		126		126		126	

Table 4 (Contd.)

Panel C: Value of Restatements

	Value of restatements		***Value of restatements***		***Value of restatements***		***Value of restatements***		***Value of restatements***	
	coef	*p-value*	*coef*	*p-value*	*Coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Herfindahl	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	
R-squared	0.30		0.28		0.26		0.30		0.27	
Observations	150		150		150		150		150	

Table 5: The Impact of Competition on Restatements - Difference-in-Difference Estimations from Tariff Reductions

This table presents coefficients and p-values from difference-in-difference regressions examining the changes in percentage restatements in an industry following large reductions in import tariffs. Standard errors are clustered at the industry level.The dependent variable is the change in 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. Tariff reductions (*CUT*) are defined using two different cut-offs. Specifically, a tariff cut occurs when an industry-year change in tariff rate (*ΔT*) is negative and two (columns 1 and 3) and, respectively, three (columns 2 and 4) times larger than its median value. Lag_CUT is one-year lagged value the tariff reductions, CUT. ΔGindex is the change in the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003). The equally-weighted average per industry of the Gindex are computed based on firms with available information only and assessed in 2000, 2002 and 2004. ΔLeverage is the change in leverage, defined as the sum of long term debt and debt in current liabilities divided by total assets (COMPUSTAT (data9 + data34)/data6). ΔInstitutional Ownership is the change in the average fraction of shares held by institutional investors as identified by 13F filings from the CDA Spectrum database. ΔCEO equity ownership is the change in 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. ΔSize is the change in the natural logarithm of the average market value of equity in the industry in each year.

	Δ% restatements		***Δ% restatements***		***Δ% restatements***		***Δ% restatements***	
Industry Level Variables	CUT 2 x med (ΔTariff)		CUT 3 x med (ΔTariff)		CUT 2 x med (ΔTariff)		CUT 3 x med (ΔTariff)	
	Coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
CUT	-0.011	0.001	-0.012	0.006				
ΔGindex	-0.002	0.808	-0.002	0.802	-0.003	0.688	-0.002	0.758
ΔLeverage	-0.199	0.256	-0.197	0.259	-0.191	0.275	-0.191	0.280
ΔInstitutional Ownership	0.013	0.843	0.014	0.828	0.012	0.852	0.013	0.842
ΔCEO Equity	0.049	0.399	0.049	0.401	0.049	0.398	0.049	0.396
ΔSize	-0.003	0.826	-0.003	0.831	-0.004	0.744	-0.003	0.797
Lag_CUT					-0.008	0.133	-0.008	0.388
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.23		0.23		0.23		0.22	
Observations	90		90		90		90	

Table 6: Financial Statement Comparability, Product Market Competition and Misreporting

This table reports coefficients and p-values of fixed effects panel data regressions with year-dummies on sub-samples based on the level of financial statement comparability (FSC). Standard errors are clustered at the industry level. We use the industry-level FSC as computed in DeFranco et al. (2011). An industry is classified as High FSC (Low FSC) if the FSC for that industry in that year is above (below) the median value of FSC across all industries that year. All variables are equally-weighted at the industry level. Columns 1 and 2 use the mean level of financial statement comparability in an industry in a given year. Columns 3 and 4 use the median level of financial statement comparability in an industry in a given year. See Table 3 for the definitions of the other variables.

	(1)		**(2)**		**(3)**		**(4)**	
	% of restatements		***% of restatements***		***% of restatements***		***% of restatements***	
	Low Mean FSC		**High Mean FSC**		**Low Median FSC**		**High Median FSC**	
Industry Level Variables								
	coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
Herfindahl	0.027	0.129	0.152	0.014	0.021	0.291	0.152	0.017
Gindex	0.003	0.093	0.002	0.498	0.004	0.019	0.003	0.322
Leverage	-0.026	0.085	0.027	0.155	-0.035	0.043	0.021	0.161
Institutional Ownership	0.078	0.002	0.080	0.060	0.079	0.003	0.062	0.084
CEO Equity	-0.019	0.203	0.024	0.204	-0.020	0.174	0.013	0.519
Size	0.007	0.022	0.001	0.695	0.008	0.008	0.002	0.344
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.43		0.60		0.42		0.60	
Observations used	94		97		94		97	

Table 7: Product Market Competition and the Negative Economic Consequence of SOX - Event Study

This table presents the average buy and hold abnormal returns based on the Fama and French (1997) model augmented with momentum (Carhart 1997) around the rulemaking events related to SOX. *All Events* correspond to the 17 rulemaking events for SOX and *Significant Events* corresponds to four out the 17 events as identified in Zhang (2007). Top HHI (Bottom HHI) refers to industries in the top (bottom) quintile based on the Normalized Herfindahl-Hirschman Index in a given year. Normalized Herfindahl-Hirschman Index is defined in the previous tables. The last column presents the returns for a hedge portfolio that goes long on Bottom HHI and short on Top HHI. t-statistics are presented beneath the averages within parenthesis and are adjusted for autocorrelation.

	Event Window	All Firms	Top HHI	Bottom HHI	Bottom - Top
All Events:					
	[-1,0]	-0.0005	0.0000	-0.0016	**-0.0016**
		(-2.92)	(-0.31)	(-4.96)	**(-3.45)**
	[-1,1]	-0.0011	0.0000	-0.0019	**-0.0019**
		(-4.79)	(0.14)	(-4.97)	**(-3.75)**
No. of Obs.		129,887	25,982	27,811	
Significant Events:					
	[-1,0]	-0.0009	-0.0002	-0.0064	**-0.0062**
		(-2.24)	(-0.36)	(-9.36)	**(-6.66)**
	[-1,1]	-0.0015	-0.0002	-0.0080	**-0.0078**
		(-3.26)	(-0.22)	(-9.98)	**(-7.15)**
No. of Obs.		35,855	7,235	7,668	

Table 8: Role of Proprietary Costs

The table reports coefficients and p-values of fixed effects panel data regressions with year-dummies on sub-samples based on the level of proprietary costs. Standard errors are clustered at the industry level. We use average R&D expense over the last three years as a measure of proprietary costs. An industry is classified as High R&D if the average R&D expense for that industry is above the median value of the average R&D expense and the industry is classified as Low R&D if the average R&D expense for that industry is above the median value of the average R&D expense. All variables are equally-weighted at the industry level. See Table 3 for the definitions of the other variables.

	(1)		**(2)**	
	% of restatements		***% of restatements***	
	Low R&D (i.e. Low Proprietary Cost)		**High R&D (i.e. High Proprietary Cost)**	
Industry Level Variables				
	coef	*p-value*	*coef*	*p-value*
Herfindahl	0.066	0.038	0.093	0.033
Gindex	0.002	0.168	-0.001	0.766
Leverage	0.008	0.555	-0.001	0.929
Institutional Ownership	0.053	0.015	0.128	0.002
CEO Equity	0.023	0.080	-0.005	0.832
Size	0.002	0.413	0.002	0.396
Errors Clustered	Industry		Industry	
R-squared	0.18		0.56	
Observations used	100		101	

Table 9: 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 equity-raised by the industry. An industry is classified as High Equity-Raised if the level of average equity raised by that industry is above the median value and the industry is classified as Low Equity-Raised if the level of average equity raised by that industry is below the median value. Standard errors are clustered at the industry level. Equity raised is defined as the sum of the proceeds from sale of common and preferred stock (COMPUSTAT data 108) scaled by average total assets. All variables are equally-weighted at the industry level. See Table 3 for the definitions of the other variables.

	(1)		**(2)**	
	% of restatements		***% of restatements***	
	Low Equity Raised		**High Equity Raised**	
Industry Level Variables				
	coef	*p-value*	*coef*	*p-value*
Herfindahl	0.058	0.004	0.119	0.017
Gindex	0.001	0.607	0.003	0.222
Leverage	0.025	0.136	0.002	0.946
Institutional Ownership	0.056	0.049	0.098	0.011
CEO Equity	0.008	0.609	0.010	0.746
Size	0.002	0.431	-0.000	0.937
Errors Clustered	Industry		Industry	
R-squared	0.25		0.54	
Observations used	100		101	

Table 10: Alternate Measures and Attributes of 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 using firms with available data between 2002 and 2006. 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. CensusHerf is the Herfindahl index computed by the U.S. Bureau of the Census. 3-digit SIC Herf refers to the Herfindahl-Hirschman Index at the 3 digit industry SIC level and 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. Top5 Herf refers to the Herfindahl-Hirschman index constructed using only the top 5 firms in the industry by sales. MktSize refers to the Market Size of the industry and is the log-transformed total sales in the 3 digit SIC industry. ProductSub refers to the product substitutability in the industry and is defined as the log-transformation of earnings (COMPUSTAT data18) scaled by sales (COMPUSTAT data12) in the 3 digit SIC industry. ROA is defined as net income scaled by book value of assets (COMPUSTAT data6) in the 3 digit SIC industry. EntryCost is the log-transformed average gross plant, property and equipment (COMPUSTAT data7) of a firm in the 3 digit SIC industry. Gindex is the governance index based on IRRC data and is constructed following Gompers, Ishii and Metrick (2003). The equally-weighted average per industry of the Gindex 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.

Table 10 (Contd.)

Panel A: Alternate Measures of Product Market Competition

	% of restatements		***% of restatements***		***% of restatements***	
Industry Level Variables						
	Coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*
CensusHerf	0.012	0.016				
3-digitSIC Herf			0.155	0.001		
Top5 Herf					0.171	0.001
Gindex	0.001	0.597	-0.002	0.311	-0.002	0.343
Leverage	-0.019	0.179	-0.003	0.929	-0.009	0.777
Inst Ownership	0.036	0.192	0.105	0.001	0.122	0.001
CEO Equity	0.015	0.428	-0.004	0.759	-0.009	0.557
Size	-0.002	0.161	0.000	0.973	-0.002	0.470
Errors Clustered	Industry		Industry		Industry	
R-squared	0.50		0.37		0.31	
Observations	450		454		454	

Table 10 (Contd.)

Panel B: Attributes of Product Market Competition

Industry Level Variables	***% of restatements***		***% of restatements***		***% of restatements***		***% of restatements***	
	Coef	*p-value*	*coef*	*p-value*	*coef*	*p-value*	*coef*	*p-value*
ProductSub	0.131	0.004						
ROA			0.095	0.001				
EntryCost					0.008	0.022		
MktSize							-0.019	0.001
Gindex	-0.003	0.219	-0.003	0.221	-0.004	0.152	-0.002	0.428
Leverage	-0.030	0.388	-0.030	0.439	-0.069	0.045	0.002	0.949
Inst Ownership	0.112	0.001	0.109	0.001	0.095	0.001	0.088	0.001
CEO Equity	-0.029	0.074	-0.028	0.087	-0.028	0.119	-0.022	0.133
Size	-0.003	0.357	-0.003	0.375	-0.007	0.039	0.016	0.004
Errors Clustered	Industry		Industry		Industry		Industry	
R-squared	0.17		0.18		0.17		0.29	
Observations	454		454		454		454	