ESSAYS ON FINANCIAL REPORTING QUALITY:

EVIDENCES FROM SEASONED EQUITY OFFERING

AND PRODUCT MARKET COMPETITION

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Essays on Financial Reporting Quality:

Evidences from Seasoned Equity Offering and Product Market Competition

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ABSTRACT

This dissertation focuses on financial reporting quality. It is comprised of three essays. The first essay documents the importance of financial reporting quality; the second essay records market power as an important determinant of financial reporting quality; the third essay shows that financial reporting quality is not the prevailing channel through which product market competition affects audit fees.

Essay I, "Earnings timeliness and seasoned equity offering announcement effect" demonstrates the importance of financial reporting quality by examining the effects of earnings timeliness on the Seasoned Equity Offering (SEO) announcement effect. Investors view an SEO announcement as a negative signal that reveals managers' perceptions regarding a firm's current stock price. Investors usually respond to this negative signal by reducing the stock price significantly. This condition can be mitigated, however, through a description of a firm's ability to capture current value-relevant information through a measure of financial reporting quality, namely earnings timeliness. This is especially true since earnings are important to investors in assessing firm performance. Presenting current value-relevant information with earnings in a greater efficient and timely way can reduce information asymmetry between managers and investors. I predict and find, then, that firms with greater earnings timeliness have less negative SEO announcement-period returns.

Because of the importance of financial reporting quality in capital market, I explore the determinants to financial reporting quality in my second essay, "Market power and accrual management". I examine whether a firm's competition status in product markets affects its financial reporting quality, measured as discretionary accrual. I argue that because firms with greater market power have a greater ability to set prices for their products, they have comparatively fewer incentives to manipulate earnings through accrual management. I use the Lerner index to measure product market power and asset-deflated absolute discretionary accruals to proxy the magnitude of accrual management. Using a large sample of firm-year observations from 1997 to 2007, I find that, as hypothesized, firms with greater market power tend to have lower levels of accrual management.

The final essay, "Product market competition and audit fees", goes one-step further than the second. As noted in the second essay, product market competition affects a firm's financial reporting quality. However, financial reporting quality may not be the only factor auditors take into account when they decide what fees to charge a client. The last essay, therefore, empirically explores the inter- and intra- industry effect of product market competition on audit fees. Prior literature posits two contradictory predictions on the relation between product market competition and audit fees. On the one hand, firms in a competitive market are expected to face higher liquidity risk, distress risk, and liquidation risk, thus increasing auditors' assessments of a client's business risk. So, audit fees are expected to increase with industry competitiveness. On the other hand, it is often argued in prior literature that product market competition decreases information

asymmetry and mitigates agency problems between shareholders and managers and increases the accuracy of financial reporting, thus decreasing auditors' assessments of a client's audit risk resulting in necessary audits. So auditors tend to charge lower fees on firms in a more competitive industry. The study, then, empirically tests the relation between product market competition and audit fees and finds that auditors charge higher fees on firms in a more competitive industry. It also finds that auditors charge lower fees on firms with greater market power within the same industry.

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TABLE OF CONTENS

Chapter 1

Introduction

This dissertation includes three essays. The first essay, “Earnings timeliness and seasoned equity offering announcement effect”, documents the importance of financial reporting quality by showing the significant negative relation between the Seasoned Equity Offering (SEO) announcement effect and earnings timeliness. I predict and test the hypothesis that firms with greater earnings timeliness have less negative SEO announcement-period returns in the first essay. My hypothesis builds on the theory that the stock price drop at an equity issue announcement is caused by information asymmetry between managers and investors, and that firms with greater earnings timeliness tend to have less information asymmetry. I regress the SEO announcement-period return on earnings timeliness by using a sample of SEO events from 1984 to 2006 and find that the firms with greater earnings timeliness experience less negative SEO announcement returns. In an additional test, I also explore whether the impact of earnings timeliness on the SEO announcement effect would be subsumed by other earnings attributes. I then reexamine the relation between SEO announcement effect and earnings timeliness with other earnings attributes in the regression. I find that the significant influence of earnings timeliness on the SEO announcement effect still holds when all other earnings attributes are considered. This suggests that earnings timeliness has its unique and distinguishable impact on the stock return at the time of the SEO announcement.

Given the importance of financial reporting quality in capital markets, the second essay, "Market power and accrual management," explores how financial reporting quality is determined. Specifically, I examine whether managers adjust their accrual management policies based on their product market power. I argue that advantageous competition status in a product market offers firms an alternative way to increase or reduce earnings so that managers in such firms have less incentive to manage earnings via accrual management. I use the Lerner index or price-cost margin (*PCM*) as the measure of market power. Following Gaspar and Massa (2005) and Peress (2010), *PCM* is calculated as the ratio of operating profit to sales. I use a modified cross-sectional Jones model in Dechow, Sloan, and Sweeney (1995) to calculate the level of asset-deflated discretionary accruals, a proxy of accrual management. Using a sample of 35,745 firm-year observations from 1997-2007, I run a fixed-effect regression on the panel data and find that even controlling factors that describe a firm's operating environment, growth opportunities, profitability and regulation environment, there is a significant negative relation between product market power and accrual management.

Essay II documents the significant effect of product market competition on a firm's financial reporting quality. However, other factors are also taken into account in addition to financial reporting quality when auditors decide what fees to charge clients. In other words, financial reporting quality may not be the only channel through which product market competition affects audit fees. The third essay empirically examines the issue described above and explores the inter- and intra-industry effect of product market competition on audit fees. Prior literature

shows that auditors charge firms higher fees either because of clients' greater audit risk or because of clients' greater business risk. Audit risk describes the likelihood of material errors in clients' financial statements, while business risk refers to circumstances that are out of auditors' control and cannot be eliminated.

Further, I describe how industry level product market competition affects audit risk and business risk in two different directions: on the one hand, competition plays a governance role and mitigates agency problems. Strengthened governance and mitigated agency problem through competition improve the accuracy of financial reporting and also reduce investors' demand on audit services. So, audit risks tend to be less for firms in an industry with greater competition intensity. In other words, there is a negative relation between audit risk and industry-level competition. On the other hand, there should be a positive relation between business risk and industry-level competition because firms in competitive industries involve more business risks than those in less competitive industries. The latter argument is based on the prior literature that documents more operation risk, innovation risk, liquidation risk, and litigation risk for firms in a more competitive industry. Therefore, I leave the inter-industry effect of product market competition on audit fees as an empirical question.

The intra-industry effect of competition on audit fees looks into the competition status, i.e., product market power, on the audit fees within an industry. The second essay tells that firms with greater market power tend to have less accrual management. So, I argue that firms having advantageous competition status have less audit risk. Also, such firms tend to have more stable cash flows

and earnings. They also have less distress risk and liquidation risk. Thus, I hypothesize that firms with better competition status also have less business risk. Both audit and business risk channels predict a negative relation between market power and audit risk. Using the Herfindahl-Hirschman index as a measure of industry-level competition intensity and *PCM* as a measure of firm-level competition status, I empirically examine the relation between these and audit fees, respectively in the U.S. manufacturing industry. I find that auditors charge higher fees in a more competitive industry, and they charge lower fees on firms with greater market power within an industry.

Chapter 2

Essay I: Earnings Timeliness and Seasoned Equity Offering Announcement Effect

2.1 Introduction

This essay examines the relation between the Seasoned Equity Offering (SEO) announcement effect and earnings timeliness. I predict and test the hypothesis that firms with greater earnings timeliness have less negative SEO announcement-period returns. My hypothesis builds on the theory that the stock price drop at an equity issue announcement is caused by information asymmetry between managers and investors (Myers and Majluf 1984) and on the empirical studies about earnings timeliness by Bushman et al. (2004) and Ball et al. (2008).

In the world of information asymmetry, rational firm managers will not issue new stocks when prices are low relative to managers' private information about firm value. Knowing this, investors view an SEO announcement as a negative signal that reveals managers' perceptions on a firm's current stock price. Investors respond to this negative signal by reducing the stock price significantly.

Measured as the adjusted R^2 from a regression of annual earnings on contemporaneous stock returns, earnings timeliness describes the ability of earnings numbers to capture current value-relevant information. Because earnings

are important to investors in assessing firm performance and earnings with greater timeliness capture firms' information in a more efficient way, greater earnings timeliness can reduce information asymmetry between managers and investors.

The above analysis suggests that earnings with greater timeliness can reduce information asymmetry between managers and investors and that less information asymmetry implies a less negative SEO announcement effect. Thus, I hypothesize that the market responds less negatively to SEO announcements from firms with greater earnings timeliness.

I test the above hypotheses on a sample of SEO events from 1984 to 2006, requiring that the sample firms have enough time-series data to compute a firm-specific measure of earnings timeliness. In order to calculate the announcement-period return, I also require that the sample firms have CRSP daily stock returns during the SEO announcement period. Finally, I regress the SEO announcement-period return on the earnings timeliness and find that the firms with greater earnings timeliness experience less negative SEO announcement return.

In an additional test, I explore whether the impact of earnings timeliness on the SEO announcement effect would be subsumed by other earnings attributes. I reexamine the relation between the SEO announcement effect and earnings timeliness with other earnings attributes in the regression. As in Lee and Masulis (2009), I find that accrual quality is negatively correlated with the magnitude of stock price drop at the SEO announcement. But the significant influence of earnings timeliness on the SEO announcement effect still holds when all other

earnings attributes are considered. This suggests that earnings timeliness has a unique and irreplaceable impact on the stock return at the SEO announcement

This study makes several contributions. First, accounting researchers have long been interested in the causes and consequences of financial reporting qualities. This study contributes to the literature about the consequences of financial reporting qualities by examining the effects of earnings timeliness in a financing event. Thus, in a broader sense, taken together with other studies that address the roles of financial reporting qualities on investment efficiency, debt contracting efficiency or stock price synchronicity (e.g., Biddle et al. 2009; Zhang 2008; Hutton et al. 2009), my essay enriches the literature and fills a need by examining the effect of earnings timeliness in the financing event.

Second, my paper provides empirical evidence on the relation between earnings attributes and firms' information environments. Francis et al. (2004) study the relation between earnings attributes and information risk. However, information risk is difficult to measure and the causal chain between these attributes and information risk involves many links and assumptions. This study proposes that information asymmetry can serve as one link between earnings attributes and information risk because information asymmetry increases investors' uncertainty regarding firms and information risk is, thus, positively correlated with information asymmetry. Studying the link between earnings attributes and measures of information asymmetry can enhance our confidence that these quality measures are causally linked to characteristics of firms' information environments.

Third, this paper enriches the current, limited literature about earnings timeliness. By measuring the extent to which current earnings numbers capture value-relevant information, earnings timeliness plays important roles in capital market. However, only a few papers conduct research on earnings timeliness. Ball et al (2008) explore the debt contracting value of earnings timeliness. Bushman et al. (2004) investigate how earnings timeliness affects corporate governance factors such as board structure. Francis et al. (2004) examine the relation between the cost of equity capital and earnings attributes, including earnings timeliness. My paper is the first to explore the impact of earnings timeliness on the transaction costs of an equity offering.

Finally, this paper also contributes to the literature seeking to explain the cross-sectional variation in announcement-period return and is among the first to examine whether earnings attributes can be used to proxy the information asymmetry and describe the information environment.

The remainder of this paper is organized as follows: Section 2.2 reviews prior research concerning the SEO announcement effect; Section 2.3 discusses the role of earnings timeliness in influencing information asymmetry and develops the hypotheses; Section 2.4 introduces the sample and research design; Section 2.5 presents empirical results; Section 2.6 supplies a summary and conclusion.

2.2 Literature review

Seasoned Equity Offerings (SEO) refer to the event during which a publicly traded firm issues additional stock. The SEO is a kind of primary offering because the firm issues new shares and the proceeds go to the firm. This is as opposed to a secondary offering, during which corporate insiders and block-shareholders sell shares while the number of shares outstanding remains the same after the offering.

It is well-documented that the announcement of a common stock offering engenders a significant stock-price drop in the magnitude of between -2% and -3% (Masulis and Kowar 1986; Asquith and Mullins 1986; Mikkelson and Partch 1986). Such a negative SEO announcement effect reflects the large transaction costs of the new issues. Researchers suggest different theories to explain this phenomenon.

Leland and Pyle (1977) show that, in markets with asymmetric information, the equity fraction in the project retained by the self-interested entrepreneur has a positive association with a future project's quality. Well-informed managers would only sell their stock shares when they believe that the shares are overvalued. So, share sales by managers serve as a negative signal about a firm's intrinsic value. The Leland and Pyle signaling theory applies to pure primary offerings and to a combination of secondary offerings and primary offerings because secondary offerings decrease the insiders or block-shareholders' shares.

Myers and Majluf (1984) take their findings beyond those of Leland and Pyle. In their adverse selection model, they assume that managers always work for the interests of existing shareholders and will not issue stocks when the firm is

undervalued, because doing so would dilute the fractional ownership of existing shareholders. Thus, even when managers do not sell their own shareholdings, the mere act of equity offering conveys a negative signal that the current stock price is too high. Knowing this, rational investors adjust their valuation of a firm and the stock price drops as a consequence. The Myers and Majluf adverse selection model applies to all kinds of offerings: primary offerings, secondary offerings and a combination.

Jung, Kim and Stulz (1996) propose a theory based on agency problems, claiming that when management has misaligned interests with the shareholders, rational investors respond to the equity offering announcement negatively because they are afraid of potential misuse of proceeds.

A substantial volume of literature also tries, with carrying findings, to explain the cross-sectional variation in the SEO announcement-period returns. For example, some researchers examine whether equity characteristics contribute to cross-sectional variation and find mixed results in the relation between the relative size of the offering and the subsequent drop. Asquith and Mullins (1986) document that announcement-period return is negatively related to the relative size of the issue, computed as the ratio of the planned proceeds to a firm's equity value before the announcement. Dierkens (1991), however, does not find a significant relation between the price drop and the relative size of the issue, measured as the ratio of the number of new shares to the number of shares outstanding before the announcement. Mikkelson and Partch (1986) also do not find a relation between the stock price effects and the amount of new financing or the size of offering.

Use of proceeds is another characteristic of an offering that can explain cross-sectional variation in the announcement returns to some extent. Mikkelson and Partch (1986) document a less negative announcement effect when it is stated that the proceeds are to be used for capital expenditures, rather than for debt refinance.

Asquith and Mullins (1986) examine whether a firm's pre-issue performance can be a factor used to explain cross-section variation in an SEO announcement return. They find that such announcement-period return is positively related to the previous eleven-month cumulative excess return. Masulis and Korwar (1986) document a negative relation of stock announcement return to the previous two-month firm return and a positive relation of stock announcement return to the previous two-month market return.

In terms of the timing of an announcement, Choe, Masulis, and Nanda (1993) document a less negative SEO announcement effect when the economy is in an expansionary period of the business cycle, which implies less adverse selection risk. Dierkens (1991) documents a significantly positive relation between the announcement-period return and the firm's growth opportunities, the ratio of the market value of the equity to the book value of the equity for one fiscal year before the announcement.

Lang and Lundholm (2000) find by examining firms' behavior patterns that issuing firms tend to reduce the information asymmetry by making optimistic disclosures more frequently, starting six months before the registration date, and

that the announcement-period return increases with such changes in firms' disclosure behavior. Korajczyk,Lucas, and McDonald (1991) report that the negative announcement effect is less pronounced with a decrease in the time difference between the offering announcement and the preceding earnings announcement. They argue that a decrease in the information asymmetry resulting from the earnings announcement reduces the magnitude of the price drop at the offering announcement.

With regard to CEO compensation structure, Brazel and Webb (2006) document that when the proportion of CEO equity-based compensation is large, investors tend to view the equity offering as a last-resort source of capital and respond to the SEO announcement effect more negatively.

In this paper, I examine whether firms with earnings timeliness of different magnitude experience different price drops during the SEO announcement period. My study will not only enrich the literature regarding the consequences of financial reporting qualities, but will also provide a potential link, information asymmetry, to the argued relation between earnings attributes and information risk. Of course, the paper will also contribute to literature that explains the cross-sectional variation in the SEO announcement-period return and literature about earnings timeliness.

2.3 Hypothesis development

Earnings are important sources for investors to assess firm performance. Measured as the adjusted R^2 of the firm-specific regression of annual earnings on annual returns (Equation 1), earnings timeliness is one measure of financial reporting quality and one of the three market-based earnings attributes in Francis et al. (2004).

$$\frac{E_{j,t}}{MKTCAP_{j,t-1}} = b_{j,0} + b_{j,1}NEG_{j,t} + b_{j,2}RET_{j,t} + b_{j,3}NEG_{j,t}RET_{j,t} + \varepsilon_{j,t} \qquad (1)$$

In Equation 1, $E_{j,t}$ is the earnings before extraordinary items, discontinued operations and special items for a given firm in fiscal year t; $MKTCAP_{j,t-1}$ is the market capitalization at the end of fiscal year t-1; $RET_{j,t}$ is the stock return of firm j from nine months before the end of fiscal year t to three months after the end of fiscal year t; $NEG_{j,t}$ is a dummy variable equal to 1 if $RET_{j,t}$ is negative and 0 otherwise. Earnings timeliness, TL, is equal to the adjusted R^2. Larger values of TL correspond to greater earnings timeliness.

Stock prices aggregate all publicly available information about firm value. Accounting numbers provide more detailed information about the sources of firm-value changes by gathering, classifying and summarizing the financial effects of firms' investment, operating and financing activities (Bushman et al., 2004). Timely and precise accounting numbers, including earnings, can help even less sophisticated investors extract the underlying information from stock prices and help them to understand equity values' changes better. Therefore, timely and efficient accounting numbers provide cleaner and less noisy information, enabling

outside investors to monitor firm performance, thus, improving the transparency of the operations and activities of the firm to outside investors.

Earnings timeliness records the inherent ability of current earnings to capture value-relevant information in a timely fashion. The greater timeliness (higher adjusted R^2) implies that the earnings have the ability to capture new information in a more efficient manner. The presentation of earnings numbers is, therefore, more informative and highly qualitative to outside investors and will decrease the information asymmetry between managers and investors.

Among the few papers that talk about earnings timeliness, Ball et al. (2008) explore the debt contracting value of earnings timeliness. Bushman et al. (2004) investigate how earnings timeliness affects corporate governance factors, such as board structure. Francis et al. (2004) examine the relation between the cost of equity capital and earnings attributes, including earnings timeliness. I argue in this study that greater timeliness also has implications in capital raising events because it mitigates potential adverse selection problems in SEO events and lead to a less negative SEO announcement effect.

Hypothesis: *Ceteris paribus*, negative SEO announcement effect is less for firms with greater earnings timeliness.

2.4 Data and research design

2.4.1 Sample selection

I collect the initial SEO samples from 1984 to 2006 from the Securities Data Company's (SDC's) New Issue Database. The offerings consist of pure primary offerings or a combination of primary and secondary offerings. I require the samples to be common stocks listed on NYSE, NASDAQ, or AMEX. I exclude: 1) limited partnership; 2) right's issue; 3) unit issues; 4) closed-end fund; 5) SEOs lacking information about filing date, issue date, offer price, shares filed, filing amount; 6) SEOs with offer prices less than $5; 7) SEOs with more than one issue for the same filing; 8) SEOs with a lag in issue date as compared to the filing date < 5 days or > 60 days. I use this restriction because short time differences between the filing date and issue date imply mixed stock responses during both announcement period and issue period. Also, if the filing date is much earlier than the issue date, then this may not mean that managers think that the stock price (on the filing date) is overvalued; 9) SEOs lacking CRSP daily stock returns/prices around the SEO filing date; and 10) SEOs without a one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

2.4.2 Filing date and announcement date

Because of data availability, I use the filing dates in the SDC new issue database for the announcement dates. This treatment is consistent with some of the previous studies (Clarke et al., 2001; Denis, 1994). My argument is that the true SEO announcement releases information about future issuances and later SEO filing further confirms the future issuance so the stock price also drops at the filing

date. Considering the fact that information about equity offerings would likely have leaked to some extent prior to the announcement date, using a filing date to proxy the announcement date may underestimate the adverse relation between earnings timeliness and SEO announcement effect.

2.4.3 Dependent variable

Referring to the filing date as day 0, I define trading days -1, 0, and 1 as an event period and compute the cumulative abnormal return (CAR) in this period as the dependent variable (Brown and Warner, 1985).

I first use OLS to estimate the market model in order to compute the cumulative abnormal returns in the event period.

$$R_{j,t} = \eta_{0,j} + \eta_{1,j} R_{M,t} + \sigma_{j,t} \qquad \text{t=-180, -179, } \ldots \text{, -10} \qquad (2)$$

$$AR_{j,t} = R_{j,t} - \hat{\eta}_{0,j} - \hat{\eta}_{1,j} R_{M,t} \qquad \text{t=-1, 0, 1} \qquad (3)$$

$$Model\_CAR_j = \sum_{t=-1,0,1} (R_{j,t} - R_{M,t}) \qquad (4)$$

The estimation period is from trading day -180 to trading day -10. The CRSP equally weighted index is used as the market return $R_{M,t}$. $R_{j,t}$ is firm j's raw return on day t. $\hat{\eta}_{0,j}$ and $\hat{\eta}_{1,j}$ are estimated coefficients from the estimation period. $AR_{j,t}$ is the abnormal return of firm j on day t. Dependent variable, cumulative abnormal return $Model\_CAR_j$, is the sum of abnormal returns in the event period.

In the sensitivity test, I also use the market-adjusted returns in the event period to obtain the cumulative abnormal return.

$$AR_{j,t} = R_{j,t} - R_{M,t} \qquad \text{t=-1, 0, 1} \qquad (5)$$

$$Adjusted\_CAR_j = \sum_{t=-1,0,1} AR_{j,t} \qquad (6)$$

$Adjusted\_CAR_j$ is the sum of market adjusted returns in event period.

2.4.4 Control variables

Control variables I consider are as follows:

Offer size (REL_SIZE, ABS_SIZE): The size of the equity offering measures the size of the negative informative signal. The relative size of the issue, REL_SIZE, is computed as the number of filing shares to the number of shares outstanding (Compustat #25) before SEO announcement. The absolute size of the issue, ABS_SIZE, is the log of filing proceeds. Although theories of information asymmetry and the alternative models based on the optimal capital structure predict that an increase in the size of the issue will increase the magnitude of the price drop (Smith, 1986), prior empirical work finds mixed results (Asquith and Mullins, 1986; Mikkelson and Partch, 1985). I try both relative offer size and absolute offer size in my empirical tests and find that absolute offer size has a significantly negative relation with SEO announcement-period return.

Firm size (FIRM_SIZE): FIRM_SIZE is computed as the natural logarithm of total assets (Compustat #6). A larger firm is usually followed by more analysts and has more media attention. Therefore, the information asymmetry between managers and investors is less for a larger firm than for a smaller firm (Lee and Masulis, 2007). So, I predict that large firm experiences less price drop at SEO announcement.

Investment opportunities (MTB): I use market-to-book ratio, MTB, as the proxy of investment opportunities (Jung et al., 1996). MTB is computed as ([Compustat #199 * Compustat #54 +Compustat #6 - Compustat #60] / [Compustat #6]). A higher MTB implies that the firm has more intangible assets and greater information asymmetry and tends to have more profitable investment opportunities. Investors tend to interpret the announcement of equity issues from firms with higher MTB as reflecting the need to fund future promising projects and the reduction of the information asymmetry about future investment opportunities. Therefore, I predict a significant positive coefficient on this variable.

2.4.5 Tests of hypothesis

I hypothesize a positive relation between the SEO announcement-period return and earnings timeliness (i.e., a negative relation between the SEO announcement effect and earnings timeliness). I test the hypothesis by estimating the following model:

$$CAR_j = \beta_0 + \beta_1 \times TL_j + \beta_2 \times OFFER\_SIZE_j + \beta_3 \times FIRM\_SIZE_j + \beta_4 \times MTB_j + \tau_j \quad (7)$$

TL_j is the value of firm j's earnings timeliness. $OFFER\_SIZE_j$ is the issue's size. I test both relative offer size and absolute offer size in the regression. $FIRM\_SIZE_j$ is the natural log of the total assets of the SEO firm j. Market-to-book ratio, MTB_j, describes the growth opportunities of firm j.

I close this section by addressing two potential selection bias issues with my empirical design. First, as discussed above, I sample only firms that issued new stocks. Bias may result if firms that decide to issue SEOs instead of debt are those with greater or less earnings timeliness. As an illustration, I compare the earnings timeliness of the sample firms with that of firms in Francis et al. (2004) and find that SEO firms tend to have significantly smaller earnings timeliness values than those reported by Francis et al. (2004). SEO firms, then, tend to be more opaque than non-SEO firms. Second, selection bias may result because time-series calculations require the use of firms with a minimum number of survival years before SEO events. Thus, the sample firms tend to be large and successful firms. Large and successful firms tend to be more transparent than small and young firms.

2.5 Empirical results

2.5.1 Descriptive statistics

Table 2.1, Panel A presents the descriptive statistics of the cumulative abnormal return in SEO announcement period. The average stock return at 3045 SEO announcement is from around -2% to -3%, depending on the method used to calculate the CAR.

To obtain earnings timeliness, I further require at least 6 yearly data points from 8 years prior to the SEO filing date to 1 year prior to the SEO filing date. Using OLS, I obtain earnings timeliness (TL) from Equation 1 in Section 3. In order to reduce the effects of outliers, I exclude the observations in the top or bottom 1% of dependent and independent variables in each equation.

Descriptive statistics of earnings timeliness can be found in Panel B, Table 2.1. The earnings timeliness measure, TL, has a mean (median) value of 0.109 (0.093).

2.5.2 Earnings timeliness vs. SEO announcement-period return

In order to reduce the effects of outliers, I exclude the observations in the top or bottom 1% of all available earnings timeliness and SEO announcement-period return. The SEO sample consists of 947 SEOs by 723 firms.

Table 2.2 presents the frequency distribution of SEOs by filing year and the number of offerings per firm. Panel A shows that SEOs were more frequent at the beginning of the 1990s. Panel B shows that about 80 percent of firms issue SEO only once.

Table 2.3 provides evidence on whether negative SEO announcement effect is less severe for firms with greater earnings timeliness. I run the regressions using market-model-based CAR and market-adjusted CAR as dependent variables, respectively. I first start from the base model that includes only offer size, firm size and growth opportunities. Columns 1 and 4 show that there is no significant relation between the SEO announcement-period return and the relative offer size (REL_SIZE). Columns 2 and 5 show a significant, negative relation between SEO announcement-period return and the absolute issue size (ABS_SIZE). Therefore, I use the absolute issue size, log of filing proceeds, as the proxy of offer size, hereafter. Columns 3 and 6 show that earnings timeliness has a significant, positive relation with SEO announcement-period return. Using a different calculation of cumulative abnormal returns at the announcement, the regressed coefficient is from 0.6% to 0.7%, with a 10% or 5% significance level. This means that firms reporting earnings in a more timely fashion experience less price-drops at the SEO announcement. This result is consistent with the hypothesis.

2.5.3 Additional tests

In this section, I examine whether the impact of earnings timeliness on the SEO announcement effect is unique and would not be subsumed by other earnings attributes. To be specific, these earnings attributes are accrual quality, persistence, predictability, smoothness and value relevance. I do not compute firm-specific

conservatism because many SEO firms do not have enough negative annual returns in the estimation period to calculate conservatism.

Accrual quality describes the effectiveness of current accruals to map into cash flows in prior, current and subsequent periods (Dechow and Dichev, 2002; Francis et al., 2004). One measure of accrual quality is the negative of the standard deviation of the residuals in the firm-specific regression of accruals on lagged, current and future cash flows:

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi_{0,j} + \varphi_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \nu_{j,t} \qquad (8a)$$

where $TCA_{j,t}$ is firm j's total current accruals in year t; $CFO_{j,t}$ is firm j's cash flow in year t; $Asset_{j,t}$ is the average of firm j's total assets between fiscal year t and t-1. Accrual quality, AQ1, is equal to $-\sigma(\hat{\nu}_{j,t})$.

McNichols (2002) improves the model in Equation 8a. He finds that the explanatory power in cross-sectional regressions is greatly improved by including deflated changes in sales and deflated property, plant and equipment. He proposes the model below:

$$\begin{aligned}\frac{TCA_{j,t}}{Assets_{j,t}} &= \varphi'_{0,j} + \varphi'_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi'_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi'_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} \\ &+ \varphi'_{4,j}\frac{\Delta SALES_{j,t}}{Assets_{j,t}} + \varphi'_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + e_{j,t}\end{aligned} \qquad (8b)$$

Accrual quality as defined in this model, AQ2, is equal to $-\sigma(\hat{e}_{j,t})$. Larger values of AQ1 (AQ2) correspond to better accrual quality. I include AQ2 as the measure of accrual quality in the regression to examine whether earnings timeliness' influence on the SEO announcement period return would be suppressed by accrual quality.

Greater accrual quality, i.e., reduced variation in the residual, indicates that earnings information provided by the firm is a more reliable measure of a firm's cash flow and performance, so higher accrual quality can increase information quality provided by earnings and decrease the information asymmetry between managers and investors. Therefore, greater accrual quality mitigates potential adverse selection problems in SEO events and leads to a less negative SEO announcement effect (Lee and Masulis, 2009).

Value relevance measures the ability of earnings level and earnings change to explain the returns (Francis et al., 2004). One measure of value relevance is the adjusted R^2 of the regression of annual returns on contemporaneous earnings and changes in earnings.

$$RET_{j,t} = \delta_{0,j} + \delta_{1,j} \frac{E_{j,t}}{MKTCAP_{j,t-1}} + \delta_{2,j} \frac{\Delta E_{j,t}}{MKTCAP_{j,t-1}} + \mu_j \qquad (9)$$

In Equation 9, $E_{j,t}$, $MKTCAP_{j,t-1}$ and $RET_{j,t}$ are defined as Equation 1 and $\Delta E_{j,t}$ as equals $E_{j,t}$ minus $E_{j,t-1}$. Value relevance, VR, is equal to the adjusted R^2. Larger values of VR correspond to greater value relevance.

Francis et al. (2004) define earnings smoothness (SMTH) as the negative of the standard deviation of the deflated earnings divided by the standard deviation of the deflated cash flows.

$$SMTH_j = -\frac{\sigma(E_{j,t} / Assets\_end_{j,t-1})}{\sigma(CFO_{j,t} / Assets\_end_{j,t-1})} \quad (10)$$

where $E_{j,t}$ and $CFO_{j,t}$ are the earnings and cash flows for firm j in fiscal year t; $Assets\_end_{j,t-1}$ is the total assets at the end of fiscal year t-1. Larger values of SMTH correspond to more earnings smoothness.

The time-series persistence of earnings describes the autocorrelation between past earnings and future earnings, while the predictability of earnings reflects the ability of past earnings to predict future earnings (Lipe, 1990; Francis et al., 2004). One measure of earnings persistence is the autocorrelation coefficient in AR(1) model for adjusted earnings and one measure of earnings predictability is the standard deviation of the negative of the standard deviation of the residuals in the AR(1) model for adjusted earnings.

$$X_{j,t} = \phi_{0,j} + \phi_{1,j} X_{j,t-1} + \varsigma_{j,t} \quad (11)$$

where $X_{j,t}$ is firm j's split-adjusted earnings per share in fiscal year t; earnings persistence, PER, is equal to $\hat{\phi}_{1,j}$ and earnings predictability, PRED, is equal to $-\sigma(\hat{\varsigma}_{j,t})$. Larger values of PER and PRED correspond to better earnings persistence and greater predictability, respectively.

In calculating for each earnings attribute, I require at least 6 yearly data points from 8 years prior to the SEO filing date to 1 year prior to the SEO filing date. Using OLS, I obtain accrual qualities (AQ2), value relevance (VR) and smoothness (SMTH) from Equations 8 through 10. Using a maximum likelihood method, I obtain earnings persistence (PER) and predictability (PRED) from the AR(1) model in Equation 11. As in the calculation of earnings timeliness, I exclude the observations in the top or bottom 1% of dependent and independent variables in my calculation of each earnings attribute to reduce the effects of outliers.

Table 2.1, Panel B presents descriptive statistics of all earnings attributes. As discussed previously, earnings timeliness measure, TL, has a mean (median) value of 0.109 (0.093). In comparison, Francis et al. (2004) report a mean (median) value of 0.466 (0.465). The measure of value relevance, VR, has a mean (median) value of 0.142 (0.116), while Francis et al. (2004) give a mean (median) value for value relevance as 0.423 (0.416). My results on accrual quality are comparable to those reported by Francis et al. (2004).

This pattern may arise from the self-selection problems inherent in my research design. To review, all sample firms cited in my work are those that issue new shares. It is possible, though, that firms deciding to issue these shares are also those that do not include value-relevant information in a timely manner or are those with earnings data that do not account for their returns well.

In order to examine whether other attributes subsume earnings timeliness, I run the regression and examine whether the coefficient and significance level of earning timeliness still holds in the presence of the others:

$$CAR_j = \beta_0' + \beta_1' \times TL_j + \beta_2' \times AQ_j + \beta_3' \times VR_j + \beta_4' \times EP_j + \beta_5' \times PRED_j + \beta_6' \times SMTH_j + \beta_7' \times OFFER\_SIZE_j + \beta_8' \times FIRM\_SIZE_j + \beta_9' \times MTB_j + \tau_j' \quad (12)$$

I also exclude the observations in the top or bottom 1% of each earnings attribute and SEO announcement-period return. The final sample consists of 495 SEOs by 379 firms. Table 2.4 presents the frequency distribution of SEOs by filing year and number of offerings per firm. Panel A shows that SEOs are more frequent at the beginning of 1990s. Panel B shows that about 80% firms issue SEO only once.

As in Lee and Masulis (2009), Table 2.5 shows that negative SEO announcement effect is less for firms with better accrual quality at the 5% level (t statistics: 2.34). No significant relations are found between the SEO announcement effect and earnings persistence, earnings predictability, value relevance or earnings smoothness. More importantly, it also shows that the effect of earnings timeliness on the SEO announcement period return still holds at the 5% level (coefficient: 1.53%; t statistics: 2.45) when other earnings attributes, including accrual quality, are considered, suggesting that earnings timeliness captures its own dimension in the cost of financing activities.

Table 2.5 shows that both accounting-based and market-based financial reporting qualities may affect SEO announcement effect. However, it is necessary

to point out that, compared with accounting-based earnings attributes, all market-based measures have their inherent limitations in event studies. Market-based accounting attributes, such as earnings timeliness, value relevance and conservatism, are calculated in the way that the stock market is regarded as being efficient. However, even studies in SEO, earnings announcements or merger and acquisitions, usually deal with situations in which stocks are overvalued or undervalued and investors regard these events as signals that reveal the true value of stock prices.

2.6 Conclusions

This paper examines whether the fact that a firm reports its earnings in a timely way affects investors' responses at the time of a firm's announcement of its SEO financing decision. I find that firms with greater earnings timeliness tend to experience less price drops at SEO announcements.

The results present evidence that timely financial reporting can help investors to assess firm performance by reducing the information asymmetry between managers and investors. So, this paper contributes to literature about the consequences of financial reporting quality. This study provides empirical evidence on the relation between earnings attributes and a firm's information environment and proposes that information asymmetry can be one link between earnings attributes and information risk. This paper also enriches the scarce literature about earnings timeliness.

This study suggests two potential avenues for future research. First, it may be intriguing to examine whether SEO firms tend to be less transparent firms and, thus, set up a link between corporate governance and corporate investment decisions. Second, distinguishing primary offerings and secondary offerings may yield some interesting topics.

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Table 2.1

Descriptive statistics

The initial samples consists of 3045 SEOs from 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, shares filed, filing amount, 6) SEOs with offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

Model_CAR is the cumulative abnormal return in the event period using the OLS market model. Adjusted_CAR is the cumulative market-adjusted return in the event period. (Filing date: day 0; event period: trading day -1, 0, 1; estimation period: period from trading day -180 to trading day -10).

For each earnings attribute's calculation, at least 6 years' necessary financial statements data are required within 8 years prior to the SEO filing date.

Accrual quality has two measures: AQ1 and AQ2. AQ1 is equal to $-\sigma(\hat{v}_{j,t})$ in

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi_{0,j} + \varphi_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + v_{j,t}.$$

AQ2 is equal to $-\sigma(\hat{e}_{j,t})$ in

$$\frac{TCA_{j,t}}{Assets_{j,t}} = \varphi'_{0,j} + \varphi'_{1,j}\frac{CFO_{j,t-1}}{Assets_{j,t}} + \varphi'_{2,j}\frac{CFO_{j,t}}{Assets_{j,t}} + \varphi'_{3,j}\frac{CFO_{j,t+1}}{Assets_{j,t}} + \varphi'_{4,j}\frac{\Delta SALES_{j,t}}{Assets_{j,t}} + \varphi'_{5,j}\frac{PPE_{j,t}}{Assets_{j,t}} + e_{j,t}$$

.

Earnings persistence (EP) and predictability (PRED) are measured as $\hat{\phi}_{1,j}$ and $-\sigma(\hat{\varsigma}_{j,t})$ in $X_{j,t} = \phi_{0,j} + \phi_{1,j}X_{j,t-1} + \varsigma_{j,t}$, respectively.

Earnings smoothness (SMTH) is measured as $-\frac{\sigma(E_{j,t} / Assets\_end_{j,t-1})}{\sigma(CFO_{j,t} / Assets\_end_{j,t-1})}$.

Value relevance (VR) and earnings timeliness (TL) are measured as the adjusted R^2 in

$$RET_{j,t} = \delta_{0,j} + \delta_{1,j} \frac{E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} + \delta_{2,j} \frac{\Delta E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} + \mu_j \text{ and}$$

$$\frac{E_{j,t}}{SHARES_{j,t-1}P_{j,t-1}} = b_{j,0} + b_{j,1}NEG_{j,t} + b_{j,2}RET_{j,t} + b_{j,3}NEG_{j,t}\square RET_{j,t} + \varepsilon_{j,t}.$$

TCA	Total current accruals = ΔCA - ΔCL - ΔCash + ΔSTDEBT (Δ: change between year t-1 to year t);
CA	Current asset (Compustat #4);
CL	Current liabilities (Compustat #5);
Cash	Cash and short-term investments (Compustat #1);
STDEBT	Debt in current liabilities (Compustat #34);
CFO	Cash flow from operations = E –TCA + depreciation amortization (Compustat #14);
Assets	Average total assets (Compustat #6) in year t and year t-1;
Sales	Sales (Compustat #12);
Assess_end	Total assets at the end of fiscal year;
PPE	Property, plant and equipment (Compustat #7);
X	Split-adjusted earnings per share (Compustat #58);
RET	Twelve-month raw return ending three months after the end of fiscal year t;
E	Earnings before extraordinary items, discontinued operations, and special items (Compustat #18);
$SHARES$	Common shares outstanding (Compustat #25);
P	Stock price – fiscal year – close (Compustat #199).

	Mean	Std. Dev.	10%	25%	Median	75%	90%
Model_CAR	-0.0284	0.0666	-0.1072	-0.0627	-0.0259	0.0054	0.0404
Adjusted_CAR	-0.0194	0.0646	-0.0924	-0.0529	-0.0200	0.0113	0.0494

Table 2.1

Panel A: Descriptive statistics of SEO announcement period returns

Panel B: Descriptive statistics of earnings attributes

	N	Mean	Std. Dev.	10%	25%	Median	75%	90%
AQ1	598	-0.0317	0.0273	-0.0676	-0.0453	-0.0240	-0.0109	-0.0053
AQ2	573	-0.0236	0.0236	-0.0530	-0.0312	-0.0152	-0.0072	-0.0037
EP	1106	0.2529	0.3744	-0.2485	-0.0106	0.2827	0.5412	0.7422
PRED	1106	-0.9950	1.0399	-2.2110	-1.1936	-0.6370	-0.3603	-0.2166
SMTH	944	-0.7438	0.4423	-1.2521	-0.9773	-0.6956	-0.4333	-0.2472
VR	950	0.1424	0.3642	-0.3302	-0.1503	0.1164	0.4069	0.6540
TL	958	0.1086	0.4403	-0.4437	-0.2205	0.0933	0.4450	0.7284

Table 2.2

Frequency distribution

The samples consists of 947 SEOs by 723 firms from 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, filing shares, filing amount, 6) SEOs with an offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP.

Panel A: Frequency distribution of SEOs by filing year

SEO_year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1984	26	2.75	26	2.75
1985	51	5.39	77	8.13
1986	58	6.12	135	14.26
1987	41	4.33	176	18.59
1988	16	1.69	192	20.27
1989	29	3.06	221	23.34
1990	24	2.53	245	25.87
1991	73	7.71	318	33.58
1992	69	7.29	387	40.87
1993	75	7.92	462	48.79
1994	37	3.91	499	52.69
1995	51	5.39	550	58.08
1996	52	5.49	602	63.57
1997	31	3.27	633	66.84
1998	30	3.17	663	70.01
1999	30	3.17	693	73.18
2000	33	3.48	726	76.66
2001	41	4.33	767	80.99
2002	44	4.65	811	85.64
2003	41	4.33	852	89.97
2004	40	4.22	892	94.19
2005	27	2.85	919	97.04
2006	28	2.96	947	100.00

Panel B: Frequency distribution of SEOs by number of offerings

N	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	573	79.25	573	79.25
2	107	14.80	680	94.05
3	24	3.32	704	97.37
4	11	1.52	715	98.89
5	5	0.69	720	99.59
6	2	0.28	722	99.86
7	1	0.14	723	100.00

Table 2.3

Regression of SEO announcement effect on earnings timeliness

This table presents OLS regression estimates of SEO announcement-period return on earnings timeliness (TL). The SEO sample consists of 947 filings by 723 firms over the period from 1984 to 2006. In the first 3 columns, I use model-based cumulative abnormal return as the dependent variable. In the last 3 columns, I use market-adjusted cumulative abnormal return as the dependent variable. The absolute value of t statistics is in brackets. ***,**, and * represent 1%, 5%, and 10% significance respectively.

	Model_CAR			Adjusted_CAR		
	1	2	3	4	5	6
REL_SIZE	-0.0005			-0.0009		
	[1.35]			[0.24]		
ABS_SIZE		-0.0073	-0.0071		-0.0040	-0.0039
		[5.17]***	[3.74]***		[2.16]**	[2.09]**
MTB	0.0015	0.0022	0.0022	0.0028	0.0032	0.0032
	[2.52]***	[3.58]***	[3.51]***	[4.88]***	[5.35]***	[5.29]***
Firm_Size	0.0034	0.0061	0.0062	0.0019	0.0035	0.0035
	[3.89]***	[5.54]***	[5.58]***	[2.28]**	[3.22]***	[3.25]***
TL			**0.0075**			**0.0062**
			[2.01]**			**[1.71]***
Intercept	-0.0456	-0.0340	-0.0356	-0.0326	-0.0266	-0.028
	[7.35]***	[5.17]***	[5.38]***	[5.43]***	[4.15]***	[4.32]***
N	947	947	947	947	947	947
Adj_R2	0.0162	0.0310	0.0342	0.0234	0.0281	0.0301

Table 2.4

Frequency distribution

The initial samples consists of 495 SEOs by 379 firms from the period of 1984 to 2006 listed on NYSE, NASDAQ, or AMEX and excludes: 1) limited partnership, 2) right's issue, 3) unit issue, 4) closed-end fund, 5) SEOs lacking information about filing date, issue date, offer price, filing shares, filing amount, 6) SEOs with an offer prices less than $5, 7) SEOs with more than one issue for the same filing, 8) SEOs whose lag of issue date compared to filing date is smaller than 5, or larger than 60 9) SEOs lacking CRSP daily stock returns for the three trading days around SEO filings or from the prior 180 trading days to the prior 10 trading days, and 10) SEOs without one-to-one correspondence between CUSIP in SDC and identifier in COMPUSTAT/CRSP. I also require at least 6 data points within 8 years prior to the SEO filing date in calculating for 6 earnings attributes: timeliness, value relevance, accrual quality, earnings persistence, predictability, and smoothness.

Panel A: Frequency distribution of SEOs by filing year

SEO_year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1984	20	4.04	20	4.04
1985	20	4.04	40	8.08
1986	28	5.66	68	13.74
1987	27	5.45	95	19.19
1988	9	1.82	104	21.01
1989	16	3.23	120	24.24
1990	17	3.43	137	27.68
1991	33	6.67	170	34.34
1992	40	8.08	210	42.42
1993	39	7.88	249	50.30
1994	26	5.25	275	55.56
1995	34	6.87	309	62.42
1996	29	5.86	338	68.28
1997	23	4.65	361	72.93
1998	16	3.23	377	76.16
1999	14	2.83	391	78.99
2000	16	3.23	407	82.22
2001	19	3.84	426	86.06
2002	23	4.65	449	90.71
2003	17	3.43	466	94.14
2004	14	2.83	480	96.97
2005	15	3.03	495	100.00

Panel B: Frequency distribution of SEOs by number of offerings

N	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	304	80.21	304	80.21
2	49	12.93	353	93.14
3	15	3.96	368	97.10
4	9	2.37	377	99.47
6	2	0.53	379	100.00

Table 2.5

Relation between SEO announcement-period return and earnings attributes

This table presents OLS regression estimates of SEO announcement-period return on earnings attributes. The SEO sample consists of 495 filings by 379 firms over 1984 to 2006. The dependent variable is the model-based cumulative abnormal return in SEO event period. The absolute value of t statistics is in brackets. ***,**, and * represent 1%, 5%, and 10% significance respectively.

	1	2	3	4	5	6	7	8
ABS_SIZE	-0.0124	-0.0123	-0.0107	-0.0124	-0.0125	-0.0124	-0.0116	-0.0102
	[4.33]***	[4.27]***	[3.65]***	[4.34]***	[4.33]***	[4.33]***	[3.97]***	[3.44]***
MTB	0.0057	0.0056	0.0061	0.0057	0.0058	0.0058	0.0059	0.0064
	[3.66]***	[3.62]***	[3.92]***	[3.66]***	[3.66]***	[3.68]***	[3.75]***	[4.08]***
Firm_Size	0.0112	0.0113	0.0093	0.0111	0.0112	0.0109	0.0104	0.0081
	[5.73]***	[5.82]***	[4.43]***	[5.69]***	[5.71]***	[5.46]***	[5.17]***	[3.60]***
TL		**0.0113**						**0.0153**
		[2.09]**						**[2.45]****
AQ2			0.2702					0.2798
			[2.47]**					[2.34]**
VR				-0.0017				-0.0109
				[0.25]				[1.41]
EP					-0.0016			-0.0026
					[0.24]			[0.41]
PRED						-0.0013		-0.0040
						[0.52]		[1.47]
SMTH							0.0090	0.0047
							[1.42]	[0.68]
Intercept	-0.0501	-0.0528	-0.0401	-0.0496	-0.0500	-0.0501	-0.0431	-0.0355
	[5.31]***	[5.56]***	[3.92]***	[5.12]***	[5.21]***	[5.31]***	[4.05]***	[3.13]***
N	495	495	495	495	495	495	495	495
Adj_R2	0.0594	0.0657	0.0691	0.0576	0.0576	0.0580	0.0613	0.0758

Chapter 3

Essay II: Market Power and Accrual Management

3.1 Introduction

Earnings include cash flows and accruals. Accrual management refers to activities undertaken by managers to inflate or reduce reported earnings via accruals, but not to change current cash flows. The past 20 years have seen an enormous increase in accrual management (Bergstresser and Philippon, 2006). This essay examines whether a firm's accrual management is affected by its product market power.

My hypothesis builds on Peress (2010). Peress sets up a theoretical model in which there is perfect competition in the stock market but imperfect competition in the product market. Imperfect competition in the product market provides each firm some ability to set prices for its product. A firm with greater market power has greater ability to pass on productivity shocks to its customers by setting prices (Kale and Loon, 2011). Within this framework, I hypothesize that firms with greater market power have less incentives to manipulate their earnings through accrual management that put the managers at more audit, litigation or regulation risk, because they could meet the earnings expectations by setting prices accordingly.

In the empirical analysis, I use the Lerner index to measure product market power and the asset-deflated absolute discretionary accruals to proxy the magnitude of accrual management. Using a sample of 35,745 firm-year observations over the 1997 to 2007 period, I find supporting evidence that firms with greater market power tend to have lower levels of asset-deflated discretionary accruals, even after controlling for other well-known variables that affect the practice of accrual management.

This essay is related to Marciutautyte and Park (2009) in the sense that we both work on the relation between product market and earnings management. However, these two studies are different in several aspects. First, Marciutautyte and Park (2009) employs an industry-level measure, the Herfindahl-Hirschman index to proxy the overall competition intensity of an industry. My paper uses the firm-level Lerner index to characterize a firm's competition status in its industry. Second, my firm-level study explores the effect of a firm's competition status in industry on its earnings management activities, while Marciutautyte and Park examine the effect of industry-level competition intensity on earnings management. In other words, Marciutautyte and Park examine the competition's inter-industry effect on accrual management, and I examine the competition's intra-industry effect on accrual management. Third, the two studies are based on different theories. My argument considers the effects of product market power on both the needs to manage earnings due to different agency problems and the abilities to manage earnings specifically through accrual management due to different price-

setting abilities, while their argument takes into account agency conflict theory only.

This essay has several contributions. First, it extends the earnings management literature by documenting the importance of a firm's market power for driving managers' accrual management decisions. Prior literature suggests factors that affect the degree to which a firm engages in accrual management are determined by the need and ability to manage earnings. Healy and Wahlen (1999) classifies accrual management reasons into three groups: capital market, contract and regulatory reasons. For example, avoiding losses increases managers' need to manipulate earnings; transparent operating environments restrict managers' ability to manage earnings. This essay adds to the existing literature by showing that a firm's competition level in product market, a factor that has never been documented in prior literature, is also a significant determinant of managers' incentives to manage earnings through accruals.

Second, my study complements recent studies on the relation between product market and capital market by providing empirical evidence on whether a firm's product market power affects its financial reporting practices. Due to increased globalization and intensity of import penetration, relaxation of barriers to entry and trade and the speed of technological change, competition in product markets is increasingly intense (Peress, 2010; Gaspar and Massa, 2005). Researchers have become more interested in the effects of the competition on various aspects of finance or accounting, such as managers' investment decisions, managers' disclosure decisions, analysts' forecasts properties and asset pricing

(Fee and Thomas 2004; Botoson and Stanford, 2005; Ali et al., 2010; Marciukaityte and Park, 2009; Hou and Robinson, 2006). This paper adds to existing studies by documenting the effect of a firm's competition status on a manager's accrual management practices. Peress predicts several possible effects of market power on capital market, such as stock liquidity, analysts' forecasts, asset allocation, and information efficiency. My paper adds to his work by demonstrating the impact of market power on the financial reporting quality.

Third, the demonstrated results also have direct implications for regulators and auditors by offering empirical evidence that the use of discretionary accruals to manipulate reported earnings is more pronounced at firms with weak market power. For example, in industries where many firms are in a disadvantageous competition status, regulators may refine existing accounting standards to enhance their financial reporting quality. Auditors can also benefit from this study by knowing how to adjust audit fees based on their clients' competition levels accordingly, which I will discuss in Essay III.

The remainder of the paper is organized as follows. The next section reviews prior literature on accrual management and market power and develops the hypothesis. Section 3.3 introduces the data and the empirical approach. Section 3.4 presents empirical results. The final section contains a conclusion.

3.2 Hypothesis development

Earnings management has been a topic of enormous interest for many years. It occurs for a variety of reasons. Healy and Wahlen (1999) classify these incentives into three groups: capital market motivations, contracting motivations, and regulatory motivations. Accounting data are important for equity holders to value a firm. Researchers have provided evidences on earnings management due to high stock market expectations in periods prior to specific events such as equity offering and stock-financed acquisitions (Teoh et al., 1998a; Teoh et al., 1998b; Erickson and Wasn, 1998). Burgstahler and Dichev (1997) present evidence that managers may manipulate earnings to avoid negative earnings by showing abnormal discontinuities in the distribution of reported earnings. There is also evidence showing that some managers manipulate earnings to avoid reporting a loss, earnings declines or falling short of market expectations (Burgstahler and Eames, 1998; Abarbanell and Lehavy, 2003; Degeorge et al., 1999). Accounting data are not only used by equity holders to value a firm, but also to help other stakeholders monitor and regulate contracts such as compensation contracts and lending contracts. Many studies also present evidence demonstrating earnings management activities for contracting reasons. For example, Healy (1985) finds that managers tend to use their discretion in accrual judgments to increase their earnings-based bonuses. DeFond and Jiambalvo (1994) show that some firms accelerate earnings to reduce the likelihood of violating lending covenants. In addition, a number of other studies have examined the impact of antitrust regulation or industry-specific regulation on managers' propensities to manipulate earnings.

Managers also have different methods of managing earnings. Earnings are composed of cash flows and accruals. Accruals reflect changes in firm value that are not reflected in current cash flows (e.g., in accounts receivable and/or account payable). Accruals are relatively hard to measure and involve a great deal of management discretion.

Accrual management refers to within-GAAP (Generally Accepted Accounting Principles) opportunistic activities to "obscure" true economic performance (Dechow and Skinner, 2000). Accrual management involves risks and costs. Demers and Wang (2009) find, for instance, that the reversing nature of accruals causes younger managers to handle accruals less in the early stages of their careers because of concern for their own career paths. Zang (2006) and Cohen et al. (2008) show that aggressive accrual management puts firms at higher risk of regulatory scrutiny and litigation. Furthermore, financial reporting choices must meet the requirements of auditors and thus have limited accounting flexibility. So, managers tend to consider accrual management less if they have an alternative to boost or decrease earnings under less pressure from regulatory scrutiny and auditing. The purpose of this paper is, therefore, to investigate whether a firm's superior competition status in product market provides it an alternative to boost or decrease earnings in addition to accrual management.

The discussion above clearly shows that when managers make decisions on their earnings management practice, they need to consider the need to manage earnings and their ability to do so through accrual management. Therefore, I examine whether a firm with advantageous competition status has more need to

manage earnings. If it does, will its competition status affect its ability to achieve this goal?

On the one hand, market power may increase a firm's needs to manage earnings. Firms with greater market power usually enjoy the underlying profits from their superior competition status, so they may engage in more earnings management to decrease their earnings in order to deter any new entries or avoid government intervention. Also, firms with greater market power tend to have greater profitability than those with less market power, thus, leading to more managerial slacks, greater agency conflicts and, consequently, more need to manage earnings.

On the other hand, market power provides firms with superior competition status alternative ways to boost or reduce their earnings. Even if firms with superior competition status have more need to reduce earnings to deter new entries or avoid government intervention, they do not have to realize this through accrual management because their competition status provides them a legal and safer way to meet their requirements on earnings. With a number of alternate ways of boosting or decreasing earnings at its disposal, firms with greater market power may rely less on accrual management. Peress (2010) sets up a theoretical model in which there is perfect competition in the stock market but imperfect competition in the product market. He points out that imperfect competition in the product market provides each firm with some ability to set prices for its product. A firm with greater market power has a greater ability to pass on productivity shocks to its customers by setting prices (Kale and Loon, 2011). For example, a firm can raise

its product prices to boost sales when they meet negative productivity shocks to their output. Hence, I argue that firms with greater market power rely less on accrual management to meet their earnings goals because they could meet the earnings expectations by setting prices accordingly.

To summarize, agency theory and price-setting theory provides two conflict predictions as to the relation between market power and accrual management. However, superior competition status also provides firms with alternative ways to meet their earnings expectations and, thus, rely less on accrual management. I therefore have the hypothesis below:

Hypothesis: *Ceteris paribus*, firms with greater market power tend to have less absolute value of discretionary accruals.

Before I conclude this section, it is necessary to clarify the difference between price-setting activities and real management. Managers may boost or reduce earnings either via changing accruals or via changing cash flows. The price-setting activities taken by firms with market power are a different mechanism from accrual management because the former has direct cash flow effects. They are also different from real management even if both methods have impacts on cash flows in current period. Roychowdhury (2006) defines real management activities as "departures from normal operational practices, motivated by managers' desires to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." He finds evidence suggesting price discounts, overproduction and reduction of

discretionary expenditures to improve reported earnings. Thus, real management activities could be long-term, value-destroying and result in the reduction of future revenue generating capability, while price-setting activities taken by firms with greater power would not affect a firm's normal operational practices. Therefore, price-setting activities are also significantly different from real management activities.

Price-setting activities are the privileged rights enjoyed by firms with superior market power in an imperfectly competitive product market. They may involve costs resulting from a loss in market power or reputation. But, strictly speaking, they do not fall within the scope of earnings management. They provide a possible choice for firms in need of avoiding accrual management or real management. Future research may explore the trade-off between real management activities and price-setting activities.

3.3 Research design

This section documents the construction of the dependent variable, independent variable and control variables. I also discuss the estimated coefficients on control variables and the regression model.

3.3.1 Dependent variable: discretionary accruals

The dependent variable is the absolute value of asset-deflated discretionary accruals. I use a modified cross-sectional Jones model described in Dechow et al., (1995) to calculate the deflated discretionary accruals (Jones, 1991). Discretionary accruals are the unexplained portion of total accruals. They are obtained by subtracting non-discretionary accruals from total accruals, while total accruals are measured as the difference between reported earnings and cash flows from operations.

To determine non-discretionary accruals, I first run total accruals on variables that proxy normal accruals, i.e., changes in sales and gross property, plant and equipment. I use the cross-sectional OLS regressions by the first 2-digit SIC code to estimate β_0, β_1, and β_2 in Equation 1. At least 10 consecutive firm-year observations are required in each cross-sectional regression. In order to control for heteroscedasticity, all variables are deflated by lagged total assets. Asset-deflated nondiscretionary and discretionary accruals are the fitted values and residuals of the regression in Equation 1.

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_0 \frac{1}{A_{i,t-1}} + \beta_1 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

In Equation 1, the subscript i refers to firms, the subscript t refers to years. *TA*, total accruals, equals earnings before extraordinary items and discontinued operations less operating cash flows from continuing operations. To avoid the non-articulation problem mentioned in Collins and Hribar (2002), I collect operating cash flows from firms' cash flow statements reported under the Statement of

Financial Accounting Standards no. 95 (SFAS no. 95, FASB 1987) instead of firms' balance sheets in successive years. ΔREV represents the changes in revenues. *PPE* is gross property, plant, and equipment. *A* is the total assets.

I introduce the estimated coefficients $\hat{\beta}_0$, $\hat{\beta}_1$, and $\hat{\beta}_2$ to Equation 2 to calculate the asset-deflated nondiscretionary accruals. ΔAR in Equation 2 is the changes in account receivables.

$$NonDis\_Accrual_{i,t} = \hat{\beta}_0 \frac{1}{A_{i,t-1}} + \hat{\beta}_1 \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} + \hat{\beta}_2 \frac{PPE_{i,t}}{A_{i,t-1}} \quad (2)$$

Finally, I derive the asset-deflated discretionary accruals as $DIS\_AC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - NonDis\_Accrual_{i,t}$. The dependent variable is the absolute value of asset-deflated discretionary accruals.

3.3.2 Independent variable: product market power

As suggested in previous literature (Lerner, 1934; Carlton and Perloff, 2000; Kale and Loon, 2010), I use the Lerner index or price-cost margin (*PCM*) as the measure of product market competition status. Following Peress (2010), I measure *PCM* as the ratio of operating profit to sales. Operating profit is sales less cost of goods sold and selling, general and administrative expenses.

As noted in Kale and Loon (2010) and McFalls (1997), courts and government agencies usually employ market share as a measure of market power.

So I use *MKT_SH* as an alternative measure of market power in the robustness test. *MKT_SH* is calculated as the ratio of the firm's sales to total sales in the same 4-digit industry sales.

3.3.3 Control Variables

Based on existing research on accrual management, I consider firms' operating environments, growth opportunities, profitability and regulation environments in the regression. Below are the descriptions on the control variables and the predicted sign of their coefficients (Yu, 2008; Bergstresser and Philippon, 2006; Marciukaityte and Park, 2009):

SIZE (-): firm size, measured as the natural log of market value of equity. The coefficient for the firm size is expected to be negative because large firm size implies a more transparent information environment. Managers have fewer opportunities to manage earnings.

MTB (+): market-to-book ratio, measured as the ratio of market value of a firm to total assets. Market value is total assets plus market value of common equity minus book value of common equity. The coefficient for MTB is expected to be positive because firms with more growth opportunities tend to be less transparent. Managers are more likely to engage in discretionary accrual management.

GROWTH (+): growth rate of assets, measured as the change of assets scaled by lagged assets. The coefficient for GROWTH is expected to be positive because

growth rate of assets can also proxy a firm's growth opportunities and volatile status.

ROA (-): return on assets, measured as the earnings before interest and tax divided by total assets. The coefficient for ROA is expected to be negative because firms with low profitability tend to have volatile cash flow and thus firms tend to engage in discretionary accrual management.

VOLAT (+): standard deviation of annual asset-deflated cash flow growth over last five years. The coefficient for VOLAT is expected to be positive because managers have more rooms to manage earnings when firms are in more volatile states.

LEVER (?): leverage, calculated as the ratio of long-term debt to total assets. On the one hand, debt holders play a monitoring role on a firm's operation; on the other hand, high leverage may create pressure on managers to manipulate earnings. Previous literature also finds mixed results on the coefficient sign for LEVER. So I do not make any predictions on the sign for the estimated coefficient on LEVER.

EXTER (+): external financing activities, measured as the sum of net cash received from equity and debt issuance scaled by total assets. The coefficient for EXTER is expected to be positive because managers tend to manipulate earnings via accrual management in periods of equity offerings or debt issuance (Teoh et al., 1998a, 1998b).

BUS_SEG (+): number of business segments. The coefficient for the number of business segments is expected to be positive because more industry diversification leaves more space for earnings manipulation.

GEO_SEG (+): number of geographic segments. The coefficient for the number of geographic segments is expected to be positive because more industry diversification leaves more space for earnings manipulation.

SOX (-): SOX=1 if the data year is later than 2002, otherwise SOX=0. The coefficient for SOX is expected to be negative because Sarbanes-Oxley Act (SOX) is proven effective in lowering the level of accrual management (Cohen et al., 2008).

3.3.4 Regression

The regression model is shown in the equation below:

$$
\begin{aligned}
|DIS\_AC_{i,t}| &= \alpha_0 + \alpha_1 PCM_{i,t} + a_2 SIZE_{i,t} + a_3 MTB_{i,t} + a_4 GROWH_{i,t} \\
&+ a_5 ROA_{i,t} + a_6 VOLAT_{i,t} + +a_7 LEVER_{i,t} + a_8 EXTER_{i,t} + a_9 BUS\_SEG_{i,t} \\
&+ a_{10} GEO\_SEG_{i,t} + a_{11} SOXi,t + +a_{12} PCM_{i,t} \times SOX_{i,t} \\
&+ Year_{i,t} + Industry_{i,t} + Exchange_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{3}
$$

In Equation 3, the subscript i refers to firm i, the subscript t refers to time in years. I consider year, industry and exchange effects in the model. I run the fixed-effect regression on the panel data set from 1997 to 2007. Following Petersen (2009), I correct the unobserved firm effect in the calculation of standard errors.

3.4 Empirical tests

3.4.1 Sample selection

I collect the business segments and geographical segments data from COMPUSTAT Industrial Segment database. I obtain financial data from the COMPUSTAT Annual Industrial and Research Files to calculate discretionary accrual and product market power and other control variables. I require that necessary inputs be available to calculate the dependent, independent and control variables. I also require at least 10 observations in each 2-digit SIC grouping per year. I exclude firm-year observations with deflated absolute value of total accruals greater than total assets because it is likely that such observations are due to recording errors (Kothari et al., 2005). Because *PCM* is defined as the ratio of operating profit to sales, it cannot be greater than 1. So I restrict the sample to observations with *PCM* less than 1. I further discard observations with bottom 1% values of *PCM* because they have extreme values as negative as several thousand. For the similar reason, I eliminate the top 1% values of *VOLAT* because these firm-year observations have absolute values of *VOLAT* around 4000. Ultimately, I have 35,745 firm-year observations with 6,841 firms spanning from 1997 to 2007, one year before the financial crisis.

3.4.2 Descriptive statistics

Table 3.1 presents the descriptive statistics for the dependent variable, independent variable and control variables. The level of asset-deflated discretional

accruals has the mean 0.0889 and median 0.0567. Price-cost margin, *PCM*, has the mean 0.0415 and median 0.0948. Market share, *MKT_SH*, has the mean 0.0678 and median 0.0087. Table 3.2 displays the Pearson correlation coefficients between variables. Both price-cost margin and market share exhibit a negative correlation with the absolute value of asset-deflated discretionary accruals. Table 3.3 presents the frequency distribution of the samples.

3.4.3 Main results

Table 3.4 shows the regression results. Column 1 of Table 3.4 presents results based on Equation 3 without control variables. The coefficient on *PCM* suggests one percentage point increase in *PCM* is associated with a 5 basis point decrease in the absolute value of deflated discretionary accruals. A movement from the 25th percentile of *PCM* (0.0255) to the 75th percentile (0.1696) would be associated with a 72 (=(0.1696-0.0255)*100*5) basis point decrease in the absolute value of deflated discretionary accruals.

Column 2 of Table 3.4 presents results based on Equation 3 with control variables only. Leverage and number of geographical segments do not show significant relation with the level of discretionary accruals, although the correlation of number of geographical segments with accrual management has the expected sign. All other estimated coefficients have the expected signs, and most of results are significant at 1% except *MTB* (t statistics=1.75, significant

level=10%) and number of business segments (t statistics=2.31, significance level=5%).

Column 3 of Table 3.4 presents the regression results of Equation 3. Adding control variables reduces the magnitude but does not affect the statistical significance of the estimated coefficient on *PCM*. The estimated coefficient on *PCM* is -0.0241 (t statistics: -4.79). The coefficients for the control variables also remain qualitatively the same as they are in Column 2. I have an interaction item between *PCM* and *SOX* in the regression. I expect that the impact of market power on accrual management is less when litigation risk is more severe because low *PCM* firms tend to less engage in accrual management, while the accrual management practice of high *PCM* firms does not change much after the passage of *SOX*. As expected, I find that after the passage of *SOX*, the differences in the accrual management practice between high and low *PCM* firms become less.

The results suggest that the negative relation between market power and the magnitude of discretionary accruals is not driven by the operating environments or firms' growth opportunities.

3.4.4 Additional results

3.4.4.1 Alternative measure of market power

As a robustness check, I introduce an alternative measure of market power into the empirical test. Market share, *MKT_SH*, is calculated as the ratio of the

firm's sales to total sales in the same 4-digit industry. Such a measure is widely used by courts and government agencies to proxy market power. Its descriptive statistics are also included in Table 1. *MKT_SH* has the mean 0.0678 and median 0.0087. I repeat the same steps described above with *MKT_SH* in replace of *PCM* in Equation 3.

Table 3.5 displays the regression results. Column 1 of Table 3.5 presents the regression results of absolute value of discretionary accruals on *MKT_SH*. I find that a one percentage point increase in *MKT_SH* is associated with 3 basis point decrease in the absolute value of deflated discretionary accruals.

Column 2 of Table 3.5 presents the regression results on control variables only. Leverage and the number of geographical segments do not show significant relation with the level of discretionary accruals. All other estimated coefficients have the expected signs, and most of results are significant at 1% except MTB (t statistics=1.75, significance level=10%) and the number of business segments (t statistics=2.31, significance level=5%).

Column 3 of Table 3.5 displays the regression results of Equation 3, where *PCM* is replaced with *MKT_SH*. Although adding control variables decreases the statistical significance of the estimated coefficient for *MKT_SH*, the sign of the estimated coefficient for *MKT_SH* is still negative. The estimated coefficient for *MKT_SH* is -0.0055 (t statistics: -1.32). The coefficients for the control variables also remain qualitatively the same as they are in Column 2. Again, I have the interaction item between *MKT_SH* and *SOX* in the regression. As expected, the

impact of market power on accrual management becomes less when litigation risk is more severe because firms with low market shares tend to engage in less accrual management after *SOX*, while the passage of *SOX* does not affect the accrual management practice of high *PCM* firms.

I further examine the joint impact of price-cost margin and market share on the level of discretionary accruals. Table 3.6 presents the estimates of the regression with both *PCM* and *MKT_SH* as independent variables. I find that the negative relation between *PCM* and the magnitude of discretionary accruals remains significant, while the correlation of *MKT_SH* and |*DIS_AC*| is statistically insignificant. Thus, I conjecture that price-cost margin is the economic linkage that underlies the correlation between market share and the level of discretionary accrual. In addition, following the logic in Ali et al (2009), we can see that *MKT_SH* is actually a biased measure to describe a firm's market power because *MKT_SH* is calculated using data from COMPUSTAT, but COMPUSTAT only includes information about public firms. For some industries, private firms constitute a significant part of the whole industry. Evidence shows that the impact of market power on the accrual management becomes less after the passage of SOX.

3.4.4.2 Industry-adjusted measure of market power

Following Gaspar and Massa (2005), I subtract the industry mean and median *PCM* to control for cross-industry effects. This allows me to get rid of industry-specific factors unrelated to market power. Table 3.7 reports the results

with industry-adjusted market power, *PCM_ADJ*, as an independent variable. When *PCM_ADJ* is calculated by subtracting the industry median and mean from the firm's *PCM* respectively, the coefficients on *PCM_ADJ* are -0.0235 and -0.0228, both with a significance level of 1% (t statistics=-4.63 and -4.51). Coefficients on the control variables are qualitatively the same as what is found in the regression without industry adjustment[1].

3.4.4.3 Alternative measures of discretionary Accrual

Ball and Shivakumar (2006) improve the discretionary accrual measure by controlling for asymmetric timeliness of accruals in recognizing gains and losses. Their model is described below:

$$TA_{i,t} = \tilde{\beta}_0 \frac{1}{A_{i,t-1}} + \tilde{\beta}_1 \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} + \tilde{\beta}_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \tilde{\beta}_3 \frac{CFO_{i,t}}{A_{i,t-1}} + \tilde{\beta}_4 DCFO_{i,t} + \tilde{\beta}_5 \frac{CFO_{i,t}}{A_{i,t-1}} * DCFO_{i,t} + \varepsilon_{i,t} \quad (4)$$

CFO represents cash flows from operation. *DCFO* is defined as a dummy variable that equals 1 if *CFO* is negative and 0 otherwise. All other variables are the same as previously defined in Equations 1 and 2. Still, I require at least 10 observations for each two-digit SIC industry and year. Thus, for the same sample in the previous section, I obtain |*DIS_AC2*|. |*DIS_AC2*| denotes the absolute value of the difference between actual asset-deflated accruals and the fitted values of the deflated accruals in Equation 4. I also use |*DIS_AC2*| as alternative measure of the

[1] All tests in this paper have qualitatively similar results with industry-adjusted market power measure.

dependent variable in Equation 3. Table 3.8 Panel A presents the descriptive statistics for |*DIS_AC2*|.

Table 3.8 Panel B reports the estimates of the regression. The first column shows the results with only control variables. All coefficients have the estimated signs. Most of them are statistically significant except those for leverage and the number of business/geographical segments. The second and third columns show the results with *PCM* and *MKT_SH*, respectively. The coefficient on *PCM* is significantly negative at the 1 percent level with the magnitude of -0.0281 and t=-5.82. The coefficient on *MKT_SH* has the magnitude of -0.0073 and t=-1.81. The coefficients on control variables remain qualitatively similar in their magnitudes and significance levels.

3.4.4.4 Sign of discretionary accruals

I classify samples to POSITIVE and NEGATIVE groups based on the signs of firms' discretionary accruals and run the regressions for these two groups independently. Table 3.9 reports the regression results. The coefficients on *PCM* are significantly negative for both groups. Estimated coefficients are -0.0121 (t statistics=-1.75) and -0.0289 (t statistics=-3.36) for Group POSITIVE and NEGATIVE, respectively. This indicates that low *PCM* firms tend to manipulate earnings more than high *PCM* firms do not only to boost earnings, but also to reduce earnings. This finding could clear the concern that high *PCM* firms tend to engage in less accrual management because their profits are guaranteed. If guaranteed profits due to monopoly status were the underlying reason, the negative

relation between *PCM* and accrual management for POSITIVE group only should have been demonstrated.

As Yu (2008) shows, the sign of estimated coefficient on *ROA* is positive for the POSITIVE group and is negative for the NEGATIVE group. As for the leverage, for firms that try to boost their earnings, more leverage means more monitoring, thus deterring managers' accrual manipulation. No significant relation between leverage and accrual manipulation is found for firms with need to reduce their earnings via accrual management.

3.4.4.5 Industry-inherent litigation risk

In order to examine the effect of litigation risk on the relation between product market power and accrual management, I run the regressions for industries with different litigation risk separately. Following Francis et al. (1994), I classify samples to HIGH_RISK and LOW_RISK groups based on their inherent litigation risk. Biotechnology (SIC codes 2833-2836), computers (SIC codes 3570-3577), electronics (SIC codes 3600-3674), and retailing (SIC codes 5200-5961) are identified as high litigation risk industries, while others are identified as low litigation risk industries. I run the regressions for these two groups independently. Table 3.10 reports the regression results. The coefficient on *PCM* in low litigation risk industries has a significantly negative risk at 1% with a magnitude of -0.0220 and t statistics of -4.32. The relation between PCM and accrual management in high litigation risk industries is less significant than that found in low litigation risk industries. Its coefficient is -0.0093, and t statistics is -0.81.

The interaction term of *SOX* and *PCM* is a time-series test on the effect of the litigation risk on the relation between *PCM* and accrual management. Table 3.10 shows a cross-sectional version of the same test. Both time-series and cross-sectional tests describe that low *PCM* firms change their accrual management practices more with the litigation risk than high *PCM* firms. In other words, managers in high *PCM* firms are not sensitive to litigation risk in deciding their accrual management policy.

3.4.4.6 Industry-level competition

I run regression with an industry-level competition measure in replace of firm-level competition level as another robustness test. Imagine an industry with intensive competition. Intensive competition implies less agency conflicts between managers and shareholders. Then managers in this industry have less incentive to engage in earnings management. In the meantime, firms in an industry with greater competition tend to have less price-setting abilities, in general, so they have to rely on accrual management if they have to meet or beat earnings expectations. So, again, industry-level competition also has mixed predictions on the effect of accrual management.

I use the Herfindahl-Hirschman index from the U.S. Census of Manufacturers, which covers both public and private firms in an industry, as the industry-level measure of competitiveness. Herfindahl-Hirschman index (HIndex) is defined as the sum of the square of percentage market share. Greater HIndex means less industry-level competition intensity. The U.S. Census Bureau reports

concentration ratios for hundreds of industries in the manufacturing sector in their *Census of Manufactures Publications*. A U.S. Census takes place every five years. The most recent two were in 1997 and 2002. Following prior literature (Ali et al., 2009), I assume the industry concentration level does not change rapidly, so I use the concentration ratio in the 1997 and 2002 Censuses as concentration ratios from 1995-1999 and from 2000-2004. Both of these timeframes are from two years before a survey year to two years after such a survey year.

Table 3.11 reports the regression results of accrual management on Herfindahl-Hirschman index. The data samples are limited to those in manufacturing industry. There are 13,289 firm-year observations in the final sample. Most other control variables still have a qualitatively similar effect on accrual management, and HIndex has a statistically significant, positive impact on accrual management. This shows that if all industries have averaged same need to meet or beat earnings expectations, firms in a more competitive industry tend to have less price-setting ability and less agency conflicts, so firms in a more competitive industry tend to manage their accruals less.

3.4.4.7Auditor industry specialization

I consider the audit market competition in my regression. I examine whether national industry leadership and specialization in audit market affect the relation between market power and discretionary accruals. Following Francis et al. (2005), I introduce two variables to calculate auditor industry specialization at the national level: *IND_SPE1* and *IND_SPE2*. These two measures are based on the

assumption that industry expertise increases in market share. *IND_SPE1* is a dummy variable. It equals to 1 if the auditor is a national industry specialist and 0 otherwise. *IND_SPE2* is the market share within a two-digit SIC industry. Panel A in Table 3.12 shows the results with *IND_SPE1*. We can see that the relation between product market power and discretionary accruals still holds with the inclusion of dummy-version auditor specialization. Dummy version of auditor industry specialization has insignificantly expected negative effect on the magnitude of discretionary accruals. Panel B in Table 3.12 reports the results with *IND_SPE2*. Still, the relation between market power and discretionary accruals holds with the inclusion of continuous-version auditor specialization. *IND_SPE2* has significantly negative effect on accrual management, but this effect is subsumed by *BIG_FIVE*. This tells that a firm that hire a Big Five auditor firm tend to have less discretionary accruals no matter whether this auditor firm has specialized auditing skills in the client's industry.

3.5 Conclusions

By identifying market power as a significant determinant of the levels of discretionary accruals, this essay provides evidence that firms with greater market power tend to manage their earnings less via accrual management because they are in a comparatively privileged market status enabling them to transfer their productivity shocks to customers by setting prices. An important message of this

paper is that a firm's market power provides one way to boost or reduce earnings in addition to accrual management.

This essay is the first study that examines the impact of a firm market power on its financial reporting quality. There are many opportunities for future research on market power and earnings management. For example, I discuss the benefits of shock-transfer over accrual management, such as less litigation, scrutiny and audit risk. However, I do not explore the disadvantage or limitation of shock-transfer to boost or decrease earnings. This begs a number of questions, including whether this transfer will weaken a firm's competition status, what the comparative costs or benefits to stakeholders between price-transfer to customers and earnings management are, or how the capital market will respond to this behavior, etc.

Recent studies show that managers have shifted from accrual to real management in this post Sarbanes-Oxley Act period. My study only considers the accrual management and product market power, so far. It is of importance to examine the real management behaviors of firms with different market powers. For example, does it still hold for real management that firms with greater power tend to engage less in real management activities? Although shock-transfer activities taken by firms with greater power do not affect their normal operational practices as real manipulations do, what are the economic consequences of a firm's transfer shocks to customers? What other factors decide their abilities to transfer productivity shocks through price-setting?

To summarize, this essay documents the relation between a firm's market power and its incentives to manage earnings through accrual management. It identifies another channel through which firms with great market power can alleviate managers' pressure to manage earnings through accruals. It also complements the existing literature regarding the impacts of competition on the capital market. Regulators and auditors will benefit from this study because it helps them understand where the accrual managements are more pervasive.

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Appendix – Variables Definitions

|DIS_AC| = the absolute value of asset-deflated discretionary accrual.

PCM = price-cost margin, calculated as the ratio of operating profit to sales.

MKT_SH = market share, calculated as the ratio of the firm's sales to total sales in the same 4-digit SIC industry.

SIZE = firm size, estimated as the natural log of market value of equity.

MTB = market-to-book ratio, measured as the ratio of market value of a firm to total assets, where market value is total assets plus market value of common equity minus book value of common equity.

GROWTH = growth rate of assets, measured as the change of assets scaled by lagged assets.

ROA = return on assets, measured as the earnings before interest and tax divided by total assets.

VOLAT = standard deviation of annual asset-deflated cash flow growth over last five years.

EXTER = external financing activities, measured as the sum of net cash received from equity and debt issuance scaled by total assets.

LEVER = leverage, calculated as the ratio of long-term debt to total assets.

BUS_SEG = the number of business segments.

GEO_SEG = the number of geographical segments.

SOX = 1 if the data year is later than 2002, otherwise 0.

Table 3.1

Descriptive statistics

The sample consists of 34414 firm-years over the period from 1997 to 2007. This table presents the descriptive statistics of the dependent variable |DIS_AC|, the independent variable PCM, and control variables. Control variables include ROA (return on assets), EXTER (external financing activities), LEVER (leverage), GROWTH (growth rate of assets), MTB (market-to-book ratio), SIZE (firm size), and VOLAT (standard deviation of annual asset-deflated cash flow growth over last five years). BUS_SEG and GEO_SEG are the number of business segments and geographical segments respectively. MKT_SH, market share, is an alternative proxy for market power.

	N	Mean	Std. Dev.	10%	25%	50%	75%	90%
|DIS_AC|	35745	0.0889	0.1077	0.0102	0.0258	0.0567	0.1086	0.1964
PCM	35745	0.0415	0.3992	-0.1418	0.0255	0.0948	0.1696	0.2799
MKT_SH	35745	0.0678	0.1497	0.0002		0.0087	0.0541	0.1996
ROA	35745	-0.0460	0.8145	-0.2693	-0.0509	0.0288	0.0755	0.1257
EXTER	35745	0.0217	0.4171	-0.1108	-0.0482	-0.0014	0.0538	0.1933
LEVER	35745	0.1834	0.2736	0.0000	0.0018	0.1117	0.2783	0.4539
GROWTH	35745	0.1360	0.6641	-0.2046	-0.0569	0.0504	0.1868	0.4433
MTB	35745	2.0634	4.5258	0.8823	1.0957	1.4718	2.2027	3.5064
SIZE	35745	5.1807	2.5449	1.9341	3.4099	5.2077	6.9085	8.4230
VOLAT	35745	0.1269	0.1337	0.0288	0.0486	0.0865	0.1533	0.2616
BUS_SEG	35745	2.3785	1.8902	1	1	1	3	5
GEO_SEG	35745	2.8399	2.2050	1	1	2	4	6

Table 3.2

Correlation matrix of key variables

This table presents the correlation matrix of key variables in the paper. The sample consists of 35745 firm-years over the period from 1997 to 2007. The variables include the dependent variable |DIS_AC|, the independent variable PCM, and control variables. Control variables include ROA (return on assets), EXTER (external financing activities), LEVER (leverage), GROWTH (growth rate of assets), MTB (market-to-book ratio), SIZE (firm size), and VOLAT (standard deviation of annual asset-deflated cash flow growth over last five years). BUS_SEG and GEO_SEG are the number of business segments and geographical segments respectively. MKT_SH, market share, is an alternative proxy for market power.

	|DIS_AC|	PCM	MKT_SH	ROA	EXTER	LEVER	GROWTH	MTB	SIZE	VOLAT	BUS_SEG
|DIS_AC|	1.0000										
PCM	-0.2430	1.0000									
MKT_SH	-0.1229	0.1054	1.0000								
ROA	-0.1518	0.2353	0.0450	1.0000							
EXTER	0.0936	-0.1813	-0.0399	0.5328	1.0000						
LEVER	0.0036	0.0303	0.0556	-0.0605	0.0504	1.0000					
GROWTH	0.1107	0.0728	-0.0035	0.0700	0.1317	0.0009	1.0000				
MTB	0.0860	-0.1033	-0.0219	0.1053	0.1094	0.0588	0.0258	1.0000			
SIZE	-0.2501	0.2874	0.3587	0.1186	-0.0448	-0.0197	0.1261	0.0611	1.0000		
VOLAT	0.3311	-0.2957	-0.1893	-0.1116	0.1268	-0.0605	0.0677	0.1274	-0.3328	1.0000	
BUS_SEG	-0.0951	0.0961	0.2560	0.0349	-0.0324	0.0322	0.0032	-0.0446	0.3285	-0.1804	1.0000
GEO_SEG	-0.0572	0.0511	0.1127	0.0192	-0.0102	-0.0625	0.0019	0.0095	0.2925	-0.0891	0.2106

Table 3.3

Frequency distribution

The sample consists of 35745 firm-years over the period from 1997 to 2007. This table presents the frequency distribution of the samples in the paper

Year	No. of Industries	No. of Firms
1997	63	3785
1998	63	3756
1999	62	3004
2000	63	3163
2001	63	3187
2002	64	3205
2003	63	3317
2004	63	3336
2005	63	3169
2006	64	2980
2007	63	2843

Table 3.4

The effect of price-cost margin on accrual management

This table presents the effect of market power on accrual management. Dependent variable is the absolute value of asset-deflated discretionary accrual. Independent variable is price-cost margin. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

		Dependent variable: |DIS_AC|		
PCM	**(-)**	**-0.0503*** **		**-0.0241*** **
		[-16.84]		**[-4.79]**
SIZE	(-)		-0.0058***	-0.0053***
			[-11.38]	[-11.17]
MTB	(+)		0.0016*	0.0014*
			[1.75]	[1.73]
GROWTH	(+)		0.0179***	0.0188***
			[6.68]	[6.73]
ROA	(-)		-0.0244***	-0.0202***
			[-3.97]	[-3.43]
VOLAT	(+)		0.1582***	0.1503***
			[15.86]	[16.03]
LEVER	(?)		-0.0038	-0.0017
			[-1.10]	[-0.50]
EXTER	(+)		0.0337***	0.0263***
			[5.06]	[4.37]
BUS_SEG	(+)		0.0006**	0.0006*
			[2.00]	[1.83]
GEO_SEG	(+)		0.0003	0.0003
			[1.09]	[1.13]
SOX	(-)		-0.0067***	-0.0080***
			[-2.82]	[-3.25]
SOX*PCM	(+)			0.0073
				[1.29]
Constant		0.1292***	0.1098***	0.1100***
		[10.20]	[10.06]	[10.04]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		35745	35745	35745
Adj. R^2		12.33%	19.66%	20.11%

Table 3.5

The effect of market share on accrual management

This table presents the effect of market share on accrual management. Dependent variable is the absolute value of asset-deflated discretionary accrual. Independent variable is market share. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC|				
MKT_SH	**(-)**	**-0.0367*** **		**-0.0055**
		[-9.25]		**[-1.32]**
SIZE	(-)		-0.0058***	-0.0058***
			[-11.38]	[-10.96]
MTB	(+)		0.0016*	0.0016*
			[1.75]	[1.75]
GROWTH	(+)		0.0179***	0.0179***
			[6.68]	[6.67]
ROA	(-)		-0.0244***	-0.0244***
			[-3.97]	[-3.97]
VOLAT	(+)		0.1582***	0.1582***
			[15.86]	[15.87]
LEVER	(?)		-0.0038	-0.0037
			[-1.10]	[-1.09]
EXTER	(+)		0.0337***	0.0337***
			[5.06]	[5.06]
BUS_SEG	(+)		0.0006	0.0006*
			[2.00]**	[1.94]
GEO_SEG	(+)		0.0003	0.0003
			[1.09]	[1.08]
SOX	(-)		-0.0067***	-0.0078***
			[-2.82]	[-3.11]
SOX*MKT_SH	(+)			0.0138***
				[2.69]
Constant		0.1309***	0.1098***	0.1099***
		[10.00]	[10.06]	[10.06]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		35745	35745	35745
Adj. R^2		9.43%	19.66%	19.67%

Table 3.6

The joint effect of price-cost margin and market share on accrual management

This table presents the joint effect of price-cost margin and market share on accrual management. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

		Dependent variable: |DIS_AC|		
PCM	**(-)**		**-0.02096*** **	**-0.0239*** **
			[-5.06]	**[-4.75]**
MKT_SH	**(-)**		**-0.0004**	**-0.0058**
			[-0.10]	**[-1.41]**
SIZE	(-)	-0.0058***	-0.0053***	-0.0053***
		[-11.38]	[-10.72]	[-10.68]
MTB	(+)	0.0016*	0.0014*	0.0014*
		[1.75]	[1.71]	[1.73]
GROWTH	(+)	0.0179	0.0188***	0.0188***
		[6.68]	[6.73]	[6.72]
ROA	(-)	-0.0244***	-0.0203***	-0.0203***
		[-3.97]	[-3.43]	[-3.44]
VOLAT	(+)	0.1582***	0.1502***	0.1503***
		[15.86]	[16.02]	[16.04]
LEVER	(?)	-0.0038	-0.0019	-0.0017
		[-1.10]	[-0.54]	[-0.49]
EXTER	(+)	0.0337***	0.0263***	0.0263***
		[5.06]	[4.38]	[4.37]
BUS_SEG	(+)	0.0006**	0.0006**	0.0006*
		[2.00]	[1.82]	[1.81]
GEO_SEG	(+)	0.0003	0.0003	0.0003
		[1.09]	[1.13]	[1.12]
SOX	(-)	-0.0067***	-0.0076***	-0.0088***
		[-2.82]	[-3.17]	[-3.48]
SOX*PCM	(+)			0.0068
				[1.20]
SOX*MKT_SH	(+)			0.0120**
				[2.36]
Constant		0.1098***	0.1100***	0.1100***
		[10.06]	[10.03]	[10.04]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		35745	35745	35745
Adj. R^2		19.66%	20.09%	20.11%

Table 3.7

The effect of industry-adjusted market power on accrual management

This table presents the effect of industry-adjusted market power on accrual management Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

		Dependent variable: |DIS_AC|			
		Median Adjusted		Mean Adjusted	
PCM_ADJ	**(-)**	**-0.0503*** [-16.74]**	**-0.0235*** [-4.63]**	**-0.0502*** [-16.67]**	**-0.0228*** [-4.51]**
SIZE	(-)		-0.0053*** [-11.20]		-0.0053*** [-11.19]
MTB	(+)		0.0014* [1.72]		0.0014* [1.72]
GROWTH	(+)		0.0188*** [6.74]		0.0187*** [6.76]
ROA	(-)		-0.0203*** [-3.44]		-0.0204*** [-3.45]
VOLAT	(+)		0.1503*** [16.03]		0.1504*** [16.03]
LEVER	(?)		-0.0017 [-0.51]		-0.0018 [-0.52]
EXTER	(+)		0.0263*** [4.38]		0.0266*** [4.40]
BUS_SEG	(+)		0.0006* [1.85]		0.0006* [1.85]
GEO_SEG	(+)		0.0003 [1.17]		0.0004 [1.19]
SOX	(-)		-0.0075*** [-3.18]		-0.0079*** [-3.28]
SOX*PCM	(+)		0.0062 [1.07]		0.0051 [0.88]
Constant		0.1247*** [9.84]	0.1078*** [9.86]	0.1272*** [10.03]	0.1090*** [9.96]
EXCHANGE		Included	Included	Included	Included
INDUSTRY		Included	Included	Included	Included
YEAR		Included	Included	Included	Included
N		35745	35745	35745	35745
Adj. R^2		12.31%	20.09%	12.26%	20.08%

Table 3.8 Results with alternative measure of discretionary accrual

Panel A: Descriptive statistics

This table presents the descriptive statistics of the dependent variable |DIS_AC2| suggested in Ball and Shivakumar (2006).

N	Mean	Std. Dev.	10%	25%	50%	75%	90%
35745	0.0800	0.1050	0.0079	0.0204	0.0463	0.0955	0.1840

Table 3.8 Results with alternative measure of discretionary accrual

Panel B: Reexamination on the effect of market power on accrual management

This table presents the effect of market power on accrual management. Dependent variable is the absolute value of asset-deflated discretionary accrual in Ball and Shivakumar (2006). Independent variable is price-cost margin or market share. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC2|				
			PCM	**MKT_SH**
PCM/MKT_SH	**(-)**		**-0.0281*** **	**-0.0073***
			[-5.82]	**[-1.81]**
SIZE	(-)	-0.0060***	-0.0054***	-0.0060***
		[-11.73]	[-11.41]	[-11.30]
MTB	(+)	0.0017*	0.0015*	0.0017*
		[1.80]	[1.78]	[1.80]
GROWTH	(+)	0.0146***	0.0156***	0.0146***
		[6.27]	[6.42]	[6.27]
ROA	(-)	-0.0255***	-0.0209***	-0.0255***
		[-4.10]	[-3.56]	[-4.11]
VOLAT	(+)	0.1467***	0.1380***	0.1468***
		[15.18]	[15.31]	[15.19]
LEVER	(?)	-0.0044	-0.0021	-0.0044
		[-1.30]	[-0.61]	[-1.29]
EXTER	(+)	0.0353***	0.0270***	0.0353***
		[5.61]	[4.87]	[5.61]
BUS_SEG	(+)	0.0001	0.0002	0.0001
		[0.38]	[0.16]	[0.29]
GEO_SEG	(+)	0.0004	0.0004	0.0004
		[1.42]	[1.47]	[1.41]
SOX	(-)	-0.0040*	-0.0055**	-0.0054**
		[-1.72]	[-2.32]	[-2.25]
SOX*PCM/MKT_SH	(+)		0.0109**	0.0196***
			[2.03]	[3.99]
Constant		0.1033***	0.1034***	0.1035***
		[9.59]	[9.57]	[9.60]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		35745	35745	35745
Adj. R^2		20.41%	21.01%	20.43%

Table 3.9

The effect of market power on accrual management in groups with positive and negative discretionary accruals

This table presents the effect of market power on accrual management in firms with positive and negative discretionary accruals. Dependent variable is the absolute value of asset-deflated discretionary accrual. Independent variable is price-cost margin. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC|			
		POSITIVE	NEGATIVE
PCM	**(-)**	**-0.0121***	**-0.02889***
		[-1.75]	**[-3.36]**
SIZE	(-)	-0.0047***	-0.0064***
		[-10.02]	[-7.24]
MTB	(+)	0.0011*	0.0017
		[1.85]	[1.48]
GROWTH	(+)	0.0308***	0.0123***
		[5.24]	[4.31]
ROA	(-)	0.0284*	-0.0353***
		[1.72]	[-2.93]
VOLAT	(+)	0.1446***	0.1386***
		[13.41]	[9.71]
LEVER	(?)	-0.0099***	0.0026
		[-2.62]	[0.45]
EXTER	(+)	0.0139	0.0486***
		[1.21]	[4.65]
BUS_SEG	(+)	0.0006*	0.0007
		[1.87]	[1.13]
GEO_SEG	(+)	0.0004	0.0000
		[1.20]	[-0.08]
SOX	(-)	-0.0040	-0.0125***
		[-1.39]	[-3.00]
SOX*PCM	(+)	0.0014	0.0094
		[0.21]	[1.21]
Constant		0.0760***	0.1474***
		[6.05]	[8.04]
EXCHANGE		Included	Included
INDUSTRY		Included	Included
YEAR		Included	Included
N		22065	13680
Adj. R^2		17.69%	28.00%

Table 3.10

The effect of market power on accrual management in industries with different litigation risks

This table presents the effect of market power on accrual management in industries with different litigation risks. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, and number of geographical segments. The Sarbanes-Oxley Act is also considered in the regression. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC|			
		HIGH RISK	LOW RISK
PCM	**(-)**	**-0.0093**	**-0.0220*** **
		[-0.81]	**[-4.32]**
SIZE	(-)	-0.0042***	-0.0063***
		[-5.18]	[-12.19]
MTB	(+)	0.0004**	0.0042***
		[2.46]	[3.96]
GROWTH	(+)	0.0459***	0.0163***
		[5.55]	[6.06]
ROA	(-)	-0.0662***	-0.0218***
		[-2.72]	[-5.14]
VOLAT	(+)	0.1383***	0.1405***
		[8.41]	[13.21]
LEVER	(?)	0.0006	-0.0029
		[0.09]	[-0.69]
EXTER	(+)	-0.0342	0.0274***
		[-1.35]	[5.57]
BUS_SEG	(+)	0.0008	0.0008**
		[1.20]	[2.33]
GEO_SEG	(+)	0.0000	0.0006*
		[0.01]	[1.66]
SOX	(-)	-0.0078	-0.0078***
		[-1.46]	[-2.83]
SOX*PCM	(+)	0.0014	0.0062
		[0.21]	[0.95]
Constant		0.4742***	0.1090***
		[15.93]	[9.18]
EXCHANGE		Included	Included
INDUSTRY		Included	Included
YEAR		Included	Included
N		8463	27282
Adj. R^2		22.11%	20.98%

Table 3.11

The effect of industry-level competition on accrual management

This table presents the effect of industry-level competition on accrual management. The sample consists of 13289 firm-years. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 1997 and 2002 Census of Manufacturers. Control variables include firm size, market-to-book ratio, growth rate of assets, return on assets, standard deviation of annual asset-deflated cash flow growth, leverage, external financing activities, number of business segments, number of geographical segments, and passage of the Sarbanes-Oxley Act. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted	Estimate	t Statistics
HIndex	**(?)**	**0.0333***	**1.93**
SIZE	(-)	-0.0038***	-4.47
MTB	(+)	0.0016	1.33
GROWTH	(+)	0.0405***	5.93
ROA	(-)	-0.0576***	-2.74
VOLAT	(+)	0.1671***	10.68
LEVER	(?)	-0.0147***	-3.07
EXTER	(+)	0.0068	0.31
BUS_SEG	(+)	-0.0004	-0.66
GEO_SEG	(+)	0.0003	0.55
SOX	(-)	-0.0053	-1.55
Constant		0.0941***	6.71
EXCHANGE		Included	
YEAR		Included	
N		13289	
Adj. R^2		21.51%	

Table 3.12

Panel A: Regression of discretionary accruals on market power with auditor specialization

The table includes the regression results of accrual management on market power with dummy version of auditor specialization, *IND_SPE1*. Control variables are described as in previous tables. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC|				
PCM	**(-)**	**-0.0515****	**-0.0515****	**-0.0529****
		[-2.26]	**[-2.26]**	**[-2.32]**
SIZE	(-)	-0.0059***	-0.0059***	-0.0052***
		[-7.76]	[-7.69]	[-6.60]
MTB	(+)	0.0064***	0.0064***	0.0061***
		[4.38]	[4.38]	[4.29]
GROWTH	(+)	0.0330***	0.0330***	0.0327***
		[3.60]	[3.60]	[3.57]
ROA	(-)	-0.0384	-0.0384	-0.0388
		[-1.29]	[-1.29]	[-1.30]
VOLAT	(+)	0.0604***	0.0604***	0.0603***
		[4.71]	[4.71]	[4.74]
LEVER	(?)	0.0022	0.0022	0.0028
		[0.32]	[0.32]	[0.41]
EXTER	(+)	-0.0094	-0.0094	-0.0095
		[-0.50]	[-0.50]	[-0.51]
BUS_SEG	(+)	0.0003	0.0004	0.0003
		[0.79]	[0.79]	[0.70]
GEO_SEG	(+)	0.0001	0.0001	0.0001
		[0.12]	[0.12]	[0.24]
SOX	(-)	-0.0084**	-0.0085**	-0.0111***
		[-2.09]	[-2.10]	[-2.78]
SOX*PCM	(+)	0.0023	0.0024	0.0039
		[0.17]	[0.17]	[0.29]
IND_SPE1	**(-)**		**-0.0006**	**-0.0011**
			[-0.38]	**[0.68]**
BIG_FIVE	**(-)**			**-0.0101*****
				[-3.68]
Constant		0.0473	0.0477	0.0539
		[1.29]	[1.31]	[1.46]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		14304	14304	14304
Adj. R^2		18.75%	18.75%	18.86%

Table 3.12

Panel B: Regression of discretionary accruals on market power with auditor specialization

The table includes the regression results of accrual management on market power with continuous version of auditor specialization, *IND_SPE2*. Control variables are described as in previous tables. Standard errors are adjusted for firm clustering and t statistics are reported in brackets. ***, **, and * represent 1%, 5%, and 10% significance respectively.

Dependent variable: |DIS_AC|				
PCM	**(-)**	**-0.0515****	**-0.0524****	**-0.0530****
		[-2.26]	**[-2.30]**	**[-2.32]**
SIZE	(-)	-0.0059***	-0.0055***	-0.0051***
		[-7.76]	[-7.08]	[-6.54]
MTB	(+)	0.0064***	0.0063***	0.0061***
		[4.38]	[4.33]	[4.28]
GROWTH	(+)	0.0330***	0.0328***	0.0327***
		[3.60]	[3.59]	[3.57]
ROA	(-)	-0.0384	-0.0386	-0.0388
		[-1.29]	[-1.29]	[-1.30]
VOLAT	(+)	0.0604***	0.0604***	0.0604***
		[4.71]	[4.72]	[4.73]
LEVER	(?)	0.0022	0.0025	0.0028
		[0.32]	[0.36]	[0.41]
EXTER	(+)	-0.0094	-0.0095	-0.0096
		[-0.50]	[-0.51]	[-0.51]
BUS_SEG	(+)	0.0003	0.0004	0.0003
		[0.79]	[0.80]	[0.72]
GEO_SEG	(+)	0.0001	0.0001	0.0001
		[0.12]	[0.24]	[0.27]
SOX	(-)	-0.0084**	-0.0100**	-0.0112***
		[-2.09]	[-2.47]	[-2.80]
SOX*PCM	(+)	0.0023	0.003	0.0039
		[0.17]	[0.21]	[0.28]
IND_SPE2	**(-)**		**-0.0176*****	**-0.0029**
			[-2.94]	**[-0.45]**
BIG_FIVE	**(-)**			**-0.0091*****
				[-2.96]
Constant		0.0473	0.0523	0.0549
		[1.29]	[1.42]	[1.49]
EXCHANGE		Included	Included	Included
INDUSTRY		Included	Included	Included
YEAR		Included	Included	Included
N		14304	14304	14304
Adj. R^2		18.75%	18.80%	18.86%

Chapter 4

Essay III: Product Market Competition and Audit Fees

4.1 Introduction

Due to increased globalization and intensity of import penetration, relaxation of barriers to entry and trade, as well as the speed of technological change, competition in product market is increasingly intense (Peress 2010; Gaspar and Massa 2006). Naturally, a question would arise regarding what consequences of this change in product market on capital market are. To answer this question, prior studies have examined the effect of the increase in competition on the behaviors of some capital market participants, such as managers, analysts, debt holders and equity holders (Ali et al. 2009). This essay sheds new light on this question by performing analysis on the effects of product market competition on auditors' risk assessment on clients. I find that auditors charge higher on firms in more competitive industries.

Firms in industries with strong competition tend to have different behavior characteristics. This leads auditors to charge firms heterogeneously. On the one hand, product market competition plays a corporate governance role and mitigates agency problems between managers and shareholders. Thus, the likelihood of earnings management decreases. Facing less audit risk, auditors could spend less resources and labor, thereby requiring lower audit fees. On the other hand, firms in

competitive industries face more liquidity, distress and liquidation risk (Schumpeter 1912; Schmidt 1997). The client's business risk can, in turn, increase auditors' business risk and, therefore, what they charge clients. I leave as an empirical question the consideration of contracting predictions.

Employing the Herfindahl-Hirschman index downloaded from the U.S. Census of Manufacturers as a measure of an industry's competition intensity, I perform an industry-level analysis on the 2201 firm-year observations (760 firms) on the intersection of the U.S. Census of Manufacturers, Audit Analytics database and Compustat from 2000 to 2004. I find that firms in more competitive industries incur higher audit fees. This signifies that, according to auditors' viewpoints, the effect of product market competition on business risk prevails over that on audit risk.

In robustness tests, I test and find that the relation between product market competition and audit fees still holds after controlling for audit market competition. In addition to industry-level analysis of product market competition on audit fees, I also perform firm-level analysis and investigate whether auditors change their risk assessment based on the clients' competition status within the same industry. Firms with better competition status tend to have earnings or cash flows with less volatility, thus inducing less business risk. They also have stronger ability to set prices so that they have less pressure to manipulate earnings through the channel of accrual management. So firms with greater market power tend to have less discretionary accruals and thus less audit risk. Therefore, both business risk channel and audit risk channel have predictions of negative relation between a

firm's competition status and audit fees. As predicted, I find that, within an industry, auditors tend to charge those firms with high product market power less.

This essay makes several contributions. First, this study is the first one that examines and explains the effect of industry-level market competition and firm-level market power on audit industry. An increase in product market competition has caused researchers to become more interested in competition's effects on the participants of capital markets. For example, managers' investment decisions (Song and Waslking 2000; Fee and Thomas 2004), payout policy (Grullon and Michaely 2007), corporate disclosure decisions (Botoson and Harris 2000; Botoson and Stanford 2005; Rogers and Stocker 2005; Verrecchia and Iber 2006), accounting choices (Zmijewski and Hagerman 1981), earnings qualities (Dhaliwal et al. 2008; Marciukaityte and Park 2009; Wang 2011), analysts' forecasts characteristics (Ali et al. 2010), cost of debt (Valta 2010) and asset pricing (Hou and Robinson 2006) are all shown to be related with market competition in earlier work. As part of the broader literature that links industrial organization and issues in financial markets, this study provides evidence of the impact of product market competition on audit fees not well recognized in previous literature. By showing that competition affects auditors' assessment on firms' risk, this essay enriches the literature about the impact of product market competition on the capital markets by setting up the economic link between competition and audit fees. Furthermore, it also shows that auditors treat firms with great market power differently. Together with prior research, this study proves that the basic and intrinsic economic factor, competition in product market, contributes significantly to the capital market.

Second, this study further contributes to the auditing literature by clarifying confusions about the existence of industry effects in prior auditing literature and providing an economic explanation and predictions for them. There appears to be little consensus in the auditing literature as to whether there is an industry effect on audit fees. Simunic (1980) claims that:

> "While loss exposure may well vary with the industry(ies) in which an auditee operates, there is really no basis to hypothesize any specific industry effects."

Some auditing papers follow this argument and do not consider industry-level determinants of the audit fees (Griffin et al. 2010). Gul and Tsui (1997, 225) realize that there are "… possible client industry effects …", but they just use 1 to represent industrials and 0 for others. They do not make any predictions on their industry dummy and do not find any significant results with it, either. Francis (1984) finds a significant effect on financial institutions only. Craswell et al. (1995) recognize the industry-wide differences in audit fees resulting from specific knowledge in specialized accounting rules and reporting requirements or frequency of complex contracts. Seetharaman et al. (2002) control for industry effects as a regular econometric procedure, but fail to explore the underlying economic logic. This study not only provides an industry-level determinant of audit fees, but also further breaks the black box of this industry-level difference and exposes the inside economic world to its readers.

Third, this study is meaningful for firms, auditors and even regulators. The results show that firms in competitive industries induce auditors to charge them

higher fees. Thus, with an increase in product market competition, firm managers need to adjust their budget for additional audit fees accordingly. With an increase in competition in one certain industry, auditors also need to explain the reasons for charging their clients higher fees because an audit fee is usually the most important determinant in a firm's auditor selection (Eichenseher and Shields 1983). Furthermore, some changes in regulations, such as the deregulation of the airline industry in the 1970s, the Bell System divestiture in the 1980s or the European Union Single Market Program in the 1990s changed the competition level. With an increase in product market competition, fund transfer from firms to their auditors is one non-negligible regulation change effect. This study also helps regulators by providing them with a thorough prediction or assessment on the consequences of regulation changes.

This essay is related to the recent paper by Leventis et al. (2011), but differs from it in four respects. First, my paper works on different data. Leventis et al. use proprietary data for Greek firms, while the present discussion uses a dataset from the U.S. Compared with the Athen Stock Exchange (ASE), which was categorized as an emerging market until May 2001, the U.S. market is more mature and developed market under a strong Anglo-American influence. Second, my paper employs a more reliable competition measure. Among four competition measures in Leventis et al. (2011), two variables representing the percentage of industry sales and concentration ratio in the context of the ASE are significant. However, because of the limitations pointed out in Ali et al. (2009), the concentration competition measure constructed using data for public listed firms is biased and

results based on such competition measure are questionable. To avoid this problem, I use the Herfindahl-Hirschman index downloaded from the U.S. Census of Manufacturers to measure the competition level. Third, our papers consider different theories. Audit risk from agency costs is the only channel through which product market competition affects audit fees considered in Leventis et al. (2011), while my paper shows that compared with audit risk, business risk is a more prevailing channel through which competition affects audit fees. Fourth, we find different results due to the differences discussed above. Leventis et al. (2011) show a negative relation between product market competition and audit fees, while my study finds that auditors tend to charge firms higher fees in competitive industries.

The remainder of this essay is organized as follows. Next section reviews prior research concerning product market competition and audit fees and develops the hypothesis. Then I describe the sample and research design. I present empirical results after the research design. The last section draws a conclusion.

4.2 Literature review and hypothesis development

Auditors are paid for their assertions in a client's financial statement (Bell et al. 2001). All else being equal, audit fees increase with litigation risk. Auditors are sued either because there are material mistakes in their audited financial reports or simply because their client is undergoing financial distress or bankruptcy. The likelihood that an auditor would face the former situation is called audit risk, while

the likelihood that an auditor would face the latter situation is called business risk. Thus, the amount of auditor fees is positively related with a client's audit risk and business risk.

A basic characteristic shared by firms in a competitive industry is that they have many peers. This fact induces such firms to behave differently from those in a less competitive industry. Their behavior patterns are likely to change the audit risk and business risk faced by their auditors. Auditors are thus likely to charge these firms differently as a consequence. I will discuss how product market competition affects audit fees through audit risk and business risk channels in the following subsections.

4.2.1 Competition vs. Audit Risk

Audit risk describes the likelihood of material errors in the client's financial statement (Gul and Tsui 1997). Auditor fees reflect the efforts that auditors devote to reduce the audit risk to an acceptable level in order to assure that the client's financial reports are free of material misstatement (Lemon et al. 1993; O'Keefe et al. 1994).

As stated previously, a basic characteristic shared by firms in a competitive industry is that they have many peers. This characteristic has some implications. First, this allows for a more comparable performance comparison among firms in a competitive industry and also allows for more relative performance evaluation (RPE) (Hart 1983). For instance, DeFond and Park (1999) find that RPE-based

(firm-specific) accounting measures are more closely associated with CEO turnover in a competitive industry. Therefore, an increase in competition generates additional information to mitigate moral hazard problems. Second, more peers due to the increased competition reduce a firm's profitability. If managers do not keep costs low in a competitive industry, then a reduction in profits may put the firm in an unprofitable position, so the probability that the firm would have to be liquidated would go up (Schmidt 1997).

Therefore, in order for managers to keep their jobs and avoid a firms' liquidation, managers in a competitive industry have to work harder, avoid wasting company resources on wasteful projects, and engage less in non-value-maximizing activities. Christie and Zimmerman (1994) indicate that non-value-maximizing managers tend to manipulate accounting information to hide their non-optimal activities more than value-maximizing managers. Thus, competition helps to align the interests of managers and shareholders and decreases the likelihood of earnings management. It plays a corporate governance role and works as an effective mechanism to mitigate agency problems between shareholders and managers.

Empirical studies confirm the above argument regarding product market competition, agency cost and, furthermore, earnings management. Marciukaityte and Park (2009) find that firms in more competitive industries are less likely to engage in opportunistic earnings management as measured by the magnitude of discretionary accruals. Using forced restatement data from the Financial Statement Restatement Database and the federal class action securities fraud lawsuits identified from the Stanford Securities Class Action Clearing house, Marciukaityte

and Park also find that forced earnings restatements and security fraud lawsuits are less common in competitive markets. Their results suggest that product market competition decreases the information asymmetry between managers and the market and improves the accuracy of financial reporting effectively. Firms in competitive industries are less likely to report misleading earnings and are more likely to provide informative financial reports.

I go one-step further to the audit fees area. Chow (1982) provides evidence that firms with higher agency costs have more incentive to hire more external auditors. Watts and Zimmerman (1986) claim that demand for high-quality audits increases with agency costs, whether they are voluntarily undertaken by managers as a bonding mechanism or are externally imposed by stakeholders as a monitoring mechanism. Empirical studies provide support for this argument on agency cost and audit fees. For example, firms with severe agency problems due to free cash flow are shown to incur more audit services (Gul and Tsui 1997; Griffin et al. 2010). Following the same reasoning, audit fees should be lower if product market competition mitigates agency problems by discouraging managers from acting unwisely and not masking their behaviors by manipulating financial statements.

In summary, prior studies suggest that agency theory is one channel through which product market competition can impact audit fees. Competition plays a governance role and mitigates agency problems. Strengthened governance and mitigated agency problems through competition also improve the accuracy of financial reporting. This reduces investors' demand on audit services. Based on these theoretical arguments and the empirical evidence in prior literature, I predict

that competition will decrease auditors' efforts to reduce audit risk to an acceptable level. Auditors are likely to assess firms in more competitive industries as being those with low levels of audit risk. Therefore, *ceteris paribus*, audit fees decrease with the level of product market competition.

4.2.2 Competition vs. Business Risk

Business risk describes circumstances that are out of the auditor's control and cannot be eliminated. According to American Institute of Certified Public Accountants (AICPA 1992), business risk includes two components: client's business risk and auditor's business risk. Client's business risk is associated with the client's continued survival and well-being, while auditor's business risk is defined by SAS No. 47 as the risk of potential legal costs and other expenditures from a business association with a client, whether or not an auditor failure exists (Bell et al. 2001; Morgan and Stocken 1998). The client's business risk and the auditor's business risk are, therefore, closely correlated. O'Malley (1993) further claims that anyone who suffers a financial loss may sue auditors and demand compensation from them even if there are no misstatements in the audited reports. Thus, business risk is usually regarded as the risk faced by auditors even when an audit report is flawless under regulations or accounting rules. Because auditors cannot eliminate business risk, they tend to charge clients higher fees due to higher business risk. Prior literature supports this argument. For example, Palmrose (1987) find a relation between bankruptcies and lawsuits against auditors. Bell et al. (2001)

empirically find that audit fees are higher for high risk clients. Morgan and Stocken (1998) also show that audit fees increase with business risk.

Firms in competitive industries run more business risks than those in less competitive industries. In the aspect of firm operation, firms in competitive industries tend to engage in innovative activities more than those in less competitive industries (Schumpeter 1912; Hou and Robinson 2006), thereby incurring greater innovation risk. Also, without barriers to entry, firms in competitive industries face more threats from new entries and from existing rivals, thus incurring liquidity risk. Having a liquidity problem is also predicative of a firm's financial failure (Seetharaman et al. 2002). Schmidt (1997) argues that product market competition increases the probability of liquidation. Hou and Robinson (2006) empirically support their prediction that innovation and distress risk represent two ways for firms in competitive industries to require higher expected returns.

A client's business risk, in turn, affects the auditor's business risk (O'Keefe et al. 1994). For example, Palmrose (1997) shows that financially distressed firms are often involved in auditor litigation. Therefore, auditors tend to charge higher fees on firms in a more competitive industry due to the associated business risks.

4.2.3 Competition vs. Audit Fees

To summarize, product market competition may affect audit fees in two directions. On the one hand, firms in a more competitive industry are less likely to

manipulate financial statements due to the corporate governance role played by competition Thus, audit risk decreases with product market competition. Audit fees then decrease with product market competition through the channel of audit risk. On the other hand, firms in a more competitive industry face more distress risk and liquidation risk. Auditor litigation risk increases with product market competition due to distress risk and liquidation risk. Thus, business risk increases with product market competition. Audit fees then increase with product market competition through the channel of business risk.

Since two channels have contradictory predictions on the relation between product market competition and audit fees, the net effect of competition on audit fees is ambiguous. I leave it as an empirical issue and explore which channel's effect prevails.

Hypothesis: There is no significant relation between product market competition and audit fees.

4.3 Empirical tests

4.3.1 Dependent Variable: Audit Fees (*LAF*)

The dependent variable is the natural log of total audit fees (*LAF*). I obtain the dependent variable from the Audit Analytics database. The Audit Analytics database starts from 2000.

4.3.2 Independent Variable: Herfindahl-Hirschman Index (*HIndex*)

The independent variable is Herfindahl-Hirschman index (*HIndex*), which is defined as the sum of the square of percentage market share (Equation 1). In Equation 1, there are N firms in the interested industry. Firm i's revenue is s_i. S represents the total revenues in the industry and is calculated as $\sum_{i=1}^{N} S_i$.

$$Herfindahl\_Index = \sum_{i=1}^{N} (\frac{S_i}{S})^2 \qquad (1)$$

The smaller the Herfindahl-Hirschman index, the more competitive the industry will be. A larger Herfindahl-Hirschman index means that the industry is concentrated in the hands of a few large firms (Hou and Robinson 2006). As pointed out in Ali et al. (2009), a Herfindahl-Hirschman index based on Compustat data only considers public firms in an industry and, therefore, is a biased measure of market competition level. Ali et al. find the correlation between Compustat-based concentration measures and U.S. Census-based concentration measures are only 13%, and the results in some important prior studies do not hold when the U.S. Census measure is employed. So, I use the Herfindahl-Hirschman index from the U.S. Census of Manufacturers, which covers both public and private firms in an industry, as the measure of competitiveness.

The U.S. Census Bureau reports concentration ratios for hundreds of industries in the manufacturing sector in their *Census of Manufacturers Publications.* A U.S. Census takes place every five years. The two most recent

were in 1997 and 2002. I only downloaded the concentration ratio data for year 2002 because audit fee data is available only after year 2000, and year 2002 is the only intersection year provided by the Audit Analytics database and the U.S. Census. Following prior literature (Aggarwal and Samwick 1999; MacKay and Phillips 2005; Campello 2006; Haushalter et al. 2007; Ali et al. 2009), I assume that the industry concentration level does not change rapidly. I, therefore, use the concentration ratio in the 2002 Census for concentration ratios from 2000 to 2004, which is two years before 2002 to two years after 2002.

4.3.3 Control Variables

Prior literature shows that the audit complexity, client size and client financial condition affect audit fees. Control variables I considered are those usually used in audit fee models (Simunic 1980; Francis 1984; Craswell et al. 1995; Gul and Tsui 1997). Below are the descriptions of the control variables and the predicted sign of their coefficients (Seetharaman et al. 2002):

SIZE (+): client's firm size, measured as the natural log of total assets. The coefficient for the client size is expected to be positive because large firms tend to be more complex and also imply a larger potential damage awards (Kellogg 1984).

CURRENT (+): current ratio, measured as the ratio of current assets to total assets. The coefficient is expected to be positive because the current ratio is a proxy for audit complexity.

QUICK (-): quick ratio, measured as the ratio of current assets, less inventory to current liabilities. The coefficient is expected to be negative because a greater quick ratio implies more liquidity and less likelihood of financial distress.

ROA (-): the return on assets, measured as the earnings before interest and tax divided by total assets. The coefficient is expected to be negative because a greater ROA means more profitability and less likelihood of financial distress.

DE (+): leverage, measured as the long-term debt to total assets ratio. The coefficient is expected to be positive because greater leverage implies more risk of financial distress.

LNAF (+): natural log of non-audit fees. The coefficient is expected to be positive for the reported positive association between audit and non-audit fees (Simunic 1984).

NO_BUS_SEGMENTS (+): number of business segments. The coefficient for the number of business segments is expected to be positive because the more industry diversification, the more audit complexity.

NO_GEO_SEGMENTS (+): number of geographic segments. Geographic dispersion of operations is one aspect of the client's structure (O'Keefe et al. 1994). The coefficient for the number of geographic segments is expected to be positive because the more geographic dispersion, the more audit complexity there is.

LOSS (+): *LOSS*=1 if income before extraordinary items in the audited year is negative; otherwise it equals 0. The coefficient is expected to be positive because litigation risk increases in loss years and auditors would then require more efforts.

FISCAL (+): *FISCAL*=1 if the client's fiscal year end is December 31; otherwise it equals 0. The coefficient for *FISCAL* is expected to be positive because auditors tend to charge higher fees in a busy season.

BIG_FIVE (+): *BIG_FIVE*=1 if the auditor is Arthur Andersen LLP, Ernst & Young LLP, Deloitte & Touche LLP, KPMG LLP or PricewaterhouseCoopers LLP. The coefficient is expected to be positive because the Big Five tend to represent greater expertise and have a greater reputation and, therefore, earn systematically higher audit fees.

4.3.4 Regression

The regression model is shown in the equation below:

$$\begin{aligned} LAF_{i,j,t} &= \beta_0 + \beta_1 HIndex_{j,t} + \beta_2 SIZE_{i,j,t} + \beta_3 DE_{i,j,t} + \beta_4 QUICK_{i,j,t} + \beta_5 CURRENT_{i,j,t} \\ &+ \beta_6 NO\_BUS\_SEGMENTS_{i,j,t} + \beta_7 NO\_GEO\_SEGMENTS_{i,j,t} + \beta_8 BIG\_FIVE_{i,j,t} \\ &+ \beta_9 LOSS_{i,j,t} + \beta_{10} FISCAL_{i,j,t} + \beta_{11} LNAF_{i,j,t} + \beta_{12} ROA_{i,j,t} + Year\_Effect + \varepsilon_{i,j,t} \end{aligned} \quad (2)$$

Where the subscript i refers to firm i, the subscript j refers to industry j, and the subscript t refers to year. Year ranges from 2000 to 2004.

4.4 Empirical results

4.4.1 Descriptive Statistics

Our sample includes all active firms that are contained in the intersection of the Audit Analytics database, the U.S. 2002 Census of Manufacturers, Compustat annual files and the Compustat segment database between 2000 and 2004. I obtain audit fees and non-audit fees data from the Audit Analytics database, Herfindahl-Hirschman index from the Census database; the number of segments from the Compustat Segment database and other control variables from the Compustat annual files. Herfindahl-Hirschman index, represented as *HIndex*, is calculated using the download value from the Census database divided by 10,000. I include all active firms, except those with 1) restated financial reports; 2) audit fees in non-US dollars; 3) zero audit fees; 4) more than one report on audit fees; and 5) zero reported total assets. The final sample includes 2201 firm-year observations that represent 760 unique firms from 2000 to 2004. Table 4.1 shows the numbers of observations and the number of loss firms in each year from 2000 to 2004. From 2000 to 2004, 35.56%, 47.50%, 42.57%, 38.74% and 31.51% of the sample firms have negative incomes before extraordinary items. NAICS ranges from 311230 to 339999, but not continuously. To provide some sense about NAICS, 311230 represents the Breakfast Cereal Manufacturing industry, 339995 represents the Burial Casket Manufacturing industry and 339999 represents all other miscellaneous manufacturing industries not included in 311111 to 339998.

Table 4.2 shows the descriptive statistics of the dependent variable, independent variable and control variables. The natural log of the audit fees ranges from 8.2965 to 17.8228, with the mean 12.8556 and median 12.7156. Herfindahl-Hirschman index numbers range from 0.000065 to 0.2707, with the mean 0.0791 and median 0.0635. About 58 percent of the sample firms have their fiscal year ending on December 31. About 87 percent of the sample firms hire Big Five as their audit firms.

4.4.2 Main Results

Table 4.3 shows the association between product market competition and audit fees. The regression formula is shown in Equation 1. I consider the year fixed effects in the regression. All control variables except the current ratio have the coefficients with the expected signs at the significance level of 1%. No significant relation is found between the current ratio and audit fees, but the coefficient for *CURRENT* has the expected positive sign. The estimated coefficient for *HIndex* is -0.5745 (t statistics: -2.59). This means that there is a negative relation between the Herfindahl-Hirschman index and audit fees, both demonstrating statistical significance and economic significance. In other words, auditors charge higher fees on firms in a more competitive industry.

I recognize the possible existence of the heteroskedasticity and time series dependence in the regression. So I use the White correction and Fama-MacBeth methods to control for these two concerns, respectively. Panel A in Table 4.4 shows the results with the White correction. All control variables have the

coefficients with the expected signs and all of them, except the current ratio, are significant at 1%. In Panel A of Table 4.4, the coefficient for *HIndex* is -0.5565 (t statistics: -2.54). This means that there is a negative relation between Herfindahl-Hirschman index and audit fees, both in statistical significance and economic significance. In other words, auditors charge firms in more competitive industries higher fees. Panel B in Table 4.4 shows the regression results when a Fama-MacBeth regression is employed. The estimated coefficient for *HIndex* is -0.5733 with 1% significance. The results on the control variables remain qualitatively same, but the significance levels on DE, FISCAL, and BIG_FIVE are weakened.

To control for the skewed distribution of a Herfindahl-Hirschman index, I also replace the original HIndex value with the log of the value downloaded from the Census database. The untabulated results suggest that the relation between competition and audit fees are qualitatively identical.

To summarize, the evidence provides support for the argument that firms in a more competitive industry face more liquidity risk, distress risk and liquidation risk. Auditor litigation risk increases with product market competition due to increased business risk, so auditors charge firms in more competitive industries higher fees.

4.4.3 Additional tests

4.4.3.1 Auditor Industry Specialization

I consider the audit market competition in my regression. I examine whether national industry leadership and specialization in the audit market affects the relation between audit fees and client competition. Following Francis et al. (2005), I introduce two variables to calculate auditor industry specialization at the national level: *IND_SPE1* and *IND_SPE2*. These two measures are based on the assumption that industry expertise increases with audit market share. *IND_SPE1* is a dummy variable. It equals to 1 if the auditor is a national industry specialist and 0, otherwise. *IND_SPE2* is the audit market share within a two-digit SIC industry. Panel A in Table 4.5 shows the results with *IND_SPE1*. We can see that the relation between product market competition and audit fees still holds with the inclusion of a dummy-version auditor specialization. Auditor specialization has an insignificantly positive effect on audit fees. Panel B in Table 4.5 reports the results with *IND_SPE2*. Still, the relation between product market competition and audit fees holds with the inclusion of a continuous-version auditor specialization. *IND_SPE2* has a significantly positive effect on audit fees, but this effect is subsumed by *BIG_FIVE*. This signifies that a Big Five auditor firm tends to charge client's higher fees, regardless of industry specialization.

4.4.3.2 Firm-level Competition Measure

For completeness, I also examine whether auditors charge firms with different competition status in the same industry heterogeneously. Peress (2010) points out that imperfect competition in a product market affects firms' behaviors in equity market. Firms with different product market power tend to behave differently. With pricing power due to the market power, firms with good

competition status can easily transfer demand or supply shock to the customers, so they tend to have cash flows or earnings with less volatility. I investigate whether this difference changes the auditors' risk assessments by introducing product market power into the regression. I argue that firms with greater product market power face less business risk due to their superior competitive status. Due to stronger price-setting abilities (Wang 2011), they also have less incentive to manipulate their earnings through accrual management, so auditors will view them these clients as having less audit risk. As such, I hypothesize that firms with a high competition status tend to be charged less by auditors. Equation 2 is the regression formula.

$$LAF_{i,j,t} = \beta_0' + \beta_1' HIndex_{j,t} + \beta_2' PCM_{i,j,t} + \beta_3' SIZE_{i,j,t} + \beta_4' DE_{i,j,t} + \beta_5' QUICK_{i,j,t} + \beta_6' CURRENT_{i,j,t} + \beta_7' NO\_BUS\_SEGMENTS_{i,j,t} + \beta_8' NO\_GEO\_SEGMENTS_{i,j,t} + \beta_9' BIG\_FIVE_{i,j,t} + \beta_{10}' LOSS_{i,j,t} + \beta_{11}' FISCAL_{i,j,t} + \beta_{12}' LNAF_{i,j,t} + \beta_{13}' ROA_{i,j,t} + Year\_Effect + \varepsilon_{i,j,t} \quad (2)$$

As suggested in previous literature (Lerner 1934; Carlton and Perloff 2000; Kale and Loon 2010), I use the Lerner index or price-cost margin (*PCM*) as a measure of product market competition status. Following Peress (2010), I measure *PCM* as the ratio of operating profit to sales. Operating profit is sales less the cost of goods sold, as well as selling, general and administrative expenses. I discard the *PCM*s with extreme absolute values of several thousand and only keep those with absolute value not greater than 1. After merging these with the other datasets, I have 1970 firm-year observations. Panel A in Table 4.6 shows the descriptive statistics of *PCM*. Panel B in Table 4.6 includes the regression results.

As hypothesized, I find a negative significant relation between product market power and audit fees (estimated coefficient =-0.3534; t statistics=-3.11). This means that within the same industry, auditors charge firms with better competition status less. The relation between audit fees and Herfindahl-Hirschman index and other control variables still holds. The sign of the relation between *LOSS* and audit fees is still as expected, but not significant. On average, auditors charge firms higher fees in more competitive industries. However, auditors tend to charge less on firms with high product market power within an industry.

4.4.3.3 Newey-West Test

I also consider the potential bias problem in the empirical results resulting from an unobserved firm effect. The residuals of a given firm may be correlated across years for a firm, so I apply the Newey-West method in the analysis. Table 4.7 shows the results of Newey-West when the parameter lag is set as 4 (other lag values do not change the result qualitatively). Table 4.7 shows that the coefficients on *HIndex* and *PCM* are still negative. The p-value of the estimated coefficient on *HIndex* is 0.0443 and the p-value of the estimated coefficient on *PCM* is 0.0162. Most control variables except LOSS have the predicted signs. With an unpredicted sign, *LOSS* has the t statistics of -0.60.

Hence, Newey-West results still support the argument that auditors tend to charge higher fees on firms in more competitive industries, while they tend to charge less on those with high product market power within an industry.

4.5 Conclusions

This essay studies the impact of product market on the auditing industry. I examine whether auditors charge firms in industries with different competition levels heterogeneously. I also investigate whether auditors request more fees from firms with great product market power within an industry.

Existing theories posit two contradictory predictions on the association between industry concentration and audit fees. On the one hand, product market competition mitigates agency problems between shareholders and managers and increases the accuracy of financial reporting, thus, decreasing required audit effort and audit fees. On the other hand, firms in competitive markets are expected to face higher liquidity risk, distress risk and liquidation risk, thus increasing auditors' assessments of business risk and audit fees. I empirically test the relation between industry concentration and audit fees and find that the second theory prevails.

In addition to the industry-level analysis of product market competition on audit fees, I also investigate firm-level competition status effects on audit fees. I explore whether auditors treat firms with better competition status differently. Firms with great market power can easily transfer demand or supply shock to customers, so they tend to have less volatile cash flows or earnings. They then face less distress risk and liquidation risk, and, consequently, less business risk. Due to a small magnitude of volatility pertaining to their earnings and cash flows, they also have less incentive to manage their earnings. So, auditors will view these

clients as having less audit risk. Our finding supports the reasoning that firms possessing advantageous market status pay less in audit fees.

This study not only complements the existing literature regarding the impacts of competition on the capital market, but also confirms and explains the existence of the economic industry effect on audit fees.

Finally, I need to point out that, due to the data availability of industry-level competition measures, this paper is based on data in the U.S. manufacturing industry only. It is necessary, then, to examine whether the conclusions still hold for all industries.

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Table 4.1

Sample firms frequency distribution from 2000 to 2004

The sample includes all active firms that are contained in the intersection of the Audit Analytics database, the U.S. 2002 Census of Manufacturers, Compustat annual files and Compustat segment database between 2000 and 2004. The sample includes all active firms except those with 1) restated financial reports 2) audit fees in non-US dollars 3) zero audit fees 4) more than one reports on audit fees 5) zero reported total assets. There are 2201 firm-years that represent 760 unique firms with six-digit North American Industry Classification Systems (NAICS) from 2000 to 2004. Loss firms represent those with negative income before extraordinary items in the audited year.

	2000	2001	2002	2003	2004
No. of Firms	284	440	404	524	549
No. of Loss Firms	101	209	172	203	173
Loss Firms (%)	35.56%	47.50%	42.57%	38.74%	31.51%

Table 4.2

Descriptive statistics

The sample consists of 2201 firm-years over the period from 2000 to 2004. This table presents the descriptive statistics of the dependent variable LAF (the natural log of audit fees), the independent variable HIndex (Herfindahl-Hirschman index), and control variables. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF-log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0).

	Mean	Std Dev	10%	25%	Median	75%	90%
LAF	12.8556	1.3548	11.2226	11.8845	12.7156	13.7157	14.7480
HIndex	0.0791	0.0573	0.0189	0.0337	0.0635	0.1307	0.1453
SIZE	5.6523	2.2035	2.8489	4.1405	5.6411	7.1512	8.4081
CURRENT	0.5698	0.2121	0.3002	0.4015	0.5579	0.7305	0.8816
QUICK	2.3526	5.8645	0.2595	0.4429	0.8767	2.1545	4.9309
ROA	-0.0233	0.4537	-0.2550	-0.0379	0.0583	0.1178	0.1823
DE	0.1753	0.2658	0	0.0004	0.0957	0.2609	0.4197
LNAF	12.1664	1.8958	9.7410	10.8435	12.2144	13.4225	14.5186
NO_BUS_SEGMENTS	2.4284	1.9722	1	1	1	4	5
NO_GEO_SEGMENTS	3.5488	2.4349	1	2	3	5	7

Table 4.3

Relation between product market competition and audit fees

(OLS regression with year fixed effects)

This table presents the regression results of audit fees on product market competition. The sample consists of 2201 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. The independent variable, HIndex, is Herfindahl-Hirschman index. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF-log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0). ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted Sign	Estimate	t Statistics
HIndex	**(?)**	**-0.5745*** **	**-2.59**
SIZE	(+)	0.3504***	30.79
CURRENT	(+)	0.0287	0.40
QUICK	(-)	-0.0120***	-5.36
ROA	(-)	-0.1321***	-4.36
DE	(+)	0.1364***	2.81
LNAF	(+)	0.1913***	17.07
NO_BUS_SEGMENTS	(+)	0.0681***	9.77
NO_GEO_SEGMENTS	(+)	0.0280***	5.25
LOSS	(+)	0.0828***	2.95
FISCAL	(+)	0.2410***	9.48
BIG_FIVE	(+)	0.1310***	3.16
YEAR EFFECTS		Included	Included
Adj. R^2		82.81%	

Table 4.4

Panel A: Relation between product market competition and audit fees

(OLS Regression with year fixed effects; White corrected)

This table presents the regression results of product market competition on audit fees. The sample consists of 2201 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. The independent variable HIndex, is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF-log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0). ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted Sign	Estimate	t Statistics
HIndex	**(?)**	**-0.5565****	**-2.54**
SIZE	(+)	0.3508***	27.96
CURRENT	(+)	0.0507	0.69
QUICK	(-)	-0.0120***	-3.64
ROA	(-)	-0.1397***	-3.33
DE	(+)	0.1357***	2.73
LNAF	(+)	0.193***	14.14
NO_BUS_SEGMENTS	(+)	0.0678***	10.22
NO_GEO_SEGMENTS	(+)	0.0278***	5.06
LOSS	(+)	0.0692**	2.35
FISCAL	(+)	0.2532***	9.97
BIG_FIVE	(+)	0.1236***	3.09
YEAR EFFECTS		Included	
Adj R^2		82.45%	

Table 4.4

Panel B: Relation between product market competition and audit fees

(Fama-Macbeth)

This table presents the regression results of product market competition on audit fees. The sample consists of 2201 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. The independent variable, HIndex, is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF- log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0). ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted Sign	Estimate	t Statistics
HIndex	**(?)**	**-0.5733*** **	**-6.10**
SIZE	(+)	0.3401***	12.94
CURRENT	(+)	-0.0210	-0.17
QUICK	(-)	-0.0133***	-4.12
ROA	(-)	-0.2585***	-4.21
DE	(+)	0.0840**	2.26
LNAF	(+)	0.2047***	12.7
NO_BUS_SEGMENTS	(+)	0.06618***	17.92
NO_GEO_SEGMENTS	(+)	0.0275***	6.19
LOSS	(+)	0.0654***	2.88
FISCAL	(+)	0.1867*	1.95
BIG_FIVE	(+)	0.0599	0.89
YEAR EFFECTS		Included	
Adj. R^2		82.45%	

Table 4.5

Panel A: Regression of audit fees on product market competition with auditor specialization

Table 4.5 includes the regression results of audit fees on industry-level competition with auditor specialization. The sample consists of 2201 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. IND_SPE1 is the dummy variable for auditor specialization. Panel A shows the results with IND_SPE1 in regression. Control variables are same as described in previous tables. ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted	Estimated	
HIndex	**(?)**	**-0.5643****	**-0.5592****
		[-2.53]	**[-2.51]**
SIZE	(+)	0.3579***	0.3499
		[32.23]	[30.69]***
CURRENT	(+)	0.0503	0.0295
		[0.71]	[0.41]
QUICK	(-)	-0.0116***	-0.0121***
		[-5.19]	[-5.38]
ROA	(-)	-0.1294***	-0.1314
		[-4.26]	[-4.33]***
DE	(+)	0.1292***	0.1375***
		[2.66]	[2.83]
LNAF	(+)	0.1934***	0.1910***
		[17.25]	[17.03]
NO_BUS_SEGMENTS	(+)	0.0664***	0.0679***
		[9.54]	[9.75]
NO_GEO_SEGMENTS	(+)	0.0287***	0.0280***
		[5.38]	[5.25]
LOSS	(+)	0.0876***	0.0820***
		[3.12]	[2.92]
FISCAL	(+)	0.2434***	0.2413***
		[9.56]	[9.49]
BIG_FIVE	**(+)**		**0.1265*** **
			[3.02]
IND_SPE1	**(+)**	**0.0336**	**0.0209**
		[1.19]	**[0.74]**
YEAR EFFECTS		Included	Included
Adj. R^2		82.75%	82.82%

Table 4.5

Panel B: Regression of audit fees on product market competition with auditor specialization

Table 4.5 includes the regression results of audit fees on industry-level competition with auditor specialization. The sample consists of 2201 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. IND_SPE2 is the continuous variable for auditor specialization. Panel B shows the results with IND_SPE2 in regression. Control variables are same as described in previous tables. ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted	Estimated	Estimated
HIndex	**(?)**	**-0.5629****	**-0.5640****
		[-2.53]	**[-2.54]**
SIZE	(+)	0.3533***	0.3492***
		[31.35]	[30.58]
CURRENT	(+)	0.0437	0.0300
		[0.61]	[0.42]
QUICK	(-)	-0.0118***	-0.0121***
		[-5.29]	[-5.39]
ROA	(-)	-0.1294***	-0.1312***
		[-4.27]	[-4.33]
DE	(+)	0.1331***	0.1375***
		[2.74]	[2.83]
LNAF	(+)	0.1927***	0.1912***
		[17.21]	[17.06]
NO_BUS_SEGMENTS	(+)	0.0664***	0.0677***
		[9.56]	[9.71]
NO_GEO_SEGMENTS	(+)	0.0288***	0.0282***
		[5.39]	[5.28]
LOSS	(+)	0.0846***	0.0818***
		[3.01]	[2.91]
FISCAL	(+)	0.2432***	0.2415***
		[9.56]	[9.50]
BIG_FIVE	**(+)**		**0.1023****
			[2.12]
IND_SPE2	**(+)**	**0.2375*****	**0.1228**
		[2.62]	**[1.16]**
YEAR EFFECTS		Included	Included
Adj. R^2		82.79%	82.83%

Table 4.6

Panel A: Descriptive statistics of product market power

Table 4.6 includes the results of product market competition and product market power on audit fees. The sample consists of 1970 firm-years over the period from 2000 to 2004. Panel A presents the descriptive statistics of product market power. Product market power is measured as the ratio of operating profit to sales. Panel B presents the regression results. Dependent variable is the natural log of audit fees. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF-log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0). ***, **, and * represent 1%, 5%, and 10% significance respectively.

	N	Mean	Std Dev	10%	25%	Median	75%	90%
PCM	1970	0.0901	0.1896	-0.0863	0.0477	0.1101	0.1767	0.2699

Table 4.6

Panel B: Relation between product market power and audit fees

Table 4.6 includes the results of product market competition and product market power on audit fees. The sample consists of 1970 firm-years over the period from 2000 to 2004. Panel B presents the regression results. Dependent variable is the natural log of audit fees. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. Product market power is measured as the ratio of operating profit to sales. Control variables are same as described as in previous tables.

	Predicted Sign			
HIndex	**(?)**		**-0.0346*** **	**-0.0333*** **
			[-3.16]	**[-3.04]**
PCM	**(-)**			**-0.3534*** **
				[-3.11]
SIZE	(+)	0.3753***	0.3810***	0.3863***
		[30.84]	[31.03]	[31.24]
CURRENT	(+)	0.2263***	0.2419***	0.2222***
		[2.82]	[3.01]	[2.76]
QUICK	(-)	-0.0311***	-0.0303***	-0.0298***
		[-6.82]	[-6.66]	[-6.54]
ROA	(-)	-0.3696***	-0.3919***	-0.1356
		[-3.92]	[-4.16]	[-1.08]
DE	(+)	0.1034*	0.1007*	0.1114**
		[1.83]	[1.78]	[1.98]
LNAF	(+)	0.1825***	0.1815***	0.1809***
		[15.42]	[15.37]	[15.35]
NO_BUS_SEGMENTS	(+)	0.0620***	0.0598***	0.0588***
		[8.91]	[8.57]	[8.44]
NO_GEO_SEGMENTS	(+)	0.0193***	0.0208***	0.0221***
		[3.49]	[3.76]	[4.00]
LOSS	(+)	0.0630*	0.0688**	0.0469
		[1.90]	[2.08]	[1.39]
FISCAL	(+)	0.2509***	0.2445***	0.2469***
		[9.61]	[9.37]	[9.47]
BIG_FIVE	(+)	0.1423***	0.1460***	0.1338***
		[3.25]	[3.34]	[3.06]
YEAR EFFECTS		Included	Included	Included
Adj. R^2		82.99%	83.08%	83.17%

Table 4.7

Newey-West results: Regression of audit fees on industry concentration and firm market Power

Table 4.7 includes the Newey-West results of industry-level competition and firm-level market power on audit fees. The sample consists of 1970 firm-years over the period from 2000 to 2004. Dependent variable is the natural log of audit fees. HIndex is Herfindahl-Hirschman index downloaded from the U.S. 2002 Census of Manufacturers. PCM is the firm-specific product market power, calculated as the operating profit to sales. Control variables include auditee size (SIZE –natural log of total assets), current ratio (CURRENT – ratio of current assets to total assets), quick ratio (QUICK – ratio of current assets less inventory to current liabilities), return on assets (ROA- the earnings before interest and tax divided by total assets), leverage (DE – debt to total assets ratio), non-audit fees (LNAF- log of non-audit fees), number of business segments (NO_BUS_SEGMENTS), number of geographic segments (NO_GEO_SEGMENTS), loss year (LOSS=1 if loss year, otherwise 0), auditor's reputation (BIG_FIVE=1 if the author belongs to "Big Five", otherwise 0), and fiscal year end (FISCAL=1 if fiscal year end is Dec. 31, otherwise 0). ***, **, and * represent 1%, 5%, and 10% significance respectively.

	Predicted Sign	Estimate	t Statistics
HIndex	**(?)**	**-0.0274****	**-2.01**
PCM	**(-)**	**-0.4219****	**-2.41**
SIZE	(+)	0.4433***	26.04
CURRENT	(+)	0.3612***	3.44
QUICK	(-)	-0.0308***	-3.43
ROA	(-)	-0.1518	-1.02
DE	(+)	0.1187	1.54
LNAF	(+)	0.1172***	7.07
NO_BUS_SEGMENTS	(+)	0.0583***	6.74
NO_GEO_SEGMENTS	(+)	0.0380***	5.49
LOSS	(+)	-0.0239	-0.60
FISCAL	(+)	0.1979***	6.00
BIG_FIVE	(+)	0.0622	1.34
YEAR EFFECTS		Included	
Adj. R^2		77.71%	

Chapter 5

Conclusions and Future Works

This dissertation focuses on financial reporting quality. It documents the importance of financial reporting quality, contributes product market power to the determinants of financial reporting quality and, further, demonstrates that financial reporting quality is one channel through which product market competition affects audit fees.

The first essay, "Earnings Timeliness and Seasoned Equity Offering Announcement Effect" explores the role of financial reporting quality on the capital raising event. Specifically, it examines whether the fact that a firm reports its earnings in a timely way affects investors' responses at the firm's announcement of its SEO financing decision. I find that firms with greater earnings timeliness tend to have less information asymmetry between managers and shareholders. These firms will, therefore, experience less price drops at SEO announcements. The second and third essays are among the first studies that posit an economic link between product market competition and financial reporting quality. They show that both firm-level competition status and industry-level completion intensity affect financial reporting quality and, furthermore, audit fees.

There are many opportunities for future research in related areas. For example, distinguishing primary offerings and secondary offerings may yield some interesting topics. I discuss the benefits of shock-transfer over accrual management,

such as less litigation, scrutiny and audit risks. However, I do not explore the costs of price-setting to boost or decrease earnings. Will this transfer weaken the firm's competition status? What are the comparative costs or benefits to stakeholders between price-setting to customers and earnings management? How will the capital market respond to this behavior?

Recent studies show that managers have shifted from accrual to real management in post Sarbanes-Oxley Act (SOX) period. My study only considers the accrual management and product market power to date. It is of importance to examine the real management behaviors of firms with different market powers. For example, it is necessary to ask whether firms with greater power tend to engage in real management activities less and, although price-setting activities taken by firms with greater power do not affect a firm's normal operational practices as real manipulations do, what the economic consequences of a firm's transfer shocks to customers are. In addition, it is necessary to ask what other factors help to decide their price-setting abilities.

Another point I need to make regarding the third essay is that, due to the availability of industry-level competition measures data, the study on competition and audit fees is based on data in the U.S. manufacturing industry only. It is worthwhile to examine, then, whether the conclusion still holds for all industries so that we can generalize the results.