The Influence of Product Market Competition on the Timing and Quality of Corporate Financial Disclosure

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Abstract

Recent economic recession has spurred fierce product market competitions and drawn a closer attention of investors than ever before. This paper examines how this product market competition is associated with corporate disclosure practices. While the disclosure of private information can attract more favorable capital, it may induce undesirable competition in the product market. Thus, each firm must evaluate economic consequences of both the capital-market and the product-market from financial disclosure. The existing literature do not have consensus about the relationship between market structure and disclosure mainly relying on analytical models. This paper uses four empirical measures of product market competition (i.e., speed of profit adjustment, industry concentration and market dominance, degree of product substitution, and growth opportunities) to examine whether the timing of firms' earnings announcement and the quality of corporate financial disclosure are indeed influenced by the product market competition. This study finds that firms in low competition or with few new entrants disseminate information in a timely manner with high quality. Market dominance seems to lead this disclosure strategy and findings suggest that when there is fierce competition in the product market, the less disclosure is preferred while investors need more information for their investment judgment. This draws attention of regulatory agents for their efforts to improve the quality of disclosure for the protection of investors.

1. Introduction

Recent economic recession changed the product market competition more fierce than ever, and many of non-profitable businesses are withered out daily. Along with this product market environment change, new regulations on the financial reporting require more transparent disclosure than ever before. Interestingly, even though the disclosure mainly targets the financial market rather than in the product market, because of new economic environment, the disclosure affects product market, too. For example, as news about possible bankruptcy of automobile companies spreads, consumers who worry about the future services have turned away from the failing brand names in their choices for new vehicles. Similarly, firms use financial disclosure both in the capital and the product market. This study empirically examines whether several measures of product market competition at both the industry and the firm level influence the timing and quality of financial disclosure.

Regarding the relation between the product market competition and disclosure, the current literature does not provide any decisive conclusions on how the product market competition influences the timing and quality of financial reporting. Instead, some analytical studies predict that firms within competitive industries have incentives to adopt a full disclosure policy. Conversely, in different competition settings, some other studies suggest that partial disclosure or non disclosure is the optimal disclosure policy. [1] When dishonest or incomplete reporting is allowed, some other studies suggest that disclosure may actually increase when proprietary costs increase.[2] These seemingly ambiguous results may hamper the decision making regarding the disclosure regulation by regulatory agencies. Thus, how product market competition affects the disclosure becomes an empirical question.

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[1] For example, Verrecchia (1983), Dye (1986), Dontoh (1988), Darrough and Stoughton (1990), Wagenhofer (1990), Feltham and Xie (1992).
[2] See Newman and Sansing (1992) and Gigler (1994).

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Corporate financial disclosures are scrutinized not only by its investors and creditors but also by its current and future product market competitors and others. While some firms voluntarily disclose information beyond levels mandated by financial and accounting regulations, others seem to disclose as little information as they can. Many studies have examined what motivates firms to have different disclosure practices. However, most studies examine this issue by focusing the capital market only. In such a case, in the absence of proprietary costs, full and unbiased disclosure is always optimal.[3] Although, the disclosure of favorable private information may attract positive capital market reactions but it may also induce adverse actions from product market rivals. In the presence of such proprietary costs, firm has to trade off the positive and negative effects of financial disclosure and then determines the optimal extent, content, and timing of its disclosure. Corporate financial disclosure is therefore a function of the expected economic consequences from both the capital and product markets.

To empirically investigate corporate financial disclosure practices, a clear setting of the competitive environment is critical. Thus, we propose to use four different proxies (i.e., speed of profit adjustment, concentration ratio and market dominance, degree of product substitution, and growth opportunities) to measure different aspects of product market competition. An industry with low speed of profit adjustment, high concentration ratio, low degree of product substitution and low growth opportunity suggest such industry face less threat from potential entrants. Conversely, an industry with high speed of profit adjustment, low concentration ratio, high degree of product substitution, and high growth opportunity suggest such industry face more threat from potential entrants. Next, this study uses the timeliness of financial reporting and overall quality of corporate financial reporting as proxies for the disclosure. The remaining of the paper is organized

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[3] Managers with favorable private information always want to reveal it in order to separate themselves from those without. Whereas managers with unfavorable private information also have incentives to disclose it which can make their future disclosure more credible.

as follows. Disclosure and competition literatures are reviewed and research questions are

presented in sections 2. Research design is discussed in section 3 and results are presented in

section 4. Finally, discussions are in section 5.

2. Literature Review and Research Question

Costs and Benefits of Disclosure

The proprietary information can adversely affect future cash flows of the disclosing firm.

Examples would be technical information about valuable patents, production process, or strategic

initiatives such as expansion or takeover plans. Grossman (1981) and Milgrom (1981) analyze the

incentives for information disclosure. They demonstrate that, assuming disclosures are costless and

verifiable, full disclosure is the optimal disclosure policy. One stream of studies suggests that firms

can lower their costs of capital by increasing the disclosure of credible information.[4]

On the other hand, signaling theory suggests the voluntary disclosures by some firms seem

to provoke other firms in the same industry to make similar disclosures; firms with good news

disclose first in order to separate themselves from others. In turns, other firms would have

incentives to disclose to distinguish themselves from the worst. Signaling theory also suggests that

reveal of bad news make future disclosure more credible. Sansing (1992) develops and analyzes a

signaling model in which a firm discloses private information via management forecast. He shows

that forecast is constrained by the extent to which the existing accounting system reflects the

private information, and the extent to which estimates regarding the private information are

available from other sources, such as financial analysts. The market assesses the credibility of the

forecast in setting firm share price. His results show that most forecasts contain good news and

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[4] For example, Healy and Palepu (1993), Botosan (1997) suggest greater disclosure is associated with lower cost of equity capital. Dye and Srihar (1995) suggests that voluntary disclosure is motivated by managers' attempt to influence the financial market's assessment of firm value. Frankle, McNichols, and Wilson (1995) shows that firms intend to financing externally are more likely to issue voluntary (unbiased) disclosures. Sengupta (1998) shows that better disclosure quality is associated with lower cost of debt.

forecast containing bad news are more credible than forecasts contain good news. In addition, he

finds that stock price reactions are stronger for firms with smaller analyst following.

Over all the above studies suggest that firms would not reveal their private information

when the costs of doing so exceed the benefits. Although the direct costs (e. g., costs of generating,

gathering and disseminating) associated with financial disclosure are insignificant, the indirect

costs (e. g., proprietary costs) could be substantial.

Timing of Disclosure

Most investors perceive that firms intentionally delay the disclosure of negative

information. Pastena and Ronen (1979) suggests that, since management has sufficient discretion

over the timing of generation and dissemination of negative information, management attempt to

delay the dissemination of negative information, relative to positive information. Ajinkya and Gift

(1984) and Waymire (1984) document that unfavorable management forecast tend to be associated

with share prices decrease, it is then not clear why some firms voluntarily disclose bad news earlier

than required by regulation. Skinner (1994) shows that, for the same magnitude of large earnings

surprise, firms with negative earnings surprise are more likely to disclose than the others. Kasznik

and Lev (1995) finds that most firms with large earnings surprise keep silent, however, firms with

large negative surprise are more likely to issue hard (quantitative and earnings related) warnings

than the firms with small negative surprise.[5] Skinner (1994) argues that by issuing a warning of

large negative earnings surprises firms can reduce the likelihood of litigation and to mitigate the

litigation costs if there is one. Nevertheless, early disclosure of adverse earnings surprise does not

provide complete protection against stockholder litigation. Francis et al. (1994)'s study provides

evidence which suggests that voluntary and early disclosures of negative earnings surprises, as

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[5] The likelihood of warnings is positively associated with firm size, magnitude of earnings surprises, existence of prior
forecast, and membership in high tech industry.

advocated like an ex ante defensive mechanism, may not be an effective deterrent to litigation.[6]

They find evidence for the information mix defense: the market reactions to adverse earnings news were significantly smaller when the analysis is conditioned on the type and tone of prior and current disclosures. Skinner (1997) finds that voluntary disclosures occur more frequently in quarters that result in litigation than in quarters that do not. Therefore, it is unclear whether managers can use preemptive disclosures to reduce the probability of being sued. However, Skinner (1997) do provide some evidence suggesting that more timely disclosure of negative earnings surprise is associated with lower settlement amounts.

Although all public listed firms must meet minimum disclosure requirements set by the Security Exchange Commission (SEC) and stock exchanges, on which they are traded, firms vary substantially in the amount of information they disclose and in the timeliness of 10-K they file. Alford, Jones, and Zmijewski (1994) documents that 20% of the 10-K in their sample firms are filed with SEC after the statutory due date. Firms that delay filing their 10-K are not a random sample; up to 25% (10%) of the firms experiencing unfavorable (favorable) economic events delay their 10-K. Firms that delay their 10-k are, on average, small in size, negative in ROA, negative in earnings changes, low in liquidity, and high in financial leverage; they also experience negative market-adjusted stock returns. Fewer than one-third of firms that filed delayed 10-K also filed the appropriate notification of late filing on form 12b-25 with the SEC. Interestingly, firms that filed Form 12b-25 tend to be larger and have lower financial performance measures than firms that did not.

Verrecchia (1983) suggests that regardless of the type of information (i.e., good or bad), the timing of disclosure depends on whether the information is proprietary in nature. He indicates that as the proprietary information becomes out-dated, the costs dissipate. Specifically, the proprietary

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[6] They show that 28 out of 45 lawsuits in their sample are sued even though voluntarily disclose adverse earnings news before the mandatory release date.

cost is a continuous decreasing function of time that approaches zero after some interval has elapsed. This provides a rationale for managers, in the presence of proprietary costs, to delay the financial reporting. When proprietary cost is relative small or not a major concern to managers, firms have incentives to provide more timely disclosures. On one hand, timely disclosure of good news can separate the superior firm from other poor performing firms. On the other hand, early disclosure of bad news (i.e., adverse earnings surprise) may reduce the expected litigation cost related to the bad news and the likelihood of potential entry.

Prior analytical studies conclude that the timing of corporate financial disclosure depends on the type of product market competition. Firms have incentives to delay financial disclosure in a post-entry competition setting. In a pre-entry competition setting, firms have incentives to disclose earlier than is required by regulation when the ex ante probability of new entry is high. However, when the ex ante probability of new entry is low, firms have incentives to delay financial disclosure. This last prediction is consistent with the findings in Alford et al. (1994) that some firms purposely delay the disclosure of favorable information. Their results implicitly suggest corporate financial disclosure might be influenced by product market competition. Competitive firms, such as those larger in size, faster in growth, and more profitable in operation, are more likely to issue timely disclosure.

When a firm possesses negative private information, which suggests the intrinsic value is less than the current market value; the firm is more likely to withhold or to delay the disclosure of such negative private information. It is hoped that, some "good news" will occur to offset the negative private information. However, when the probability of entry is relatively high, the firm may want to disclose its negative private information. Because withholding such negative information may induce the rival to enter and worsen its future payoffs, but disclosing earlier may deter the rival from entry. In this sense, our research question becomes as follows:

RQ1.a: Does the industry competition shorten the timing of financial reporting at the industry level?

RQ1.b: Does the industry competition motivate firms to provide the timely financial reporting?

Quality of Disclosure

It is commonly agreed that a high quality financial disclosure should provide information in ways that would facilitate investors to assessing a firm's future cash flows. Scott (1997) suggests several ways to characterize financial information reporting system of high quality. First, a high quality reporting system should enable investors good reading of the future cash flows. Second, it should contain additional information. In the accounting context, additional information means the introduction of new information systems to report on matters not covered by the historical cost system. Third, it can be evaluated in terms of its credibility. Fourth, it has other mechanisms for information production, such as signals.

During the period from 1974 to 1996, Association for Investment Management and Research (here after, AIMR)[7] reviewed and evaluated the corporate financial reporting and shareholder communication practices of hundreds of companies in a wide variety of industries. An extensive cadre of professional analysts is recruited to donate their time and expertise to perform this seemingly improbable task. These annual reports show how consistent investment professionals are in identifying the types of information they find most valuable. In an age of increasing regulation and demands for additional disclosure, companies can learn how best to present information so that its value is ensured.

There have been many other attempts to measure the relative importance and the extent of disclosure of selected types of financial and non financial information in annual reports. However,

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[7] The AIMR stopped publishing the report since 1996.

no general agreement had been reached regarding the relative importance of disclosure items.[8]

Using data from AIMR (Annual Review of Corporate Reporting Practices, 1985-89), Lang and

Lundholm (1993) document a significant rank-order correlation between annual report and other

publication disclosure rankings. Moreover, Lang and Lundholm (1996) shows that firms with more

informative disclosure policies have a larger analyst following, more accurate analyst earnings

forecast, less dispersion among individual analyst forecast, and less volatility in forecast revisions.

Disclosure of private information is managed, in addition to the timing of announcing,

through the choices of accounting methods from acceptable alternatives, timing of adoption of

accounting methods, and the accounting numbers generated from those methods. After an

incumbent firm releases financial statements, its rival firm then makes inferences about the

probability of each level of output (private information) by observing the financial statements and

the accounting methods chosen to generate the financial statements. If the expected payoff of

entering is high enough, the rival firm will deem it profitable to enter the product market and

capture cash flows from the incumbent firm. Aware of this potential threat from its rival firm,

incumbent firm would attempt to mask such proprietary information to reduce the impact of

possible adverse actions by product market rival.

Dye (1986) suggests that non-disclosure or partial disclosure may be optimal even if

credible announcements of all information can occur when managers are endowed with both

proprietary and non-proprietary information. This result depends on the assumption that managers

can make verifiable announcements regarding their private information.[9] Furthermore, Newman

and Sansing (1992) and Gigler (1994) demonstrate that voluntary disclosure may increase as

proprietary costs increase when dishonest or incomplete reporting is allowed. This prediction is

consistent with finding in industry organization literature that the profit hiding is used as a strategic

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[8] For example, see Copeland and Frederick (1968), Singhvi and Desai (1971) and Buzby (1974).
[9] Signaling theory asserts that an announcement is not credible without being accompanied by costly signals.

to deter potential entries. For example, Smiley (1988) conducts an extensive survey concerning whether firms attempt to limit entry and which of the many possible strategies are followed most frequently. His results show that the practice of entry deterrence is surprisingly important to the sample firms. The most commonly chosen entry deterring strategies for existing products were masking the profitability of the division (79%), filing all product niches (79%), and advertising to limit entry (78%).[10]

The disclosure of favorable private information may increase firm share value but at the same time the revealed information may also attract competition from rivals and hence create proprietary costs for the announcing firms. Verrecchia (1983) defines proprietary costs as costs related to the disclosure of true liquidating value of the announcing firm and the decline in the true liquidating value results from the disclosure.[11] He shows that there is never full disclosure equilibrium, and there exists partial disclosure equilibrium with only favorable information being disclosed. For very high proprietary costs this extends to non-disclosure equilibrium.

In a game theory setting, Darrough and Stoughton (1990) show that full disclosure equilibrium exists when the prospectus of the product market is optimistic or the entry cost is relatively low (i.e., the expected payoff of entering the product-market is higher than the expected entry cost). In addition, they show that the prospectus of the product market is pessimistic or the entry cost is relatively high, it is predicted that firms choose not to disclose or partially disclose.[12] This prediction appears to conflict with the result of Verrecchia (1983). In his another paper (1990b), he shows that this conflict may due to different types of competition examined in these

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[10] As for new products, strategic entry deterrence through advertising and R&D-patenting are practiced most frequently, 78% and 71% of the responses, respectively.

[11] Verrecchia (1983) assumes that disclosure cost is exogenous and consider only the reaction from competitors (financial market is not considered).

[12] Darrough and Stoughton (1990) identifies three equilibria as follows: A full-disclosure equilibrium in which private information is disclosed and entry depends on the information. A nondisclosure equilibrium in which private information is withheld and entry does not take place. A partial-disclosure equilibrium in which favorable private information is never disclosed, but unfavorable private information is sometimes disclosed and entry is random.

two models. In Darrough and Stoughton (1990)'s model, the competition is from potential entry and the incumbent firm voluntarily discloses bad news to discourage the new entry. Verrecchia (1983) on the other hand, implicitly assumes that rival firms are already competing in the product market. Therefore, disclosure only serves to reduce their competitive advantage.[13]

Feltham and Xie (1992) extend Darrough and Stoughton (1990)'s study with continuum types of private information. This extension eliminates the mixed strategy equilibria that Darrough and Stoughton (1990) showed. In addition, their study provides a characterization of the ranges of incumbent types that choose not to disclose their private information. In fact, their results are obtained from the tension that exists between the desire to communicate the good news (hide the bad news from) to capital market and the desire to communicate bad news (hide good news from) to potential entrant. Consistent with the results of Wagenhofer (1990), and Darrough and Stoughton (1990), Feltham and Xie (1992) suggest the incumbent firm prefers partial disclosure equilibria.[14] According to their analyses, full-disclosure will occur if one of the capital market or product market is of concern to the incumbent firm, or if the response of one market clearly dominates the other. They also demonstrate that partial disclosure equilibrium exists when the incumbent has a relative balanced concern for the response of both markets.

The assumption that the disclosure decision imposes no explicit or implicit costs on the managers or on firms suppresses a number of relevant and interesting issues commonly associated with corporate financial disclosures. In a corporate world characterized by the separation of ownership and control, corporate financial disclosures can serve as a monitoring mechanism for agency relationship between managers and shareholders. To the extent that a manager's personal welfare is affected by his/her disclosure decision the manager may manipulate the disclosure signal

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[13] Verrecchia (1983) offers a rationale for why a regulated monopoly, such as a utility firm, might disclose more information voluntarily than firms within a highly competitive industry, or one in which entry into the product-market was easier to achieve.

[14] In Feltham and Xie (1992), this is the only perfect sequential equilibrium.

by introducing bias as well as by altering the signal's level of imperfection.[15] Similarly, disclosure related costs, which include the costs associated with disclosing proprietary information, may lead to a setting where it is in shareholders' interest to allow manager discretion over disclosure policy. Therefore, manager's decision on how much private information to disclose is not only affected by the effect on capital market but also by the proprietary costs and agency costs.

The proprietary cost for firms with a competitive edge should be relatively smaller than those for other firms within the same industry. Thus, these firms with the competitive edge within each industry would not be affected by firms' disclosure. For example, some firms may disclose their intention to introduce a new product much earlier than most other firms would do. One possible reason for such an action could be that disclosing firms have the patent that is crucial in producing such products. By disclosing its intention and superior ability of producing such products in the future can deter rivals to engage fruitless competition.[16] Therefore, the research question becomes as follows:

RQ 2a: Is there any difference in the quality of financial disclosure across industry?

RQ 2b: Is there any difference in the quality of financial disclosure across firms in the same industry?

3. Research Methods

3.1 Measures for the product market competition

Industry organization literature suggests that effective competition requires the following three conditions: (1) r*easonable parities* among the current competitors operate within the industry, (2) the firms within the industry are *numerous enough* to prevent effective collusion among them, and (3) e*ntry* into the industry is *easy*. In line with this view, we use four measures for the product

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[15] Other contracting factors, such as debt covenant or compensation, may also influence corporate financial disclosures.

[16] This announcement can be viewed as a signal used by the announcing firm to communicate with its rivals and to reveal its favorable private information to the capital market. Of course, to be credible, such signal must carry certain signaling costs.

market competition; firm's degree of market dominance (δ), firm's degree of product substitution

(ϕ), firm's speed of profit adjustment (β), firm's growth opportunity (q). These measures can be

used separately and jointly to examine the research questions that are raised in the previous

section.

A. Profitability

As Stigler (1963) once observed, the issue of whether profit rates have a tendency to

converge on a single, competitive level is fundamental to a normative evaluation of the

competitiveness of a market economy. In an economy subject to uncertainty, profits and losses

signal the existence of excess demand or excess supply at long-run competitive price. In the long

run, the individual firm and industry profit rate should converge toward a common competitive

level. All observed profits and losses should be short-run deviations around this trend. This

normative view of competition (static model), however, cannot explain the observed persistent

positive profits for many dominant companies in their markets. Several studies present findings

suggesting that an element of the profits of all firms at any point in time is a permanent rent that

the competitive process fails to erode.[17] In Schumpeterian perspective (dynamic model) of creative

destruction, firms with continuous innovations can enjoy permanent economic rent. Therefore,

persistence of profits in an industry suggests the lack of efficient competition. These two views

about competition, static and dynamic models of competition, both suggest that only in a less

competitive environment firm would enjoy economic rents, transitory or persistent. To measure

this degree of competition based on the industry wide abnormal profit, this study uses the

following model from Harris (1998).

$$X_{ijt} = \beta_{0j} + \beta_{1j} (D_n X_{ijt-1}) + \beta_{2j} (D_p X_{ijt-1}) + \varepsilon_{ijt} \qquad (1)$$

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[17] For example, Mueller (1986) examine the largest 1,000 U.S. manufacturing companies over the time period from 1950 to 1972 and find that both profits and market shares tend to persist over time.

Where

X_{ijt} = the difference between firm i's ROA and the mean ROA for its industry, j, in year t.

D_n = 1 if X_{ijt-1} is less than or equal to zero, 0 otherwise.

D_p = 1 if X_{ijt-1} is greater than zero, 0 otherwise.

The slope coefficient, β_{2j}, captures the speed of adjustment for positive abnormal ROA for firm i. A significant coefficient suggests that rival firms are unable to drive profitability down to a normal rate of return. Accordingly, a larger β_{2j} implies less competition. This proxy is motivated by Mueller's (1977, 1986, 1990) hypothesis that firms' rates of return converge over time to a competitive rate. However, even with a sample period of 23 years, Mueller's result suggests the speed of profit adjustment is slow. Instead of converging to a competitive rate of return, the deviation actually increases for some sample firms. This result suggests, consistent with the dynamic model of competition, innovative firms can enjoy a higher rate of return for a long time.

B. Concentration Ratio and Market Dominance

We measure the market's degree of concentration is with the combined share of the top four largest firms as defined as follows:

$$CR_j = \text{(the sum of sales of the four largest firms)} / \text{Industry-wide sales} \qquad (2)$$

Next, individual firm's market dominance is calculated in relation to the industry-wide concentration as an interaction term as follows:

$$\delta_i = CR_j * MS_i \qquad (3)$$

where,

δ_i = a measure for the market dominance of firm i in industry j.

CR_j = the concentration ratio (top four-firm concentration) of industry j.

MS_i = sales revenue of firm i deflated by industry sales.

When there are only a few large firms, each additional one can have a large impact, but this is true only when sizes and competitive strength are comparable. The concentration ratio (CR) shows the degree of oligopoly. At the firm level, market share is the most important single indicator of the firm's degree of monopoly power. The large market share almost always provides

high monopoly power, whereas small market share involves little or none. Within a product market, individual firm's monopoly power will vary in line with market shares. This importance of market share has been recognized in the classical and neoclassical literature, and the market share is deeply established in business practice as a compelling focus for company motives and strategies.[18] This study uses the interaction term of industry concentration ratio and firm's market share as the market dominance measure. The higher this measure (δ) is, the more dominant the firm is in the product market (or the greater the market power the firm possesses). For example, a monopolist would have one as the value of δ.

C. Degree of product substitution

Competition is most rigorous when products are identical: buyers can compare goods precisely and switch freely among them. When goods are differentiated, competition is often less effective. Two most important investments associated with product differentiation are R&D and advertising. There is no upper limit to R&D and advertising spending as long as extra spending enhances the possibility of generating an innovation or consumer loyalty. Economics researchers have demonstrated that both the *profit incentive* and the *competitive threat incentive* are the driving forces of R&D undertaken by individual firms. The profit incentive is widely accepted as the driving force of innovative activity. That is R&D is heavily dependent on the size of the market: the larger the market is, the greater incentives to engage in R&D activities are. It has also been demonstrated that innovative activity is undertaken in markets where the competitive threat is present. That is R&D spending can be used as a strategic mechanism of entry deterrence, by heavily spending in R&D a firm not only increase consumers' perception about the quality of its products but at the same time raise the entry barrier for the potential entrant. The competitive pressures of current or potential competitors determine the rapidity with which an innovation is

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[18] Mueller (1977) finds a strong linkage between market share and ROA. Weiss (1971, 1974) also find a significant correlation between market share and profitability.

introduced. There is another measure that improves product substitution like advertisement. Even though advertising cannot improve product quality, it can improve consumers' perception about product quality. Thus, it is aimed to foster consumers' loyalty to their products, which then reduces competition. In an advertising intensive market, advertising clearly makes it more expensive for an entrant to enter such market. Total costs for an entrant (production costs plus normal advertising costs plus penetration costs) are higher than those existing firms with established brand names are. To measure these R&D and advertisement effect, we use the following substitution measure:

$$\phi_i = 1 \, / \, [1 + (AD_i + R\&D_i) * 100] \qquad\qquad (4)$$

where

ϕ_i = degree of product substitution for firm i.
$R\&D_i$ = the ratio of R&D expenditure to the sales revenue for firm i.
AD_i = the ratio of Advertisement expenditure to the sales revenue for firm i.

The degree of substitution among products ranges from 0 to 1. When R&D and Advertising are zero, $\phi = 1$, and the seller's products within the industry are presumed to be perfect substitutes. As R&D and advertising activities increase, ϕ falls toward 0 (lower degree of product substitution). In general, a firm with a high ϕ is assumed to operate in a highly competitive product market, whereas a firm with a low ϕ is assumed to operate in a less competitive product market.

D. Growth (Tobin's q)

Many economists have questioned whether accounting profit rate is a good indicator of economic performance. As Fisher and McGowan (1983, p. 90) puts it, "there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability or about the presence or absence of monopoly profits".[19] One way to judge the seriousness of the biases from accounting data is to estimate the same types of relationships using data free from or containing smaller biases. Many financial economists have argued that the market value of a firm

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[19] Many studies (Shepherd, 1972; Ravenscraft, 1983; Mueller, 1986) failed to find a positive relationship between accounting profit rates and concentration.

is an unbiased measure of a firm's economic performance and have employed Tobin's q as a substitute for accounting rates of return in their studies.[20] Tobin's q is defined as the ratio of a firm's market value to the replacement value of its assets. This study uses Tobin's q as the proxy for the growth opportunities A high Tobin's q suggests high growth opportunities or less competition defined as follows:

$$q_i = \frac{MVE_i + PS_i + TDEBT_i}{TASSET_i} \tag{5}$$

where

MVE_i	= market value of firm i's equity.
PS_i	= carrying value of firm i's preferred stock.
$TDEBT_i$	= book value of firm i's total debt.
$TASSET_i$	= book value of firm i's total asset.

As far as the industry sales growth is concerned it seemed reasonable to assume that the higher the industry sales growth rate the less competitive the industry. Undoubtedly, the degree of industry competition is high even in growth industries but this competition is less direct than in industries with low growth opportunities. In growth industries, the demand is increasing and, more often than not, is more volatile than the demand in non-growing industries. Since growth opportunities enlarge the size of the market and create new ones, accommodation is become easier in this type of industries. In a way growth softens competition. Consequently, in growth industries, new entrants would anticipate a milder reaction from incumbents. In non-growing industries the gain of market share by one incumbent firm is the loss of other incumbents. Therefore, the competition and the costs associated with proprietary information within non-growing industries could be very high even if the industry concentration is high.

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[20] However, Lindenberg and Ross (1981) show that concentration and Tobin's q were unrelated. Thus, if one believes that concentration and economic profits should be positive correlated, Tobin's q would not appear to a good measure of economic returns.

3.2 Test Models

The timing of financial Reporting

This study uses classical linear regression model and ordinary least square (OLS) estimator to test the impact of product market competition on the timing of financial reporting as follows:

$$IABANND_{jt} = a_0 + a_1 CR_{jt} + a_2 \Phi_{jt} + a_3 \beta_{jt} + a_4 Q_{jt} + a_5 ISIZE_{jt} + \varepsilon_{jt} \qquad (6.1)$$

$$ABANND_{it} = b_0 + b_1 \delta_{it} + b_2 \phi_{it} + b_3 q_{it} + b_4 MS_{it} + b_5 Size_{it} + \varepsilon_{ijt} \qquad (6.2)$$

where

$IANND_{jt}$	= The average number of days between firm's fiscal year end and earnings announcement date for industry j in the fiscal year t;
$ABANND_{it}$	= the number of days between firm's fiscal year end and earnings announcement date after subtracting mean value of industry firm i belongs to in the fiscal year t;
MS_{it}	= sales revenue of firm i deflated by industry sales revenue in the fiscal year t;
CR_{jt}	= four largest firm's concentration ratio for industry j in the fiscal year t;
δ_{it}	= degree of market dominance for firm i and is set to equal CR_{jt} x MS_{it} in the fiscal year t;
Φ_{jt}	= degree of product substitution for industry j in the fiscal year t;
ϕ_{it}	= degree of product substitution for firm i in the fiscal year t;
β_{jt}	= speed of abnormal profit adjustment for industry j in the fiscal year t;
Q_{jt}	= Tobin's q for industry j in the fiscal year t;
q_{it}	= Tobin's q for firm i in the fiscal year t;
$ISIZE_{jt}$	= The average size of firms in the industry j in the fiscal year t;
$Size_{it}$	= log of total assets for firm i in the fiscal year t;

and,

$\varepsilon_{jt},\ \varepsilon_{ijt}$ = error terms.

The Quality of financial Reporting

Next, we examine the relationship between quality of financial disclosure and proxies for firms' competitiveness. The dependent variable used to test is the AIMR score of financial disclosure for firms within selected industries.

$$ISCORE_{jt} = c_0 + c_1 CR_{jt} + c_2 \Phi_{jt} + c_3 \beta_{jt} + c_4 Q_{jt} + \varepsilon_{jt} \qquad (7.1)$$

$$SCORE_{it} = d_0 + d_1 \delta_{it} + d_2 \phi_{it} + d_3 q_{it} + d_4 MS_{it} + d_6 Size_{it} + \varepsilon_{ijt} \qquad (7.2)$$

Where,

$ISCORE_{jt}$ = AIMR disclosure score for industry j in the fiscal year t;

$SCORE_{it}$ = AIMR disclosure score for firm i in the fiscal year t;

and,

other variables are as defined before.

4. Sample Description and Test Results

Sample and Data Selection

The data used in this study are collected from the following databases: Standard and Poor's Research Insight, Association for Investment Management and Research (AIMR) Corporate Information Committee Reports (1992-93 to 1995-96). The sample, used to examine the timing of earnings announcement, contains all firm-years with earnings disclosure date available from Research Insight for the period between 1990 and 2009 and 75,213 observations are used for our analyses. The sample size for the disclosure quality analysis is 991 for the firm-years of 1992~1995 and distribution by industry is presented on Table 1.

Product market competition and timing of financial reporting

Table 4 shows the regression results of timing on the measures for the product market competition after controlling for individual industry average reporting time. Thus, the negative association means the more timely disclosure. The coefficients on the market product market competition measures are all statistically significant. Especially, the firm with higher dominance measure (δ_{it}), higher growth opportunity (q_{it}) and low product substation (ϕ_{it}) reported faster than its peer group firms. This suggests that a strong firm in the product market competition is willing to disseminate information in a timely manner. One contrasting result is the positive association of the market share and delay of financial reporting. This implies that the firm with a higher market share than the others will disclose slowly. This might due to the incentive to protect against the potential entrant when there is no competitive edge while the probability of potential entries is high.

Table 5 shows the similar analysis for the industry level without any benchmark. Compared to the previous analyses, the regression results are based on a general cross industry analysis. We find that the industry where a few firms are dominant (CR_{jt}) or average size of firms are large tend to have delayed in the timing of financial reporting. It can be interpreted that oligopolistic market would not need to disclose in time because the entrant may not benefit from entering the market such that there is no strategic advantage of disclosing early. Regarding the result with the size variable (*ISIZE*), we can interpret that the industry with large firms needs more time until the financial reporting because they have more scope of business that needs more preparation time not because of strategic choices. Similarly, the weak evidence that the industry with a growth potential tends to report late because of the nature of the business where more audit works or preparation mainly more uncertain business environment than the non-growing saturated industry. Over all, results in Table 4 and 5 suggest that the reports are prepared and reported timely in the competitive market.

Product market competition and quality of financial reporting

Table 6 shows the regression results of quality of disclosure on the measures for the product market competition. Thus, the positive association for the market dominance (δ_{it}), the growth opportunity (q_{it}) and the market share (MS_{it}) means that the less competitive the market is, the higher is the quality of disclosure. Thus, it is consistent with the view that firms will be willing to disclose more information when there disclose would not affect the market competition. We also find the negative but weak association with the product substitution (ϕ_{it}). The result means that firms tend to disclose more when new products are developed or marketing activities are active. Finally, we find that the larger a firm is, the higher the disclosure quality is. We interpret that large firms have more resources to enhance the disclosure quality such that these firms tend to use

higher quality of audit service from big audit firms. As a result, they tend to have higher quality of disclosure.

Table 7 shows the association between industry level competition and quality of disclosure at the industry level. Again we find that only market dominance (CR_{jt}) and aver size of firms ($ISIZE_{jt}$) associated with the quality of disclosure. Consistent with our findings in the timing of the financial reporting, the industry where only a few firms dominate (oligopolistic market) tends to disclose with low quality. Thus, we find that there is a strategic choice of disclosure induced by the market structure. That is, the high quality with the competitive market and the low quality with less competitive market. On the other hand, as we find in the firm level, when the average size of firms in the industry is large, the industry tends to produce high quality disclosure. This reflects the resources the large firms have to prepare the financial reporting. As a consequence of putting more work in preparation for the disclosure, the quality is enhanced, even though the timing is as soon as the other industry.

5. Discussion

This study investigates the influence of product market competition on corporate financial disclosure practices in terms of timing and quality. Recent economic recession changed product market competition more fierce than ever and unfitted businesses are withered out daily. Along with this product market environment change, financial reporting requires more transparent disclosure than ever before. Interestingly, the impact or importance of disclosure has been more emphasized in the financial market rather than in the product market. However, many firms oppose against new disclosure requirements have expressed their concern about the possible adverse actions from their current and potential product market competitors. Many analytical studies have examined this question, but the results are inconclusive.

This study empirically investigates competition settings that fit the descriptions of competition settings in several analytical models with the research question 'Does product market competition influence capital market financial reporting in timing and quality?' As suggested in the industry organization literature, we use four measures for the product market competition; firm's degree of market dominance (δ), firm's degree of product substitution (ϕ), firm's speed of profit adjustment (β), firm's growth opportunity (q).

Consistent with the prediction of prior analytical models, the firms facing less competition or less threatened by the new entrants because of their strong market dominance, the firms are willing to disseminate information in a timely manner with high quality. However, we find that firms with large market share disclose less timely manner but the quality is high. It appears that the large firms' decision is using the timing of reporting as a strategic tool to protect from the potential competitors. Otherwise, overall results support that less competitive market condition induces more timely and high quality disclosure. One contrasting result is with the market share where it shows the positive coefficient implying that the firm with a higher market share than the others will disclose slowly. This might due to the incentive to protect against the potential entrant when there is no competitive edge while the probability of potential entries is high. At the industry level analysis, results show that market structure is a main factor that influences the timing and quality of disclosure. The less competitive industry tends to delay financial reporting and produce low quality reports. This suggests that the oligopolistic market induces the industry to use the disclosure to deter the new entrants by disclosing less. In this way, they can keep their extra rent by deterring new entrants.

The empirical findings of this study would enhance our understanding of how firms make their financial disclosure decisions when facing varies degrees of product market competition. Furthermore, the results may able to resolve the seemingly conflicting predictions from prior

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analytical models and provide some implications for regulatory agencies' future policy setting. One important suggestion is that overall, when there is fierce competition at both at the firm and industry level, the less disclosure is observed. This is contrary to the intention of regulations implemented recently to protect investors better. After all, considering the potential strategic choice of firms in voluntary disclosure, the level of mandatory disclosure can be tuned more to the less competitive industry where investors are less likely to receive timely financial reporting of high quality.

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Table 1 Sample Distribution

	Timing Sample	Disclosure Sample
1. Transportation	910	51
2. Apparel and textiles	2,018	22
3. Automotive, Train, Aircraft, Ship & related	5,654	13
4. Financial Institutions	235	148
5. Chemical	3,596	49
6. Construction	7,907	27
7. Containers and packaging	10	7
8. Computer & Electrical equipment	6,864	31
9. Environmental control	26	39
10. Food, Beverage and tobacco	4,121	83
11. Healthcare	1,278	57
12. Parmaceuticals	1,247	2
13. Machinery	1,884	36
14. Media (Publishing-broadcasting)	1,091	72
15. Metals	3,688	33
16. Paper and forest products	1,501	76
17. Oil and Gas	2,971	112
18. Wholesale, Retail, and Trading	23,727	85
19. Software and services	1,452	34
20. Telecommunications services	1,572	3
21. Others	1,461	11
Total	73,213	991

Table 2 Firm Level Summary Statistics

Panel A. Data Description and Summary Statistics

$ABANND_{it}$ = number of days until the earnings announcement after fiscal year ending subtracted by industry average number of days until the earnings announcement for the firm i in the fiscal year t;

$SCORE_{it}$ = disclosure score from AIMR reports for the firm i in the fiscal year t;

δ_{it} = market dominance measured by the multiplication of market share and industry concentration ratio (industry concentration ratio is the proportion of four largest firms' market share) for the firm i in the fiscal year t;

ϕ_{it} = degree of product substitution for the firm i in the fiscal year t;

q_{it} = Tobin's q for the firm i in the fiscal year t;

MS_{it} = market share for the firm i in the fiscal year t;

$SIZE_{it}$ = log of total assets for the firm i in the fiscal year t;

Variable	Mean	Median	Minimum	Maximum
$ABANND_{it}$	-0.899	-1.909	-31.571	58.727
$SCORE_{it}$	71.344	73.500	0.000	96.500
δ_{it}	0.053	0.025	0.000	0.718
ϕ_{it}	0.473	0.001	0.000	1.000
q_{it}	1.352	1.086	0.072	8.358
MS_{it}	0.078	0.044	0.001	0.718
$SIZE_{it}$	8.018	8.104	3.401	11.984

Panel B. Spearman Correlation Coefficients

	$ABANND_{it}$	$SCORE_{it}$	δ_{it}	ϕ_{it}	q_{it}	MS_{it}
$SCORE_{it}$	-0.059*					
	(0.064)					
δ_{it}	-0.041	0.258***				
	(0.201)	(0.000)				
ϕ_{it}	0.103***	-0.270***	-0.093			
	(0.001)	(0.000)	(0.003)***			
q_{it}	-0.163***	0.135***	-0.097	-0.367		
	(0.000)	(0.000)	(0.002)***	(0.000)***		
MS_{it}	-0.066	0.235***	0.979	-0.123	-0.093	
	(0.037)**	(0.000)	(0.000)***	(0.000)***	(0.003)***	
$SIZE_{it}$	-0.105	0.293***	0.506	-0.414	-0.073	0.582
	(0.001)***	(0.000)	(0.000)***	(0.000)***	(0.021)**	(0.000)***

*, **, and *** represent the significance level of 10%, 5%, and 1%, respectively
( ) represents p-value.

<center>**Table 3 Industry level Summary Statistics**</center>

Panel A. Data Description and Summary Statistics

$IANND_{jt}$ = The average number of days until the earnings announcement after fiscal year ending subtracted by industry average number of days until the earnings announcement for the industry j in the fiscal year t;

$ISCORE_{jt}$ = The average disclosure score from AIMR reports for the industry j in the fiscal year t;

Φ_{jt} = degree of product substitution for the firm i in the fiscal year t;

Q_{jt} = The average Tobin's q for the industry j in the fiscal year t;

β_{jt} = The speed of abnormal profit adjustment for the industry j;

CR_{jt} = The sum of the market share of four largest firms for the industry j;

$ISIZE_{jt}$ = The average log of total assets of the firms in the industry j of the fiscal year t;

Variable	Mean	Median	Minimum	Maximum
$IANND_{it}$	34.29	33.46	17.00	49.59
$ISCORE_{it}$	1.65	1.50	0.00	4.00
Φ_{jt}	0.01	0.00	0.00	0.17
Q_{jt}	1.49	1.34	0.15	3.45
β_{jt}	7.00	5.79	0.10	27.61
CR_{jt}	0.26	0.24	0.13	0.64
$ISIZE_{jt}$	8.09	8.35	5.35	10.25

Panel B. Spearman Correlation Coefficients

	$IANND_{it}$	$ISCORE_{it}$	Φ_{jt}	Q_{jt}	β_{jt}	CR_{jt}
$ISCORE_{it}$	-0.443***					
	(0.000)					
Φ_{jt}	0.172	-0.175				
	(0.113)	(0.108)				
Q_{jt}	0.317***	-0.083	-0.408***			
	(0.003)	(0.450)	(0.000)			
β_{jt}	0.445***	-0.290***	-0.238**	0.646***		
	(0.000)	(0.007)	(0.027)	(0.000)		
CR_{jt}	-0.182*	0.285***	0.005	-0.225**	-0.241**	
	(0.093)	(0.008)	(0.966)	(0.037)	(0.026)	
$ISIZE_{jt}$	-0.424***	0.399***	-0.512***	-0.021	-0.158	0.047
	(0.000)	(0.000)	(0.000)	(0.851)	(0.146)	(0.667)

*, **, and *** represent the significance level of 10%, 5%, and 1%, respectively
( ) represents p-value.

Table 4 Individual firm's Timing of Financial Reporting and Product Market Competition

Model

$$ABANND_{it} = b_0 + b_1\delta_{it} + b_2\phi_{it} + b_3q_{it} + b_4MS_{it} + b_5Size_{it} + \varepsilon_{ijt}$$

where,

$ABANND_{it}$ = the number of days between firm's fiscal year end and earnings announcement date after subtracting mean value of industry firm i belongs to in the fiscal year t;

δ_{it} = degree of market dominance for firm i and is set to equal CR_{jt} x MS_{it} in the fiscal year t;

ϕ_{it} = degree of product substitution for firm i in the fiscal year t;

q_{it} = Tobin's q for firm i in the fiscal year t;

MS_{it} = sales revenue of firm i deflated by industry sales revenue in the fiscal year t;

$Size_{it}$ = log of total assets for firm i in the fiscal year t;

and,

ε_{ijt} = error term.

Variable	Estimate	t-value
Intercept	21.405	131.154***
δ_{it}	-20.859	-2.279**
ϕ_{it}	0.007	10.494***
q_{it}	-0.002	-2.265***
MS_{it}	24.157	2.912***
$SIZE_{it}$	-5.452	-161.674***
Adj. R^2=30.4	N=72,913	

*, *, *** represent significance level at 10%, 5%, and 1%, respectively

Table 5 Timing of Industry Financial Reporting and Product Market Competition

Model

$$IANND_{jt} = a_0 + a_1 CR_{jt} + a_2 \Phi_{jt} + a_3 \beta_{jt} + a_4 Q_{jt} + a_5 ISIZE_{it} \, \varepsilon_{jt}$$

where,

$IANND_{jt}$ = The average number of days between firm's fiscal year end and earnings announcement date for industry j in the fiscal year t;

CR_{jt} = four largest firm's concentration ratio for industry j in the fiscal year t;

Φ_{jt} = degree of product substitution for industry j in the fiscal year t;

β_{jt} = speed of abnormal profit adjustment for industry j in the fiscal year t;

Q_{jt} = Tobin's q for industry j in the fiscal year t;

$ISIZE_{it}$ = The average size of firms in the industry j for the fiscal year t;

and,

ε_{jt} = error term.

Variable	Estimate	*t-value*
Intercept	26.478	*1.560*
CR_{jt}	21.532	*3.110****
Φ_{jt}	0.646	*1.930**
Q_{jt}	5.602	*1.390*
β_{jt}	-0.295	*1.384*
$ISIZE_{jt}$	3.139	*2.120****
Adj. R^2=31.9 *N=919*		

*, *, *** represent significance level at 10%, 5%, and 1%, respectively

Table 6 Individual Firm's Disclosure Quality and Product Market Competition Model

$$SCORE_{it} = d_0 + d_1\delta_{it} + d_2\phi_{it} + d_3q_{it} + d_4MS_{it} + d_6Size_{it} + \varepsilon_{ijt}$$

Where,

$SCORE_{it}$ = AIMR disclosure score for firm i in the fiscal year t;

and,

other variables are as defined before.

Variable	Estimate	t-value
Intercept	-72.625	-1.695*
δ_{it}	20.591	3.355***
ϕ_{it}	-24.271	-1.877*
q_{it}	1.182	2.934***
MS_{it}	19.595	2.878***
$SIZE_{it}$	1.228	3.021***
Adj. R^2=42.64		

*, *, *** represent significance level at 10%, 5%, and 1%, respectively

Table 7 Industry Level Disclosure Quality

Model

$$ISCORE_{jt} = c_0 + c_1CR_{jt} + c_2\Phi_{jt} + c_3\beta_{jt} + c_4Q_{jt} + \varepsilon_{jt}$$

Where,

$ISCORE_{jt}$ = AIMR disclosure score for industry j in the fiscal year t;

and,

other variables are as defined before.

Variable	Estimate	*t-value*
Intercept	57.567	*1.083*
CR_{jt}	-20.569	*-2.939*****
Φ_{jt}	-29.573	*-0.615*
Q_{jt}	2.744	*0.951*
β_{jt}	-0.052	*-0.051*
$ISIZE_{jt}$	3.352	*2.931*****
Adj. R^2=14.74 N=86		

*, *, *** represent significance level at 10%, 5%, and 1%, respectively