

## **A study on the relationship between proprietary information cost and the quality of disclosure**

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### **Abstract**

*Examining whether the relationship between proprietary information cost and management's disclosure decision is also valid for domestic companies is expected to provide meaningful implications for investors and regulatory authorities. However, there are no domestic studies related to proprietary information costs so far. This study examines whether managers tend to lower the disclosure level at their discretion in consideration of proprietary information costs. This study used the measurement quality of disclosure to examine whether managers tend to lower the disclosure level at their discretion in consideration of proprietary information costs. As a result of empirical analysis, it was confirmed that there is a negative relationship between proprietary information cost and the quality of disclosure. This suggests that management tends to make disclosure decisions in consideration of not only the benefits of disclosure but also proprietary information costs resulting from disclosure in order to maximize corporate value. These findings are expected to have significant implications for investors and related policy authorities.*

**Keywords:** *proprietary information cost, quality of voluntary disclosure, capital costs*

### **1. Introduction**

According to the proprietary information cost hypothesis of Verrecchia (1983) [1], managers make disclosure choices by simultaneously considering the benefits of lower capital costs due to increased disclosure and the cost of exposing proprietary information. As long as the cost incurred from exposure of proprietary information has a positive value, the benefit of disclosure is offset, and the higher the cost, the lower the disclosure threshold. A low level of information disclosure increases information risk, and investors demand a risk premium, which in turn increases the cost of capital.

Examining whether the relationship between proprietary information cost and management's disclosure decision is also valid for domestic companies is expected to provide meaningful implications for investors and regulatory authorities. However, there are no domestic studies related to proprietary information costs so far. The lack of related domestic research can be attributed to the following two reasons. First, various data used

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to substantiate the proprietary information cost hypothesis in foreign studies are insufficient or absent in Korea.

In addition, in order to verify the relationship between proprietary information cost and management's disclosure behavior, the quality of voluntary disclosure, which affects management's discretion, must be measured without noise, which is difficult to measure in reality. This is because there is no relevant valid theoretical framework or a methodology for precisely measuring the quality of voluntary disclosure has never been proposed.

Accordingly, this study used Zhang (2005) [2]'s measurement quality of disclosure to examine whether managers tend to lower the disclosure level at their discretion in consideration of proprietary information costs. The empirical analysis results are as follows. First, it was confirmed that there is a negative relationship between proprietary information cost and the quality of disclosure. Although voluntary disclosures involving management's discretion affect the cost of capital, which is a decisive factor in asset prices (Easley and O'Hara 2004) [3], investors didn't know about the factors that affect the quality of such disclosures. The empirical results of this study confirmed that investors tend to make disclosure decisions in consideration of not only the benefits of disclosure but also proprietary information costs resulting from disclosure in order to maximize corporate value.

## **2. Prior Research, Theory and Hypothesis**

The clarity and accuracy of information disclosed by companies differs from company to company. Some companies make profit forecasts with specific values and others with interval values. Some companies use qualitative information to make forward-looking statements. In relation to the disclosure of business segments, some companies disclose detailed business information by sector, while others hide or unclearly disclose business information by sector.

According to Hayes and Lundholm (1996) [4], managers in the face of threats from competitors are reluctant to disclose information about the relevant business segment in order to sustain excess profits, which leads to the avoidance of business-related disclosures. Botosan and Stanford (2005) [5] reported that managers of firms with operating segments belonging to less competitive industries limit the exposure of relevant proprietary information to sustain excess profits in those segments. Newman and Sansing (1993) [6] investigated the disclosure decision behavior of managers who want to provide useful information to investors but undesirable information to strategic competitors to avoid proprietary information costs. They confirmed that managers tend to make informational but noise and ambiguity disclosures.

As such, companies tend to selectively adjust the quality level when making disclosure decisions. According to Easley and O'Hara (2004) [2], this affects the cost of capital, which is a decisive factor in asset prices. Nevertheless, investors cannot know whether management has chosen the quality of the disclosure with good intentions. Therefore, it is important to identify the factors that influence the disclosure decision. According to previous analytical studies, rational managers make optimal decisions by considering both the benefits of disclosure (*e.g.*, reduction in capital cost) and disclosure costs (*i.e.*, proprietary information cost) when deciding on a disclosure policy. This means that proprietary information cost is a disclosure determinant that can significantly affect an entity's disclosure policy. This study examines whether there is a significant link between the disclosure determinant (proprietary information cost) and the disclosure choice (adjustment of the disclosure level).

If there are no costs due to the disclosure of information, companies will pursue only the benefits of disclosure and will maximize the disclosure. However, if a competitor infringes upon the disclosure company's interests due to the disclosure of information, proprietary information costs arise to the disclosure company.

In other words, in the discretionary disclosure theory, a competitor's behavior is a function of expectations for the type of disclosure firm (e.g., 'profit') that depends on the disclosure signal, so clearer and more accurate disclosures enable the formation of clear expectations of competitors.

In conclusion, companies facing high proprietary information costs are expected to make low-quality disclosures in order to reduce the usefulness of disclosure information by competitors. To empirically analyze this, this study establishes the following hypotheses.

: There is a negative relationship between the quality of disclosure and proprietary information costs.

### **3. Methodology and Results**

#### **3.1 Measure of proprietary cost**

In order to verify the relevance between proprietary information cost and the quality of disclosure, a proxy for proprietary information cost verified in a number of previous studies, that is, capital concentration and R&D cost, is used. Capital intensity (INVCAPITAL), a proxy for the first proprietary information cost, is the value obtained by dividing the book value of the underlying tangible assets by the total underlying assets. Capital concentration is interpreted as the minimum required capital that potential market entrants must have to enter the market and is used as the size of entry barriers in industrial organization and accounting research (Schmalensee, 1989) [7]. A high capital concentration represents a high entry barrier for potential market entrants, but a low entry threat for existing market entrants. Thus, all other things being equal, firms with high capital concentration (i.e., firms facing low entry threats) are compared to firms with low capital concentration (i.e. firms facing high entry threats). Compared to that, the possibility of disadvantages due to disclosure is low. In other words, a negative relationship between capital concentration and proprietary information cost is expected. This capital concentration is multiplied by '-1' and named 'proprietary information cost measurement 1 (INVCAPITAL)', in order to resolve the discrepancy between the sign of the measurement and intuitive understanding.

Second, R&D cost, which is a proxy for proprietary information cost, is calculated as the ratio of electricity R&D expenses to electricity sales. For companies with high R&D expenses, business-related information is a sensitive matter and becomes proprietary information (Zhang 2005) [2]. For example, pharmaceutical companies are reluctant to disclose details of new drugs under development, and if detailed information related to new drug development is disclosed early, the desire of competing pharmaceutical companies to develop new drugs is stimulated, thereby reducing the opportunity to preoccupy the market. Because it is likely to disappear. Therefore, a positive (+) correlation is expected between R&D expenses and proprietary information exposure costs.

#### **3.2 Hypothesis Test using OLS Regression Analysis**

In this study, to verify the correlation between proprietary information cost and the quality of disclosure, the value obtained by multiplying two proprietary information cost variables, namely, capital concentration (INCAPTIVAL, PC) by '-1', was used as a proprietary information cost variable 1 and a study against sales. Development cost ratio (R&D, PC) was set as proprietary information cost variable 2. If the hypothesis is supported, the coefficient value of the proprietary information cost variable of the model below is expected to have a negative (-) value at a statistically significant level.

$$\begin{aligned}
 \text{QUALITY} = & \alpha_1 + \alpha_2 \text{PC}_{it-1} + \alpha_3 \text{MtoB}_{it-1} + \alpha_4 \text{PERFORMANCE}_{it-1} + \alpha_5 \text{FIRMSIZE}_{it-1} \\
 & + \alpha_6 \text{NegEarn}_{it} + \alpha_7 \text{NegEarnG}_{it} + \alpha_8 \text{ANALYST}_i + \alpha_9 \text{OFFER}_{it} \\
 & + \alpha_{10} \text{SOPHIST}_{it-1} + \varepsilon_{it}
 \end{aligned}$$

(1)

Table 1 presents the results of regression analysis for hypothesis testing. The coefficient values of proxy 1 for proprietary information cost (INCAPTIVAL, PC) and proxy value 2 for proprietary information cost (R&D, PC) all showed negative values at statistically significant levels. These empirical results are proprietary information cost, which expected that the managers of companies with high (low) cost, would perform a qualitatively low (higher) level of disclosure compared to companies with low costs, is supported.

**Table 1. Hypothesis test using OLS regression analysis**

	Model 1	Model 2
	(the verification of PC1)	(the verification of PC2)
	Coefficient value (t-value)	Coefficient value (t-value)
<i>Intercept</i>	0.085 (1.50)	0.129 (2.02 <sup>**</sup> )
<i>INCAPTIVAL</i>	-0.031 (-2.08 <sup>**</sup> )	n/a
<i>R&amp;D</i>	n/a	-0.136 (-2.4 <sup>**</sup> )
<i>MtoB</i>	0.006 (3.12 <sup>***</sup> )	0.006 (3.01 <sup>**</sup> )
<i>PERFORMANCE</i>	-0.159 (-6.49 <sup>***</sup> )	-0.166 (-6.77 <sup>***</sup> )
<i>FIRMSIZE</i>	-0.003 (-1.25)	-0.004 (-1.75 <sup>+</sup> )
<i>NegEarn</i>	-0.066 (-5.78 <sup>***</sup> )	-0.066 (-5.77 <sup>***</sup> )
<i>NegEarnG</i>	-0.000 (-0.07)	0.000 (0.07)
<i>ANALYST</i>	0.000 (1.12)	0.000 (1.55)
<i>OFFER</i>	-0.006 (-0.81)	-0.005 (-0.70)
<i>SOPHIST</i>	0.003 (0.14)	0.010 (0.50)
YD (Year Dummy)	-	Omit mark
IND (Industry Dummy)	-	Omit mark
number of samples	1,957	1,957
Adjusted $R^2$	0.0242	0.0284

When the quality of disclosure is improved, the information environment is improved and information risk is lowered. If a company with a high proprietary information cost makes a lower level of disclosure, investors will demand a higher premium for information risk, which will increase the cost of capital. Ultimately, the results of this study suggest that if a company with a high proprietary information cost makes a lower quality disclosure, the cost of capital will rise. A rational manager will make a decision while simultaneously considering the trade-off between the benefit of reducing capital costs due to high-quality disclosure and the

occurrence of proprietary information cost due to high-quality disclosure. If it was common for managers to give equal weight to the benefits of reducing capital costs and avoidance of proprietary information costs, the above research results would not have been drawn. The results of this study show that managers of companies with high proprietary information costs tend to perform low-quality disclosures by placing higher weight on avoidance of proprietary information costs than on the benefits of reducing capital costs compared to managers of companies with high proprietary information costs. suggest This means that the high proprietary information cost tends to increase the cost of capital to prevent useful information from being transmitted to competitors. It is expected.

#### **4. Conclusion**

As a result of the empirical analysis, a negative relationship between proprietary information cost and the quality of disclosure was confirmed, indicating that, all other things being equal, managers of companies with high (low) proprietary information costs have lower (lower) quality. It means that there is a tendency to perform high level of disclosure.

Rational management should consider the trade-off between the benefit of reducing capital costs due to high-quality disclosure and the occurrence of proprietary information costs due to high-quality disclosure. If it was common for managers to give equal weight to the benefit of reducing capital costs and avoidance of proprietary information costs, the above research results would not have been drawn. The results of this study suggest that managers of companies with high proprietary information costs tend to perform low-quality disclosures by placing higher weight on avoidance of proprietary information costs than on the benefits of reducing capital costs compared to managers of companies with high proprietary information costs. This means that companies with high proprietary information costs tend to take even higher capital costs to prevent useful information from being transmitted to competitors. It is expected.

Although voluntary disclosures involving management's discretion affect the cost of capital, which is a decisive factor in asset prices, investors should directly observe whether the manager's incentives to make choices in determining the quality of such disclosures. difficult. From the results of the empirical analysis of this study, it can be inferred that, in the case of a company with a high proprietary information cost, the lower level of disclosure is the result of the rational decision made by the management in terms of maximizing the corporate value. This point is expected to have great implications for investors. On the other hand, if disclosure only brings a reduction in capital cost (benefit) through resolving information asymmetry, full disclosure should be common, but the actual corporate phenomenon related to disclosure is not. It is expected that the results of the empirical analysis of this study will provide a clue for the interpretation of this disclosure phenomenon.

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