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Voluntary Disclosure of the Schedule of Manufacturing Cost*

-Implications of Revisions to Korean Accounting Standards-

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<Abstract>

Korea Accounting Standard Board announced new amendment of changing in disclosure regulation in order to protect firm's operating strategy. The new amendment includes the disclosure policy about the schedule of manufacturing cost. This study explores the characteristics of firms which still voluntarily disclose the schedule of manufacturing costs even though the mandatory regulations about reporting detail information have been relaxed.

As the starting point when the regulation would be acted is uncertain, we consider different starting point of voluntary disclosure, and set several definition of voluntary disclosure.

We find that there are statistically significant differences in characteristics of voluntary disclosure firms. The voluntary disclosure firms are younger, small size, lower performance than non-voluntary disclosure firms. The market which voluntary disclosure firms belong to is less competitive than the market which non-voluntary disclosure firms belong to. Also the ratio of sales cost in voluntary disclosure firms is higher than that of non-voluntary disclosure firms.

This paper contributes in the accounting research in that it is the first paper of researching voluntary disclosure about the schedule of manufacturing cost and analyzing the differences of firm's characteristics between disclosure firms and non-disclosure firms.

<Key words> voluntary disclosure, schedule of manufacturing costs, the characteristics of firms

* This paper is partially drawn from Kim's master thesis at Kyung Hee University

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Ⅰ. INTRODUCTION

There are two ways to obtain a firm's financial information. One is directly from the Chief Executive Officer(hereafter, CEO), who is ultimately responsible for the majority of a firm's investor relationship(hereafter, IR) activities. Another is from the firm's individual financial reports.

IR management is a powerful financial interaction tool within the investment community that integrates finance, communication, marketing, and securities law and compliance to enable the most effective two－way communication between the financial community and other constituencies. The key measures as to how successful firm's IR efforts are judged is how well its efforts ultimately contribute to firm's securities achieving fair valuation, the firm's ability to raise capital.

Financial reports[1] are another means by which financial information is disseminated. Financial reports provide useful financial information that assists a firm's stakeholders, investors, and others who might be interested in a firm's stock, future strategies, or financial stability to make sound economic decisions. There are also additional tools, such as footnotes and supplementary schedules, that indicate a firm's unique features, its business environment, as well as its expected future financial performance.

The schedule of manufacturing costs is a supplementary schedule that reports costs of manufacturing certain products during a generic time period. It also describes a firm's factory－related indirect costs when a product is manufactured, as well as the firm's overhead.

On February 6, 2006, the Korean Accounting Standard Board(hereafter, KASB) proposed a revision to the Korean Accounting Standards(hereafter, KAS), including Chapter 7[2], which

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1) Financial reports or Financial statements don't have any different meaning using both of them. So We will use both of them.

2) On 24th December, 2004, the Financial Supervisory Commission(hereafter, FSC) also released the new amendment about the disclosure and issue of securities, whose main purpose is to reduce the burden of disclosure of trade secret, such as the schedule of manufacturing costs. And the FSC mentioned that this amendment would be applied after 2005. The main interest of this amendment is that there is no specific prescribed mention. whether applying this amendment after 2005 is relevant to fiscal year, 2005 or the financial statement about fiscal year, 2004(the fiscal year end is normally December, and the financial statements of t－1 year is reported in March, t year). This ambiguous amendment causes discussion of setting starting point of voluntary disclosure. It is very crucial for this paper to debate the difference of announce time as the starting point of voluntary disclosure would be different. So we consider BY2004, as the period of transition and BY2005 as settlement period. This distinguish will discuss again in the sample selection.

addressed footnotes and supplementary schedules. These additional documents were deemed important and appropriate, if there was supplemental information that was needed for financial statements' clarity. however, those schedules could be omitted it there was no perceived need. The focus in this report will be on the 13th schedule(the schedule of manufacturing costs) in Chapter 7, as the new amendment stated that the disclosure of this schedule would be no longer mandatory.

According to Statement of Korean Accounting Standards No. 21, there are two perspectives on manufacturing cost disclosure. The first is that the schedule of manufacturing costs supplies useful pertinent financial information to stockholders relative to a firm's future performance and/or cash flow. Another perspective is that this schedule contains the firm's proprietary strategies and operational practices, and therefore should not be disclosed in the market to guard against exposure of the firm's business strategies to competitors.

The KASB accepted the second opinion and announced a new amendment. Despite the KASB's decision, some firms continue to disclose their schedule of manufacturing costs. Compared to the KASB's decision, in the United States, the Financial Accounting Standards Board(hereafter, FASB) enacted Statement of Financial Accounting Standards(hereafter, SFAS) No.131, which is related to SFAS No.14, stating that companies are required to submit a segment report based on the internal reporting and management system of firm. The objective of requiring disclosure of this report is to help stakeholders

a. better understand the enterprise's performance
b. better assess its prospects for future net cash flows
c. make more informed judgments about the enterprise as a whole(SFAS No.131, p.5).

As mentioned above, there are different views between the KASB and the FASB as to how much information the firms may－or should－disclose.

From a lenient perspective, this study investigates the characteristics of those firms which still voluntarily disclose their schedule of manufacturing costs after the amendment of KAS on February 6, 2006. And we will also examine the differences in characteristics between voluntary disclosure firms and non－voluntary disclosure firms.

The remainder of the paper consists of the following. Section Ⅱ reviews a prior research. Section Ⅲ describes research design and the definition of voluntary disclosure firms. Section Ⅳ presents the results. Section Ⅴ provides a sensitivity analysis. and lastly, Section Ⅵ provides conclusions and limitations.

Ⅱ. LITERATURE REVIEW

Disclosure is one of the processes that let stakeholders recognize the information about a firm's performance. The most common type of disclosure is in the form of financial reports. Disclosure of a firm's performance plays an important role in capital markets.

There are normally two types of financial disclosure－mandatory and voluntary. A mandatory disclosure implies that a firm must report certain information to its stakeholders, since some companies have a tendency not to report private information to the outside world. Financial regulators impose penalties on a firm that violates the disclosure regulation. Voluntary disclosure refers to the publication of information about the firm without any compulsion to do so. There are some economic incentives to voluntarily disclose financial data(Kwon et al. 2003, chapter 4).

Regardless of the disclosure type, the main purpose for disclosure is to solve information asymmetry between a firm and market participants who are either a firm's current stakeholders or may be future investors.

Information asymmetry causes two kinds of problems. The first problem is that the firm's CEO knows the business strategies, or projected financial information, better than outside users. So he or she has a tendency to exaggerate the firm's performance, or other financial information, in order to attract investors or stockholders. In this instance, then, outside investors face the obstacle of making the most objective decision in choosing the best firms in which to invest.

The next issue is an agency problem where the CEO makes a decision to maximize his or her individual benefits, and ignores the investor's benefits. Information asymmetry could cause market failure, and disclosure is one of the important methods to alleviate information asymmetry.

As mentioned above, voluntary disclosure is based on a CEO's decision without a mandatory requirement. That is, there are some incentives to report voluntarily. Ettredge et al.(2002) studied companies' lobbying positions on the FASB's exposure draft for SFAS No. 131 on segments of an enterprise, as well as related information, and investigated the opposing companies' characteristics by several proxies.

According to the results, companies opposed to the segment disclosure rules promulgated in SFAS No.131 were concerned that the proposed rules would damage their competitive position in the market. In addition, managers of the most vulnerable companies believed that the new disclosure rules would increase the customers' and suppliers' bargaining power, as well as intensify the threat of entry by powerful competitors into the companies' most profitable business segments.

Similar prior research(Ettredge et al. 2002 ; Chen et al. 2001) studied the characteristics of firms that voluntarily disclosed balance sheet information when they announced their quarterly earnings. As a result of this disclosure, the public, especially potential investors, are privy to such information as a firm's losses, its forecast errors, and/or a firm's future M&A plans. It was found that small, relatively young, and inexperienced companies, including high−tech firms, were involved, to a large extent, in divulging this type of private information. Additionally, firms with these features exhibited low price−to−earnings(P/E) ratios.

Thus, voluntary disclosure plays a supplemental role in earnings announcements, giving additional valuable, relevant information to potential investors.

Shalev(2009) studied whether investors calculate the value of the difference in disclosure levels in business, as well as its effects. The results show that investors do not understand the difference between the levels of disclosure, even though there is a positive relationship between the disclosure level of a business and an acquirer's performance.

Ahn et al.(2005) studied the contents of the section "Overview of Operations" in the annual reports of South Korean firms. The results suggest that in the absence of regulations on information disclosure, Korean firms voluntarily provide soft information in their annual reports' overview of operations section. such disclosure depends on the firm's industry membership, business environment change, and firm performance.

Cho(2007) examined the possible impact of interim segment information reporting requirements of SFAS No. 131 on information asymmetry. his results implied that segment information reporting reduces information asymmetry. According to prior research, companies are motivated to voluntarily disclose information when incentives are offered. Choi and Hwang(2001) studied the features of voluntary disclosure firms through the Internet and concluded that the larger the firm, the more incentivized it is to disclose information. Moreover, not only the firm's size but also the firm's industry type has some effect on disclosure(Choi et al. 2008). When disclosure is changed from mandatory to voluntary, the quantity of information divulged seems to decrease(Kim and Sohn 2007).

However, Hayes and Lundholm(1996) constructed a model that analyzed segment disclosure observed by capital markets, as well as competitors. It was concluded that under the FASB proposal regarding segments reporting, when competitors were involved, firms were likely to disclose segments reporting that had similar competitors' results. The assumption is that companies have a tendency not to divulge their strategic information to competitors.

Adopting the signal theory to the incentives to disclose information, the firms will not disclose information, if disclosing the information divulges a firm's market strategy or demonstrates to present or potential competitors the low entry barriers in an industry. When the firm has an option to disclose, the incentives will change.

Herrmann and Thomas(2000) suggest that the firms' managers tend to choose not to disclose information. The results showed that, under SFAS 131, which addresses voluntary disclosure of firm earnings geographically, companies tend to withhold geographic－specific information.

Hope and Thomas(2007) showed that when the CEO or any decision－maker involved in the financial undertakings of the firm is motivated by power and/or wealth and seeks to maintain and strengthen his or her position in the firm, the person tends to refrain from divulging the firm's financial information.

In sum, the prior literature review demonstrated that disclosure gives needed information about a firm's current performance and future goals and objectives. There is a mandatory as well as voluntary way of disclosing information, each fraught with positives and negatives. Every firm, depending upon its individual goals and objectives, must choose its own method of relaying its firm－specific information to the market.

The schedule of manufacturing costs contains cost information. the cost information differs from the companies' characteristics and CEO's decisions. Horngren et al.(2006) concluded that cost accounting provides key data to managers for planning and controlling as well as costing, products, services, and customers. The central focus of cost accounting is on helping managers make better decisions by assigning costs to products, so management can control its overhead. A schedule of manufacturing cost is a form of cost accounting that assigns factory－related costs to a firm's financial statements. Calculating the cost of a product is a cost accounting function that answers financial accounting's inventory－valuation needs and management accounting's decision－making needs. Modern cost accounting takes the perspective that collecting cost information is a function of the management decisions being made.

Ⅲ. RESEARCH DESIGN

Gu and Li(2007) tested market reaction to voluntary disclosure using insider transactions before voluntary disclosure of an innovation strategy. it indicated that voluntary disclosure has a credibility－enhancing effect. Information asymmetry was more prevalent in the following. Younger firms, firms reporting losses, firms with fewer analysts analyzing their respective companies, as well as firms with higher R&D intensity.

Moreover, as mentioned in Lang(1991) and Lundholm(2003), firm age could be one of the measures of information asymmetry, since investors have less useful, historical information on younger firms. Besides, Chen et al.(2001) mentioned that the younger the firm, the more the balance sheet discloses in the quarterly earnings announcement.

Therefore, in mitigating information asymmetry, firm age and the type of reporting of earnings are directly related to the voluntary disclosure of additional information.

Another variable to consider is firm size. Diamond and Verrecchia(1991) stated that since large firms benefit more from disclosure, they tend to disclose more information. Choi and Hwang(2001) showed similar results with prior research related to voluntary disclosure through the Internet. They found that the most relevant variable related to voluntary disclosure is firm's size. According to Cho(2007), this study measured assets relative to firm size and showed that a firm's assets are statistically large in firms with voluntary disclosure.

Moreover, Choi et al.(2008) carried out related research, which showed that the type and size of a firm play key roles in deciding information disclosure. Hope and Tomas(2008) considered the firm size as the level of disclosure. From the research, firm size is one of the characteristics of voluntary disclosure.

In addition, companies' common characteristics appear to be directly related to voluntary disclosure. Ettredge et al.(2002) investigated whether a firm's distinguishing qualities and features reflect its tendency to disclose information or not. They analyzed the probability of agreement－ and/or disagreement－according to a firm's characteristics. The results showed that complex firms with numerous business segments tend to be less inclined to disclose their information.

In this paper, the focus will be on information disclosure linked to a firm's distinctive features and characteristics. <Table 1> describes the variables that will be used in this study.

〈Table 1〉 Variable definition

Variable	Definition
FirmAge1	the age from established year
FirmAge2	the age from listed year
BIG4	if audit firms cooperates with BIG 4(PricewaterhouseCoopers, Deloitte, KPMG, Ernst&Young) in year t, BIG4＝1, otherwise BIG4＝0
Conglomerate	if the firm belongs to the large enterprise according to the commercial law, then Conglomerate＝1, otherwise Conglomerate＝0.

〈Table 1〉 Variable definition (Continued)

Variable	Definition
N_Employee	the number of employees
T_Asset	total asset at fiscal year end ; amounts in billions of wons
Debt	total debt at the fiscal year end ; amounts in billions of wons
Equity	total capital at the fiscal year end ; amounts in billions of wons
Sales	sales(net) in fiscal year ; amounts in billions of wons
G_Sales	gross sales in fiscal year ; amounts in billions of wons
M_Sales	sales of manufactured goods in fiscal year ; amounts in billions of wons
G_Profit	gross profit in fiscal year ; amounts in billions of wons
OP_Income	operating income in fiscal year ; amounts in billions of wons
NET_Income	net income in fiscal year ; amounts in billions of wons
ROA	return on asset ; income/total asset
OP_Cash	cash flows from operating activities in fiscal year ; amounts in billions of wons
COGS	cost of goods sold in fiscal year ; amounts in billions of wons
SG&A	selling and general administrative expenses in fiscal year ; amounts in billions of wons
HHI_Sales	Herfindahl－Hirschman index using sales
HHI_G_Sales	Herfindahl－Hirschman index using gross sales
RSC	ratio of sales cost＝cost of goods sold/sales
C_T_Asset	the changes[1)] in total asset
C_ROA	the changes in return on asset
C_Sales	the changes in sales
C_G_Sales	the changes in gross sales
C_G_Profit	the changes in gross profit
C_OP_Income	the changes in operating income
C_NET_Income	the changes in net income
C_OP_Cash	the changes in flows from operating activities
C_COGS	the changes in cost of goods sold

1) change＝$(variable_t - variable_{t-1})/variable_{t-1}$

3.1 Sample selection

The main purpose of this paper is to find the characteristic of firms which voluntarily disclose the schedule of manufacturing costs as additional information. The variables which already discussed in section Ⅱ and section 3.1 will be used in this paper.

The most delicate issue in this paper is to determine the base year when the mandatory regulation released. As mentioned before, the first date of public announcement from FSC in on 24th December 2004, and the new amendment of disclosure would be applied after 2005. The second day of announcement about revision of KAS including the new amendment, on 6th Feb, 2006, is opened by KASB.

Therefore, the firm might release the information of the schedule of manufacturing cost in financial report about performance in 2004, still considering the releasement as mandatory disclosure. It is hard to distinguish the changing time clearly because of these different announcement date. Also the ambiguous announcement of applying year makes more confusion, which whether the firms could apply this new regulation to the financial reports in 2004 or the financial reports in 2005.[3)]

Additionally, the lack of clarity in the dates could affect the determination of the commencement dates of voluntary disclosure activities. Consequently, two starting points are reflected in <Table 2>, which indicates the standards and two base years. The predominant purpose of this paper is to study the characteristics of firms that voluntarily disclose the schedule of manufacturing costs. Since disclosure occurs in the manufacturing industry, we collected samples from the manufacturing sector.

〈Table 2〉 The setting of base year of voluntary disclosure

Standards of the new amendment	Base year of voluntary disclosure
Announced by FSC — Applied after 2005	BY2004
Proposed by KASB — open revision of KAS in 2006	BY2005

3) The fiscal year end of samples is December, The financial statement in 2004 usually reports on 31st March, 2005. So when FSC announce the new amendment, on 24th December, 2004, the firm could apply this new amendment to the reports of 2004 or 2005.

The sample conditions in this paper are mentioned following <Table 3>. As mentioned above, since there is a controversy about the base year of voluntary disclosure, the number of samples in each base year is different. We also collected the samples before the announcement of the new amendment. The disclosure of the manufacturing costs was one of the mandatory disclosure regulations before 2004. Hence, if the firms do not disclose at least one item in the manufacturing costs, these kinds of samples should be excluded, since the firms will have violated the regulations.

〈Table 3〉 sample conditions

Conditions	Detail
Period	1) From 2004 to 2010 2) Previous period(1999－2003) is used to exclude samples which are not satisfied with sample conditions
Data source	KIS－Value
Level of industry	1) Manufacturing industry in KIS－9 2) Middle grouping(C10000～C33000)
Firm	1) Fiscal year end is December 2) Listed in KSE(excluded in the state of administrative issue) 3) Excluded when the audit opinion of a firm is unqualified

<Table 4> shows the distribution of firms according to the base year, BY2004 and BY2005. The number of samples relative to the year is the same in the base year, BY2004 and BY2005, except for 2004.[4] The number of samples is 1,956 in BY2004, and 1,698 in BY2005, which appears to be a fairly even distribution between the two years. The number increases from 258 in 2004 to 295 in 2007, decreasing slightly to 272 in 2010.

The serial pattern of samples supports Kim and Shon(2007), which means that the amount of disclosure slightly decreased after changing from a mandatory regulation to a voluntary regulation.

〈Table 4〉 Year relative to samples : base year, BY2004, BY2005

	2004	2005	2006	2007	2008	2009	2010	Total
BY2004	258	276	287	295	285	283	272	1,956
BY2005	－	276	287	295	285	283	272	1,698

4) The number of samples in year, 2004 is excluded in the base year, BY2005.

<Table 5> Industry relative to samples : base year, BY2004, BY2005

Industry code	Categories(Middle grouping)	# of samples in BY2004	# of samples in BY2005
C10000	Manufacture of Food Products	123(6.29%)	104(6.12%)
C11000	Manufacture of Beverages	23(1.18%)	21(1.24%)
C12000	Manufacture of Tobacco Products	7(0.36%)	6(0.35%)
C13000	Manufacture of Textiles, Except Apparel	63(3.22%)	55(3.24%)
C14000	Manufacture of wearing apparel, Clothing Accessories and Fur Articles	61(3.12%)	55(3.24%)
C15000	Tanning and Dressing of Leather, Manufacture of Luggage and Footwear	20(1.02%)	17(1.0%)
C16000	Manufacture of Wood and of Products of Wood and Cork ; Except Furniture	18(0.92%)	15(0.88%)
C17000	Manufacture of Pulp, Paper and Paper Products	104(5.32%)	91(5.36%)
C19000	Manufacture of Coke, hard−coal and lignite fuel briquettes and Refined Petroleum Products	17(0.87%)	15(0.88%)
C20000	**Manufacture of chemicals and chemical products(except pharmaceuticals, medicinal chemicals)**	**309(15.8%)**	**269(15.84%)**
C21000	Manufacture of Pharmaceuticals, Medicinal Chemicals and Botanical Products	149(7.62%)	127(7.48%)
C22000	Manufacture of Rubber and Plastic Products	79(4.04%)	68(4.0%)
C23000	Manufacture of Other Non−metallic Mineral Products	76(3.89%)	65(3.83%)
C24000	**Manufacture of Basic Metal Products**	**224(11.45%)**	**197(11.6%)**
C25000	Manufacture of Fabricated Metal Products, Except Machinery and Furniture	34(1.74%)	29(1.71%)
C26000	**Manufacture of Electronic Components, Computer, Radio, Television and Communication Equipment and Apparatuses**	**180(9.2%)**	**155(9.13%)**
C27000	Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks	26(1.33%)	22(1.3%)
C28000	Manufacture of electrical equipment	75(3.83%)	66(3.89%)
C29000	Manufacture of Other Machinery and Equipment	150(7.67%)	132(7.77%)
C30000	Manufacture of Motor Vehicles, Trailers and Semitrailers	161(8.23%)	138(8.13%)
C31000	Manufacture of Other Transport Equipment	37(1.89%)	34(2.0%)
C32000	Manufacture of Furniture	14(0.72%)	12(0.71%)
C33000	Other manufacturing	6(0.31%)	5(0.29%)
Total		1,956(100%)	1,698(100%)

<Table 5> illustrates the distribution of firms relative to industry according to the base years, BY2004 and BY2005. In the third column in <Table 5>, approximately 15% of the samples(309) belong to the chemicals and chemical products manufacturing sector(excluding pharmaceuticals and medicinal chemicals). roughly 20% of the samples is included in the basic metal products manufacturing industry(224, 11.45%) and the electronic components, computer, radio, television, and communication equipment and apparatuses industry accounted for approximately 9.2% of the samples(180). The last column in <Table 5> is based on BY2005. In BY2005, the chemicals and chemical products(excluding pharmaceuticals and medicinal chemicals) also occupied about 15% of the samples(269). the next sample size(197, 11.6%) relates to the basic metal products industry. The manufacturing of electronic components, computer, radio, television, and communication equipment and apparatuses includes roughly 10% of the samples.

3.2 The standard of voluntary disclosure

Some of the firms provide manufacturing cost information, even though the mandatory regulation no longer exists. Moreover, the pattern of disclosure varies in accordance with firms' unique information－risk motivations, size, diversity, and characteristics, to name a few. In the study, four criteria have been set to describe a voluntary disclosure firm. First, five items[5] were selected from the schedule of manufacturing costs. The five items are used a proxy for proprietary costs to measure voluntary disclosure. Second, the five items were converted into dummy variables. if the number of the items was greater than zero, the variable received a one, otherwise zero. Then, the sum of the five compositions of the schedule of manufacturing costs was calculated and indicated as N_MFG_DC.[6] VOL_DC, the dummy variable equals one, if N_MFG_DC is greater than zero[7], was a proxy for voluntary disclosure in specific year－firm.

Certain firms might continually disclose the schedule of manufacturing costs. however, other

5) The five items in the schedule of manufacturing costs are raw material cost(#150000), direct labor cost(#152000), manufacturing cost(#153000), total manufacturing cost(#154000), cost of goods manufactured (#155000). These items are considered as basic items in the schedule of manufacturing costs, So we collected five items as the criteria of voluntary disclosure.

6) We excluded the sample which has zero value in N_MFG_DC during previous period(2000－2003), as mentioned in the conditions of samples.

7) The distribution of N_MFG_DC appears below table. When defining VOL_DC, we assumed that VOL_DC equals one if N_MFG_DC>0, otherwise, VOL_DC equals zero. Most of samples are divided two parts. So it would not be a generous standard of N_MFG_DC.

firms might disclose it less frequently. The frequency of disclosure, as well as the ratio of voluntary disclosure, are important standards of voluntary disclosure. <Table 6> explains these variables, such as N_MFG_DC, VOL_DC, and VOL_FIRM, and shows four criteria of voluntary disclosure firms.

First, the 2004_N_ONCE setting, which decides the firm as a voluntary disclosure firm if the firm discloses the information about manufacturing costs at least once. Otherwise, the firm is considered a non−voluntary disclosure firm. firm A in <Table 6> discloses once during the sample period, so firm A is considered a voluntary disclosure firm.

Second setting is the 2004_N_MEAN, which regards the firm as a voluntary disclosure firm if the number of VOL_DC in a sample is above the average number of VOL_DC(3.07). Firm B in <Table 6> discloses four times, the disclosure number of Firm B is above the average disclosure number(3.07 times) in the sample. So with respect to another perspective(2004_N_MEAN), firm B is considered a voluntary disclosure firm.

Third setting is the 2004_R_MEAN, which separates voluntary disclosure firms from non−voluntary disclosure firms, using an average ratio of VOL_DC during the listed period(0.49). Firm C in <Table 6> is listed in KSE for six years and disclosed four times. So, the ratio of voluntary disclosure during the sample period is 0.67(4/6). In the ratio setting(2004_R_MEAN), Firm C is considered a voluntary disclosure firm.

The last is the 2004_R_ALL setting. This setting warrants the most rigorous criterion, since only the firm that discloses the schedule of manufacturing costs consecutively as voluntary disclosure firms are placed in this category. Firm D in <Table 6> continually disclosed the schedule of manufacturing costs after initial public offering. In the rigorous standard of voluntary disclosure(2004_R_ALL), therefore, only firm D is regarded as a voluntary disclosure firm.[8]

N_MFG_DC	0	4	5
# of samples in BY2004	991(51%)	10(0.5%)	995(48.5%)
# of samples in BY2005	920(54%)	9(0.5%)	769(45.5%)

8) The standard of each setting is the same in BY2005, and sensitivity test, however, the average frequency of voluntary disclosure, and average ratio of voluntary disclosure are different according to base year of voluntary disclosure.

〈Table 6〉 The examples of definition of voluntary disclosure firms : base year, BY2004

Firm	Year	RAW	LABOR	MFG	TMFG	COGM	N_MFG_DC	VOL_DC	VOL_FIRM=1
A	2004	0	0	0	0	0	0	0	2004_N_ONCE
	2005	0	0	1	0	0	1	1	
	2006	0	0	0	0	0	0	0	
	2007	0	0	0	0	0	0	0	
	2008	0	0	0	0	0	0	0	
	2009	0	0	0	0	0	0	0	
	2010	0	0	0	0	0	0	0	
B	2004	0	0	0	0	0	0	0	2004_N_MEAN
	2005	1	1	0	1	1	4	1	
	2006	0	0	0	0	0	0	0	
	2007	1	1	1	1	1	5	1	
	2008	1	0	1	1	0	3	1	
	2009	0	0	0	0	0	0	0	
	2010	1	0	1	1	1	4	1	
C	2004	not listed	not listed	not listed	not listed	not listed	null	null	2004_R_MEAN
	2005	1	1	1	1	1	5	1	
	2006	0	0	0	0	0	0	0	
	2007	1	1	0	1	1	4	1	
	2008	0	0	0	0	0	0	0	
	2009	1	1	1	1	1	5	1	
	2010	1	1	1	1	1	5	1	
D	2004	1	1	1	1	1	5	1	2004_R_ALL
	2005	1	1	1	1	1	5	1	
	2006	1	1	1	1	1	5	1	
	2007	1	1	1	1	1	5	1	
	2008	1	1	1	1	1	5	1	
	2009	1	1	1	1	1	5	1	
	2010	1	1	1	1	1	5	1	

1) Variable definition
   RAW : If raw material cost>0, RAW=1, else RAW=0
   LABOR : If direct labor cost>0, LABOR=1, else LABOR=0
   MFG : If manufacturing cost>0, MFG=1, else MFG=0
   TMFG : If total manufacturing cost>0, TMFG=1, else TMFG=0
   COGM : If cost of goods manufactured>0, COGM=1, else COGM=0
   N_MFG_DC : Sum of five variables(RAW+LABOR+MFG+TMFG+COGM)
   VOL_DC : If N_MFG_DC>0 in specific year, then VOL_DC=1, else VOL_DC=0

The sample distribution of each of the settings with the respect to base year BY2004 and BY2005 is illustrated in <Table 7>. The number of voluntary disclosure firms in each setting is different. The average number of VOL_DC(3.07) in BY2004 is larger than that in BY2005(2.48). The ratio of VOL_DC(0.49) in BY2004 is also larger than the ratio of VOL_DC in BY2005(0.46) with an average number of VOL_DC and average ratio of VOL_DC.

〈Table 7〉 Sample distribution of four settings : base year, BY2004, BY2005

<table>
<tr><td colspan="4">Panel A : The aggregate of voluntary disclosure : base year, BY2004</td></tr>
<tr><th># of VOL_DC</th><th>samples</th><th>2004_N_ONCE</th><th>2004_N_MEAN</th></tr>
<tr><td>0</td><td>409</td><td>NON_VOL_FIRM</td><td rowspan="4">NON_VOL_FIRM</td></tr>
<tr><td>1</td><td>181</td><td rowspan="7">VOL_FIRM</td></tr>
<tr><td>2</td><td>281</td></tr>
<tr><td>3</td><td>256</td></tr>
<tr><td>4</td><td>233</td><td rowspan="4">VOL_FIRM</td></tr>
<tr><td>5</td><td>229</td></tr>
<tr><td>6</td><td>157</td></tr>
<tr><td>7</td><td>210</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">1,956</td></tr>
<tr><td colspan="2">Average</td><td colspan="2">3.07</td></tr>
</table>

<table>
<tr><td colspan="4">Panel B : The ratio of voluntary disclosure : base year, BY2004</td></tr>
<tr><th>voluntary disclosure ratio[1)]</th><th>samples</th><th>2004_R_MEAN</th><th>2004_R_ALL</th></tr>
<tr><td>0</td><td>409</td><td rowspan="5">NON_VOL_FIRM</td><td rowspan="10">NON_VOL_FIRM</td></tr>
<tr><td>0<ratio≤0.20</td><td>104</td></tr>
<tr><td>0.20<ratio≤0.30</td><td>229</td></tr>
<tr><td>0.30<ratio≤0.40</td><td>27</td></tr>
<tr><td>0.40 <ratio≤0.50</td><td>172</td></tr>
<tr><td>0.50<ratio≤0.60</td><td>189</td><td rowspan="6">VOL_FIRM</td></tr>
<tr><td>0.60<ratio≤0.70</td><td>69</td></tr>
<tr><td>0.70<ratio≤0.80</td><td>170</td></tr>
<tr><td>0.80<ratio≤0.90</td><td>208</td></tr>
<tr><td>0.90<ratio<1</td><td>88</td></tr>
<tr><td>1.00</td><td>340</td><td>VOL_FIRM</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">1,956</td></tr>
<tr><td colspan="2">Average</td><td colspan="2">0.49</td></tr>
</table>

〈Table 7〉 Sample distribution of four settings : base year, BY2004, BY2005 (Continued)

Panel C : The aggregate of voluntary disclosure : base year, BY2005

<table>
<tr><th># of VOL_DC</th><th>samples</th><th>2005_N_ONCE</th><th>2005_N_MEAN</th></tr>
<tr><td>0</td><td>459</td><td>NON_VOL_FIRM</td><td rowspan="3">NON_VOL_FIRM</td></tr>
<tr><td>1</td><td>163</td><td rowspan="6">VOL_FIRM</td></tr>
<tr><td>2</td><td>269</td></tr>
<tr><td>3</td><td>262</td><td rowspan="4">VOL_FIRM</td></tr>
<tr><td>4</td><td>196</td></tr>
<tr><td>5</td><td>151</td></tr>
<tr><td>6</td><td>198</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">1,698</td></tr>
<tr><td colspan="2">Average</td><td colspan="2">2.48</td></tr>
</table>

Panel D : The ratio of voluntary disclosure : base year, BY2005

<table>
<tr><th>voluntary disclosure ratio</th><th>samples</th><th>2005_R_MEAN</th><th>2005_R_ALL</th></tr>
<tr><td>0</td><td>459</td><td rowspan="5">NON_VOL_FIRM</td><td rowspan="9">NON_VOL_FIRM</td></tr>
<tr><td>$0<\text{ratio}\leq 0.20$</td><td>96</td></tr>
<tr><td>$0.20<\text{ratio}\leq 0.30$</td><td>29</td></tr>
<tr><td>$0.30<\text{ratio}\leq 0.40$</td><td>201</td></tr>
<tr><td>$0.40<\text{ratio}\leq 0.50$</td><td>30</td></tr>
<tr><td>$0.50<\text{ratio}\leq 0.60$</td><td>206</td><td rowspan="5">VOL_FIRM</td></tr>
<tr><td>$0.60<\text{ratio}\leq 0.70$</td><td>198</td></tr>
<tr><td>$0.70<\text{ratio}\leq 0.80$</td><td>40</td></tr>
<tr><td>$0.80<\text{ratio}\leq 0.90$</td><td>149</td></tr>
<tr><td>$0.90<\text{ratio}\leq 1$</td><td>293</td><td>VOL_FIRM</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">1,698</td></tr>
<tr><td colspan="2">Average</td><td colspan="2">0.46</td></tr>
</table>

1) ratio = the period of voluntary disclosure/the period of listed during sample period

<Table 8> shows the distribution of VOL_FIRM and NON_VOL_FIRM in each setting with respect to base years BY2004 and BY2005. The number of VOL_FIRM in 2004_N_ONCE is larger than in any other setting. Further, the number of VOL_FIRM in 2004_R_MEAN is greater than that in the 2004_N_MEAN setting. For each base year, the ratio of VOL_FIRM in the lenient standard(2004_N_ONCE, 2005_N_ONCE) is larger than other standards. When we use the

ratio of voluntary disclosure(2004_R_MEAN, 2005_R_MEAN), the ratio of the samples is almost 50% for each base year.

〈Table 8〉 Sample compositions : base year, BY2004, BY2005

Variables	NON_VOL_FIRM		VOL_FIRM		Total	
	Number	ratio	Number	ratio	Number	ratio
2004_N_ONCE	390	20%	1,566	80%	1,956	100%
2004_N_MEAN	1,127	58%	829	42%	1,956	100%
2004_R_MEAN	941	48%	1,015	52%	1,956	100%
2004_R_ALL	1,616	83%	340	17%	1,956	100%
2005_N_ONCE	456	27%	1,242	73%	1,698	100%
2005_N_MEAN	891	52%	807	48%	1,698	100%
2005_R_MEAN	815	48%	883	52%	1,698	100%
2005_R_ALL	1,405	83%	293	17%	1,698	100%

Ⅳ. RESULTS

4.1 The result with respect to base year, BY2004

4.1.1 Descriptive statistics

<Table 9> presents descriptive statistics of total samples with base year BY2004. The mean(median) of FirmAge1 is 35.22(35.00), and the mean(median) of conglomerate is 0.58(1). The firms in the sample are, in large part, bigger companies. The mean(median) N_Employee is 1,131.17(373), which indicates the distribution of number of employees has a right tail. Moreover, the mean(median) HHI_Sales is 0.22(0.19), which also suggests that the degree of competition in the sample is high. The mean(median) C_ROA is −0.97(−0.96), which indicates that the growth rate in the sample is negative. The mean(median) RSC is 0.81(0.85). The mean(median) C_Sales is 886.34(177.97), which indicates that there are wide variations in the samples.

〈Table 9〉 Descriptive statistics of total samples : base year, BY2004

Variables	Mean	Median	Standard deviation	Min	Max	1st quartile	3rd quartile
FirmAge1	35.22	35.00	15.06	1.00	113.00	28.00	44.00
FirmAge2	18.37	18.00	11.20	−6.00	54.00	10.00	29.00
BIG4	0.49	0.00	0.50	0.00	1.00	0.00	1.00
Conglomerate	0.58	1.00	0.49	0.00	1.00	0.00	1.00
N_Employee	1,131.17	373.00	3,174.53	11.00	56,137.00	216.00	808.50
T_Asset	995.27	190.84	3,249.38	5.22	48,190.25	100.24	430.44
Debt	486.22	72.78	1,684.51	2.06	23,760.02	36.96	177.17
Equity	509.05	109.17	1,880.08	−57.50	35,082.19	54.44	259.80
Sales	887.34	178.97	3,046.64	0.78	45,737.32	94.67	432.11
G_Sales	891.94	181.43	3,047.71	0.78	45,737.32	94.80	432.11
M_Sales	810.49	141.67	2,975.63	0.02	45,601.33	74.46	341.88
G_Profit	148.66	28.77	519.40	−986.79	8,918.98	11.94	74.18
OP_Income	67.96	8.29	329.34	−2,202.19	6,540.06	2.13	25.19
NET_Income	56.55	6.43	319.81	−4,719.63	5,266.97	1.31	20.82
ROA	0.03	0.04	0.09	−1.93	0.36	0.01	0.07
OP_Cash	76.05	8.16	404.58	−3,162.49	7,143.46	0.81	25.58
COGS	738.68	145.13	2,604.18	0.45	42,420.66	74.82	349.19
SG&A	80.71	17.75	254.23	0.34	5,692.36	8.75	51.57
HHI_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
HHI_G_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
RSC	0.81	0.85	0.15	0.27	2.18	0.78	0.90
C_T_Asset	994.27	189.84	3,249.38	4.22	48,189.25	99.24	429.44
C_ROA	−0.97	−0.96	0.09	−2.93	−0.64	−0.99	−0.93
C_Sales	886.34	177.97	3,046.64	−0.22	45,736.32	93.67	431.11
C_G_Sales	890.94	180.43	3,047.71	−0.22	45,736.32	93.80	431.11
C_G_Profit	147.66	27.77	519.40	−987.79	8,917.98	10.94	73.18
C_OP_Income	66.96	7.29	329.34	−2,203.19	6,539.06	1.13	24.19
C_NET_Income	55.55	5.43	319.81	−4,720.63	5,265.97	0.31	19.82
C_OP_Cash	75.05	7.16	404.58	−3,163.49	7,142.46	−0.19	24.58
C_COGS	737.68	144.13	2,604.18	−0.55	42,419.66	73.82	348.19

1) See <Table 1> for definitions of variables.

2) The sample consists only of observations satisfied with sample conditions(n=1,956).

<Table 10> Descriptive statistics(mean) of voluntary disclosure and non−voluntary disclosure firm : base year, BY2004

Year	2004_N_ONCE		2004_N_MEAN		2004_R_MEAN		2004_R_ALL	
Variable	Vol[2]	Non−Vol[3]	Vol	Non−Vol	Vol	Non−Vol	Vol	Non−Vol
FirmAge1	34.55	37.89	34.41	35.81	33.47	37.09	31.38	36.02
FirmAge2	17.77	20.79	17.15	19.27	16.54	20.34	16.07	18.85
BIG4	0.49	0.48	0.48	0.49	0.49	0.48	0.49	0.49
Conglomerate	0.56	0.66	0.52	0.62	0.55	0.61	0.45	0.61
N_Employee	892.27	2,090.48	660.60	1,477.32	874.07	1,408.50	678.10	1,226.50
T_Asset	758.38	1,946.49	536.84	1,332.49	763.79	1,244.96	468.84	1,106.03
Debt	427.35	722.60	314.33	612.66	471.52	502.07	290.51	527.40
Equity	331.03	1,223.89	222.51	719.83	292.26	742.89	178.33	578.64
Sales	643.19	1,867.73	471.50	1,193.23	662.98	1,129.35	443.24	980.78
G_Sales	645.19	1,882.73	472.33	1,200.59	664.24	1,137.54	443.83	986.22
M_Sales	585.38	1,714.40	423.64	1,095.04	605.70	1,031.38	354.56	906.41
G_Profit	96.53	357.99	58.84	214.74	88.96	213.06	55.29	168.31
OP_Income	43.49	166.20	24.96	99.59	42.13	95.81	21.02	77.83
NET_Income	34.00	147.08	14.33	87.60	30.97	84.14	11.18	66.09
ROA	0.03	0.04	0.03	0.03	0.03	0.04	0.02	0.03
OP_Cash	42.77	209.66	22.66	115.32	36.74	118.44	21.08	87.61
COGS	546.65	1,509.74	412.66	978.49	574.01	916.29	387.95	812.47
SG&A	53.04	191.79	33.88	115.15	46.83	117.25	34.27	90.48
HHI_Sales	0.22	0.19	0.24	0.20	0.24	0.19	0.28	0.20
HHI_G_Sales	0.22	0.19	0.24	0.20	0.24	0.19	0.28	0.20
RSC	0.83	0.74	0.85	0.79	0.85	0.78	0.87	0.80
C_T_Asset	757.38	1,945.49	535.84	1,331.49	762.79	1,243.96	467.84	1,105.03
C_ROA	−0.97	−0.96	−0.97	−0.97	−0.97	−0.96	−0.98	−0.97
C_Sales	642.19	1,866.73	470.50	1,192.23	661.98	1,128.35	442.24	979.78
C_G_Sales	644.19	1,881.73	471.33	1,199.59	663.24	1,136.54	442.83	985.22
C_G_Profit	95.53	356.99	57.84	213.74	87.96	212.06	54.29	167.31
C_OP_Income	42.49	165.20	23.96	98.59	41.13	94.81	20.02	76.83
C_NET_Income	33.00	146.08	13.33	86.60	29.97	83.14	10.18	65.09
C_OP_Cash	41.77	208.66	21.66	114.32	35.74	117.44	20.08	86.61
C_COGS	545.65	1,508.74	411.66	977.49	573.01	915.29	386.95	811.47

1) See <Table 1> for definitions of variables.
2) voluntary disclosure firm
3) non−voluntary disclosure firm

<Table 10> shows the mean of voluntary disclosure and non－voluntary disclosure firm in each setting in base year BY2004. The average age(FirmAge1) of voluntary disclosure firm is lower than that of non－voluntary disclosure firm in all settings, as is the average of FirmAge2. For instance, the mean of FirmAge1 in voluntary disclosure firm is 34.55 while the mean FirmAge1 in non－voluntary disclosure firm is 37.89 in the 2004_N_ONCE setting.

The mean of N_Employee and T_Asset, the proxy for firm size, is different between voluntary disclosure firm and non－voluntary disclosure firm in all settings. The mean of voluntary disclosure firm's N_Employee is 678.1, however, the mean of non－voluntary disclosure firm's N_Employee is 1,226.5 in the 2004_R_ALL setting. The performance of voluntary disclosure firms is smaller than that of non－voluntary disclosure firms.

The mean of sales, NET_Income and OP_Cash in voluntary disclosure firm, is much smaller than non－voluntary disclosure firm. Besides, the degree of competition in the market is lower in voluntary disclosure firm for all settings, and the ratio of sales cost is also higher in the voluntary disclosure firm for all settings. In short, voluntary disclosure firm seem to be smaller－size, lower－performance, less－competitive companies compared to the non－voluntary disclosure firm.

4.1.2 Empirical test : Comparison of two group

This section shows the empirical test of our samples. The samples are divided into two groups, so we can compare the mean characteristics of both voluntary and non－voluntary disclosure firms. The empirical analysis results relating to voluntary disclosure found in <Table 11> use the 1,956 firm－year sample found in <Table 4>. These results provide differences of properties between voluntary disclosure firms and non－voluntary disclosure firms.

〈Table 11〉 The result of difference analysis between voluntary disclosure and non－voluntary disclosure firm with respect to four settings : base year, BY 2004

Variable	2004_N_ONCE	2004_N_MEAN	2004_R_MEAN	2004_R_ALL
FirmAge1	3.9148*** (0.0001)	2.1119** (0.0174)	5.3088*** (0.0000)	6.0653*** (0.0000)
FirmAge2	4.4764*** (0.0000)	4.2753*** (0.0000)	7.5574*** (0.0000)	4.4405*** (0.0000)
BIG4	－0.3412 (0.6334)	0.4488 (0.3268)	－0.6763 (0.7505)	0.0780 (0.9378)
Conglomerate	3.9672*** (0.0000)	4.4799*** (0.0000)	2.3766** (0.0176)	5.3607*** (0.0000)

〈Table 11〉 The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY 2004 (Continued)

Variable	2004_N_ONCE	2004_N_MEAN	2004_R_MEAN	2004_R_ALL
N_Employee	4.0640^{***} (0.0000)	6.4297^{***} (0.0000)	3.6613^{***} (0.0003)	5.4104^{***} (0.0000)
T_Asset	4.0484^{***} (0.0000)	6.0710^{***} (0.0000)	3.2257^{***} (0.0013)	6.0839^{***} (0.0000)
Debt	2.5015^{***} (0.0063)	4.2414^{***} (0.0000)	0.4024 (0.6874)	3.8399^{***} (0.0001)
Equity	4.6050^{***} (0.0000)	6.7294^{***} (0.0000)	5.1680^{***} (0.0000)	7.4204^{***} (0.0000)
Sales	4.1784^{***} (0.0000)	5.9310^{***} (0.0000)	3.3155^{***} (0.0009)	5.6277^{***} (0.0000)
G_Sales	4.2227^{***} (0.0000)	5.9833^{***} (0.0000)	3.3638^{***} (0.0008)	5.6765^{***} (0.0000)
M_Sales	3.9330^{***} (0.0000)	5.6521^{***} (0.0000)	3.0980^{***} (0.0020)	6.1954^{***} (0.0000)
G_Profit	5.0952^{***} (0.0000)	7.6380^{***} (0.0000)	5.1728^{***} (0.0000)	7.2676^{***} (0.0000)
OP_Income	3.7510^{***} (0.0001)	5.7427^{***} (0.0000)	3.5199^{***} (0.0004)	6.0237^{***} (0.0000)
NET_Income	3.5568^{***} (0.0002)	5.8286^{***} (0.0000)	3.5933^{***} (0.0003)	5.9185^{***} (0.0000)
ROA	2.2244^{**} (0.0133)	1.1255 (0.1303)	1.9352^{*} (0.0531)	2.5872^{***} (0.0000)
OP_Cash	4.2208^{***} (0.0000)	5.7586^{***} (0.0000)	4.3781^{***} (0.0000)	5.2013^{***} (0.0000)
COGS	3.8492^{***} (0.0001)	5.4226^{***} (0.0000)	2.8464^{***} (0.0045)	5.1563^{***} (0.0000)
SG&A	5.3699^{***} (0.0000)	8.1578^{***} (0.0000)	5.9884^{***} (0.0000)	7.0446^{***} (0.0000)
HHI_Sales	-3.2455^{***} (0.0012)	-7.0782^{***} (0.0000)	-7.7678^{***} (0.0000)	-7.8782^{***} (0.0000)
HHI_G_Sales	-3.4227^{***} (0.0007)	-7.0358^{***} (0.0000)	-7.7817^{***} (0.0000)	-7.8826^{***} (0.0000)
RSC	-8.4879^{***} (0.0000)	-9.9183^{***} (0.0000)	-10.0164^{***} (0.0000)	-8.7791^{***} (0.0000)

<Table 11> The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY 2004 (Continued)

Variable	2004_N_ONCE	2004_N_MEAN	2004_R_MEAN	2004_R_ALL
C_T_Asset	4.0484*** (0.0000)	6.0710*** (0.0000)	3.2257*** (0.0013)	6.0839*** (0.0000)
C_ROA	2.2244** (0.0133)	1.1255 (0.1303)	1.9352* (0.0531)	2.5873*** (0.0100)
C_Sales	4.1784*** (0.0000)	5.9310*** (0.0000)	3.3155*** (0.0009)	5.6277*** (0.0000)
C_G_Sales	4.2227*** (0.0000)	5.9833*** (0.0000)	3.3638*** (0.0008)	5.6765*** (0.0000)
C_G_Profit	5.0952*** (0.0000)	7.6380*** (0.0000)	5.1728*** (0.0000)	7.2676*** (0.0000)
C_OP_Income	3.7510*** (0.0001)	5.7427*** (0.0000)	3.5199*** (0.0004)	6.0237*** (0.0000)
C_NET_Income	3.5568*** (0.0002)	5.8286*** (0.0000)	3.5933*** (0.0003)	5.9185*** (0.0000)
C_OP_Cash	4.2218*** (0.0000)	5.7586*** (0.0000)	4.3781*** (0.0000)	5.2013*** (0.0000)
C_COGS	3.8492*** (0.0001)	5.4226*** (0.0000)	2.8464*** (0.0045)	5.1563*** (0.0000)

1) See <Table 1> for definitions of variables.
2) *,**,*** indicate statistically significant at the 10%, 5% and 1% level, respectively.
3) p−value in the parenthesis.
4) The t−test with unequal variance assumption.

We use difference analysis, which demonstrates whether there are statistically significant differences according to voluntary disclosure of schedules of manufacturing costs. The first column represents the t−value and p−value under the 2004_N_ONCE setting. the second column is under the 2004_N_MEAN setting. the third column is under the 2004_R_MEAN setting. and the last column displays the results under the 2004_R_ALL setting.

The results are statistically significant, despite the different standards for voluntary disclosure firms. First, the voluntary disclosure firms are younger than the non−voluntary disclosure firms. The t−values of FirmAge1 in all of the settings are 3.9148(2004_N_ONCE), 2.119 (2004_ N_MEAN), 5.3088(2004_R_MEAN), and 6.0653(2004_R_ALL), and the significance level is 1%, except for 2004_N_MEAN(5%). The results are consistent with Chen et al.(2001), which indicates that the younger the firms are, the more voluntarily they disclose information.

There is no significant difference in the type of audit firm. The proxy for firm size, N_Employee and T_Asset is statistically significant. The size of voluntary disclosure firms is much smaller than that of non−voluntary disclosure firms. This is contrary to the results of Diamond and Verrecchia(1991) and Cho(2007), in which large firms disclose more information voluntarily, since they benefit the most from transparent reporting.

In regard to a firm's performance, voluntary disclosure firms obtain smaller results than non−voluntary disclosure firms. The proxies of firm's performance, sales, NET_Income, and OP_Cash, have strong, significant t−values. This is also not consistent with Cho(2007). however, it supports Ahn et al.(2005).

Voluntary disclosure firms appear to face less competitive markets than non−voluntary disclosure firms. The proxies of competition in the market, HHI_Sales, based on sales(net), and HHI_G_Sales, based on gross sales, are seen as statistically significant variables. The t−values of HHI_Sales are −3.2455(2004_N_ONCE), −7.0782(2004_N_MEAN), −7.678(2004_R_MEAN), and −7.8782(2004_R_ALL).

Next, the t−value of ratio of sales cost is also statistically significant, which means voluntary disclosure firms have more cost burdens than non−voluntary disclosure firms.

4.2 The result with respect to base year, BY2005

4.2.1 Descriptive statistics

Since the date in which the mandatory regulation was released is subject to controversy, we set another starting point BY2005. <Table 12> shows descriptive statistics of base year BY2005 samples, demonstrating the total samples of descriptive statistics. the mean(median) of FirmAge1 is 35.44(36), and the mean(median) of T_Asset is 1,072.12(194.78). The difference between mean and median is significant. The mean(median) of HHI_Sales is 0.22(0.19), the same as the descriptive statistics shown in <Table 11>. The mean(median) of RSC is 0.82(0.85), which suggests that the sample belongs to a high−cost type.

〈Table 12〉 Descriptive statistics of total samples : base year, BY2005

Variable	Mean	Median	Standard deviation	Min	Max	1st quartile	3rd quartile
FirmAge1	35.44	36.00	15.21	1.00	113.00	28.00	45.00
FirmAge2	18.65	18.00	11.29	−5.00	54.00	10.00	29.00
BIG4	0.49	0.00	0.50	0.00	1.00	0.00	1.00
Conglomerate	0.58	1.00	0.49	0.00	1.00	0.00	1.00
N_Employee	1,160.72	367.50	3,277.34	11.00	56,137.00	214.00	810.00
T_Asset	1,072.12	194.78	3,454.74	5.22	48,190.25	103.57	456.08
Debt	525.12	75.62	1,790.24	2.06	23,760.02	38.66	186.13
Equity	547.00	114.35	2,003.18	0.50	35,082.19	56.70	273.31
Sales	948.91	184.27	3,227.08	0.78	45,737.32	97.55	461.18
G_Sales	953.99	186.87	3,228.15	0.78	45,737.32	97.55	461.18
M_Sales	870.35	148.00	3,157.65	0.02	45,601.33	77.24	362.05
G_Profit	156.58	29.61	547.49	−986.79	8,918.98	12.20	77.59
OP_Income	72.73	8.49	350.74	−2,202.19	6,540.06	2.31	25.64
NET_Income	60.21	6.62	340.77	−4,719.63	5,266.97	1.34	21.51
ROA	0.03	0.04	0.09	−1.93	0.36	0.01	0.07
OP_Cash	80.85	8.23	430.35	−3,162.49	7,143.46	0.67	26.10
COGS	792.32	149.83	2,761.45	0.45	42,420.66	76.86	374.26
SG&A	83.85	18.13	263.60	0.34	5,692.36	8.89	53.52
HHI_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
HHI_G_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
RSC	0.82	0.85	0.15	0.27	2.18	0.78	0.90
C_T_Asset	1,071.12	193.78	3,454.74	4.22	48,189.25	102.57	455.08
C_ROA	−0.97	−0.96	0.09	−2.93	−0.64	−0.99	−0.93
C_Sales	947.91	183.27	3,227.08	−0.22	45,736.32	96.55	460.18
C_G_Sales	952.99	185.87	3,228.15	−0.22	45,736.32	96.55	460.18
C_G_Profit	155.58	28.61	547.49	−987.79	8,917.98	11.20	76.59
C_OP_Income	71.73	7.49	350.74	−2,203.19	6,539.06	1.31	24.64
C_NET_Income	59.21	5.62	340.77	−4,720.63	5,265.97	0.34	20.51
C_OP_Cash	79.85	7.23	430.35	−3,163.49	7,142.46	−0.33	25.10
C_COGS	791.32	148.83	2,761.45	−0.55	42,419.66	75.86	373.26

1) See <Table 1> for definitions of variables.

2) The sample consists only of observations satisfied with sample conditions(n=1,698).

〈Table 13〉 Descriptive statistics(mean) of voluntary disclosure and non−voluntary disclosure firm : base year, BY2005

Year	2005_N_ONCE		2005_N_MEAN		2005_R_MEAN		2005_R_ALL	
Variable	Vol[2]	Non−Vol[3]	Vol	Non−Vol	Vol	Non−Vol	Vol	Non−Vol
FirmAge1	33.88	39.70	34.26	36.51	33.45	37.60	31.58	36.24
FirmAge2	17.50	21.78	17.12	20.04	16.64	20.82	16.42	19.12
BIG4	0.49	0.50	0.49	0.49	0.49	0.48	0.48	0.49
Conglomerate	0.55	0.65	0.53	0.62	0.55	0.61	0.45	0.61
N_Employee	904.02	1859.88	895.94	1400.54	896.97	1446.48	671.10	1262.83
T_Asset	827.23	1739.12	814.29	1305.64	811.60	1354.37	484.84	1194.59
Debt	482.72	640.60	516.97	532.49	507.74	543.94	300.92	571.87
Equity	344.51	1098.52	297.32	773.14	303.86	810.43	183.92	622.72
Sales	706.65	1608.73	668.89	1202.52	700.00	1218.58	456.23	1051.65
G_Sales	708.73	1622.02	669.65	1211.53	701.35	1227.71	456.91	1057.65
M_Sales	646.89	1478.99	618.09	1098.83	643.34	1116.30	366.49	975.42
G_Profit	100.45	309.48	85.44	221.02	92.49	226.03	54.80	177.81
OP_Income	47.27	142.09	43.52	99.19	44.62	103.19	21.12	83.50
NET_Income	36.20	125.58	31.19	86.49	31.85	90.93	10.24	70.63
ROA	0.03	0.04	0.03	0.04	0.03	0.04	0.02	0.04
OP_Cash	44.47	179.91	35.97	121.49	37.73	127.56	21.08	93.31
COGS	606.21	1299.24	583.45	981.50	607.51	992.55	401.43	873.84
SG&A	53.18	167.39	41.92	121.83	47.87	122.84	33.68	94.31
HHI_Sales	0.23	0.19	0.24	0.19	0.24	0.19	0.28	0.20
HHI_G_Sales	0.23	0.19	0.24	0.19	0.24	0.19	0.28	0.20
RSC	0.84	0.75	0.86	0.78	0.85	0.78	0.88	0.80
C_T_Asset	826.23	1738.12	813.29	1304.64	810.60	1353.37	483.84	1193.59
C_ROA	−0.97	−0.96	−0.97	−0.96	−0.97	−0.96	−0.98	−0.96
C_Sales	705.65	1607.73	667.89	1201.52	699.00	1217.58	455.23	1050.65
C_G_Sales	707.73	1621.02	668.65	1210.53	700.35	1226.71	455.91	1056.65
C_G_Profit	99.45	308.48	84.44	220.02	91.49	225.03	53.80	176.81
C_OP_Income	46.27	141.09	42.52	98.19	43.62	102.19	20.12	82.50
C_NET_Income	35.20	124.58	30.19	85.49	30.85	89.93	9.24	69.63
C_OP_Cash	43.47	178.91	34.97	120.49	36.73	126.56	20.08	92.31
C_COGS	605.21	1298.24	582.45	980.50	606.51	991.55	400.43	872.84

1) See <Table 1> for definitions of variables.
2) voluntary disclosure firm
3) non−voluntary disclosure firm

The mean of voluntary disclosure and non-voluntary disclosure firm in each of the settings are found in <Table 13>. The characteristics of voluntary disclosure firm are similar in all of the settings to those in base year BY2004. The average age(FirmAge1) of voluntary disclosure firm is lower than non-voluntary disclosure firm, which is consistent with the prior research, showing that younger firms tend to provide more information to investors.

In summary, the younger firms voluntarily disclose more. The size(N_Employee, T_Asset) of voluntary disclosure firm is smaller than non-voluntary disclosure firm. Additionally, the mean of Sales, NET_Income and OP_Cash in voluntary disclosure firm, is much smaller than those of non-voluntary disclosure firm.

4.2.2 Empirical test : Comparison of two group

As in section 4.1.2, this section also demonstrates the empirical test with samples. The samples are divided into two groups, VOL_FIRM and NON_VOL_FIRM. We use difference analysis to calculate the characteristics of voluntary disclosure firms. The empirical results are found in <Table 14>, using the 1,698 firm-year sample.

〈Table 14〉 The result of difference analysis between voluntary disclosure and non-voluntary disclosure firm with respect to four settings : base year, BY2005

Variable	2005_N_ONCE	2005_N_MEAN	2005_R_MEAN	2005_R_ALL
FirmAge1	6.5376*** (0.0000)	3.0869*** (0.0021)	5.6241*** (0.0000)	5.6480*** (0.0000)
FirmAge2	6.5819*** (0.0000)	5.4261*** (0.0000)	7.7130*** (0.0000)	4.0033*** (0.0001)
BIG4	0.3395 (0.7343)	0.2400 (0.8104)	−0.4254 (0.6706)	0.4135 (0.6794)
Conglomerate	3.8022*** (0.0002)	3.7630*** (0.0002)	2.7849*** (0.0054)	5.0417*** (0.0000)
N_Employee	3.8439*** (0.0001)	3.2446*** (0.0012)	3.3959*** (0.0007)	5.2994*** (0.0000)
T_Asset	3.5430*** (0.0004)	2.9899*** (0.0028)	3.1862*** (0.0015)	5.9657*** (0.0000)
Debt	1.4769 (0.1401)	0.1768 (0.8597)	0.4182 (0.6759)	3.8636*** (0.0001)
Equity	4.4899*** (0.0000)	5.1240*** (0.0000)	5.0739*** (0.0000)	7.1404*** (0.0000)

<Table 14> The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY2005 (Continued)

Variable	2005_N_ONCE	2005_N_MEAN	2005_R_MEAN	2005_R_ALL
Sales	3.5639*** (0.0004)	3.5164*** (0.0005)	3.2394*** (0.0012)	5.5053*** (0.0000)
G_Sales	3.6077*** (0.0003)	3.5700*** (0.0004)	3.2872*** (0.0010)	5.5528*** (0.0000)
M_Sales	3.3538*** (0.0009)	3.2348*** (0.0012)	3.0187*** (0.0026)	6.0255*** (0.0000)
G_Profit	4.7391*** (0.0000)	5.3154*** (0.0000)	4.9135*** (0.0000)	7.0571*** (0.0000)
OP_Income	3.3558*** (0.0009)	3.3831*** (0.0000)	3.3550*** (0.0008)	5.8186*** (0.0000)
NET_Income	3.2548*** (0.0012)	3.4557*** (0.0006)	3.4860*** (0.0005)	5.7180*** (0.0000)
ROA	2.2528** (0.0245)	2.1508** (0.0316)	2.4733** (0.0135)	2.3276** (0.0204)
OP_Cash	3.9644*** (0.0001)	4.2295*** (0.0000)	4.2123*** (0.0000)	4.9535*** (0.0000)
COGS	3.2054*** (0.0014)	3.0617*** (0.0022)	2.8104*** (0.0050)	5.0614*** (0.0000)
SG&A	5.2265*** (0.0000)	6.5809*** (0.0000)	5.7206*** (0.0000)	6.9064*** (0.0000)
HHI_Sales	−5.5695*** (0.0000)	−7.1976*** (0.0000)	−7.0684*** (0.0000)	−7.1176*** (0.0000)
HHI_G_Sales	−5.6773*** (0.0000)	−7.1514*** (0.0000)	−7.0729*** (0.0000)	−7.1109*** (0.0000)
RSC	−9.2426*** (0.0000)	−11.1638*** (0.0000)	−9.6021*** (0.0000)	−8.4894*** (0.0000)
C_T_Asset	3.5430** (0.0004)	2.9899*** (0.0028)	3.1862*** (0.0015)	5.9657*** (0.0000)
C_ROA	2.2528*** (0.0245)	2.1508** (0.0316)	2.4733** (0.0135)	2.3276** (0.0204)
C_Sales	3.5639*** (0.0004)	3.5164*** (0.0005)	3.2394*** (0.0012)	5.5053*** (0.0000)
C_G_Sales	3.6077*** (0.0003)	3.5700*** (0.0004)	3.2872*** (0.0010)	5.5528*** (0.0000)
C_G_Profit	4.7391*** (0.0000)	5.3154*** (0.0000)	4.9135*** (0.0000)	7.0571*** (0.0000)

<Table 14> The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY2005 (Continued)

Variable	2005_N_ONCE	2005_N_MEAN	2005_R_MEAN	2005_R_ALL
C_OP_Income	3.3558*** (0.0009)	3.3831*** (0.0007)	3.3550*** (0.0008)	5.8186*** (0.0000)
C_NET_Income	3.2548*** (0.0012)	3.4557*** (0.0006)	3.4860*** (0.0005)	5.7180*** (0.0000)
C_OP_Cash	3.9644*** (0.0001)	4.2295*** (0.0000)	4.2123*** (0.0000)	4.9535*** (0.0000)
C_COGS	3.2054*** (0.0014)	3.0617*** (0.0022)	2.8104*** (0.0050)	5.0614*** (0.0000)

1) See <Table 1> for definitions of variables.
2) *,**,*** indicate statistically significant at the 10%, 5% and 1% level, respectively.
3) p−value in the parenthesis.
4) The t−test with unequal variance assumption.

Each column represents the t−value and p−value under the 2005_N_ONCE, 2005_N_MEAN, 2005_R_MEAN, and 2005_R_ALL settings. The results are statistically significant, notwithstanding different standards of voluntary disclosure, in that the results are consistent with <Table 11>, regardless of a different base year.

All of the t−values in <Table 14>, except for BIG4 and Debt, are statistically significant. That means the characteristics of voluntary disclosure firms are significantly different from the characteristics of non−voluntary disclosure firm.

In short, when mandatory information disclosure is changed to a voluntary disclosure regulation, some of the firms continue to disclose information, despite there being no legal responsibility to do so. Additionally, some specific characteristics of voluntary disclosure firms appear to be different from those of non−voluntary disclosure firms.

Ⅴ. SENSITIVITY ANALYSIS

According to the results of the study, the characteristics of voluntary disclosure firms are different from those of non−voluntary disclosure firms. After testing samples from two different base years, the results of the first base year are similar to those of the second base year.

There is still concern over the ambiguity of the rules' announcement dates, since the regulation did not mention the specific base year. Therefore, firms might disclose manufacturing costs information, though not voluntarily. such firms could affect the study's results.

Therefore, the sample period was shortened, which means that the starting year of voluntary disclosure was changed. We extended the settlement period to 2007 and divided the samples into two parts, using sample criteria employed in a previous analysis. At this point, the starting year was 2007, which represented BY2007.

<Table 15> shows four settings of voluntary disclosure, and <Table 16> represents sample compositions in each condition. The total number of samples is 1,135, and the firms voluntarily provide information averaged 1.44 times during the sample period. Approximately 15% of the samples voluntarily disclosed information during sample period, consistently.

〈Table 15〉 Sample distribution of four settings : base year, BY2007

Panel A : The aggregate of voluntary disclosure			
# of VOL_DC during sample period	samples	2007_N_ONCE	2007_N_MEAN
0	456	NON_VOL_FIRM	NON_VOL_FIRM
1	181	VOL_FIRM	NON_VOL_FIRM
2	203	VOL_FIRM	VOL_FIRM
3	135	VOL_FIRM	VOL_FIRM
4	160	VOL_FIRM	VOL_FIRM
Total		1,135	
Average		1.44	

Panel B : The ratio of voluntary disclosure			
voluntary disclosure ratio[1)]	samples	2007_R_MEAN	2007_R_ALL
0	456	NON_VOL_FIRM	NON_VOL_FIRM
0<ratio≤0.25	132	NON_VOL_FIRM	NON_VOL_FIRM
0.25<ratio≤0.4	12	NON_VOL_FIRM	NON_VOL_FIRM
0.4<ratio≤0.5	196	VOL_FIRM	NON_VOL_FIRM
0.5<ratio≤0.75	135	VOL_FIRM	NON_VOL_FIRM
0.75<ratio<1	0	VOL_FIRM	NON_VOL_FIRM
1.00	204	VOL_FIRM	VOL_FIRM
Total		1,135	
Average		0.39	

1) ratio=the period of voluntary disclosure/the period of listed during sample period

Compared to sample compositions in each condition, the number of VOL_FIRM drastically decreased, which suggests that some firms in the samples still voluntarily disclose the schedule of manufacturing costs, even though the base year for distinguishing voluntary disclosure firms was changed.

The smallest number of VOL_FIRM is 204 in the strict condition, 2007_R_ALL. The number of VOL_FIRM in rate condition is similar to that of VOL_FIRM in the average condition.

〈Table 16〉 Sample compositions : base year, BY2007

Variable	2007_N_ONCE		2007_N_MEAN		2007_R_MEAN		2007_R_ALL	
	number	ratio	number	ratio	number	ratio	number	ratio
NON_VOL_FIRM	242	21.3%	637	56.1%	600	52.9%	931	82%
VOL_FIRM	893	78.7%	498	43.9%	535	47.1%	204	18%
Total	1,135	100%	1,135	100%	1,135	100%	1,135	100%

5.1 The result with respect to base year, BY2007

<Table 17> shows descriptive statistics of total samples with base year BY2007. the mean(median) of FirmAge1 is 35.76(36), and the mean(median) of N_Employee is 1,238(365). The mean(median) RSC is 0.81(0.85), which suggests that most of the samples are high cost type.

〈Table 17〉 Descriptive statistics of total samples : base year, BY2007

Variable	Mean	Median	Std.	Min	Max	1st quartile	3rd quartile
FirmAge1	35.76	36.00	15.73	1.00	113.00	28.00	45.00
FirmAge2	19.16	19.00	11.49	−4.00	54.00	11.00	31.00
BIG4	0.48	0.00	0.50	0.00	1.00	0.00	1.00
Conglomerate	0.58	1.00	0.49	0.00	1.00	0.00	1.00
N_Employee	1,238.24	365.00	3,543.08	11.00	56,137.00	217.00	807.00
T_Asset	1,285.43	213.86	4,021.67	20.06	48,190.25	113.96	498.90
Debt	635.02	85.82	2,097.35	4.03	23,760.02	43.35	213.17
Equity	650.41	122.11	2,317.99	4.85	35,082.19	62.12	294.52
Sales	1,113.85	201.65	3,726.09	0.78	45,737.32	106.44	517.67
G_Sales	1,119.58	203.29	3,727.12	0.78	45,737.32	106.44	517.67

<Table 17> Descriptive statistics of total samples : base year, BY2007 (Continued)

Variable	Mean	Median	Std.	Min	Max	1st quartile	3rd quartile
M_Sales	1,032.25	160.29	3,667.90	0.02	45,601.33	84.54	407.64
G_Profit	183.62	31.95	629.16	−986.79	8,918.98	13.22	88.07
OP_Income	90.29	9.56	406.12	−2,202.19	6,540.06	2.70	29.93
NET_Income	72.01	7.36	398.69	−4,719.63	5,266.97	1.33	24.16
ROA	0.04	0.04	0.08	−0.78	0.36	0.01	0.08
OP_Cash	96.00	9.26	501.30	−3,162.49	7,143.46	0.42	28.96
COGS	930.22	161.60	3,193.53	0.45	42,420.66	82.11	411.86
SG&A	93.34	19.09	293.88	0.34	5,692.36	9.28	59.36
HHI_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
HHI_G_Sales	0.22	0.19	0.14	0.07	1.00	0.10	0.29
RSC	0.81	0.85	0.15	0.27	1.57	0.78	0.90
C_T_Asset	1,284.43	212.86	4,021.67	19.06	48,189.25	112.96	497.90
C_ROA	−0.96	−0.96	0.08	−1.78	−0.64	−0.99	−0.92
C_Sales	1,112.85	200.65	3,726.09	−0.22	45,736.32	105.44	516.67
C_G_Sales	1,118.58	202.29	3,727.12	−0.22	45,736.32	105.44	516.67
C_G_Profit	182.62	30.95	629.16	−987.79	8,917.98	12.22	87.07
C_OP_Income	89.29	8.56	406.12	−2,203.19	6,539.06	1.70	28.93
C_NET_Income	71.01	6.36	398.69	−4,720.63	5,265.97	0.33	23.16
C_OP_Cash	95.00	8.26	501.30	−3,163.49	7,142.46	−0.58	27.96
C_COGS	929.22	160.60	3,193.53	−0.55	42,419.66	81.11	410.86

1) The sample consists only of observations satisfied with sample conditions(n=1,135).
2) See <Table 1> for definitions of variables.

5.1.1 Descriptive statistics

<Table 18> represent the mean of voluntary disclosure and non−voluntary disclosure firm in each setting.

The average age(FirmAge1) of voluntary disclosure firm is younger than non−voluntary disclosure firm, which is consistent with the main results. The size(N_Employee, T_Asset) of voluntary disclosure firm is much smaller than non−voluntary disclosure firm. The mean of Sales, NET_Income, OP_Cash, the change of operating income, sales(C_OP_Income, C_NET_ Income, C_Sales variables) in voluntary disclosure firm is also lower than non−voluntary disclosure firm. This suggests that firm performance and firm growth in voluntary disclosure firm is smaller or slower than those of non−voluntary disclosure firm.

<Table 18> Descriptive statistics(mean) of voluntary disclosure and non−voluntary disclosure firm : base year, BY2007

Year	2007_N_ONCE		2007_N_MEAN		2007_R_MEAN		2007_R_ALL	
Variable	Vol[2]	Non−Vol[3]	Vol	Non−Vol	Vol	Non−Vol	Vol	Non−Vol
FirmAge1	35.04	38.38	33.12	37.82	33.13	38.10	31.55	36.68
FirmAge2	18.59	21.26	17.00	20.84	17.01	21.07	16.50	19.74
BIG4	0.48	0.50	0.42	0.53	0.44	0.52	0.48	0.49
Conglomerate	0.56	0.66	0.52	0.63	0.53	0.63	0.43	0.61
N_Employee	937.65	2,347.45	909.37	1,495.35	886.55	1,551.84	616.54	1,374.47
T_Asset	948.43	2,529.00	899.11	1,587.45	864.51	1,660.75	520.54	1,453.03
Debt	549.83	949.40	547.87	703.16	524.52	733.55	327.29	702.45
Equity	398.60	1,579.61	351.24	884.29	339.98	927.20	193.25	750.58
Sales	766.67	2,394.95	729.97	1,413.96	702.44	1,480.69	461.73	1,256.74
G_Sales	769.20	2,412.51	732.83	1,421.93	705.17	1,489.09	462.88	1,263.47
M_Sales	705.93	2,236.37	671.05	1,314.63	643.05	1,379.28	386.42	1,173.76
G_Profit	114.93	437.09	107.68	242.99	103.31	255.23	54.81	211.85
OP_Income	57.03	212.99	56.36	116.81	53.30	123.26	24.36	104.73
NET_Income	42.16	182.18	37.62	98.90	34.80	105.19	9.47	85.72
ROA	0.03	0.04	0.03	0.04	0.03	0.04	0.02	0.04
OP_Cash	46.97	276.95	39.94	139.83	38.18	147.56	17.06	113.30
COGS	651.74	1,957.87	622.29	1,170.97	599.13	1,225.46	406.92	1,044.89
SG&A	57.90	224.10	51.32	126.18	50.01	131.97	30.45	107.12
HHI_Sales	0.23	0.20	0.24	0.20	0.24	0.20	0.28	0.21
HHI_G_Sales	0.23	0.20	0.25	0.20	0.24	0.20	0.28	0.21
RSC	0.83	0.75	0.84	0.79	0.84	0.79	0.88	0.80
C_T_Asset	947.43	2,528.00	898.11	1,586.45	863.51	1,659.75	519.54	1,452.03
C_ROA	−0.97	−0.96	−0.97	−0.96	−0.97	−0.96	−0.98	−0.96
C_Sales	765.67	2,393.95	728.97	1,412.96	701.44	1,479.69	460.73	1,255.74
C_G_Sales	768.20	2,411.51	731.83	1,420.93	704.17	1,488.09	461.88	1,262.47
C_G_Profit	113.93	436.09	106.68	241.99	102.31	254.23	53.81	210.85
C_OP_Income	56.03	211.99	55.36	115.81	52.30	122.26	23.36	103.73
C_NET_Income	41.16	181.18	36.62	97.90	33.80	104.19	8.47	84.72
C_OP_Cash	45.97	275.95	38.94	138.83	37.18	146.56	16.06	112.30
C_COGS	650.74	1,956.87	621.29	1,169.97	598.13	1,224.46	405.92	1,043.89

1) See <Table 1> for definitions of variables.

2) voluntary disclosure firm

3) non−voluntary disclosure firm

5.1.2 Empirical test : Comparison of two group

As in section 4.1.2, this section also shows the empirical test of samples. The empirical results found in <Table 19>. The results are statistically significant, despite a different standard of voluntary disclosure, as well as a different base year. The result of <Table 19> is consistent with the main findings. It suggests that the change of base year does not affect the characteristics of voluntary disclosure firms. Younger, smaller, less competitive, and lower performance firms voluntarily disclose manufacturing cost information.

〈Table 19〉 The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY 2007

Variable	2007_N_ONCE	2007_N_MEAN	2007_R_MEAN	2007_R_ALL
FirmAge1	2.8643*** (0.0044)	5.1942*** (0.0000)	5.4345*** (0.0000)	5.0198*** (0.0000)
FirmAge2	2.9877*** (0.0030)	5.7939*** (0.0000)	6.0793*** (0.0000)	3.9657*** (0.0001)
BIG4	0.7156 (0.4747)	3.5982*** (0.0003)	2.7179*** (0.0067)	0.2587 (0.0000)
Conglomerate	2.9157*** (0.0038)	3.8349*** (0.0001)	3.2734*** (0.0011)	4.7848*** (0.0000)
N_Employee	3.4701*** (0.0006)	2.9284*** (0.0035)	3.2611*** (0.0011)	5.2812*** (0.0000)
T_Asset	3.5283*** (0.0005)	3.0470*** (0.0024)	3.4481*** (0.0006)	5.5821*** (0.0000)
Debt	2.1885** (0.0294)	1.2639 (0.2065)	1.6994* (0.0895)	3.8173*** (0.0001)
Equity	4.0238*** (0.0001)	4.2643*** (0.0000)	4.4984*** (0.0000)	6.4198*** (0.0000)
Sales	3.6613*** (0.0003)	3.3260*** (0.0009)	3.6666*** (0.0003)	5.3182*** (0.0000)
G_Sales	3.6955*** (0.0003)	3.3501*** (0.0008)	3.6926*** (0.0002)	5.3540*** (0.0000)
M_Sales	3.4863*** (0.0006)	3.1773*** (0.0015)	3.5219*** (0.0005)	5.5445*** (0.0000)
G_Profit	4.2065*** (0.0000)	3.9219*** (0.0001)	4.2552*** (0.0000)	6.4795*** (0.0000)

<Table 19> The result of difference analysis between voluntary disclosure and non−voluntary disclosure firm with respect to four settings : base year, BY 2007 (Continued)

Variable	2007_N_ONCE	2007_N_MEAN	2007_R_MEAN	2007_R_ALL
OP_Income	3.1580*** (0.0018)	2.6884*** (0.0073)	3.0164*** (0.0026)	5.2833*** (0.0000)
NET_Income	2.8739*** (0.0044)	2.7673*** (0.0058)	3.0875*** (0.0021)	5.0283*** (0.0000)
ROA	1.5449 (0.1234)	1.4712 (0.1415)	2.2146** (0.0270)	2.3737** (0.0183)
OP_Cash	3.8149*** (0.0002)	3.6289*** (0.0003)	3.8393*** (0.0001)	4.6571*** (0.0000)
COGS	3.4219*** (0.0007)	3.1139*** (0.0019)	3.4420*** (0.0006)	4.9493*** (0.0000)
SG&A	4.4738*** (0.0000)	4.7438*** (0.0000)	4.9665*** (0.0000)	6.6030*** (0.0000)
HHI_Sales	−2.4155** (0.0163)	−4.9054*** (0.0000)	−4.8953*** (0.0000)	−5.5941*** (0.0000)
HHI_G_Sales	−2.5614** (0.0109)	−4.8961*** (0.0000)	−4.8823*** (0.0000)	−5.5697*** (0.0000)
RSC	−6.4144*** (0.0000)	−4.9261*** (0.0000)	−5.3568*** (0.0000)	−8.6598*** (0.0000)
C_T_Asset	3.5283*** (0.0005)	3.0470*** (0.0024)	3.4481*** (0.0006)	5.5821*** (0.0000)
C_ROA	1.5449 (0.1234)	1.4712 (0.1415)	2.2146** (0.0270)	2.3737** (0.0183)
C_Sales	3.6613*** (0.0003)	3.3269*** (0.0009)	3.6666*** (0.0003)	5.3182*** (0.0000)
C_G_Sales	3.6955*** (0.0003)	3.3502*** (0.0008)	3.6926*** (0.0002)	5.3540*** (0.0000)
C_G_Profit	4.2065*** (0.0000)	3.9210*** (0.0001)	4.2552*** (0.0000)	6.4795*** (0.0000)
C_OP_Income	3.1580*** (0.0018)	2.6884*** (0.0074)	3.0164*** (0.0026)	5.5283*** (0.0000)
C_NET_Income	2.8739*** (0.0044)	2.7673*** (0.0058)	3.0875*** (0.0021)	5.0283*** (0.0000)
C_OP_Cash	3.8149*** (0.0002)	3.6289*** (0.0003)	3.8393*** (0.0001)	4.6571*** (0.0000)
C_COGS	3.4219*** (0.0007)	3.1139*** (0.0019)	3.4420*** (0.0006)	4.9493*** (0.0000)

1) See <Table 1> for definitions of variables.
2) *,**,*** indicate statistically significant at the 10%, 5% and 1% level, respectively.
3) p−value in the parenthesis.
4) The t−test with unequal variance assumption.

Ⅵ. CONCLUSIONS AND LIMITATIONS

We investigated that there are differences between the characteristics of voluntary disclosure firms and non−voluntary disclosure firms when considering different starting years, i.e., BY2004, BY2005, and BY2007, and the definition of voluntary disclosure firms with four settings.

The results of all the samples were consistent with each other when carefully considering the sample conditions. The sensitivity test supported the main results. It was shown that the voluntary disclosure firms were, for the most part, younger, relatively smaller, less performing, and less competitive than the non−voluntary disclosure firms. Moreover, the ratio of sales cost was higher than that of the non−voluntary disclosure firms.

This paper contributes to accounting research in that it is the first paper to research voluntary disclosure utilizing the schedule of manufacturing costs and analyzing the differences between information disclosure and non−disclosure companies as they relate to a firm's characteristics.

The limitations of this paper are as follows. First, there could be unconscious disclosure about the schedule of manufacturing costs during the settlement period. Therefore, the analysis could take place after the settlement period.

Second, this paper investigates the characteristics of voluntary disclosure firms. Another relationship that might be examined is researching the characteristics that affect the voluntary disclosure policy. This investigation warrants further study.

Third, additional research is appropriate to investigate the determinants as well as the prediction of voluntary disclosure.

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제조원가명세서 자발적 공시기업의 특성에 관한 연구*

김미옥** · 정형록***

<요 약>

Ball and Brown(1968) 이후로 회계학 연구는 회계정보가 자본시장참가자들의 의사결정에 영향을 미치고 있음을 실증하는 것이 주요 관심사였다. 또한 이러한 회계정보는 다양한 형태를 통하여 자본시장참가자들에게 전달되는데, 공시는 이러한 정보전달 방법들 중에서 대표적인 형태라고 할 수 있다.

공시를 통하여 기업은 자본시장에 정확한 정보를 제공하게 되며, 이를 통해 정보획득비용이 감소하여 투자자들은 더 많은 정보를 통하여 기업에 투자하게 되며, 기업은 보다 많은 투자를 받을 수 있게 되어 경제활동이 활발해진다. 따라서 공시는 경제의 투명성과 건전성을 향상시키며 경제가 성장하는데 긍정적 영향을 미친다고 할 수 있다.

공시는 크게 강제공시와 자발적 공시로 구분할 수 있다. 자발적 공시는 법적의무가 없는 데도 불구하고 기업이 정치적 비용 등의 유인으로 인하여 자본시장에 기업의 성과 및 정보를 제공하는 경우로서 이렇게 자발적 공시를 하는 기업에 관한 다양한 선행연구가 존재한다.

이와 관련되어 한국회계기준원은 2006년 2월 6일 강제공시 사항 중에 하나인 제조원가명세서의 공시를 자율공시사항으로 규제를 완화하였다. 따라서 본 연구는 제조원가명세서에 대한 공시가 강제사항이 아님에도 불구하고 2006년 이후에도 자발적으로 공시하는 기업들의 특성을 분석하고자 한다. 본 연구는 자발적 공시에 대한 기준연도와 자발적 공시의 정의를 여러 기준으로 분류하여 분석하였다. 연구 결과, 자발적으로 제조원가명세서를 공개하는 기업은 그렇지 않은 기업에 비해, 통계적으로 유의하게 기업의 규모가 작고, 상장기간이 짧고, 기업의 성과가 낮은 것으로 나타났다. 또한 자발적 공시기업은 그렇지 않은 기업에 비해 통계적으로 유의하게 산업경쟁도가 낮으며, 매출액 대비 원가비율이 높은 것으로 나타났다.

본 연구의 공헌점은 제조원가명세서의 자발적 공시에 대한 최초의 연구이며 또한 자발적 공시기업과 그렇지 않은 기업에 대한 차이를 분석한 최초의 연구라고 할 수 있다.

<주제어> 자발적공시, 제조원가명세서, 기업특성

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