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Voluntary Disclosure Practices of Japanese Corporations  
Listed on Mothers and Jasdq

by

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## Voluntary Disclosure Practices of Japanese Corporations Listed on Mothers and Jasdq

### Abstract

This paper examines factors influencing the voluntary disclosure contained in the annual reports and other investor relations' information of Japanese corporations listed on the Mothers and Jasdq stock market. We examine the relation between the level of voluntary disclosure and the size, stock market listing, profitability, ownership structure, leverage and industry type. We also examine the relation between the level of voluntary disclosure and the accuracy of analysts' earnings forecasts, and the size of the analyst following. A firm's size, stock market listing, profitability and, analyst following are the most important factors explaining voluntary disclosures overall. We also find more voluntary disclosures; and market listing, and less managerial ownership and analysts following associated with higher forecast accuracy and, that sales change is positively related to the accuracy of earnings forecasts.

**Key words:** Annual reports; Voluntary disclosure; Managerial ownership; Block-holder ownership; EPS; Accuracy of analysts' earnings forecast.

## 1 Introduction

Most studies in voluntary disclosure focus on disclosures which are not governed by legislation or accounting standards. A more precise name for these disclosures would therefore be 'non-mandatory disclosure'. Nevertheless, to keep in line with common usage, in this study the word 'voluntary' will generally be used to refer to non-mandatory disclosures.

Voluntary disclosure is important in providing a greater degree of transparency. The Asian financial crisis has highlighted the need for information, especially voluntary information. In recent years, there have been increasing call for firms to improve their corporate governance structure and information disclosure. Shareholder protection is increasingly important for Japan to keep its status as a major world financial center. Better practices in corporate governance and greater voluntary disclosure are being promoted in Japanese corporations, especially after the Asian financial crisis. Several features of Japanese culture have been cited in literature as contributing to limited disclosure. One issue is the keiretsu ownership structure of Japanese industry. In this structure, "insiders" are major sources of financing and are well informed about the earnings prospects of keiretsu partners. Thus, disclosures to "outsiders" are not so important.

Mothers and Jasdag are the focus of this study, because of their unique and similar backgrounds as emerging markets for venture corporations with rapidly growing capital markets. The total market capitalization of the Jasdag market has increased more than 4.1 times from JPY27410.8 billion to JPY112658 billion during 1999~2004. Similarly, it has increased more than 4 times from JPY813 billion to JPY3226 billion for the Mothers market from 1999.12~2004.12.

To foster the development of start-up firms, the Tokyo Stock Exchange established a new market named Mothers ("market of the high-growth and emerging stocks") on November 11, 1999, in order to provide venture companies; with access to funds at an early stage of their development and to provide investors with more diversified investment products. The main listing criterion<sup>1</sup> is the prospect of a company's business area. While there are no criteria for profit, listed companies are required to disclose business results every quarter and an initial public offering must involve a minimum of 1,000 trading units of newly issued shares.

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<sup>1</sup> Listing Requirements of Mothers: a, Eligibility: potentials for high growth; b, Liquidity: Public Offering of minimum 1,000 trading units of new issued shares, minimum 300 new shareholders, at least JPY 1000 million on the day of listing; c, Sales record; d, Financial Statements; e, Shareholder service representative agent; f, Restrictions on Transfer of Shares.

Jasdaq ( Japan Securities Dealers Association automated Quotation ) started in 1963, and now is the largest market for start-up firms in Asia. Unlike the Tokyo Stock Exchange, the Jasdaq exchange doesn't require companies to have profitability<sup>2</sup>.

Both the Mothers and Jasdaq stock market are mainly for start-up corporations, and both two stock market play important roles in fostering new industries in Japan. Voluntary disclosure will increase the firm's transparency; in order to attract and retain investors. However, there are many problems concerning information disclosure in both markets. Widespread bending of accounting rules and information disclosure at a number of venture companies has been revealed. TSE (Tokyo Stock Exchange) found the Software Company ASSOCIATE TECHNOLOGY made a window dressing settlement (2004.10.21.Nikkei Economic Newspaper). On the other hand, as far as we know, few studies have directly or indirectly focused on the voluntary disclosure practices of Japanese start-up firms. For all these reasons, not only is more research needed on the two markets, but also an assessment of similarities and differences in voluntary disclosure is likely to give insight.

Accordingly, this paper examines the relationship between voluntary disclosure level and the proxies of corporations. We also examine the relation between voluntary disclosure level and the properties of analysts' earning forecasts and size of analyst followings for a sample of firms. Chen and Jaggi (2000) examine the association between independent non-executive directors and the comprehensiveness of information in financial disclosures.

This paper is organized as follows. Section 2 reviews the prior literature on corporate disclosures, and explains the Variables of Interest. Section 3 presents the hypotheses. Section 4 discusses the sample and the methodology used in this study. The results are contained in Section 5. The paper concludes with a summary in Section 6.

## **2 Literature Review and Variables of Interest**

### **2.1 Variables of Interest**

The empirical and theoretical literature suggests a number of variables that may explain voluntary disclosures. We discuss the variables in this section, while section 4

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<sup>2</sup> Listing Requirements of Jasdaq: Profitability: Profit of current term was positive value or Ordinary profit minimum 500 million (market capitalization over 5000 million doesn't require); b, Asset minimum JPY 200 million; c, Shareholder: minimum 300 new shareholders d, Financial Statements; e, Shareholder service representative agent; f, Restrictions on Transfer of Shares.

defines how each variable is measured

### **Size**

There are many reasons why larger companies might disclose more information than other corporations, and some of these relate to the need to raise capital at a lower cost. Larger companies are likely to need substantial capital and corporations may increase disclosure to facilitate this equity and debt issuance.

Larger corporations tend to be more complex since they are likely to be multi-product based and operate in a number of geographical areas. Such complexity requires more information disclosure.

Furthermore, larger firms are likely to be entities of economic significance, so that there may be greater demands for information from customers, suppliers, analysts, and governments as well as the general public. In general, larger firms disclose more information than smaller ones. All of these issues indicate that larger firms should have additional incentives for voluntary disclosure compared to smaller firms.

### **Industry**

It is plausible that disclosure in corporate reports may not be identical throughout all sectors of the economy. For example, because of the nature of their products and their research and development, chemical companies are likely to be more sensitive about disclosures to competitors and the public than companies in certain other industries. The relevance of the items selected for disclosures can also vary across industries. Research and Development is more relevant for companies in high tech industries, for example. Therefore, industry membership may exert an influence on voluntary disclosure.

### **Internationality**

As firms become multinational, they face additional demands from foreign investors. The increased internationalization of operations results in a larger proportion of foreign stakeholders in the corporation. Thus, the demand for information is expected to increase, resulting in an increased level of voluntary disclosure.

### **Profitability**

In general, profitable, well-run firms have incentives to distinguish themselves from less profitable ones in order to raise capital on the best available terms. Thus, more profitable firms are expected to disclose more voluntary information.

### **Listing Status**

In order to raise capital through the markets, it is possible that listed companies will voluntarily disclose additional information. Monitoring also varies with listing status, and stronger enforcement will increase the level of voluntary disclosure. Mothers has more generous enforcement. Jasdaq-listed corporations may disclose more information than those listed on Mothers stock market.

### **Ownership structure**

In addition to relevant accounting standards and practices for disclosure of voluntary information, the management's attitude towards disclosures also plays an important role in such disclosure.

Ownership structure is characterized by managerial ownership, block-holder ownership and outside-director ownership.

Patton and Baker (1987) assert that inside directors are not effective at monitoring management since most of them have benefited from top management.

Outside directors are more aggressive in monitoring for the following reasons. First, outside directors regard financial performance as a key element in monitoring management. Second, compared to insider directors, outside directors are more positive in dismissing chief executive officers when the corporate performance is not satisfactory. Third, outside directors are positive in monitoring management to maintain their reputations. Thus, we expect that non-executive directors on corporate boards will enhance the level of voluntary disclosure, and ensure the accuracy of the information that management provides.

## **2.2 Literature Review**

T. Rhanna, K.G. Palepu, and S.Srinivasan (2004) find that firm size; and performance are positively associated with the level of disclosure.

Meek, and Gray (1995) examine disclosures in the annual reports of multinational corporations from the United States, the United Kingdom and Continental Europe. They find that firm size, country, listing status and industry are all important factors in explaining voluntary disclosures.

L.L.Eng, and Mak (2003) find that lower managerial ownership and significant government ownership are associated with increased disclosure.

T.E.Cooke (1991) finds that the firm's size, stock market listing, and industry type are significant predictors in empirical research about Japanese corporations.

Li Li Eng and Hong Kiat Teo (1999, 2000) show that the level of corporate disclosure is positively related to the accuracy of earnings forecasts by analyst; they also show that disclosure is negatively related to dispersion in analysts' earnings forecasts.

Leung and Horwitz (2004) find that high board ownership explains the extent of low voluntary disclosure and that this relationship is stronger when firm performance is very poor; and they also find that the contribution of non-executive directors to enhancing voluntary disclosure is effective for firms with low director ownership in Hong Kong corporations.

Mark M. Spiegel and Nobuyoshi Yamori (2003) find that more leveraged, and smaller banks with less competitive pressure were less likely to voluntarily disclose.

Chen, and Jaggi (2000) show that the ratio of non-executive directors to the total number of directors on corporate boards is positively associated with the comprehensiveness of financial disclosures.

Hope (2003) investigates the relations between the accuracy of analysts' earnings forecasts and the level of annual report disclosure, and between forecast accuracy and the degree of enforcement of accounting standards. He finds that firm-level disclosures are positively related to forecast accuracy, and also finds that strong enforcement is associated with higher forecast accuracy.

Chau, and Gray (2002), examine the association of ownership structure with the voluntary disclosures of listed corporations in Hong Kong and Singapore. They find that the extent of outside ownership is positively associated with voluntary disclosures.

There are a number of studies relating to the disclosure practices of Japanese corporations. Most notably, Cooke (1991) examines firm-specific characteristics of disclosure among survey samples of Japanese corporations. Conversely, Meek (1999), argues that the traditionally low disclosure levels of Japanese corporations are due to managers' perceptions that the costs of additional disclosure are greater than the benefits. Satomi (2004) examines the relation between the level of voluntary disclosure and the cost of equity capital among Japanese firms. He finds that it was negative relations between the level of voluntary disclosure and the cost of equity capital.

### **3 Hypotheses**

#### **3.1**

##### **3.1.1 Hypothesis 1**

Large firms are likely to make more voluntary disclosures because of the greater demand for outside capital, lower average costs of collecting and disseminating information, and greater demand for information by financial analysts. Firms with

high leverages incur higher monitoring costs. Thus, the managers of high debt firms seek to reduce these costs by disclosing more information in annual reports (Ahmed and Courtis, 1999). Firms with high profitability might have incentives to make more corporate disclosures in order to communicate their good performance to investor. And high growth firms might have higher information asymmetry between managers and investors and thus have incentives to reduce this information gap by more voluntary disclosure. Thus, we test the following hypothesis:

**H1: The level of voluntary disclosure is associated with the firm's size, profitability, and leverage.**

### **3.1.2 Hypothesis 2**

Listing status is an important variable in prior empirical researches. Firms listed on J Nasdaq might make more disclosures than firms listed on Mothers. The majority of firms listed on J Nasdaq have a high reputation for the quality and comprehensiveness of their listing requirements including more strict accounting and disclosure obligations. Thus, we test the following hypothesis:

**H2: The level of voluntary disclosure in the Mothers stock market is lower than in the J Nasdaq stock market.**

## **3.2**

### **3.2.1 Hypothesis 3**

Manager-owners are initially endowed with information on the value of their firm. This information is a particular, clearly circumscribed item of information concerning the future cash flows of the firm. In the simplest case, the manager-owners would know the amount of future cash flows with certainty, and would therefore know the value of the firm. The manager-owners can decide whether or not to disclose to investors.

Managerial ownership is the percentages of ordinary shares held by the CEO and executive directors, and includes their deemed interests. When managerial ownership is low, there is a greater agency problem. That is, the manager has greater incentives to consume perks and reduced incentives to maximize the company's performance. Hence, outside shareholders will increase monitoring of the manager's behavior to reduce the agency costs. Monitoring by outside shareholders increases the costs of the firm. However, monitoring by outside shareholders may be reduced if managers can provide voluntary disclosure. That is, voluntary disclosure is a substitute for



monitoring. Thus, we test the following hypothesis:

**H3: The level of voluntary disclosure is negatively associated with managerial ownership.**

#### **3.2.2 Hypothesis 4**

Block-holder ownership is the percentage of ordinary shares held by substantial shareholders (that is, shareholdings of 5% or more). When block-holder ownership is low there is an increased need for monitoring. Thus, we test the following hypothesis:

**H4: The level of voluntary disclosure is negatively associated with block-holder ownership.**

#### **3.2.3 Hypothesis 5**

Outside directors who are less aligned to management may be more inclined to encourage firms to disclose more information to outside investors. That is, a positive relation between the proportion of outside directors and voluntary disclosure is expected. Chen and Jaggi (2000) find empirical evidence of a positive relation between the proportion of independent directors and disclosure. Hence, we hypothesize that the proportion of outside directors is positively associated with the level of voluntary disclosure. Thus, we test the following hypothesis:

**H5: The level of voluntary disclosure is positively associated with outside-director ownership.**

### **3.3**

#### **3.3.1 Hypothesis 6**

Analysts generally depend on the information disclosed by firms to forecast their next period's earnings. As such, the extent of disclosure is expected to have a positive effect on the accuracy of the analysts' earnings forecast. We expect a positive relation between the level of corporate disclosure and the accuracy of analysts' earnings forecasts. Thus, we test the following hypothesis:

**H6: The accuracy of analysts' earning forecasts is positively associated with the level of voluntary disclosure**

### **3.3.2 Hypothesis 7**

The dispersion among analysts' earnings forecasts refers to the difference between the earnings forecasts provided by different analysts.

Lang (1996) notes that this dispersion exists primarily for two reasons. First, the dispersion might exist because of differences in information. Each analyst has access to different private information. This causes the dispersion in their forecasts. Second, it could be due to differences in forecasting models. Even if the information available to each analyst is the same, individual analysts might have a unique forecasting model. This difference in forecasting models contributes to the dispersion among their forecasts. If analysts have asymmetric information, then an increase in the level of information disclosure should reduce the dispersion in analysts' earnings forecasts. On the other hand, if the dispersion is due mainly to a difference in forecasting models, then an increase in the level of information disclosure may increase the dispersion among analysts' earnings forecasts. This is because more information is input into their different forecasting models, resulting in larger dispersions among their earnings forecasts. Since the relation between disclosure and the dispersion in analysts' earnings forecasts is unclear, we test the following hypothesis:

**H7: The level of voluntary disclosure is associated with the dispersion in analyst's earnings forecasts**

### **3.3.3 Hypothesis 8**

Disclosures provided in annual reports and other resources represent a part of a firm's overall information environment. One proxy for a firm's information environment is its analyst following. I expect the importance of voluntary disclosures is positively related to the number of analysts who follow the firm. Li, Li, Eng and Hong Kiat Teo (1999) state that a higher level of disclosure leads to more analysts following the firms. However, the demand for analyst services will depend on the role that analysts play in the capital markets. If analysts act mainly as information intermediaries, an increase in firm-provided information means that analysts have more input to process and therefore a more valuable report to sell. However, if analysts act mainly as information providers competing with information released by the firm, then an increase in corporate disclosure will substitute for the analysts' service. Then an increase in the level of corporate disclosure will reduce the demand for analyst's services. Since the relation between disclosure and analyst following is unclear, we test the following

hypothesis:

**H8: The level of voluntary disclosure is associated with the size of the analyst following.**

## **4 Sample and Data**

### **4.1 Voluntary Disclosures**

Because there has been no empirical research about disclosure in corporations listed on Mothers and Jasdaq stock market, there is not a voluntary disclosure checklist that can be used. For the purpose of this study, the checklist is based on Eng (2003), Hong (1997), and Meek, Roberts and Gray (1995). The checklist contains three main categories: strategic information, non-financial information and financial information. One reason to divide the information into three types is that the decision relevance of information probably varies with type. For example, the strategic and financial information categories have obvious decision relevance for investors. The nonfinancial information category is directed more toward the company's social accountability.

In order to carry out the study, the 2003 annual reports were obtained for the sample firms. At the time of data collection, these were the latest annual reports available. In the Investor Relations information we took the latest information from each firm homepage. The contents of voluntary disclosure were compared to the items on the checklist and coded as 1 or 0 (or not applicable), depending upon whether the information contained or did not contain the disclosure item.

The voluntary disclosure score for each firm is additive and unweighted. Unweighted scores are used for several reasons. First is the subjectivity that would be involved in assigning weights when user preferences are unknown and when users in different stock markets are likely to assign different weights to similar items. Unweighted scores have been used in most empirical studies. Furthermore, Chow (1987) finds almost identical results using weighted and unweighted disclosure scores.

### **4.2 Variables**

We describe how the variables are measured. (a) Firm Size was measured by the firm's assets and sales, taken from the SIKIHO (Japan Company Handbook). (b) Listing Status was indicated using 0, 1 dummy variables to classify corporations into Mother and Jasdaq. We defined Jasdaq as 1, and Mothers as 0 in this study. (c) Profitability was measured as the firm's ROE (Return on Equity) and ROA (Return on Assets). Using the data from the SIKIHO (Japan Company Handbook). (d) Industry Type

measured as 0, 1 dummy variables. We divided the total firms into four groups: (1) IT, (2) Service, (3) Electric Machines, and (4) others. (e) Leverage was calculated as the firm's total debt to equity ratio, using the data from the SIKIHO (Japan Company Handbook). (f) Ownership Structure was from the SIKIHO (Japan Company Handbook), the YAKUINSIKIHO (Japan Company Directors Handbook), and the OOKABUNUSISOURAN (Japan Company Block-holders Handbook). (g) Analysts' forecasts of EPS were obtained from the 2003 issue of the I/B/E/S detail file. Actual realized EPS was obtained from the 2004 issue of the I/B/E/S detail file. Both forecast and actual earnings per share are from the I/B/E/S International Summary Files. The firm's stock price used in the analysis is at the beginning of the 2003 fiscal year. (h) Analysts following is measured by the number of analysts that made forecasts for the firm in the I/B/E/S detail file.

In this study, we define two variables, accuracy of the analysts' earnings forecasts, and dispersion of the analysts' earnings forecasts.

The accuracy of analysts' earnings forecasts<sup>3</sup> is defined as the deviation of the forecast EPS from the actual EPS. This measure is obtained as follows:

$$A_j = \frac{-\sum |FEPS_{i,j} - AEPS_j| / n_j}{p_j}$$

where

$A_j$  = Accuracy of analysts' earnings forecasts for firm  $j$ ;

$FEPS_{i,j}$  = EPS forecast for firm  $j$  by the  $i$ th analyst;

$AEPS_j$  = Actual EPS for firm  $j$  for the period;

$n_j$  = Number of analysts making forecasts for firm  $j$ ;

$p_j$  = Share price of firm  $j$  at the beginning fiscal year;

The dispersion of analysts' earnings forecasts is defined as the standard deviation of forecasts between analysts deflated by the share price. It is obtained as follows:

$$SD_j = \frac{1}{p_j} \sqrt{\frac{n_j \sum FEPS_{i,j}^2 - (\sum FEPS_{i,j})^2}{n_j(n_j - 1)}}$$

where

$SD_j$  = Standard deviation of analysts' earnings forecasts for firm  $j$ ;

$FEPS_{i,j}$  = EPS forecast for firm  $j$  by the  $i$ th analyst;

$n_j$  = Number of analysts making forecasts for firm  $j$ ;

$p_j$  = Share price of firm  $j$  at the beginning of fiscal year;

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<sup>3</sup> Lang and Lundholm (1996) take the negative absolute value of the difference between the median analyst's forecast EPS and the actual EPS. Taking the median analyst's forecast EPS ignores the forecasts of other analyst. Since we are examining the accuracy of analysts' forecasts, it is more appropriate to take the mean of all analysts' forecasts.

Table A summarizes the definition and measurement of all variables.

**Table A Definition and Measurement of variables**

	Definition	Measurement	Data Source(s)
DEBT	Leverage ratio	Total liability divided by total assets	SIKIHOU(2004) <sup>f</sup>
MOWN	Managerial ownership	The proportion of ordinary shares held by CEO and executive directors	OOKABUNUSI SOURAN(2004) <sup>g</sup>
BLOCK	Blockholder ownership	The proportion of ordinary shares owned by substantial shareholders (with equity of 5% or more)	OOKABUNUSI SOURAN(2004)
SHARE	Shareholders	Number of total shareholders.	OOKABUNUSI SOURAN(2004)
FOREIGN	Foreigners shareholders	The proportion of ordinary shares held by foreigner	OOKABUNUSI SOURAN(2004)
OUTMAN	Board composition	Percentage of outside executive directors on the board	YAKUINSIKI HOU(2004,2005)
OUTDIR	Board composition	Percentage of outside auditors on the board	YAKUINSIKI HOU(2004,2005) <sup>h</sup>
AUDITOR	Auditor reputation	Coded as 1 as auditor is Big-Four <sup>e</sup> firm and 0 otherwise	SIKIHOU(2004)
LISING	Stock market listing status	Coded as 1 if the firm listed on Jasdaq and 0 for listed on Mothers	Tokyo Stock Exchange Market and Jasdaq's homepages.
INDUSTRY <sup>a</sup>	Industry type	Coded as 1 if belong to the selected industry group and 0 otherwise.	Tokyo Stock Exchange Market and Jasdaq's homepages.
FSIZE <sup>b</sup>	Firm size	Measured with ASSET or SALES over the past year in Japanese Yen (millions)	SIKIHOU(2004)
GROWTH <sup>c</sup>	Firm growth	Measured with the change about ASSET or SALES over the past year.	SIKIHOU(2004)
ANALYST	Analyst following	The number of analysts following the firm.	IBES
FRSD	Dispersion of forecast	The standard deviation of analysts' earnings forecasts for the firm	IBES
ACCURACY	Accuracy of forecast	The negative of the absolute difference between actual EPS and analysts' forecasts scaled by stock price	IBES
PROFITABILITY <sup>d</sup>	Firm profitability	Measured with ROE (Net income divided by shareholders equity), ROA (Net income divided by total asset).	SIKIHOU(2004)
DSCORE	Disclosure score	Total number of points awarded for voluntary disclosure of strategic, non-financial and financial information. See the Appendix	Annual reports and the other investor related informations.

a. We divided the industry to four groups: 1, IT; 2, Service; 3, Electric Machines; 4, Others.

b. We used ASSET or SALES

c. We used ASSETCHANGE or SALESCHANGE

d. We used ROE or ROA

e. Big-Four Auditor: Aoyama, Shinmihon, Azusa, Tomatsu.

f. JAPAN COMPANY HANDBOOK

g. JAPAN COMPANY BLOCK-HOLDERS HANDBOOK

h. JAPAN COMPANY DIRECTORS HANDBOOK

### 4.3 Sample firms

The sample consists of firms listed on Mothers and Jasdaq at the end of 2004. Our sample firms were randomly selected from these two stock markets. The sample contained 100 firms, 50 from Mothers and the other 50 from Jasdaq. To examine the relation between the level of voluntary disclosure and Industry type, we selected 40 firms in the IT industry (20 firms from Mothers); 20 firms in Service Industries (10 firms from Mothers); 20 firms in the electric machinery industry (10 firms from Mothers); and 20 firms in other industries (10 firms from Mothers).

### 4.4 Regression model

H1, H3, H4, H5 test the relation between the level of voluntary disclosure and the firm size, profitability, and leverage. We use the following regression models to test last hypotheses.

Model1-1

$$\begin{aligned} \text{DSCORE} = & \beta_0 + \beta_1 \text{DEBT} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \beta_4 \text{SHARE} \\ & + \beta_5 \text{FOREIGN} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \beta_8 \text{AUDITOR} \\ & + \beta_9 \text{LISTING} + \beta_{10} \text{INDUSTRY1} + \beta_{11} \text{INDUSTRY2} + \\ & \beta_{12} \text{INDUSTRY3} + \beta_{13} \text{ASSET} + \beta_{14} \text{ASSETC} + \beta_{15} \text{ROE} \end{aligned}$$

Model1-2

$$\begin{aligned} \text{DSCORE} = & \beta_0 + \beta_1 \text{DEBT} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \beta_4 \text{SHARE} \\ & + \beta_5 \text{FOREIGN} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \beta_8 \text{AUDITOR} \\ & + \beta_9 \text{LISTING} + \beta_{10} \text{INDUSTRY1} + \beta_{11} \text{INDUSTRY2} + \\ & \beta_{12} \text{INDUSTRY3} + \beta_{13} \text{ASSET} + \beta_{14} \text{ASSETC} + \beta_{15} \text{ROA} \end{aligned}$$

Model1-3

$$\begin{aligned} \text{DSCORE} = & \beta_0 + \beta_1 \text{DEBT} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \beta_4 \text{SHARE} \\ & + \beta_5 \text{FOREIGN} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \beta_8 \text{AUDITOR} \\ & + \beta_9 \text{LISTING} + \beta_{10} \text{INDUSTRY1} + \beta_{11} \text{INDUSTRY2} + \\ & \beta_{12} \text{INDUSTRY3} + \beta_{13} \text{SALES} + \beta_{14} \text{SALESC} + \beta_{15} \text{ROA} \end{aligned}$$

Model1-4

$$\begin{aligned} \text{DSCORE} = & \beta_0 + \beta_1 \text{DEBT} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \beta_4 \text{SHARE} \\ & + \beta_5 \text{FOREIGN} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \beta_8 \text{AUDITOR} \\ & + \beta_9 \text{LISTING} + \beta_{10} \text{INDUSTRY1} + \beta_{11} \text{INDUSTRY2} + \\ & \beta_{12} \text{INDUSTRY3} + \beta_{13} \text{SALES} + \beta_{14} \text{SALESC} + \beta_{15} \text{ROE} \end{aligned}$$

where,

DSCORE= disclosure scores;

DEBT = total liabilities divided by total assets;

MOWN =percentage of equity ownership by CEO and inside directors;

BLOCK =percentage of equity ownership by substantial shareholders (with equity of 5% or more)

SHARE = number of total shareholders following the firm;

FOREIGN=percentage of foreign shareholders divided by total shareholders:

OUTMAN= percentage of outside executive directors on the board;

OUTDIR =percentage of outside auditors on the board;

AUDITOR=dummy variable for auditor reputation, coded as 1 for Big-Four Auditor Firms and 0 otherwise;

LISTING=dummy variable for listing status, coded as 1 for Jasdaq and 0 for Mothers;

INDUSTRY1=dummy variable for industry, coded as 1 for Information Technology industry and 0 otherwise;

INDUSTRY2= dummy variable for industry, coded as 1 for Information Service industries and 0 otherwise;

INDUSTRY3= dummy variable for industry, coded as 1 for Information Electric machinery industry and 0 otherwise;

ASSET= market value of firm;

ASSETC= measured the change in total assets over the previous year;

SALES=the firm's sales over the year;

SALESC= measured the change in sales over the previous year;

ROE= return on shareholders 'equity;

ROA = return on total assets;

H2 tests whether the level of voluntary disclosure in the Mothers and Jasdaq stock markets are different. We used the independent samples T-test method and Wilcoxon Test to test the hypothesis.

H6, H7, H8 test the relation between the level of voluntary disclosure and the size of analyst following, accuracy of forecasts and the dispersion of forecasts. We use the following regression models to test the last hypotheses.

#### Model 2-1

#### Simultaneous Equation Analysis<sup>4</sup> of Forecast Accuracy and Voluntary Disclosure

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<sup>4</sup> Information disclosure is likely to vary with a number of factors. Consistent with this, significant variation disclosure levels are found in empirical studies. (e.g., Meek, Roberts, and Gray, 1995). Thus, it is important to test whether the potential endogeneity of disclosures affects the relation between analysts' forecast accuracy and disclosure levels.

$$\begin{aligned}
\text{DSCORE} = & \beta_0 + \beta_1 \text{ANALYST} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \beta_4 \text{SHARE} \\
& + \beta_5 \text{ROE} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \beta_8 \text{AUDITOR} \\
& + \beta_9 \text{LISTING} + \beta_{10} \text{ACCURACY} + \beta_{11} \text{FRSD} + \\
& \beta_{12} \text{ASSET} + \beta_{13} \text{ASSETC} \quad \dots \text{Equation (2)}
\end{aligned}$$

$$\begin{aligned}
\text{ACCURACY} = & \beta_0 + \beta_1 \text{ANALYST} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \\
& \beta_4 \text{DSCORE} + \beta_5 \text{AUDITOR} + \beta_6 \text{OUTMAN} + \\
& \beta_7 \text{OUTDIR} + \beta_8 \text{ASSET} + \beta_9 \text{LISTING} + \beta_{10} \text{SALESC} \quad \dots \text{Equation (1)}
\end{aligned}$$

We also use the ordinary regression model (Model2-2) to test the relation between the level of voluntary disclosure and the firm's size, profitability, and leverage, analyst following, dispersion of forecast, etc (exclude the variable ACCURACY used in 3SLS models).

Model2-2

$$\begin{aligned}
\text{DSCORE} = & \beta_0 + \beta_1 \text{ANALYST} + \beta_2 \text{MOWN} + \beta_3 \text{BLOCK} + \\
& \beta_4 \text{ROE} + \beta_5 \text{AUDITOR} + \beta_6 \text{OUTMAN} + \beta_7 \text{OUTDIR} + \\
& \beta_8 \text{ASSET} + \beta_9 \text{LISTING} + \beta_{10} \text{ASSETC} + \beta_{11} \text{SHARE} + \\
& \beta_{12} \text{FRSD}
\end{aligned}$$

Where,

DSCORE= disclosure scores;

ACCURACY=the accuracy of analysts' earnings forecasts for the firm.

FPSD= the dispersion of analysts' earnings forecasts for the firm.

ANALYST= Number of analysts following the firm

MOWN =percentage of equity ownership by CEO and inside directors;

BLOCK=percentage of equity ownership by substantial shareholders (with equity of 5% or more)

SHARE= number of total shareholders following the firm;

ROE= return on shareholders' equity;

OUTMAN= percentage of outside executive directors on the board;

OUTDIR =percentage of outside auditors on the board;

AUDITOR=dummy variable for auditor reputation, coded as 1 for Big-Four Auditor Firms and 0 otherwise;

LISTING=dummy variable for listing status, coded as 1 for Jasdq and 0 for Mothers;

ASSET= market value of firm;

SALESC= measured change in sales over the previous year;



## 5 Results

### 5.1 Descriptive statistics for H1~H5

Table 1 Panel A provides descriptive statistics of the 100 sample firms in this study. The mean of the voluntary disclosure index is 22.97 out of a possible 95, suggesting a low voluntary disclosure environment in Mothers and Jasdqa. The highest disclosure score obtained is 46, and the lowest is 7. The mean strategic voluntary disclosure is 6.79, the Mean nonfinancial voluntary disclosure is 6.39, and the mean financial disclosure is 9.79. Thus, on average, there is greater disclosure on financial performance, and less disclosure on nonfinancial categories. The level of block-holder ownership (BLOCK) is high with a mean of 50.2%. We also find the high level of outside-auditor (65%) surprising.

Table 1 PanelB provides descriptive statistics of the firms listed on Mothers. Panel C provides descriptive statistics of the firms listed on Jasdqa. For the Mothers corporations, the voluntary mean disclosure varied from 6.14 in strategy information to 4.88 for nonfinancial information, with 8.40 in financial information. The overall mean voluntary disclosure was 19.42. However for the Jasdqa corporations, the voluntary mean disclosure varied from 7.44 in strategy information to 7.90 for nonfinancial information, with 11.18 in financial information. The overall mean voluntary disclosure is 26.52. This shows that, the levels of nonfinancial information disclosure for Mothers and Jasdqa corporations were relatively lower. Table 1 also reveals that the Mothers corporations were larger, on average, in sales change (SALESC) and asset change (ASSETC) than the corporations listed on Jasdqa. We find that the mean of sales change (SALESC) is 61.7% and the mean of asset change (ASSETC) is 60.6% in the Mothers corporations. For the Jasdqa corporations they are 10.8% and 15.16%. This means that corporations listed on Mothers achieved higher growth than those listed on Jasdqa. Although the firms listed on Mothers achieved higher growth, they did not do well in profitability. The mean return on equity (ROE) for Mothers is 1%, and the return on equity (ROE) for Jasdqa is 2.5%. Table 1 also shows that both the market's corporations had high levels of leverage (DEBT). As is reflected in Table 1, we find firms listed on Jasdqa were larger than those listed on Mothers.

Panel D provides descriptive statistics of firms by industry type. Panel D shows that the level of voluntary disclosure was lowest in the IT industry (mean: 21.45), and, highest in Service Industries (mean: 24.95). We also find relatively smaller firms in the IT and Electric Machinery industry.

## 5.2 Multivariate tests for H1~H5

Table 2-1 provides the results of an independent-samples T-test for differences in disclosure between Mothers and Jasdaq. Table 2-2 shows the results of a Wilcoxon Test. It was found that the level of voluntary disclosure in Mothers stock is lower than in Jasdaq. The test also reveals that there are differences in all of strategy, nonfinancial, and financial disclosure. Firms listed on Jasdaq disclose more voluntary information overall.

Table 3 presents the correlation between variables. Disclosure score (DScore) is positively correlated with ASSET, sales change (SALES), shareholders (SHARE), and negatively correlated with managerial ownership (MOWN). The univariate relation supports H3, that managerial ownership (MOWN) is negatively correlated with the level of voluntary disclosure.

Table 4 presents regression results for all the firms with four models. In model 1-1, we used ASSET, asset change (ASSETC), and return on equity (ROE) to measure firm size, growth, and profitability. In Model1-2 we replace the explanatory variable return on equity (ROE) by return on asset (ROA). The results differ from Model 1-1 in profitability. In Model1-1, the coefficient of return on equity (ROE) is significant at the 5% level; however in model1-2, the coefficient of return on asset (ROA) is not significant at the 5% level. Model 1-3 replaces ASSET with SALES and asset change (ASSETC) with sales change (SALESC). Model1-4 replaces return on asset (ROA) with return on equity (ROE). In Model 1-3, and Model 1-4, we find that the coefficient of shareholders (SHARE) is significant, and profitability is not significant. Because Model 1-1 is the best fitting model and most of the prior studies in voluntary disclosure used ASSET and return on equity (ROE) as explanatory variables to measure firm size and profitability, in this study, we used ASSET, asset change (ASSETC), and return on equity (ROE) as independent variables.

The use of a regression model is based on the assumptions of no significant multicollinearity between the explanatory variables, and conditions of linearity and normality. Potential problems related to multicollinearity may be investigated by means of a correlation matrix<sup>5</sup>. The Pearson correlations (see Table3) suggested that multicollinearity between the explanatory variables was most unlikely to cause a serious problem in the interpretation of the results of the multivariate analysis.

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<sup>5</sup> To evaluate whether multicollinearity also used the method of variance inflation factor(VIF) scores Lardaro(1993) suggests that multicollinearity is unlikely to cause a serious problem if VIF scores are less than 10, and none of the VIF scores exceed this number.

Model 1-1 reported the F value of 7.175 (significant at the .000 level) for all firms listed on Mothers and Jasdqa. The adjusted coefficient of determination ( $R^2$ ) for the level of overall disclosure is 48.3%. Both of these values suggest that the model explains variation fairly well. The regression coefficient for LISTING (4.077) is positive and statistically significant ( $p < 0.01$ ), suggesting that firms listed on Jasdqa disclose more voluntary information. The coefficient for ASSET (.000) is positively correlated with disclosure scores (DSCORE) and significant ( $p < 0.01$ ), the standardized coefficient for ASSET is .591, suggesting that firm size is the most explanatory variable in this model. The coefficient on return on equity (ROE) (5.184) is significantly positive ( $p < 0.05$ ).

Table 5, Panel A provided the regression results in Mothers, and Panel B provided the regression results in Jasdqa. As shown in Panel A, the F value was 3.523 (significant at the .001 level). The adjusted coefficient of determination was 41.9%.

Similarly, the F value in Panel C was 3.634 (significant at the .001 level). The adjusted coefficient of determination was 42.9%.

Table 6 shows regression results for models using three voluntary disclosure subgroups as dependent variables. Table 6 Panel A shows the results with Strategic Disclosure scores as a dependent variable in Mothers and Jasdqa stock market; Panel B shows the results with Nonfinancial Disclosure scores as a dependent variable in Mothers and Jasdqa stock market; Panel C shows the results of Financial Disclosure scores as dependent variable in Mothers and Jasdqa. There were some differences in the explanatory power of the information types in both markets. The coefficient of determination in disclosure for Mothers firms ranged from 8% ( $R^2$  Panel A-1) for strategic information (not significant), to 33% ( $R^2$  Panel B-1) for nonfinancial information (significant at the .01 level), with financial information at 20% ( $R^2$  Panel C-1) (significant at the 0.1 level). On the other hand, the amount of explained variation in disclosure for Jasdqa firms ranged from 8% ( $R^2$  Panel C-2) for financial information (not significant), to 53% ( $R^2$  Panel A-2) for strategy information (significant at the .000 level), with nonfinancial information at 44% ( $R^2$  Panel B-2) (significant at the .001 level).

### **5.2.1 Mothers**

As shown in Table 5 and Table 6, the coefficient ASSET of Mothers firms was highly significant ( $p < 0.001$ ), not only for total information (Table 5 Panel A) but also for nonfinancial information (Table 6 Panel B-1) and financial information (Table 6 Panel C-1). The coefficient of leverage (DEBT) was negative and significant ( $p < 0.1$  Table 5

Panel A) for total information. The coefficient for service industry (INDUSTRY2) of firms listed on Mothers was significant ( $p < .05$ ) for total information ( $p = .002$  Table 5 Panel A), nonfinancial information ( $p = .022$  Table 6 Panel B-1), and financial information ( $p = .002$  Table 6 Panel C-1). This indicates that Service Industries in Mothers disclose more information. We also find that electric machines industry (INDUSTRY3) was significant ( $p < .05$ ) for total disclosure scores ( $p = .013$  Table 5 Panel A), and financial disclosure ( $p = .012$  Table 6 Panel C-1). In the Mothers market, we could not find return on equity (ROE) significantly correlated with the level of voluntary disclosure. However the result shows that profitability is positively correlated with the level of voluntary disclosure.

We find that outside ownership of Mothers firms is negatively correlated with the level of voluntary disclosure (Table 5 Panel A). The results show that higher outside ownership does not increase the level of information disclosure in Mothers markets.

The results show that the coefficient on shareholders (SHARE) is negative and significant ( $p < .05$  Table 5 Panel A), and it is also significantly correlated with the level of financial disclosure ( $p < .05$  Table 6 Panel C-1). We also find that managerial ownership (MOWN) is positively correlated with voluntary disclosure level, although it is not significant (Table 5 Panel A). Block-holder ownership (BLOCK) is negatively correlated with the level of voluntary disclosure, and Foreign shareholders (FOREIGN), asset change (ASSETC) was positively correlated with the level of voluntary disclosure, although this are not significant either (Table 5 Panel A).

To summarize the results: The level of voluntary disclosure is positively correlated with firm size both in Mothers. This is consistent with the results in Meek, and Gray (1995), and Cooke (1991), Mark (2003). The level of voluntary disclosure is not related to profitability in Mothers. This result is converse to the results in Gray (1995), Jaggi (2000) The level of voluntary disclosure is negatively correlated with the number of shareholders.

### **5.2.2 Jasdaq**

As shown in Table 5 and Table 6, the coefficient for ASSET of Jasdaq firms was significantly correlated ( $p = 0.07$  Table 5 Panel B) with the level of disclosure. The coefficient on return on equity (ROE) is positive and significant ( $p = 0.07$  Table 5 Panel B) for total information. The coefficient for managerial ownership (MOWN) of firms listed on Jasdaq was negative and significantly ( $p = 0.08$  Table 5 Panel B) correlated with the level of voluntary disclosure.

We find that the outside ownership structure is negatively correlated with the level

of voluntary disclosure not only in the Mothers market but also in the Jasdaq market. The results show that higher outside ownership does not increase the level of information disclosure in the two markets.

It also shows the coefficient on shareholders (SHARE) was positive and significant ( $p < .05$  Table 5 Panel B) with total information, and also significantly in strategic information ( $p = .061$  Table 6 Panel A-2) and nonfinancial information ( $p = .081$  Table 6 Panel B-2). We also find that leverage (DEBT), and foreigner shareholders (FOREIGN) were positively correlated with the level of voluntary disclosure, and block-holder ownership (BLOCK), and asset change (ASSETC) were negatively correlated with the level of voluntary disclosure, although they are not significant (Table 5 Panel B).

To summarize the results: The level of voluntary disclosure is positively correlated with firm size in Jasdaq. This is consistent with the results in Meek, and Gray (1995), and Cooke (1991), Mark (2003). The level of voluntary disclosure is positively correlated with profitability in Jasdaq. This result is consistent with the results in Srinivasan (2004), Gray (1995), and Jaggi (2000). The level of voluntary disclosure is positively correlated with the number of shareholders. The level of voluntary disclosure is higher in Jasdaq than in Mothers.

### **5.3 Descriptive statistics for H6~H8**

Table 7 provides descriptive statistics of 32 sample firms in this study (The sample with data available from IBES, 22 firms listed on Jasdaq). The mean of the voluntary disclosure index is 25.53 out of a possible 95. The mean of the number of analysts following was 10.16. The average of accuracy of forecast was -0.08, and the lowest accuracy was -0.87 in this sample. Table 7 also shows that the mean of dispersion of forecast (FRSD) was 0.06, the largest dispersion was 0.66.

Table 8 presents the correlation between variables. Disclosure score (DScore) is positively correlated with the size of analyst following (ANALYST), and ASSET. Forecast accuracy (ACCURACY) is positively correlated with asset change (ASSETC), return on equity (ROE) and dispersion of forecast (FRSD).

### **5.4 Multivariate tests for H6~H8**

Table 9 provides the results of Model 2-2. Model 2-2 tests the relation between the level of voluntary disclosure and the firm size, profitability, leverage, analyst following, and dispersion of forecast, excluding the variable ACCURACY used in 3SLS models.

It shows that the coefficient for the analyst following of sample firms is significant

( $p < .05$ ) and positive. It suggests that more additional information disclosures attract more analysts. The result is consistent with the results in Li.Li.Eng (1999, 2000). We also find that firm size (ASSET) is positive and significant ( $p < .01$ ). However we could not find that LISTING is significant and positive. This shows that the levels of voluntary disclosure are not different between Mothers and Jasdqa. Contrary to our expectation, dispersion of forecast (FRSD) was associated with voluntary disclosures.

Table 10 reports the results of three-stage least squares (3SLS) analysis. In model2, both voluntary disclosure scores (DSCORE) and sales change (SALESC) are positively associated with forecast accuracy at less than the 5% level, supporting the H6: accuracy is positively associated with the level of voluntary disclosure. It also shows that more analysts following decrease the forecast accuracy. It is not surprising that the level of voluntary disclosure is strongly and positively associated with the number of analysts. The adjusted coefficient of determination ( $R^2$ ) for Model 2-1 equations (2) is 11%, thus it has weak explanatory power. The objective of Model 2-1 is to understand factors influencing the forecast accuracy, and the total system weighted R-square was 69%. The result about the association between forecast and the level of voluntary disclosure is consistent with the observation in Srinivasan (2004). Although Srinivasan documents that more analysts following will increase the forecast accuracy, our result shows a converse observation.

The following table shows our predictions about coefficients of regression analysis.

Dep(DSCORE)	ASSET	ASSETC	ROE	DEBT	MOWN	BLOCK	SHARE	FOREIGN
Pre.	+	+	+	+	-	-	+	+
All firms Est.	+	+	+	-	-	-	+	+
Mothers Est.	+	+	+	-	+	-	-	+
Jasdaq Est.	+	-	+	+	-	-	+	+
Continued								
Dep(DSCORE)	OUTMAN	OUTDIR	AUDITOR	INDUSTRY1	INDUSTRY2	INDUSTRY3	ANALYST	FRSD
Pre.	+	+	+	?	?	?	?	?
All firms Est.	-	+	-	-	+	+	+	+
Mothers Est.	-	-	-	+	+	+	*	*
Jasdaq Est.	-	-	-	-	-	-	*	*

From the table, we can see that most of our predictions are consistent with our results. However, the results show that most outside ownership is negatively correlated with information disclosure. The result contradicts our predictions. The table also shows that ROE is positively correlated with all firms listed on Mothers and Jasdqa, although it is not significantly correlated with information disclosure in corporations listed on Mothers. The number of shareholders (SHARE) is negatively correlated with the level of information disclosure in corporations listed on Mothers. Managerial ownership

(MOWN) also shows a negative relation to information disclosure in Mothers. All of this might be explained by the fact that the Mothers market is younger than the Jasdaq market, and the Mothers market needs stronger enforcement to increase information disclosure level. The other reason might be that the listing requirement of Mothers is less rigorous than Jasdaq's.

## 6 Conclusions

In this study we investigate the factors influencing the level of voluntary disclosure, and also examine the effects of variables on forecast accuracy in both the Mothers and the Jasdaq stock markets. We document that firm size, market listing, profitability, and analysts following are associated with the level of voluntary disclosure. We find that most of the results are consistent with the results in prior research. We also find that the level of voluntary disclosure is positively associated with forecast accuracy, which suggests that voluntary disclosures provide useful information to analysts. The result is consistent with the results in Srinivasan (2004) and Li.Li.Eng (1999).

We also discover that increased analyst following will decrease forecast accuracy. We find that sales change is positively associated with forecast accuracy. One plausible reason is that better performing firms are inclined to disclose more information which in turn increases forecast accuracy. Examining the relation between disclosure and managerial ownership (MOWN), we document that the level of voluntary disclosure is negatively correlated with managerial ownership (MOWN) in Jasdaq, a result which is consistent with the results in Mark (2003), and Gray (2002). We further document that the level of voluntary disclosure is positively correlated with the number of shareholders (SHARE) in Jasdaq. However managerial ownership (MOWN) is not related to the level of voluntary disclosure and the number of shareholders (SHARE) is negatively correlated with the level of voluntary disclosure.

One of our interests is to understand outside directors' roles in corporations listed on the Mothers and Jasdaq markets. To increase the transparency, and enhance monitoring, the Japan Stock Exchange encourages firms to increase the number of independent directors. Auditor firm is also mandated. However, our results cast doubt on the effect. Our findings suggest that outside directors and big-auditor firms did not effectively increase the level of voluntary disclosure. Our results are different from the results in prior research such as Jaggi (2000) and Gray (2002).

It might be necessary for shareholders to increase the pressure on companies listed on Mothers and Jasdaq to achieve better disclosure. Even for large Japanese corporations,

greater disclosure and relevant regulation are desirable in order to avoid corporate scandals such as the disclosure irregularities in Seibu Railway.

In Japan, the disclosure system is becoming more and more important. First, Japan is adopting global accounting standards; second, Japan is moving from a bank-centered system to a capital market-based system and from a system with concentrated investor ownership to a system with more dispersed investors; and third, Japan is comprehensively overhauling its legal and regulatory infrastructure of the capital market. In recent years, the Japan Stock Exchange and the other regulatory authorities have made some changes in the information disclosure rules, standards and guideline affecting corporate governance practice and financial reporting practice. In future research, we should be examining how the change of rules affects voluntary disclosure.