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Earnings Forecast and Earnings Management of Japanese Initial Public Offerings Firms

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Abstracts

I investigated earnings management surrounding initial public offerings (IPOs) using 828 Japanese firms that went public in the over-the-counter market between 1990 and 1999. As the proxy of earnings management, I measure discretionary accruals following the methodology employed by Kasznik (1999). First, I found evidence that firms whose managers have overestimated earnings at IPO time have significantly positive discretionary accruals to mitigate forecast error, but firms whose managers have underestimated earnings do not have negative discretionary accruals. Second, I found that managers, on average, use significantly positive discretionary accruals to increase reported earnings in years just after the IPO but not in years before the IPO.

Keywords: initial public offerings; management earnings forecast; earnings management; discretionary accruals.

Data Availability: The data used in this study are publicly available from the sources indicated in the text.

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1. Introduction

The Japan Securities Dealers Association Automated Quotation (JASDAQ) market, which is the Japanese over-the-counter market, requires a preliminary inquiry of the underwriter of any initial public offerings (IPOs) firm as well as the filing of many documents,[1] including an application for a new listing, which requires documented profit planning for the next two fiscal years. The Japan Securities Dealers Association (JSDA), which is the supervisor of JASDAQ, provides the investors with the Summary of New Listing Firms, which includes excerpts of the documents that IPO firms submitted. Consequently, although they are prohibited by security law from including forward-looking information in the prospectus, all firms that go public in the JASDAQ market disclose their management's earnings forecast for the next year.

The first purpose of this study was to investigate whether a manager who issues an inaccurate earnings forecast at the time of IPO reduces the forecast error by managing reported earnings so that they more closely match the forecasted number. Kasznik (1999) analyzed discretionary accruals for each of 499 firm-years with management earnings forecasts issued between 1987 and 1991. Using 828 Japanese firms that went public between 1990 and 1999, I find the same evidence as that of Kasznik (1999), in that firms whose managers have overestimated earnings have a significant level of positive discretionary accruals to mitigate their forecast error, but firms whose managers have underestimated earnings do not have negative discretionary accruals to do so.

Teoh, Welch, and Wong (1998b) and Teoh, Wong, and Rao (1998) investigated the relationship between earnings management during the year of IPO and subsequent

underperformance, while Aharony, Lin, and Loeb (1993), Friedlan (1994), and DuCharme, Malatesta, and Sefcik (2001) investigated earnings management in the period prior to IPO. The second purpose of the present study was to examine earnings management during both the pre- and post-IPO periods. I found that managers use significantly positive discretionary accruals to increase reported earnings in years just after the IPO but not in the years before the IPO.

The literature has mainly documented earnings management by U.S. IPO firms. Aharony, Lee, and Wong (2000) are exceptional in that they examined earnings management in the financial packaging of Chinese state-owned enterprises for public listing. I examined whether Japanese IPO firms engage in earnings management, in the hopes of enhancing international understanding of earning management around the IPO.

The remainder of the paper is organized as follows: Section 2 briefly surveys earlier studies and describes my hypotheses. Section 3 explains sample selection and data. Section 4 details the proxy of earnings management. Section 5 presents the empirical results, and Section 6 concludes the paper.

2. Review of Prior Research and Research Hypotheses

In the United States, many managers do not issue quantitative earnings forecasts or do so only sporadically, because they fear legal actions by investors and loss of reputation for accuracy if they issue forecasts that later turn out to be less than perfectly accurate. The costs associated with legal exposure and loss of reputation due to inaccurate forecasts are higher for overestimates than for underestimates. Consistent with the asymmetric loss function, Kasznik (1999) shows that managers who have overestimated earnings use positive discretionary accruals to manage reported earnings upward, but

managers who have underestimated earnings do not use negative discretionary accruals to manage reported earnings downward.

In a less litigious environment such as Japan, a wish to avoid potential legal liability might not provide the incentive for managers who issue inaccurate earnings forecasts to manage reported earnings so that they more closely match the forecasts. However, according to the Fair Practice Rule set forth by the JSDA, when issuing new stocks to interested parties such as officers, employees, traders, and financial institutions during the two years up to the fiscal year end just before the IPO, parties who have subscribed for stocks are prohibited from selling them for six months after the IPO. If management forecasts that later turn out to be inaccurate trigger a decline in stock prices, managers might have an incentive to manage reported earnings so that they more closely match the forecasts, for the people that underwrote stocks in the pre-IPO period. So I tested the same hypothesis as Kasznik (1999) using a sample of Japanese IPOs.

H_1: A manager who issues an inaccurate earnings forecast at the IPO time reduces the forecast error by managing reported earnings so that they more closely match the forecasted number.

Some researches have analyzed earnings management of IPO firms.[2] For example, Teoh, Welch, and Wong (1998b) investigated earnings management during the year of IPO and subsequent stock return. They find a significant negative relationship between abnormal accruals during the IPO year and stock return in the three years after the IPO fiscal year. Teoh, Wong, and Rao (1998) examined the association between IPO year abnormal accruals and long-term earning performance in the years after IPO. They provide evidence that high IPO-year abnormal current accruals predict low future

earnings performance. On the other hand, there are several studies that investigate earnings management in the period prior to IPO. Aharony, Lin, and Loeb (1993) find very weak evidence that managers use discretionary accruals to increase reported earnings in the period preceding IPO. Friedlan (1994) shows that IPO firms make positive discretionary accruals in the most current financial statements included in the prospectuses. DuCharme, Malatesta, and Sefcik (2001) report evidence that aggressive pre-IPO earnings management both increases IPO proceeds and decreases subsequent stock returns. I tested the same hypothesis as those of prior researchers, but I used Japanese IPO firms and examined discretionary accruals during both the pre- and post-IPO periods to better understand earnings management of IPO firms.

H_2: Firms engage in earnings management to boost reported earnings around the IPO so that offering prices and post-IPO market prices are maintained at a high level.

3. Sample Selection

The initial sample of this study consists of 848 firms that went public at the JASDAQ between 1990 and 1999 (there are no banks, stock brokerage firms, or insurance companies included in the sample). I manually collected the earnings forecasts of these IPO firms from the Summary of New Listing Firms furnished by the JSDA. From Nikkei Needs, which is the database provided by Nihon Keizai Shimbunsya (similar to the Dow Jones in the United States), I got financial statement data necessary to compute the test variables explained in the next section. Because the necessary data were not available for all IPO firms, I eliminated 20 firms for which some data were missing. The final sample was 828 firms.

Table 1

Panel A of table 1 presents a sample distribution by the year of listing. Except for 1992, in which IPOs were postponed by the slump in the stock market, the sample is almost equally distributed among the sample years. Panel B indicates the sample distribution based on Nikkei two-digit industrial codes. The presence of twenty-six separate two-digit industrial codes, with sixteen of these representing at least one percent of the sample, indicates a wide selection of industries, although more than half of my sample is comprised of non-manufacturing firms, such as service, trading, and retail businesses.

Table 2

Table 2 reports some characteristics of Japanese IPO firms. The mean total assets is 19.47 billion yen, but the median is only 9.96 billion yen, suggesting that there are a few outliers concerning firm size. The mean (median) financial leverage, total liabilities divided by total assets, is 63.66 (65.39)%. IPO firms have better performance, as indicated by a mean (median) return on assets of 10.32 (8.41)%. Japanese IPO firms are considerably mature, having existed for a mean of 29.10 years and a median of 27.58 years from the date of incorporation to the date of going public. The mean (median) time horizon of forecasts, measured as the number of days between the listing date and the fiscal year end when the IPO firm forecasts its earnings, is 140.31 (152) days.[3] Considering simultaneously that it takes a few months to go public after the application is made and that the application must be accompanied by the management earnings forecast, earnings forecasts issued by IPO firms are not designed to be preliminary

earnings releases. About 80% of IPO firms select prestigious underwriters and auditors.

4. Measurement of Discretionary Accruals Proxy

Following methods similar to those of Kasznik (1999), I used discretionary accruals as a measure of earnings management. Discretionary accruals were calculated by subtracting non-discretionary accruals from total accruals. Because the statement of cash flows was not available, I defined total accruals, TAC, as follows:

$$TAC = \Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP \quad (1)$$

ΔCA is the change in current assets. ΔCL is the change in current liabilities. $\Delta CASH$ is the change in cash. ΔSTD is the change in debt included in current liabilities. DEP is the depreciation expense.

To measure non-discretionary accruals, I estimated the following cross-sectional model for each year and each industry:

$$TAC = \beta_0 + \beta_1 \Delta ADJREV + \beta_2 PPE + \beta_3 \Delta CFO + \varepsilon \quad (2)$$

$\Delta ADJREV$ is the change in revenues adjusted for the change in account receivables. PPE is the gross property, plant, and equipment. ΔCFO is the proxy of the change in cash flow from operations. I define operating cash flow as the net earnings before extraordinary items minus total accruals. All variables are deflated by total assets at the beginning of the year. ε is the error term.

Equation (2) is a modified and extended version of Jones's (1991) model, which describes total accruals as a function of the change in revenue and the level of property, plant, and equipment. Because discretion could be exercised over revenues by changing the timing of sales shipments, Dechow, Sloan, and Sweeney (1995) advocate that one should adjust the sales revenue variable for the change in account receivables. Following Dechow's (1994) findings that there is a negative correlation between the change in

operating cash flow and total accruals, Kasznik (1999) includes ΔCFO as an explanatory variable.

As in DeFond and Jiambalvo (1994), I estimate the model using a cross-section approach, because IPO firms usually do not have the long-term data necessary for adopting a time-series approach. To obtain the estimated coefficients in equation (2), I formed estimation portfolios by fiscal year and two-digit Nikkei industrial code, based on the following selection criteria: firms had to (a) be listed with at least one of the Japanese stock exchanges (Tokyo, Osaka, Nagoya, JASDAQ, etc.) as of December 2000,[4] (b) be not included in the initial IPO sample, (c) be not statistically extreme, defined as falling more than three standard deviations from the mean in each estimation portfolio, (d) not have missing values of items necessary to calculate total accruals, and (e) operate on a 12-month fiscal year. Each estimation portfolio must have more than ten observations. I was able to make up a total of 330 estimation portfolios consisting of 23,713 firm-years.

Table 3

Table 3 provides descriptive statistics for the cross-sectional OLS estimation results of the accruals model. The mean (median) number of observations in the estimation portfolios is 71.86 (43). As expected, the coefficient on change in revenue is generally positive, but not statistically significant. The coefficients on property, plant, and equipment and change in operating cash flow are generally negative and statistically significant. The model explains a significant portion of the variation in total accruals; the mean (median) adjusted R^2 is 0.517 (0.534).[5]

For each IPO firm, I computed the non-discretionary component of total accruals, NDAC, using the estimated coefficients of the estimation portfolio matched by year and

industry as follows:

$$NDAC = b_0 + b_1 \Delta ADJREV + b_2 PPE + b_3 \Delta CFO \quad (3)$$

where b_0, b_1, b_2, and b_3 denote estimated coefficients β_0, β_1, β_2, and β_3, respectively.

The prediction error of the accruals model (the difference between total accruals and estimated non-discretionary accruals) is a proxy for discretionary accruals, DAC:

$$DAC = TAC - NDAC \quad (4)$$

5. Empirical Results

5.1. Earnings Forecast and Earnings management of IPO firms

In this section, I examine the hypothesis that a manager who issues an inaccurate earnings forecast at IPO time reduces the forecast error by using discretionary accruals. To do so, I had to identify proxies for the sample firms' forecast error without including earning management by managers. One way to estimate earnings absent earnings management is to subtract the discretionary accruals proxy from reported earnings. As indicated by Kasznik (1999), however, this could induce a mechanical correlation between the earnings forecast error proxy and estimated discretionary accruals. Therefore, I also used the reported forecast error, defined as the difference between actual earnings before extraordinary items and taxes and its forecasted number, divided by total assets at the beginning of the year.[6] Assuming that firms with reported earnings more (less) than the forecast also had non-discretionary earnings more (less) than the forecast, I expected that firms with reported earnings more (less) than the forecast would have positive (negative) discretionary accruals to reduce forecast error.

To test this prediction, I assigned each IPO firm to one of ten portfolios, based on its reported forecast error. Portfolio 1 consisted of firms having the largest negative forecast error, that is, those firms whose management earning forecast was the most optimistic.

Portfolio 10 consisted of firms having the largest positive forecast error, that is, those firms whose management earning forecast was the most pessimistic.

Table 4

Panel A of table 4 reports the descriptive statistics of management forecast error. The mean reported forecast error deflated by lagged total assets is -0.0006, not significantly different from zero (the one-tail p-value is 0.3298 using a t-test). While 359 IPO firms have negative forecast errors suggesting that managers overestimate earnings, 469 firms have positive forecast errors indicating that managers underestimate earnings. The median of 0.0011 is significantly positive (the one-tail p-value is 0.0001 using a binominal sign test). These results indicate that earnings forecasts of Japanese IPO firms on average are pessimistically underestimated.[7]

Panel B of table 4 presents the mean and median discretionary accruals for decile portfolios. For portfolios 1 to 4, in which reported earnings are below the management forecasts, the mean and median discretionary accruals are positive at the statistically significant level. Furthermore, firms in portfolio 1, that is, those have the largest negative forecast errors, have more positive discretionary accruals than do the firms in portfolios 2 to 4 at the significant level of 0.0389 or better, using a non-parametric Wilcoxon signed rank test (not reported in the table).[8] These results are consistent with the prediction that managers who overestimate earnings at IPO time use income-increasing discretionary accruals to mitigate their forecast errors. However, for portfolios 5 to 10, in which reported earnings are above the management forecasts, the mean and median discretionary accruals are also significantly positive, except for the median in portfolio 6. These findings generally provide no support for the prediction that

managers who underestimate earnings manage reported earnings downward by using negative discretionary accruals.

5.2. Earnings Management around the IPO

As indicated in panel B of table 4, IPO firms have, on average, significantly positive discretionary accruals during the fiscal year, of which the manager forecasts earnings at IPO time (mean = 3.87%, median = 2.34% of the lagged total assets). Because there is relatively little information available to investors from public sources about private firms, they have to rely primarily on information provided by managers, such as the financial statements of prior years and the like. If investors are unable to understand fully the extent to which IPO firms engaged in earnings management to increase reported earnings by adopting positive discretionary accruals, high reported earnings could result in a higher offering price. In addition, IPO firms have an incentive to boost income in the period immediately after the IPO. According to the Fair Practice Rule, when issuing new stocks to interested parties such as officers, employees, traders, and financial institutions during the two years up to the fiscal year end just before the IPO, which is often observed, parties who have subscribed for stocks are prohibited from selling them during the fixed time period after IPO. Thus, managers might have an incentive to maintain high earnings until after the prohibitive period, as a reward for the people who underwrote stocks in the pre-IPO period. I examined discretionary accruals during both the pre- and post-IPO periods to gain a better understanding of earnings management in IPO firms.[9]

Table 5

Table 5 presents the time-series distribution for earnings performance measure, return

on assets (ROA), and proxy of earnings management, discretionary accruals (DAC), during the seven years centered on year 0, defined as the fiscal year when the IPO firm forecasts earnings.[10] Panel A reports the return on assets, earnings before extraordinary items, and taxes divided by total assets at the beginning of the year. From year -3 to year -1, return on assets is at a high level and has a tendency to rise, reaching a peak in year -1, that is, the year just before IPO. After IPO, superior earnings performances are not sustained, declining to less than half the level of the highest return on assets in year 3.

Panel B reports discretionary accruals, as defined previously. In years -3 and -2, discretionary accruals were negative, having the effect of decreasing reported earnings. In year -1, just before IPO, discretionary accruals changed to positive and were statistically significant according to the binomial sign test (although they were not statistically significant in a t-test). There is only weak evidence that high-level earnings performances during the pre-IPO period were inflated by earnings management. In contrast, in year 0 immediately after IPO and year 1, positive discretionary accruals were statistically significant, keeping reported earnings from dramatically dropping otherwise. Because a high level of discretionary accruals cannot be sustained over a long period, discretionary accruals showed negative levels in year 3, though they were not statistically significant.

5.3. Robustness Check

At present because there is no perfect model separating discretionary accruals from non-discretionary accruals, any proxies for discretionary accruals are noisy measures of earnings management. Testing for earnings management using a proxy for discretionary accruals could yield biased results if measurement error in the proxy is correlated with omitted variables associated with managers' decision to go public.

Dechow, Sloan, and Sweeney (1995) find that measurement error in the estimation of discretionary accruals is correlated with firm performance, in that firms with low (high) earnings tend to have negative (positive) prediction errors of the accruals model. As indicated in tables 2 and 4, firms at IPO time are performing better than average.[11] To sum up, these findings raise concern that the positive accruals prediction errors identified for IPO firms just reflect measurement errors associated with better performances. Following the example of Kasznik (1999), I adjusted discretionary accruals for potential measurement errors of the accruals model to check the robustness of the above empirical results.

Figure 1

I first calculated discretionary accruals for each of the 23,713 firm-years included in the sample to estimate equation (2). I then ranked these observations on the level of earnings divided by lagged total assets and assigned them to a percentile within the ordered ranks. Percentile 1 (100) contains the 238 (237) observations with the lowest (highest) levels of earnings performance among the 23,713 observations. For each percentile, I computed a 95% confidence interval around the mean discretionary accruals. Figure 1 plots the 100 confidence intervals. It reveals that the null hypothesis of zero discretionary accruals is rejected at the five percent level for percentiles standing for lower and higher levels of earnings. The mean discretionary accruals are significantly negative (positive) at the 0.05 levels for 12 (14) out of the lowest (highest) 20 percentiles, using a parametric t-test. The null hypothesis that mean discretionary accruals are zero was rejected for eleven out of the remaining 60 percentiles. The finding that firms with good (bad) earnings performance have, on average, positive (negative) discretionary

accruals is consistent with the finding of Dechow, Sloan, and Sweeney (1995) and Kasznik (1999).

Figure 2

To assess the potential effects of this relationship on the earnings management measures, I assigned each of 828 IPO firms to one of the percentile groups based on earnings levels. As Figure 2 shows, more than 90% of the sample observations lie above the 50th percentile, with 11.71% in the 100th percentile, which is consistent with the finding that IPO firms perform better. This indicates that the positive discretionary accruals of IPO firms noted in previous sections could be due to measurement errors in estimating the accruals model, and that IPO firms in Japan might have a more serious problem with this type of error than listed firms that issue management earnings forecasts in the United States, such as those examined by Kasznik (1999). Because of this potential problem, I adjusted the discretionary accruals to control for this potential bias, following the method employed by Kasznik (1999). Assuming that the median discretionary accruals for each percentile group reflect measurement error correlated with that level of performance, I computed an adjusted proxy of discretionary accruals, ADJDAC, as the difference between discretionary accruals based on equation (4), DAC, and the median discretionary accruals, $MED(DAC)_g$, for a percentile group g, matched with the IPO firm on earnings deflated by the lagged total assets:

$$ADJDAC = DAC - MED(DAC)_g \quad (5)$$

Table 6

Table 6 presents the mean and median adjusted discretionary accruals for decile portfolios based on management forecast error, measured as the difference between reported earnings and management earnings forecast deflated by the lagged total assets. Removing the component of discretionary accruals that potentially reflects measurement errors associated with firm performances reduces magnitudes of discretionary accruals, from a mean (median) of 0.0387 (0.0234) to 0.0338 (0.0190), but the accruals are still significantly positive. For portfolios 1 to 4, in which reported earnings are below the management forecasts, the mean and median adjusted discretionary accruals are statistically positive at the significant level. However, for portfolios 5 to 10, in which reported earnings are above the management forecasts, the mean and median adjusted discretionary accruals are also positive and statistically significant, except for the median in portfolio 6. These results basically confirm previous ones, that is, they are consistent with the prediction that managers who overestimate earnings use income-increasing accruals to mitigate their forecast errors, but the results are not consistent with the prediction that managers who underestimate earnings use income-decreasing accruals to manage reported earnings downward.

Table 7

Table 7 presents the time-series distribution for adjusted discretionary accruals during the seven years centered on year 0, defined as the fiscal year during which the manager forecasts the earnings at IPO time. In the pre-IPO period, the mean and median adjusted discretionary accruals in not only year -3 and -2 but also year -1 are negative, and the means are statistically significant except for the mean in year -3. These results suggest that high-level earnings performances in years before IPO are not attained by earnings

management. In contrast, in the post-IPO period, adjusted discretionary accruals are significantly positive for years 0 and 1 and then decline, turning to negative in year 3. These results are fundamentally identical to previous findings that earnings performances for the few years immediately following IPO are inflated by earnings management.

6. Concluding Remarks

In this study I investigated earnings management of Japanese IPO firms from two viewpoints. First I examined whether managers who issue an inaccurate earnings forecast at IPO time engage in earnings management to reduce forecast error. When overestimating earnings, managers use positive accruals to mitigate their forecast errors. However, when underestimating earnings, managers do not use negative accruals to manage reported earnings downward. These results are similar to those of Kasznik (1999), who investigated listed firms that issue management forecasts in the United States, and may show that the effects on manager's legal exposure, reputation, and stock price in the case of inaccurate forecasting are asymmetric between overestimations and underestimations.

Second, I examined whether Japanese IPO firms engage in earnings management to boost earnings around the IPO so that offering prices and post-IPO market prices are maintained at a high level. In the pre-IPO period, managers do not use discretionary accruals to attain high-level earnings performances. In contrast, in the period immediately after IPO, significantly positive discretionary accruals keep reported earnings from declining dramatically, but such accruals cannot sustain earnings over a long period. These results are not necessarily consistent with those of Aharony, Lin, and Loeb (1993), Friedlan (1994), and DuCharme, Malatesta, and Sefcik (2001), who

investigate pre-IPO earnings management of U.S. IPO firms, but they are almost identical to the findings of Teoh, Welch, Wong (1988b) and Teoh, Wong, and Rao (1998), which focus on post-IPO earnings management.

Among the literature that has mainly documented earnings management by U.S. IPO firms, Aharony, Lee, and Wong (2000) is exceptional in that they examined earnings management in the financial packaging of Chinese state-owned enterprises for public listing. By making comparisons with these earlier researches, the present study, which investigates whether Japanese IPO firms engage in earnings management, makes some contribution to enhancing international understanding of earnings management around the IPO.

Teoh, Welch, and Wong (1998b) and Teoh, Wong, and Rao (1998) also study the relationship between earnings management during the year of IPO and subsequent stock market performance. DuCharme, Malatesta, and Sefcik (2001) examine the association between earnings management just before IPO and initial firm value and subsequent stock return. How and Yeo (2001) explore the impact of forecast disclosure and its accuracy on the valuation of IPO firms. There remains ample room for investigating the stock market evaluation of earnings forecast disclosure and earnings management by Japanese IPO firms.

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Table 1

Sample Distribution

	Freq.	%		Freq.	%
Panel A: By Year of IPO					
1990	84	10.14	1995	136	16.43
1991	95	11.47	1996	111	13.41
1992	15	1.81	1997	100	12.08
1993	53	6.40	1998	62	7.49
1994	104	12.56	1999	68	8.21
			Total	828	100.00
Panel B: By Industry					
Foods	27	3.26	Precision Machinery	10	1.21
Textile	7	0.85	Other Manufacturing	36	4.35
Paper	4	0.48	Construction	50	6.04
Chemical	33	3.99	Trading	141	17.03
Pharmacy	8	0.97	Retail	91	10.99
Rubber	5	0.60	Other Finance	19	2.29
Ceramics	16	1.93	Real Estate	12	1.45
Steel	7	0.85	Land Transportation	14	1.69
Nonferrous Metals	26	3.14	Marine Transportation	3	0.36
Machinery	39	4.71	Warehouse	3	0.36
Electrical Equipment	62	7.49	Communications	5	0.60
Automobile	18	2.17	Gas	1	0.12
Other Transport	3	0.36	Service	188	22.71
			Total	828	100.00

Table 2

Characteristics of Japanese IPO firms

	Mean	Std. Dev.	Q1 [a]	Median	Q3 [a]
Total assets [b]	19.4705	64.4993	6.0835	9.9620	17.5248
Financial leverage [c]	0.6366	0.1699	0.5258	0.6539	0.7653
Return on assets [d]	0.1032	0.1034	0.0510	0.0841	0.1296
Firm age [e]	29.0975	13.5700	18.3322	27.5795	38.7945
Forecast horizon [f]	140.3104	70.8856	106.0000	152.0000	191.0000
Lead underwriter [g]	661 (79.8% of 828 IPO firms)				
Auditor [h]	597 (84.3% of 708 IPO firms)				

Sample consists of 828 IPO firms that went public in the JASDAQ during 1990-99, except for summary statistics of auditor by the following reason.

a Q1 and Q3 are the first and third quartiles of the distribution, respectively.

b Total assets is measured as the assets at the beginning of the fiscal year for which the IPO firm forecasts earnings (in billion yen).

c Financial leverage is measured as total liabilities divided by total assets, at the beginning of the fiscal year for which the IPO firm forecasts earnings.

d Return on assets is measured as earnings before extraordinary items and taxes deflated by lagged total assets, at the beginning of the fiscal year for which the IPO firm forecasts earnings.

e Firm age is measured as the number of years from the incorporation to the listing.

f Forecast horizon is measured as the number of days from the listing date to the fiscal year end when the IPO firm forecasts earnings, because I could not obtain the date in which managers forecast earnings or apply for listing.

g Lead underwriter is the number of firms that select a prestigious underwriter for a public offering. I consider the four largest Japanese brokerage firms to be prestigious.

h Auditor is the number of firms that select to be audited by a prestigious accounting firm. I consider the six largest Japanese accounting firms, which are affiliated with the international accounting firms called the Big 6, to be prestigious. I collected auditor data from the Summary of New Listing Firms only issued after August 1991, because such data was not provided before that year.

Table 3

Descriptive Statistics for Ordinary Least-Squares Estimation of the Accruals Model [a]

$$TAC = \beta_0 + \beta_1 \Delta ADJREV + \beta_2 PPE + \beta_3 \Delta CFO + \varepsilon$$

	N [b]	Mean	Std. Dev.	Q1 [c]	Median	Q3 [c]
Observations	330	71.8576	66.4368	19.25	43	114
b_0	330	0.0056	0.0351	-0.0076	0.0068	0.0217
t-statistic	330	0.5786	1.7738	-0.5239	0.5261	1.4957
b_1	330	0.0138	0.2802	-0.0594	0.0173	0.0841
t-statistic	330	0.2802	1.5281	-0.6698	0.2301	1.1800
b_2	330	-0.0636	0.0441	-0.0829	-0.0591	-0.0415
t-statistic	330	-2.8835	1.9528	-4.0872	-2.7821	-1.5060
b_3	330	-0.4827	0.1671	-0.5603	-0.4818	-0.4050
t-statistic	330	-7.1840	4.1344	-10.3915	-6.5594	-3.8074
adj. R^2	330	0.5166	0.1946	0.4295	0.5340	0.6152
F-statistic	330	29.0148	25.5875	8.5188	20.8580	44.1730

Variable definitions: TAC is total accruals, defined using a balance sheet approach (see equation 1); ΔADJREV is change in revenues (adjusted for change in receivables); PPE is gross property, plant, and equipment; ΔCFO is the change in cash flow from operations. I define operating cash flow as net earnings before extraordinary items minus total accruals. All variables are deflated by total assets at the beginning of the year. b_0, b_1, b_2, and b_3 denote estimated coefficients β_0, β_1, β_2, and β_3, respectively.

a Each of 23,713 sample firm-years is assigned to an estimation portfolio that consists of all non-initial IPO sample firms matched by year (judged from the beginning of the fiscal year) and two-digit Nikkei industrial code.

b Nihon Keizai Shimbunsya classifies 36 two-digit industrial codes. Of them, I do not estimate the accrual model for 6 industries, namely, banks, stock brokerage firms, and insurance companies in which data are not available, and 3 industries that have fewer than 10 observations. IPO firms in the final sample forecast their earnings for 11 years between 1989 and 1999 (judged from the beginning of the fiscal year).

c Q1 and Q3 are the first and third quartiles of the distribution, respectively.

Table 4

Management Forecast Errors and Discretionary Accruals

	N	Mean	Median	Std. Dev.
Panel A: Management Forecast Errors [a]				
All Samples	828	-0.0006	0.0011	0.0414
Portfolio 1	83	-0.0700	-0.0425	0.0839
2	83	-0.0162	-0.0165	0.0037
3	83	-0.0078	-0.0078	0.0016
4	83	-0.0029	-0.0028	0.0010
5	83	0.0002	0.0003	0.0007
6	83	0.0023	0.0022	0.0008
7	83	0.0058	0.0057	0.0010
8	83	0.0101	0.0099	0.0016
9	82	0.0178	0.0166	0.0035
10	82	0.0552	0.0420	0.0381

	N	Mean	p-value [c]	Median	p-value [c]	Std. Dev.	Positive	Negative
Panel B: Discretionary Accruals (DAC) [b]								
All Samples	828	0.0387	0.0000	0.0234	0.0000	0.1085	581	247
Portfolio 1	83	0.0544	0.0009	0.0413	0.0000	0.1539	63	20
2	83	0.0342	0.0077	0.0163	0.0005	0.1262	57	26
3	83	0.0330	0.0002	0.0199	0.0002	0.0804	58	25
4	83	0.0217	0.0001	0.0298	0.0005	0.0495	57	26
5	83	0.0236	0.0004	0.0182	0.0011	0.0612	56	27
6	83	0.0159	0.0108	0.0096	0.1899	0.0618	46	37
7	83	0.0122	0.0130	0.0113	0.0042	0.0491	54	29
8	83	0.0352	0.0000	0.0227	0.0000	0.0627	63	20
9	82	0.0402	0.0000	0.0320	0.0000	0.0885	62	20
10	82	0.1171	0.0000	0.0654	0.0000	0.2019	65	17

"All Samples" refers to 828 IPO firms that went public in the JASDAQ during 1990-99. Each firm is assigned to one of the decile portfolios, based on management forecast error. Portfolio 1 consists of firms having the largest negative forecast error, while Portfolio 10 consists of firms having the largest positive forecast error.

a Management forecast error is measured as the difference between reported earnings before extraordinary items and taxes and its forecasted number, deflated by lagged total assets.

b Discretionary accruals (DAC) is estimated as the accruals prediction error, i.e., the difference between total accruals and estimated non-discretionary accruals.

c One-tail p-value of a parametric t-test (non-parametric binominal sign test) for the null hypothesis that the mean (median) DAC is zero.

Table 5

Earnings Performance and Discretionary Accruals around the IPO

Year [a]	-3	-2	-1	0	1	2	3
Panel A: Return on Assets (ROA) [b]							
N	585	694	803	828	750	695	603
Mean	0.1037	0.1020	0.1129	0.1032	0.0769	0.0632	0.0541
Median	0.0667	0.0775	0.0882	0.0841	0.0633	0.0525	0.0434
Std. Dev.	0.2779	0.0920	0.0978	0.1034	0.0754	0.0738	0.0629
Positive	579	692	803	820	704	636	546
Negative	6	2	0	8	46	59	57
Panel B: Discretionary Accruals (DAC) [c]							
N	585	694	803	828	750	695	603
Mean	-0.0473	-0.0045	0.0005	0.0387	0.0318	0.0083	-0.0012
p-value [d]	0.1815	0.0832	0.4147	0.0000	0.0000	0.0026	0.2920
Median	-0.0032	-0.0009	0.0017	0.0234	0.0251	0.0039	-0.0003
p-value [d]	0.1235	0.2594	0.0790	0.0000	0.0000	0.0040	0.4353
Std. Dev.	1.2578	0.0863	0.0685	0.1085	0.0915	0.0785	0.0551
Positive	278	338	422	581	511	383	299
Negative	307	356	381	247	239	312	304

Sample consists of IPO firms that went public in the JASDAQ during 1990-99.

a Year 0 is relatively defined as the fiscal year for which the IPO firm forecasts earnings.

b Return on assets (ROA) is measured as earnings before extraordinary items and taxes, deflated by lagged total assets.

c Discretionary accruals (DAC) is estimated as the accruals prediction error, i.e., the difference between total accruals and estimated non-discretionary accruals.

d One-tail p-value of a parametric t-test (non-parametric binominal sign test) for the null hypothesis that the mean (median) DAC is zero.

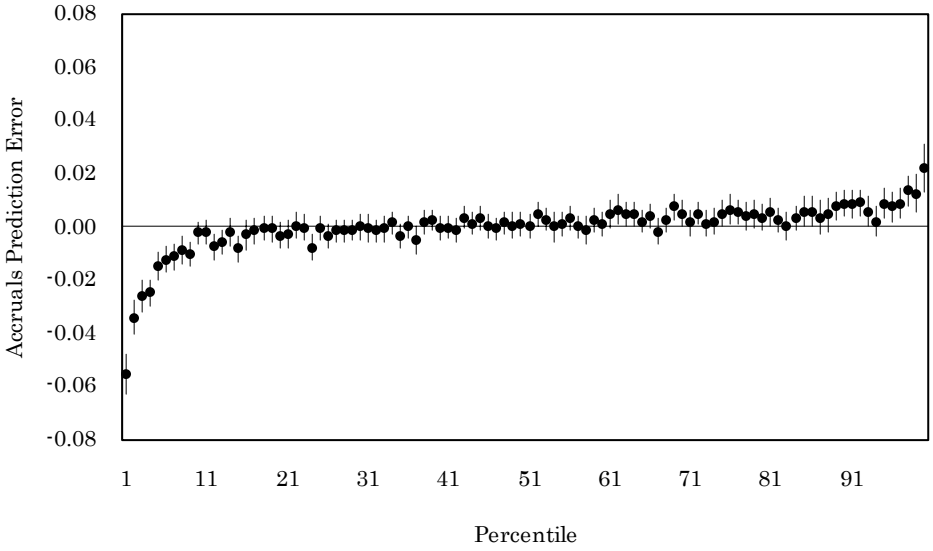

Figure 1. Ninety-five percent confidence intervals around mean accruals prediction errors for percentiles of 23,713 observations in the estimation sample from 1989-99. The accruals prediction error is measured for each observation as the difference between total accruals and the predicted value from the accruals model (see table 3 for model description and estimation specification). Percentile observations are ranked on earnings before extraordinary items and taxes deflated by lagged total assets.

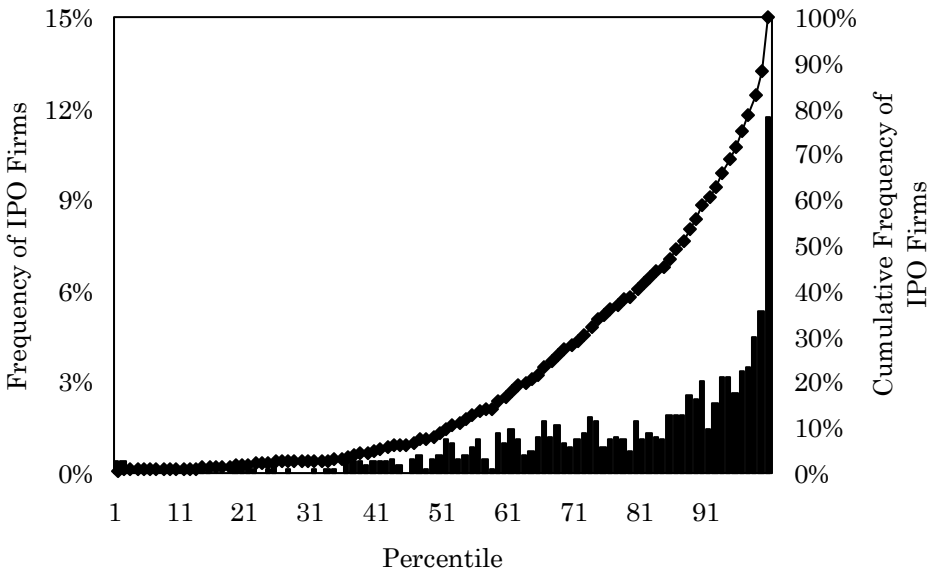

Figure 2. Frequencies and Cumulative Frequencies of 828 IPO firms matched with percentiles of 23,713 observations in the estimation sample from 1989-99 based on earnings before extraordinary items and taxes deflated by lagged total assets.

Table 6

Discretionary Accruals for Each of the Decile Portfolios Based on Management Forecast Error When Adjusted for Potential Measurement Errors of the Accruals Model

	N	Mean	p-value [b]	Median	p-value [b]	Std. Dev.	Positive	Negative
Adjusted Discretionary Accruals (ADJDAC) [a]								
All Samples	828	0.0338	0.0000	0.0190	0.0000	0.1071	557	271
Portfolio 1	83	0.0532	0.0011	0.0356	0.0000	0.1537	62	21
2	83	0.0308	0.0135	0.0161	0.0011	0.1247	56	27
3	83	0.0285	0.0007	0.0163	0.0005	0.0787	57	26
4	83	0.0188	0.0005	0.0268	0.0005	0.0497	57	26
5	83	0.0201	0.0015	0.0147	0.0042	0.0601	54	29
6	83	0.0118	0.0408	0.0084	0.1899	0.0609	46	37
7	83	0.0079	0.0719	0.0089	0.0241	0.0488	51	32
8	83	0.0301	0.0000	0.0178	0.0002	0.0615	58	25
9	82	0.0332	0.0005	0.0262	0.0003	0.0875	57	25
10	82	0.1039	0.0000	0.0532	0.0001	0.2010	59	23

"All Samples" refers to 828 IPO firms that went public in the JASDAQ during 1990-99. Each firm is assigned to one of the decile portfolios based on management forecast error, measured as the difference between reported earnings before extraordinary items and taxes and its forecasted number, deflated by lagged total assets. Portfolio 1 consists of firms having the largest negative forecast error, while Portfolio 10 consists of firms having the largest positive forecast error.

a Adjusted discretionary accruals (ADJDAC) is measured as the difference between the accruals prediction error (see tables 3 and 4) and the median accruals prediction error for a percentile group of 23,713 non-IPO firms matched with the sample observation on earnings before extraordinary items and taxes, deflated by lagged total assets.

b One-tail p-value of a parametric t-test (non-parametric binominal sign test) for the null hypothesis that the mean (median) ADJDAC is zero.

Table 7

Discretionary Accruals around the IPO
When Adjusted for Potential Measurement Errors of the Accruals Model

Year [a]	-3	-2	-1	0	1	2	3
Adjusted Discretionary Accruals (ADJDAC) [b]							
N	585	694	803	828	750	695	603
Mean	-0.0516	-0.0094	-0.0051	0.0338	0.0294	0.0074	-0.0017
p-value [c]	0.1610	0.0022	0.0177	0.0000	0.0000	0.0058	0.2198
Median	-0.0077	-0.0047	-0.0018	0.0190	0.0218	0.0033	-0.0010
p-value [c]	0.0015	0.0152	0.0900	0.0000	0.0000	0.0476	0.2843
Std. Dev.	1.2582	0.0865	0.0681	0.1071	0.0894	0.0768	0.0535
Positive	256	318	382	557	503	370	294
Negative	329	376	421	271	247	325	309

Sample consists of IPO firms that went public in the JASDAQ during 1990-99.

a Year 0 is relatively defined as the fiscal year for which the IPO firm forecasts earnings.

b Adjusted discretionary accruals (ADJDAC) are estimated as the difference between the accruals prediction error (see tables 3 and 5) and the median accruals prediction error for a percentile group of 23,713 non-IPO firms matched with the sample observation on earnings before extraordinary items and taxes, deflated by lagged total assets.

c One-tail p-value of a parametric t-test (non-parametric binominal sign test) for the null hypothesis that the mean (median) ADJDAC is zero.

[1] Japanese IPO firms tend to select the JASDAQ market more frequently than the Tokyo Stock Exchange (TSE), which is the largest stock market in Japan, probably because the former has less strict requirements for listing than does the latter. The TSE organized a new section named Mothers on November 1999, and a new market, NASDAQ Japan, was founded in June 2000. It is as easy to list in these new markets as in the JASDAQ, so IPO firms now select from among these three stock markets for listing.

[2] Teoh, Welch, and Wong (1998a), Rangan (1998), and Shivakumar (2000) examined earnings management around seasoned equity offerings (SEOs).

[3] I used the listing date to calculate the time horizon of the forecast because I could not obtain the date on which managers forecasted earnings or applied for listing.

[4] The requirement was checked using Kabuka CD-ROM (Japanese firms' stock price database) provided by Toyo Keizai Shimpousya.

[5] The explanatory power of this accruals model is similar to ones reported in Suda and Syutou (2001). The Jones model and modified Jones model have poor explanatory power in Japan, perhaps due to insignificant variable of change in revenues. According to Suda and Syutou, the mean (median) adjusted R^2 is 0.123 (0.061) in the Jones model and 0.122 (0.054) in the modified Jones model.

[6] Japanese IPO firms generally issue forecasts of sales, earnings before extraordinary items and taxes, net earnings, dividends, net earnings per share, and dividends per share. In this analysis, I focus on managers' forecasts of earnings before extraordinary items and taxes, which people generally regard as the most important measure of firm performance in Japan.

[7] Otogawa (2001) investigated bias and accuracy of management earnings forecasts issued by Japanese IPO firms and existing listed firms. While earnings forecasts of IPO firms are relatively pessimistic, listed firms are relatively optimistic. Moreover, IPO firms have more accurate earnings forecasts than do listed firms.

[8] In a two-sample t-test, the differences of discretionary accruals between portfolio 1 and portfolios 2 to 4 are significant at the level of 0.1783, 0.1317, and 0.0336, respectively.

[9] Because I did not have the data I needed for year 1 for 1999 IPOs, for year 2 for 1998 and 1999 IPOs, nor for year 3 for 1997 to 1999 IPOs, sample sizes are smaller in the post-IPO period. Some firms had incomplete data, especially for pre-listing years, or changed fiscal year end. Exclusion of these firms led to even smaller sample sizes in those cases.

[10] Year 0 as used here corresponds to year 0 as defined by Teoh, Welch, and Wong (1998b) and Teoh, Wong, and Rao (1998) in 780 of 828 IPO firms, and to year -1 in the other cases.

[11] For example, the mean (median) ROA, earnings before extraordinary items and taxes scaled by the lagged total assets, of the estimation sample is 0.0401 (0.0332).

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