AN EMPIRICAL STUDY OF GROWTH OPPORTUNITY AND EARNINGS MANAGEMENT OF JAPANESE FIRMS

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ABSTRACT

This paper examines the relationship between the level of investment opportunity sets and managers' accounting choices in Japanese firms from 1990 to 1998. Previously, studies of multinational American manufacturing and services firms found that, compared to low growth opportunity firms, high growth opportunity firms make accounting choices to reduce income and net worth.

This study utilizes similar research methodologies to provide information on earnings management practices in a Japanese context. Our results show that the changes in sales and the fixed asset balance are statistically significant in explaining the variation in accruals of Japanese companies. As expected, changes in sales have a positive relation with discretionary accruals, while fixed assets have a negative relation with discretionary accruals. The results of this study do not present a consistent negative relationship between high growth opportunities and earnings management as has been found in the U.S. Other studies of growth opportunity in international contexts have also had mixed results. These results suggest a need to first examine the correlation between common proxies for the investment opportunity set and future growth in the Japanese context. Additional studies should further examine the relation between investment opportunity, use of discretionary accruals to manage earnings, and the unique Japanese business environment.

INTRODUCTION

Managers in the U.S. are often considered more myopic than their Japanese counterparts because the Japanese corporate control structure eases short-term pressure from stakeholders (Morck & Nakamura, 1999). The Japanese corporate control system and the related financial and capital markets differ from those of the U.S. in many dimensions. For example, the main-bank system, cross-shareholdings (keiretsu), low-dividend payments, stable shareholding, focus on growth or market share, and long-term employment are common practices in Japanese firms (Suzuki & Wright, 1985; Ide, 1996; Kikuya, 2001). However, there is growing evidence that Japanese managers face short-term pressure similar to those in the U.S., especially after the stock market crash of 1991 (Mande, File & Kwak, 2000; Kaplan, 1994). Accordingly, an interesting empirical question is

whether Japanese mangers have motivations similar to those of their U.S. counterparts concerning earnings management and a short-term focus on profits even within different financial and capital market contexts.

Previous studies have used U.S. data to examine the relationship between the level of investment opportunity sets and managers' accounting choices. However, the results of empirical capital market studies (for example, Prowse, 1992; Rajan & Zingales, 1995; Fama & French, 1998) suggest that the Japanese business and accounting environments differ from those of the U.S. This paper expands the investment opportunity set literature by examining its linkage with managers' accounting choices in Japanese firms from 1990 to 1998. The results show that the relationship between growth opportunity and discretionary accruals is dependent on the proxy that is used to identify high and low growth opportunity firms. This mixed result is consistent with other studies of the investment opportunity set in an international context, suggesting the need for further research.

BACKGROUND

Growth opportunity includes opportunities to expand capacity, make new product introductions, acquire other firms, increase budgets for advertising, basic research and commercial development programs, and makes outlays for maintenance and replacement projects (Kester, 1984, p.154). The enhanced value of the firm and increased stock price can be realized by improving future investment opportunities (so-called growth opportunity).

Myers (1977) introduced the term investment opportunity set (IOS) referring to the extent the value of a firm depends on its future discretionary expenditures. This term refers to traditional investment opportunities, such as a newly invented energy efficient hybrid-car, but also to other discretionary expenditures, such as brand advertising, that are essential to the future success of the firm (Mason & Merton, 1985). Myers (1977) referred to these investment opportunities as call options, noting that their value is determined by the probability of exercise. In general, the firm's investment opportunity set depends on firm-specific factors, such as physical and human capital in place, as well as on industry-specific and macro-economic factors (Kallapur & Trombley, 1999). The firm's investment opportunity set consists of business projects, which allow the firm to grow. For this reason, the investment opportunity set can be understood as the growth prospects of the firm.

The value of a firm exceeds the value of tangible assets in use. AlNajjar and Riahi-Belkaoui (2001) propose that the rest of the firm's value is attributable to the value of future growth opportunity. Supposing that the market value of the firm is given, the less value attributed to assets in place, the more value attributable to growth opportunity. Therefore, as a firm's growth opportunities increase, the ratio of the value of assets to the market value of the firm decreases. However, even though the concept of growth opportunity is an important consideration in capital

budgeting and strategic planning, and in determining the value of the firm (Kester, 1984), it is inherently impossible to objectively measure (Gaver & Gaver, 1993).

Kallapur and Trombley (1999) identified three types of empirical proxies for IOS: price-based proxies, investment-based proxies, and variance measures. The price-based IOS proxy relies on the idea that the growth prospects of the firm are at least partially impounded in stock prices. Therefore, a firm having greater growth prospects will have higher market value, exceeding the value of assets in place. The conceptual basis of investment-based proxies is that a high level of investment activity is positively related to the investment opportunity set of the firm. Variance measures rely on the variability of returns on the increase of the underlying assets.

Price-based Investment Opportunity Set Proxies

Smith and Watts (1992) measured growth opportunity as the ratio of book value of assets to total market value of the firm (A/V). They argued that the higher the A/V ratio, the higher the ratio of the value of assets in place to the market value of a firm and the smaller the ratio of investment opportunity to firm value. Smith and Watts note a disadvantage of using the A/V ratio is that significant measurement error may occur when the firm has long-lived assets because these assets are measured at depreciated historical cost, rather than at market value, because the variable of interest is the actual value of the assets, not their depreciated cost. This means that error in the measurement of the value of long-lived assets may introduce measurement error in the residual measure, the investment opportunity. This problem could have been a more serious problem for Japanese firms due to the rapid inflation in Japanese land values during the 1980s. In addition, the A/V ratio also may introduce measurement error for highly leveraged companies because the relatively smaller owner's equity reduces the difference between the value of the assets in place and the market value (Gaver & Gaver, 1993). Despite these potential weaknesses, the A/V ratio is the most commonly used proxy.[1]

Another price-based measure of investment opportunity is the ratio of the market value of equity to the book value of equity (Collins & Kothari, 1989; Chung & Charoenwong, 1991). Collins and Kothari argue that the difference between the market value and the book value of equity roughly represents the value of investment opportunities of the firm. The market-to-book equity ratio depends on the extent to which the firm's return on its existing assets and expected future investments exceed its required rate of return on equity.

A third price-based measure of the investment opportunity set is the earnings/price (E/P) ratio (Chung & Charoenwong, 1991). Chung and Charoenwong modeled equity value as the sum of the capitalized value of earnings generated from assets in place plus the net present value of the firm's future investment opportunity. They showed that the larger the E/P ratio, the larger the proportion of equity value attributable to earnings generated from assets in place, relative to growth opportunities. However, the results of this analysis are partially driven by portfolio grouping

procedures. In addition, this analysis is only meaningful for companies with a positive earnings stream.

Investment-based Investment Opportunity Set Proxies

Kole (1991) used research intensity, or expenditures for research and development (R&D) divided by total assets, to proxy for growth opportunity. A related measure is the ratio of R&D expenditures to sales used by Skinner (1993). The higher the outlays for R&D, the greater the investment made by the firms in creating new products and potential barriers to entry. However, the disadvantage of these measures is that research and development is only one example of the vast array of discretionary expenditures available to support growth opportunity and is not relevant in many industries. Because of this, we do not utilize investment-based proxies for IOS in our study.

Variance-based Investment Opportunity Set Proxies

Christie (1989) uses variability of return measures to assess the magnitude of growth opportunity, focusing on revenue volatility. Conversely, Smith and Watts (1992) use the variance of the rate of return for the firm as an index of investment opportunities (Gaver & Gaver, 1993). Their rationale is that the value of any option is an increasing function of the variability of the underlying performance measures. We do not use the variability measures due to unique characteristics of the Japanese capital market, including thin trading, leverage, and the unsettlement caused by the stock market crash.

This study follows the price-based approaches (AlNajjar & Riahi-Belkaoui, 2001): the book value of assets to total firm value, the market value of equity to the book value of equity, and the earnings/price ratio. These ratios are used as proxies for the investment opportunity set due to their robustness and acceptance. Kallapur and Trombley (1999) found the price-based IOS proxies to have the highest correlation with future growth. These three proxies for the investment opportunity set are tested for correlation with earnings management practices in Japan.

Earnings Management

Earnings management is one of the most discussed issues in accounting. In the U.S., managers use discretion in making accounting policies and procedures choices. Japanese accounting and taxation rules permit many allowances and reserves (Jinnai, 1990), providing a ready mechanism for earnings management. Recent studies support the notion that Japanese managers smooth income. For example, Kaplan (1994) states that Japanese managers, like U.S. managers, focus on current earnings performance. This does not prove earnings management, but there are some factors that focus on current earnings in Japan lead to income smoothing behavior. Herman

and Inoue (1996) found that management bonuses in Japan were related to income smoothing. Bonuses are adversely affected if dividends are less than ¥5 per share or if income is less than dividends (Xu, 1997). Mande et al. (2000) found that Japanese firms adjust their R & D budgets to smooth profits. Therefore, the presence of earnings management, such as income smoothing practices, is expected in Japan.

Much of the evidence on earnings management suggests that it is more likely to be present when a firm's performance is either unusually good or unusually bad. Therefore, earnings management can be understood as a temporary, rather than chronic, adjustment in reporting. There are three approaches to evaluating the existence of earnings management (Beneish, 2001). One approach uses regression models to calculate expected and unexpected aggregate accruals. A second approach focuses on specific accruals such as the provision for bad debt, or on accruals in specific sectors, such as the claim loss reserve in the insurance industry. The third approach investigates discontinuities in the distribution of earnings. This study follows Jones (1991), which is widely used in studies of aggregate accruals. More detailed information will follow in the research design section.

Japanese Corporate Environment

Japan is the second largest economy in the world and Japanese corporations are actively involved in the world market. However, the social, economic and institutional environments in Japan differ significantly from those in the U.S. Since its market crashed in 1990, Japan has made efforts to raise its business environment to world standards. However, many characteristics of the Japanese economy differ from those of other westernized economies.

Darrough, Pourjalali and Saudagaran (1998) reviewed the accounting framework in Japan and its industrial groups, or keiretsu. The required conformity between tax reporting and financial reporting increases the cost of income increasing earnings management. Japanese accounting practices are largely subject to two legal frameworks: the Japanese Commercial Code and the Security and Exchange Law (Oguri & Hara, 1990). "Interestingly, the Commercial Code has a creditor (balance sheet) orientation, while the Securities and Exchange Law has an investor (income statement) orientation (Iqbal, 2002)." Recently, Japan has adopted international accounting standards to harmonize with global practices (Kikuya, 2001). However, there is a significant difference between Japan and the U.S. with respect to the accounting environment (Jinnai, 1990).

Tax law plays a distinctive role in Japanese financial reporting compared to its role in the U.S. For example, Corporation Tax Law and its related regulations specify the methods of recording various expenses and allowances, which would not be tax deductible in other countries. Because the marginal tax rate can exceed 50 percent in extreme situations, tax consideration is an important factor in the Japanese business environment (Darrough, Pourjalali & Saudagaran, 1998). Temporary differences between expenses for tax and financial purposes commonly occur in the U.S. However,

Japan requires conformity between tax and financial reporting. Due to that required conformity, higher reported earnings result in higher tax liabilities and, subsequently, in higher cash outflows. This in turn pressures Japanese managers to reduce reported earnings, rather than increase them, by recognizing the maximum expenses allowable for both purposes. While Japanese managers have motivation to increase reported earnings to increase their bonuses, the high level of conformity required between financial reporting and tax reporting generally reduces the opportunity and increases the cost to increase reported earnings (Oguri & Hara, 1990). Previous studies such as Ide (1996) have shown that Japanese managers tend to report lower net income.

The presence of industrial groups (keiretsu) reduces the need to increase reported income. A large parent firm controls many subsidiaries using cross-shareholding to increase its efficiency and effectiveness. Stable shareholders, such as main banks, other financial institutions and other companies within industrial groups, hold almost half of all outstanding shares (Ide, 1996). Currently, the top six industrial groups (Mitsui, Mitsubishi, Sumitomo, Fuji, Sanwa, and Dai-ichi Kangyo) produce approximately 25 % of the GDP in Japan (Darrough, Pourjalali & Saudagaran, 1998). The keiretsu practice in Japan insulates management from outside pressure. In addition, ownership is generally based on a long-term, strategic business relationship rather than an attempt to attain short-term capital gains. The practice protects against hostile takeovers because cross-shareholding within keiretsu reduces the portion of outstanding shares that are actually traded in the markets. Culturally, the Japanese corporate environment looks negatively on non-friendly mergers and hostile acquisitions, enabling the ownership structure to be more stable and predictable and reducing the pressure on managers to defend their position (Suzuki & Wright, 1985).

Japanese industrial groups enjoy a close relationship with a main-bank, the primary creditor for that group (Prowse, 1992). This close relationship between industrial groups and main banks allows the main bank to act as both a credit rating agency and a security analysis agency. The main bank monitors, screens and evaluates the performance of the industrial groups because the success or failure of the industrial group is directly related to that of the main bank. In addition, Japanese banks are likely to send their directors to debtor companies to resolve financial and earnings problems (Kaplan & Minton, 1994). Accordingly, the role of banks in Japan is not simply a lending service provider as in the U.S., but also is a proactive participant in the industrial group. Suzuki and Wright (1985) found that measures of a Japanese firm's social importance and its bank relationship may be more important for financially distressed firms than accounting information. This relationship between a firm and its main bank allows managers to focus on a long-term perspective.

The Japanese cultural preference for retaining ownership control explains why Japanese corporations historically have relied more heavily on debt rather than equity. According to McKinnon (1984), the typical debt ratio exceeded 80% in the 1980s, although the ratio is smaller now. For this reason, the equity market in Japan is less active and smaller than it might otherwise be.

Because of the active role of banks, cross-shareholding, and the relatively inactive equity market, Japanese managers do not have as much need or motive to disclose financial information to the equity market as do U.S. managers. Under this corporate environment, the ownership structure is more concentrated within management than in the U.S. and other Westernized economies. For this reason, financial statements are mainly prepared for reporting to other companies, financial institutions, and government rather than to individual investors.

Other unique features of the Japanese corporate environment are corporate governance and the role of labor unions. Due to cross-shareholding practices and insider board structures, the Japanese market for corporate control may be underdeveloped (Pochet, 2002). The stock price of the companies may not accurately represent the business performance because cross-shareholding within industrial groups reduces the trade volume of equity and because Japanese corporations rely heavily on debt. The role of the equity market is relatively small in Japan and the board members from related parties support management without fully exposing the firm to hostile intervention. Accordingly, when deciding accounting standards, Japanese corporate managers are not motivated to choose income increasing earnings management through accruals, which is the most common way to manage earnings (Ide, 1996).

In addition, Darrough et al. (1998) note that labor unions are organized within the firm and are associated with national industry unions. Labor unions negotiate their wages with each employer on an annual basis. During the negotiation, management has a negative perspective of labor unions. If reported earnings are less profitable, management will find it easier to negotiate contracts favorable to the employer. Darrough et al. (1998) demonstrated that Japanese managers tended to choose accounting accruals which reduce reported earnings in order to weaken the bargaining power of the labor unions.

The managers of Japanese companies could choose income-increasing accounting accruals to increase their bonuses and to increase their access to outside funding. However, according to the political cost hypothesis, high growth opportunity Japanese firms may choose income-decreasing accounting accruals to minimize tax liability and weaken the bargaining power of unions (Darrough, Pourjalali & Saudagaran, 1998). Japanese managers are subject to conflicting pressures, and it is unknown which will dominate in a particular instance.

RESEARCH DESIGN

This study examines the relationship between growth opportunity as reflected in the IOS and discretionary accruals. It adopts the methodology used by AlNajjar and Riahi-Belkaoui (2001), Jones (1991), and Cahan (1992) by estimating non-discretionary accruals by regressing total accruals on the changes in sales and on fixed assets. This technique leads to an estimate of discretionary accruals that is less biased and less noisy than earlier models. Furthermore, the approach eliminates the assumption that accruals remain stationary over time. The basic model is:

$$A_{it} = b_0 + b_1 \text{ CHASALES}_{it} + b_2 \text{ FIXASSETS}_{it} + e_{it} \quad (1)$$

where:
A_{it} = total accruals in year t /total assets$_{it}$,
CHASALES = (net sales$_{it}$ - net sales$_{it-1}$)/ TA_{it}^2,
FIXASSETS= fixed assets$_{it}$ / TA_{it}, and
e_{it} = error term or residual.

Total accruals are the sum of discretionary (DA) and nondiscretionary accruals (NDA). Like Cahan (1992) and Jones (1990), we define the estimated nondiscretionary accruals as:

$$NDA = b_0 + b_1 \text{ CHASALES}_{it} + b_2 \text{ FIXASSETS}_{it}$$

It then follows that e_{it} is the estimate of discretionary accruals. We believe that this measure of discretionary accruals should be relatively free of bias and noise.

We expand Model 1 by including an indicator variable to measure the discretionary accruals of high growth firms, as well as a control variable for total assets and dummy variables for each year of analysis. This expansion results in Model 2 which is used to test the effect of Investment Opportunity Set (IOS).

$$A_{it} = b_0 + b_1 \text{ CHASALES}_{it} + b_2 \text{ FIXASSETS}_{it} + b_3 \text{ IOS}_1 + b_4 \text{ TA}_{it} + b_5 \text{ YR}_t \ldots + b_{13} \text{ YR}_t + e_{it} \quad (2)$$

where:
A_{it} = total accruals in year t /total assets$_{it}$,
CHASALES = (net sales$_{it}$ - net sales$_{it-1}$)/ TA_{it},
FIXASSETS= fixed assets$_{it}$ / TA_{it},
IOS is the investment opportunity set indicator,
TA is total assets,
YR is a dummy variable for a year of analysis, and
e_{it} = error term or residual.

The expected sign of the coefficient for CHASALES is positive. It is expected to be negative for all other explanatory variables. The coefficient of IOS will be negative (positive) if managers lower (increase) accruals for high growth firms.

The sample consisted of Japanese companies in the PACAP database from 1990 to 1998. The majority of financial data were obtained from PACAP database, but other data were collected from Japan Company Handbook. All sample data were recorded in thousand Yen.

First, we began with 1,390 Japanese companies with complete financial data available for the 1990 to 1998 period. 1,390 Japanese companies produced 12,510 observations in the sample set. Financial institutions were excluded because their financial profile differs considerably from non-financial institutions. Firms from regulated industries were excluded because their managers are subject to different pressures than those of non-regulated industries. March 31 is the most common fiscal-year of Japanese companies. Non-March 31 fiscal-year companies were removed to eliminate noise due to different year ends. After excluding financial institutions, firms from regulated industries, and non-March 31 fiscal-year companies from the sample, 7,565 observations remained. Table 1 presents sample observations used in the test.

Table 1: Number of Sample Observations

Observations for the year 1990 and 1998 period	Firm years
after data adjustments	7,565
after excluding top and bottom 5% total assets	6,812
only including high IOS and low IOS	3,783
only including high IOS and low IOS excluding top and bottom 5% TA	3,407

Total accruals are calculated for each firm as defined in Models 1 and 2 using the same approach as AlNajjar and Riahi-Belkaoui (2001).

A_{it} = total accruals in year t / total assets it

$= [- DEP_{it} + (AR_{it} - AR_{it-1}) + (INV_{it} - INV_{it-1}) - (AP_{it} - AP_{it-1}) - (TP_{it} - TP_{it-1}) - DT_{it}] / TA_{it}$

where:

DEP_{it} = depreciation expense and the depletion charge for firm i in year t,
AR_{it} = accounts receivable balance for firm i, at the end of year t,
INV_{it} = inventory balance for firm i, at the end of year t,
AP_{it} = accounts payable for firm i, at the end of year t,
TP_{it} = taxes payable balance for firm i, at the end of year t,
DT_{it} = deferred tax expense for firm i at the end of year t, and
TA_{it} = total asset balance for firm i at the end of year t.

Then, to examine the relationship between the level of investment opportunity sets and managers' accounting choices on discretionary accruals, we utilized regression Model 2 as defined previously.

Consistent with Kallapur and Trombley (1999), three IOS proxies for growth opportunity were developed: Market-to-book assets (MASS), market-to-book equity (MV), and the earnings/price ratio (EP). The three proxies are calculated as follows:

MASS = [(assets - total common equity) + (shares outstanding x share closing price)] / assets,
MV = (shares outstanding x share closing price) / total common equity,
EP = primary EPS before extraordinary items / share closing price.

OS was treated as a dummy variable with 1 assigned to high growth opportunity companies and 0 to low growth opportunity companies. In addition, YRt, a dummy variable coded as 1 for year t to measure the time effect for each year of analysis (AlNajjar & Riahi-Belkaoui, 2001). The total assets of the firm, TAit, were included because "large firms are expected to make income decreasing choices relative to small firms (Christie 1990)."

RESULTS

The results of these measures of investment opportunity set were categorized under MASS, MV and EP, respectively. Based on these results, following AlNaijar and Riahi-Belkaoui (2001), we defined high growth firms as the top 25% of the distribution on a yearly basis, while we defined low growth firms as the bottom 25% of the annual distribution.

Next, nine years of individually-sorted samples were added together with dummy variables; 1 was assigned to the top 25% companies of the distribution and 0 was assigned to the bottom 25%. This reduced the 7,565 observations to two-tailed observations of 1,892 and 1,891. Therefore, the study tested the effect of the investment opportunity set on discretionary accruals with three distinctive IOS proxies, resulting in three approaches.

We performed sensitivity analysis by excluding the top and bottom 5% companies in terms of total assets. This process reduced the total observations of 7,565 to 6,812 observations. It also affected IOS proxies, meaning that the more extreme sample companies were excluded from testing. However, the more normal companies remain in the sample. For this reason, we report results based on a winsorized sample of 6,812 observations.[4]

Descriptive statistics for the three proxies of investment opportunity sets are presented in Table 2. High growth companies were the top 25% quartile in terms of market-to-book assets (MASS), market-to-book equity (MV), and the earnings/price ratio (EP). Low growth companies were the bottom 25% quartile using the three perspectives.

The MV and EP approaches resulted in similar data descriptions. As expected, high growth companies had larger total revenues, larger total assets, and even larger net profits than low growth companies. The sample had large standard deviations (not reported here). For this reason, we excluded the top and bottom 5% of observations to eliminate extreme observations. The resulting

standard deviations became distinctively smaller. The maximum, minimum and median measures of the observations were in a narrower range, as reported here.

Interestingly, the MASS approach provided a sample that differed from those of the MV and EP approaches. Low growth opportunity companies showed slightly larger total revenue and total asset variables, but lower net profits. The standard deviation was relatively small in the high growth sample although it was large in the low growth sample. After the top and bottom 5% observations were eliminated, standard deviations became distinctively smaller in each variable. Although the difference between high and low growth companies between means of each variable became smaller, low growth opportunity companies still had slightly larger total revenues and total assets.

The descriptive statistics presented in Table 2 provided a general view of the variables in the observations. High growth opportunity did not always mean higher numbers in financial statements because the size of companies was not comparable, and each firm was in a different stage of its development cycle. However, interestingly, high growth opportunity companies had larger net profits in comparison to low growth opportunity companies using all definitions of the investment opportunity set. The relative magnitude of total revenues and total assets differed depending on the definition of the investment opportunity set and whether the measure used was the mean or the median. The descriptive statistics of our samples also differ from those of AlNajjar and Riahi-Belkaoui (2001). Their sample showed that the high growth opportunity firms had greater total assets and lower net profits than the low growth opportunity firms, while the total revenue measures differed depending on whether the metric used was the mean or the median.

The results for the regression estimation of Model 1 are reported in Table 3. Both CHASALES and FIXASSETS are statistically significant as expected. The model is significant with an F value of 395.78 and an adjusted R^2 of 10.39 percent. As expected, both changes in sales and changes in fixed assets are statistically significant in explaining discretionary accruals. These results are similar to those provided by AlNajjar and Riahi-Belkaoui (2001)[5].

The results for Model 2 are reported in Tables 4, 5, and 6.[6] As was the case with Model 1, both CHASALES and FIXASSETS are statistically significant when using each of the three of IOS proxies. These results again indicate that the changes in sales are positively associated with discretionary accruals and changes in fixed asset balance are negatively associated with it.

Table 4 shows the results with IOS1 using the market-to-book asset ratio (MASS) as a proxy. The variable of interest, IOS1, is significant at the 0.01 level with a two-tailed test, and its sign is negative as expected. Because high growth opportunity is coded as 1, the negative sign of IOS indicates that discretionary accruals of high growth firms were lower than for low growth firms. Total assets is not statistically significant in this model. The time dummy variables generally show that the accruals in any specific year are significantly less than the accruals in 1990, except for 1991 and 1995. 1991 is the first year of the Japanese stock market crash and the results are not significant.

Table 2: Descriptive Statistics
Unit: 1,000 Yen

Variables	Mean	Standard Deviation	Maximum	Median	Minimum
IOS definition as MASS A.1. High Growth Sample, Obs = 1,704					
Total Revenues	132,166	161,948	1,395,359	72,761	5,332
Total Assets	152,583	169,437	943,991	82,984	10,910
Net Profit	9,450	15,829	150,528	4,076	(27,947)
B.1. Low Growth Sample, Obs = 1,703					
Total Revenues	153,234	217,546	2,263,587	79,047	3,331
Total Assets	154,849	180,787	913,534	80,544	10,589
Net Profit	2,386	6,081	51,333	1,274	(87,265)
IOS definition as MV					
A.2. High Growth Sample, Obs = 1,704					
Total Revenues	159,949	177,754	1,423,849	93,317	6,096
Total Assets	172,531	180,484	943,991	96,421	11,368
Net Profit	9,966	15,814	150,528	4,452	(27,947)
B.2. Low Growth Sample, Obs = 1,703					
Total Revenues	100,939	156,147	1,742,584	52,984	3,331
Total Assets	109,772	137,581	913,534	60,048	10,589
Net Profit	1,458	4,679	53,622	912	(87,265)
IOS definition as EP A.3. High Growth Sample, Obs = 1,704					
Total Revenues	143,879	198,507	2,263,587	75,959	5,038
Total Assets	145,847	173,075	933,242	75,493	10,366
Net Profit	6,736	11,594	150,528	6,460	178
B.3. Low Growth Sample, Obs = 1,703					
Total Revenues	100,557	118,908	784,946	53,816	3,331
Total Assets	117,703	137,735	911,762	59,838	10,589
Net Profit	(96)	4,935	29,683	124	(87,265)

*Highest and lowest quartiles with most extreme 5% of total firms winsorized.

Table 3: Results of Regression Estimation - Model 1
(Using dataset excluding top and bottom 5%)
$A_{it} = b_0 + b_1 CHASALES_{it} + b_2 FIXASSETS_{it} + e_{it}$

Independent Variables	Expected Sign	Coefficient	Standard Error	t Value	Pr > | t |
Intercept		-0.00309	0.0012	-2.58	<0.0099
CHASALES	+	0.08244	0.00489	16.85	<0.0001
FIXASSETS	-	-0.08822	0.00398	-22.15	<0.0001

n = 6,812
R^2 = 0.1041
Adjusted R^2 = 0.1039
F Value = 395.78
Probability <0.0001
Variable definitions:
A_{it} = total accruals in year t / total assets it
$= [- DEP_{it} + (AR_{it} - AR_{it-1}) + (INV_{it} - INV_{it-1}) - (AP_{it} - AP_{it-1}) - (TP_{it} - TP_{it-1}) - DT_{it}] / TA_{it}$
where:
DEP_{it} = depreciation expense and the depletion charge for firm i in year t,
AR_{it} = accounts receivable balance for firm i, at the end of year t,
INV_{it} = inventory balance for firm i, at the end of year t,
AP_{it} = accounts payable for firm i, at the end of year t,
TP_{it} = taxes payable balance for firm i, at the end of year t,
DT_{it} = deferred tax expense for firm i at the end of year t, and
TA_{it} = total asset balance for firm i at the end of year t.
$CHASALES = (\text{net sales}_{it} - \text{net sales}_{it-1}) / TA_{it}$,
$FIXASSETS = \text{fixed assets}_{it} / TA_{it}$,

Table 5 reports the results with IOS_2 using market-to-book equity (MV) ratio as the proxy. The changes in sales and fixed assets variables are significant and their signs are the same as IOS_1. However, IOS_2 is not significant and the sign is positive, which is not consistent with the results of IOS_1 or with expectations. Year-specific accruals are generally significant and consistent with the results of Table 4.

Table 4: Results of Regression Estimation - Model 2 with IOS_1
(Market-to-Book Assets)
$A_{it} = b_0 + b_1\ CHASALES_{it} + b_2\ FIXASSETS_{it} + b_3\ IOS_1 + b_4\ TA_{it} + b_5\ YR_t \ldots + b_{13}\ YR_t + e_{it}$

Independent Variables	Expected Sign	Coefficient	Standard Error	t Value	Pr > | t |
Intercept		0.01366	0.00431	3.17	<0.0016
CHASALES	+	0.0794	0.00789	10.06	<0.0001
FIXASSETS	-	-0.08596	0.006	-14.33	<0.0001
IOS_1	-	-0.00886	0.00213	-4.15	<0.0001
TA	-	3.64E-10	5.13E-09	0.07	<0.9435
YR91		-0.00454	0.00493	-0.92	<0.3571
YR92		-0.01417	0.0046	-3.08	<0.0021
YR93		-0.01373	0.00448	-3.07	<0.0022
YR94		-0.01308	0.00476	-2.75	<0.006
YR95		-0.00365	0.00443	-0.82	<0.4097
YR96		-0.01365	0.00462	-2.95	<0.0032
YR97		-0.01698	0.00455	-3.73	<0.0002
YR98		-0.02527	0.00465	-5.44	<0.0001

n = 3,407
$R^2 = 0.1183$
Adjusted $R^2 = 0.1152$
F Value = 37.96
Probability <0.0001
Variable definitions:
A_{it} = total accruals in year t / total assets it
$= [- DEP_{it} + (AR_{it} - AR_{it-1}) + (INV_{it} - INV_{it-1}) - (AP_{it} - AP_{it-1}) - (TP_{it} - TP_{it-1}) - DT_{it}\ ] / TA_{it}$
where:
DEP_{it} = depreciation expense and the depletion charge for firm i in year t,
AR_{it} = accounts receivable balance for firm i, at the end of year t,
INV_{it} = inventory balance for firm i, at the end of year t,
AP_{it} = accounts payable for firm i, at the end of year t,
TP_{it} = taxes payable balance for firm i, at the end of year t,
DT_{it} = deferred tax expense for firm i at the end of year t, and
TA_{it} = total asset balance for firm i at the end of year t.
CHASALES = (net $sales_{it}$ - net $sales_{it-1}$)/ TA_{it},
FIXASSETS= fixed $assets_{it}$ / TA_{it},
IOS_1= 1 if growth opportunities are high: 0 if they are low.
[(assets - total common equity) + (shares outstanding * share closing price)] / assets

Table 5: Results of Regression Estimation - Model 2 with IOS_2
(Market-to-Book Equity)
$A_{it} = b_0 + b_1\ CHASALES_{it} + b_2\ FIXASSETS_{it} + b_3\ IOS_2 + b_4\ TA_{it} + b_5\ YR_t \ldots + b_{13}\ YR_t + e_{it}$

Independent Variables	Expected Sign	Coefficient	Standard Error	t Value	Pr > | t |
Intercept		0.00694	0.00443	1.57	<0.1171
CHASALES	+	0.06828	0.00756	9.03	<0.0001
FIXASSETS	-	-0.07933	0.00627	-12.64	<0.0001
IOS_2	-	0.00295	0.00226	1.3	<0.1924
TA	-	-4.50E-09	5.64E-09	-0.8	<0.4251
YR91		-0.00601	0.00493	-1.22	<0.2235
YR92		-0.02038	0.00466	-4.37	<0.0001
YR93		-0.01603	0.00464	-3.45	<0.0006
YR94		-0.01798	0.00474	-3.79	<0.0002
YR95		-0.00421	0.00457	-0.92	<0.3573
YR96		-0.01458	0.00465	-3.13	<0.0017
YR97		-0.01366	0.00464	-2.94	<0.0033
YR98		-0.02394	0.00474	-5.05	<0.0001

n = 3,407
$R^2 = 0.1130$
Adjusted $R^2 = 0.1098$
F Value = 36.01
Probability <0.0001
Variable definitions:
A_{it} = total accruals in year t / total assets it
$= [- DEP_{it} + (AR_{it} - AR_{it-1}) + (INV_{it} - INV_{it-1}) - (AP_{it} - AP_{it-1}) - (TP_{it} - TP_{it-1}) - DT_{it}\ ] / TA_{it}$
where:
DEP_{it} = depreciation expense and the depletion charge for firm i in year t,
AR_{it} = accounts receivable balance for firm i, at the end of year t,
INV_{it} = inventory balance for firm i, at the end of year t,
AP_{it} = accounts payable for firm i, at the end of year t,
TP_{it} = taxes payable balance for firm i, at the end of year t,
DT_{it} = deferred tax expense for firm i at the end of year t, and
TA_{it} = total asset balance for firm i at the end of year t.
CHASALES = (net $sales_{it}$ - net $sales_{it-1}$)/ TA_{it},
FIXASSETS= fixed $assets_{it}$ / TA_{it},
IOS_2= 1 if growth opportunities are high: 0 if they are low.
(shares outstanding * share closing price)] / total common equity

Table 6: Results of Regression Estimation - Model 2 with IOS_3
(Earnings / Price Ratio)
$A_{it} = b_0 + b_1\ CHASALES_{it} + b_2\ FIXASSETS_{it} + b_3\ IOS_3 + b_4\ TA_{it} + b_5\ YR_t \ldots + b_{13}\ YR_t + e_{it}$

Independent Variables	Expected Sign	Coefficient	Standard Error	t Value	Pr > | t |
Intercept		0.0048	0.00566	0.85	<0.3963
CHASALES	+	0.06027	0.00754	7.99	<0.0001
FIXASSETS	-	-0.0816	0.00645	-12.66	<0.0001
IOS_3	-	0.01114	0.00202	5.51	<0.0001
TA	-	7.01E-09	6.01E-09	1.17	<0.2437
YR91		-0.00989	0.00664	-1.49	<0.1365
YR92		-0.01864	0.00618	-3.02	<0.0026
YR93		-0.01955	0.00608	-3.22	<0.0013
YR94		-0.0219	0.00606	-3.61	<0.0003
YR95		-0.00441	0.00612	-0.72	<0.4710
YR96		-0.01631	0.00604	-2.7	<0.0070
YR97		-0.02084	0.006	-3.47	<0.0005
YR98		-0.02962	0.00605	-4.9	<0.0001

n = 3,407
$R^2 = 0.1139$
Adjusted $R^2 = 0.1108$
F Value = 36.35
Probability <0.0001
Variable definitions:
A_{it} = total accruals in year t / total assets it
$= [- DEP_{it} + (AR_{it} - AR_{it-1}) + (INV_{it} - INV_{it-1}) - (AP_{it} - AP_{it-1}) - (TP_{it} - TP_{it-1}) - DT_{it}\ ] / TA_{it}$
where:
DEP_{it} = depreciation expense and the depletion charge for firm i in year t,
AR_{it} = accounts receivable balance for firm i, at the end of year t,
INV_{it} = inventory balance for firm i, at the end of year t,
AP_{it} = accounts payable for firm i, at the end of year t,
TP_{it} = taxes payable balance for firm i, at the end of year t,
DT_{it} = deferred tax expense for firm i at the end of year t, and
TA_{it} = total asset balance for firm i at the end of year t.
CHASALES = (net $sales_{it}$ - net $sales_{it-1}$)/ TA_{it},
FIXASSETS= fixed $assets_{it}$ / TA_{it},
IOS_3= 1 if growth opportunities are high: 0 if they are low.
Primary EPS before extraordinary items / share closing price

Table 6 presents the results with IOS3 utilizing the earnings/price (EP) ratio as a proxy. IOS3 is significant at the 0.01 level with a two-tailed test and its sign is positive. This result is contrary to findings using U.S. data. The other variables are significant and their signs are as expected. One reason for our unexpected result may be that the earnings/price ratio approach is only valid when net income is not negative. The 1990s' economic recession in Japan, when many companies reported negative income, may explain the unexpected regression result on IOS3. Our samples show that the E/P (IOS3) had the highest ratio of revenues to assets, followed by MV (IOS2) and then MASS (IOS1). However, E/P (IOS3) had the lowest ratio of net profits to revenues (assets), followed by MV (IOS2), and then MASS (IOS1). Kallapur and Trembley (1999) had similar results. They indicated a possible explanation for this result, "[A]lthough growth firms have fewer assets-in-place relative to firm values, those assets-in-place produce a higher income stream than those of non-growth firms: these two offsetting effects equalize the mean E/P ratios for growth firms and non-growth firms." In addition, total assets is not significant, therefore the sign is not reliable. Consistent with previous test results, year-specific accruals are generally significant.

SUMMARY AND CONCLUSIONS

This study examined whether managers of Japanese companies respond to the political costs associated with high level of growth opportunities by adjusting their discretionary accruals. The discretionary accruals of Japanese companies were examined over the 1990 to 1998 period, using the residuals of a fixed effects covariance model that regressed total accruals on the change in sales, the fixed assets balance, and a year dummy variable. We then examined the relation between accruals and high growth opportunity firms using three different proxies to define high growth opportunity firms. These results were mixed based on the IOS definition.

The mixed results may be interpreted in a number of ways. These findings are consistent with the mixed results in the limited number of international studies of IOS. These international studies used traditional proxies for IOS, similar to those used in this study. Cahan and Hossain (1996) found support for their hypotheses only among a sample of lower growth opportunity firms in a Malaysian context. Jones and Sharma (2001) failed to find the hypothesized relationship between IOS and low growth opportunity firms, but found those relationships in high growth firms in an Australian context. The mixed results may be related to how high growth opportunity firms are identified. They may also imply that there is not a set relation between common IOS measures and discretionary accruals in the Japanese economy.[7] All of the measures that we used to proxy for growth opportunity, as well as to measure discretionary accruals, are based on accounting measures. We suspect that our results may be driven by the differences in accounting rules between the United States and Japan. As noted previously, Ide (1996) found that Japanese managers tend to make income decreasing accruals. Leuz et al. (2001) analyzed earnings management across 31 countries over the 1990 to 1999 period. They developed two measures of earnings smoothing, as well as two

measures of earnings discretion. Both of their income smoothing measures indicated more smoothing in Japan than in the U.S. Similarly, both of their earnings discretion measures indicate greater discretion in earnings in Japan than in the U.S.

Additionally, there is no guarantee that the three proxies that we used properly reflect IOS. These proxies for IOS, as well as others, were developed in a U.S. context. Studies have not been conducted in the Japanese economy to determine which measures of the investment opportunity set correlate best with future growth. Accordingly, we do not know if the measures that we used accurately identified high growth opportunity firms.

Finally, the mixed results may be an artifact of the time period examined. During that time, the Japanese economy was in a severe recession and its stock market was in a severe downturn. Each of the proxies that we used to measure IOS was based on share prices which were depressed, and subjected to bear market psychology.[8] In addition, managers were liquidating assets in order to recognize the increase in value of assets that had occurred in previous years to partially offset the lower operating earnings that occurred in that period. Each of these actions could have adversely affected our results. Further research should expand the time period of investigation so that these possibilities could be examined.

Further research is needed in several other areas. First, various IOS proxies need to be examined to determine their relation with actual future growth of the firm. That would identify which if any of the measures are useful in a Japanese context. After that is accomplished, the relationship between Japanese IOS and corporate policies needs to be examined. This might include capital structure and dividend policy. Additional research should examine the relationship between IOS and the degree of influence of the main bank, the amount of external stockholdings, and the existence on management bonus and stock option plans.

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ENDNOTES

1. This is probably due to two factors. First, the A/V ratio is easy to compute. Second, among the common proxies for IOS, it has the highest correlation with future growth (Kallapur & Trombley,1999; Smith & Watts,1992).
2. We also used TA_{it-1} to scale the change in sales and fixed assets. The results are qualitatively similar to those presented in Tables 3 - 6, but are not presented here.
3. We include a dummy variable for the year of analysis following prior studies by Jones and Sharma (2001), Kallapur and Trombley (1999), and Riahi-Belkaoui and Picur (2001), who found varying associations between different IOS proxies and growth over time.
4. The full sample tests (not reported here) yielded qualitatively similar results.
5. We tested the Durbin-Watson statistic (DW=1.97) for the Model 1 and error terms are independent. Therefore, our model is reliable.
6. The tables and discussions regarding Model 2 present results using the winsorized data set. The results using the full data set (not reported here) are essentially the same.
7. Both Kallupur and Trombley (1999) and Jones and Sharma (2001) have noted inconsistencies in the IOS literature. They have questioned the robustness of some of the proxies for growth opportunity.
8. Riahi-Belkaoui and Picur (2001) found that high growth opportunity firms are "PE valued" while low growth opportunity firms are "dividend yield valued." The Japanese recession may have caused many of our sample firms to be dividend valued.