## Article

# Do Japanese Firms Manage Earnings in Response to Tax Rate Reductions in the Late 1990s?

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#### Abstract

This study investigates whether Japanese firms manage their book income in response to changes in the statutory rate of corporate income taxes. Prior studies examine book income or current accruals as the proxy for taxable income shifting. However, in the U.S., there are few direct links between taxable income and book income, which in turn might introduce significant errors into earnings management measures. Although we also focus on accounting accruals, the link between the two incomes in Japan is much more explicit, which enables us to examine taxable income shifting more directly. We find that there are significantly negative discretionary accruals for the years immediately preceding a tax rate reduction. These results show that Japanese firms manage their book income to minimize tax costs. This suggests that conforming the two incomes does not necessarily eliminate tax-induced earnings management, and therefore has very important implications for the recent debate over book-tax conformity.

#### Key Words

Earnings management, Tax rate reduction, Japanese firms

# 1990年代後半の税率引き下げに伴う経営者の裁量的行動

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#### <論文要旨>

本研究は、日本で1990年代後半になされた法人税率および事業税率の引き下げに伴い、経営者が税コスト削減のために、所得を税率の低い期間に移転させたかどうかを検証するものである。先行研究と同様に本研究でも裁量的会計発生高に焦点を合わせて分析を行うが、米国に比べて日本では会計利益と課税所得の結びつきが強いため、より直接的な検証が可能となる。分析の結果、税率引き下げの直前期に有意な負の裁量的会計発生高が生じていること等が明らかになる。これは税率引き下げに伴い日本企業の経営者が、税コスト削減のために所得移転を行ったという考え方と整合的である。本研究は、税率変更に伴う利益調整行動の追加的証拠を提供するとともに、会計利益と課税所得を一致させるという米国の議論に対して、両者を一致させることが必ずしも利益調整行動を抑制するわけではないという具体的な証拠を提供しているという点で貢献があると考えられる。加えて、分析結果は、税率変更により税収がどのように変化するかを見積もる政策担当者等に対しても有益な情報を提供すると考えられる。

<キーワード>

経営者の利益調整行動、税率引き下げ、日本企業

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## **1. INTRODUCTION**

This study investigates whether Japanese firms manage their book income in response to changes in the statutory rate of corporate income taxes.<sup>1)</sup> In Japan, the maximum corporation tax rate was reduced from 37.5 percent to 34.5 percent in 1998, and was reduced to 30.0 percent in 1999. In addition, the corporation enterprise tax rate was also reduced from 12.0 percent to 11.0 percent in 1998, and was reduced to 9.6 percent in 1999. Therefore, to minimize tax costs, managers likely have an incentive to defer income to the lower tax rate period.

There are some prior studies that investigate earnings management in response to changes in the statutory corporate income tax rate. Using samples of U.S. firms, Scholes et al. (1992) investigate earnings management in response to the Tax Reform Act of 1986. Guenther (1994) and Lopez et al. (1998) focus on discretionary current accruals based on the Jones model and modified Jones model, respectively. Maydew (1997) investigates income shifting by firms with net operating loss (NOL) carrybacks. Chung (1998) and Roubi and Richardson (1998) investigate earnings management in response to reductions in corporate tax rates in other countries, such as Canada, Malaysia, and Singapore. In general, these studies report that firms manage their book income to minimize tax costs. However, analysis based on book income or its components, not taxable income, might introduce significant errors into income tax shifting measures when book income does not correspondent with taxable income.

In Japan, the Business Accounting Council, an advisory board of the Minister of Finance, had set the Generally Accepted Accounting Principles (GAAP) to provide financial statements for outside stakeholders, such as investors and creditors.<sup>2)</sup> On the other hand, the tax return is submitted under the Corporation Tax Code to the National Tax Agency. It prescribes that except for particular provisions, taxable income should be based on revenues and expenses, which shall be computed in accordance with the GAAP (Article 22). It also provides that a domestic firm should prepare its tax return based on financial statements with approval by a general meeting of stockholders or board of directors (Article 74). That is, financial statements for outside stakeholders shall form the basis for determining taxable income. This means that Japan is an environment in which book income and taxable income correspond more highly compared with the U.S., and that it is much more difficult for Japanese firms to defer taxable income to the lower tax rate period without changing their book income. Although we also focus on accounting accruals, the book-tax conformity situation in Japan enables us to more directly examine taxable income shifting, compared with prior studies.

There is no academic evidence regarding how Japanese firms respond to changes in tax rates, except for Suzuki and Okabe (1998). They examine earnings management in response to reductions in the statutory corporation tax rate during 1989-1990, and find that more profitable firms tend to defer income to the lower tax rate period, compared with less profitable firms. In contrast, we investigate the tax rate reductions in 1998 and 1999. As the tax rate reductions in the late 1990s are much larger than in the late 1980s, managers would have stronger incentives for income tax shifting. We find that there are significantly negative

discretionary accruals for the years immediately preceding a tax rate reduction. These results, consistent with Guenther (1994) and Lopez et al. (1998), suggest that Japanese firms also manage their book income to minimize tax costs. We also provide moderate evidence that some firms tend to have more negative discretionary accruals to shift income to the future lower tax rate period. These firms are (1) smaller firms that face low political costs, and (2) lower leverage firms that are not concerned about covenant violations.

The expanding difference between the book income and taxable income is becoming a major concern in the U.S., because the difference may be caused by some misleading or even fraudulent activity on the part of firms in reporting book income, taxable income, or both (Hanlon and Shevlin 2005). One solution proposed is to conform the two incomes, and one of the claimed potential benefits of this solution is to reduce or eliminate earnings management.<sup>3)</sup> However, Erickson et al. (2004) demonstrate that there are some managers willing to pay taxes on the overstatement of book income. It means that the book-tax conformity does not entirely remove financial reporting-induced earnings management. In addition, by investigating tax income shifting of Japanese firms in a book-tax conformity context, we provide evidence that conforming of book and taxable incomes does not necessarily eliminate tax-induced earnings management. This evidence suggests that the above-mentioned benefit of conforming two incomes might not be realized as expected, and has very important implications for the recent debate over the expanding divergence between two incomes.

The remainder of this paper is organized as follows: in the next section, we provide a summary of tax rules in Japan. We then develop the hypotheses tested in this study, and describe the research design and the associated results. Finally, we present a summary and conclusion.

#### 2. TAX RULES IN JAPAN

In Japan, there are three types of tax imposed directly or indirectly on corporate taxable income (i.e., corporate income taxes). First, corporation tax is a national tax, and is computed by multiplying taxable income by a given rate  $(t_1)$ . Second, corporation inhabitants' tax is a local tax, and includes a prefecture tax and a municipality tax on corporations. It is computed by multiplying the amount of corporation tax, not taxable income, by a given rate  $(t_2)$ . Therefore, this is regarded as the tax imposed indirectly on taxable income. Third, corporation enterprise tax is also a local tax, payable by firms to benefit from public services such as the police and the road network. It is computed by multiplying taxable income by a given rate  $(t_3)$ .<sup>4</sup> The payment for corporation enterprise tax could be deductible to measure taxable income in the next year. Assuming no tax rate change and ignoring time value, the statutory integrated tax rate (t) that Japanese firms face is as follows:

$$t = t_1 + t_1 t_2 + t_3 - t_3 t$$
(1)  

$$(1 + t_3)t = (1 + t_2)t_1 + t_3$$
(2)  

$$t = \frac{(1 + t_2)t_1 + t_3}{1 + t_3}$$
(3)

The Japanese government revised tax rates in the late 1980s and in the late 1990s. In the top bracket, the corporation tax rate on retained earnings was reduced from 42.0 percent to 40.0 percent in 1989 and was reduced to 37.5 percent in 1990. In parallel, the tax rate on distributed earnings was increased from 32.0 percent to 35.0 percent in 1989 and was increased to 37.5 percent in 1990. As a result, since 1990, the differential tax rates in favor of dividends were abolished. That is, the same tax rate of 37.5 percent is applied to retained and distributed portions of earnings. The corporation enterprise tax rate and corporation inhabitants' tax rate remained unchanged. Suzuki and Okabe (1998) estimate the combined effect of those tax rate changes, in the case of a firm having a dividend payout ratio of 32.5 percent, to be only a net reduction of 0.375 percent in 1989 and 0.875 percent in 1990.

In contrast, the changes in tax rates in the late 1990s, which are examined in this study, have a much larger impact. In Japan, the corporation tax rate was reduced from 37.5 percent to 34.5 percent in 1998, and was reduced to 30.0 percent in 1999.<sup>5)</sup> In addition, the corporation enterprise tax rate was also reduced from 12.0 percent to 11.0 percent in 1998, and was reduced to 9.6 percent in 1999. Since corporation inhabitants' tax rate is constant at 17.3 percent, the integrated tax rate that Japanese firms face was 50.0 percent in 1997, 46.8 percent in 1998, and 40.9 percent after 1999. This results in a net reduction in the tax rates of 3.2 percent in 1998 and of 5.9 percent in 1999. Firms could reduce their tax costs by means of shifting taxable income from 1997 or 1998 to the later year.<sup>6)</sup> Therefore, to minimize tax costs, managers likely have a strong incentive to defer income to the lower tax rate period.

As described previously, the Japanese Corporation Tax Code requires that financial statements for outside stakeholders shall form the basis for determining taxable income. Japanese firms adopt the same depreciation method in measuring taxable income as one used in preparing financial statements. On the other hand, the Tax Code also plays the role of limiting the amount of book income. For example, it sets the maximum amount of depreciation expenses to be reported in the tax returns (Article 31). Even if depreciation expenses beyond the limit are recorded in the financial statements, the excess may not be charged-off against taxable income. Therefore, almost all Japanese firms employ useful lives and residual values set by the Tax Code to compute depreciation expenses in financial statements.

Yamashita and Okuda (2006) investigate the magnitude, trends, and source of book-tax income differences from 1991 to 2003 in Japan. They find that the difference between the two incomes was relatively small and extremely stable except for 1999 and 2000. There are large negative book-tax differences in these two years primarily because many firms reported huge amounts of special losses on unfunded post-retirement obligations, which are not deductible in the tax returns.<sup>7)</sup> They then indicate that these large differences are temporary, and that mean book-tax differences after 2000 are almost the same level as previous ones. These suggest that Japan is an environment in which book income and taxable income correspond more highly compared with the U.S.

There are two advantages to examining income tax shifting in the Japanese context. First, prior studies

in U.S., such as Scholes et al. (1992) and Guenther (1994) investigate book income or current accruals as the proxy for earnings management. But there are few direct links between taxable income and book income or its component in a U.S. institutional environment, which in turn might introduce significant errors into earnings management measures.<sup>8)</sup> Although we also focus on accounting accruals, it is expected that a measurement error would be smaller because it is much more difficult for Japanese firms to defer taxable income to the lower tax rate period without changing their book income. Second, as described previously, the expanding difference between the book income and taxable income is becoming a major concern in the U.S One solution proposed is to conform the two incomes, and one of the claimed potential benefits of this solution is to reduce or eliminate earnings management. However, there is little evidence suggesting whether this benefit can or cannot be realized as expected. By investigating tax income shifting of Japanese firms in a book-tax conformity context, we provide evidence that conforming book and taxable incomes does not necessarily eliminate tax-induced earnings management.

#### **3. HYPOTHESES DEVELOPMENT**

To detect earnings management, many studies focus on accounting accruals, which are the differences between book income and cash flow from operations. Although Healy (1985) uses total accruals to test his hypotheses, subsequent research attempts to separate them into two components: discretionary and non-discretionary accruals. Discretionary accruals are extensively used to demonstrate that managers have incentives to transfer their book income from one period to another. If managers use accounting accruals to defer taxable income, discretionary accruals in the years immediately preceding the tax rate reduction will be negative. Our first hypothesis is as follows: <sup>9)</sup>

H1: Firms will have negative discretionary accruals in the years preceding the tax rate reduction.

We also consider non-tax costs in discussing earnings management in response to changes in the statutory rate of corporate income taxes. Guenther (1994) separates non-tax costs into two types. One is direct costs of the actual deferral (e.g., the cost of dissatisfied customers; the costs associated with the acceleration of R&D projects). Guenther (1994) asserts that the first type of non-tax cost is not expected to differ cross-sectionally, and does not control it in the empirical tests. Following Guenther (1994), we also do not control it.

The other is costs that are associated with the reduction in book income caused by the deferral. Guenther (1994) includes political costs, cost of violating debt covenant restrictions, and costs associated with management compensation plans (e.g., Watts and Zimmerman 1986). The existence of these non-tax costs discourages firms and their managers to engage in tax-induced earnings management. For example, if politically sensitive firms aggressively shift their taxable income in response to tax rate reductions, they

might be inspected by tax authorities. Watts and Zimmerman (1978) suggest that the magnitude of political costs is highly dependent on firm size. Larger firms are more likely subject to political costs and thus more sensitive to political scrutiny. That is, it is less likely that larger firms defer income to save taxes. Alternatively smaller firms, facing low political costs, might have more negative discretionary accruals to shift income to the future periods. These arguments lead to the following hypothesis:

H2: Discretionary accruals in the years preceding the tax rate reduction will be positively related to firm size.

Accounting-based debt covenants are included in debt agreements to resolve potential conflicts between debtholders and stockholders. If a covenant is violated, lenders can require corporate borrowers to repay immediately, increase collateral or raise interest rate according to lending contracts. Beneish and Press (1993) show the technical violation of accounting-based covenants imposes substantial costs on borrowing firms. Because details of lending agreements are difficult to obtain, many researches use leverage as the proxy for closeness to bond covenants. Other research (e.g., Duke and Hunt 1990; Press and Weintrop 1990; Dichev and Skinner 2002) also indicates that leverage is positively, but not perfectly, correlated with the existence or tightness of debt constraints. Therefore, higher leverage firms, being close to covenant violation, are less likely to defer income to save taxes because deferring income reduces retained earnings and then increases the debt-equity ratio. Alternatively lower leverage firms, not being concerned about covenant violation, might have more negative discretionary accruals to shift income to future periods. Based on these prior researches, we test the following hypothesis:

H3: Discretionary accruals in the years preceding the tax rate reduction will be positively related to long-term debt levels.

Jensen and Meckling (1976) analyze the impact of managerial ownership on conflicts between managers and stockholders. Through explicitly connecting management compensation to accounting earnings reported in the income statement, bonus schemes are a popular means in the U.S. of alleviating their conflict. Bonus schemes are not common in Japan, but there is an implicit link between accounting performance and management compensation. Kaplan (1994) demonstrates that the relationship between firm performance and top management cash compensation in large Japanese companies is generally economically and statistically similar to those in their U.S. counterparts. However, although tax savings benefit shareholders who have residual claims, managers with none or only a little ownership might have a disincentive to defer income in response to a tax rate reduction. This is because income-decreasing earnings management reduces their compensation unless the compensation committee in the board of directors

entirely adjusts it for lower earnings resulting from managers' tax-saving activities. As managerial ownership rises, potential conflicts of interest between managers and stockholders are resolved. Firms with higher managerial ownership might have more negative discretionary accruals to shift income to future periods. This leads to the following hypothesis:

H4: Discretionary accruals in the years preceding the tax rate reduction will be negatively related to levels of manager ownership.

#### 4. RESEARCH DESIGN

#### 4. 1. Discretionary Accruals Measure

Total accruals are defined as the difference between book income and cash flow from operations. Guenther (1994) and Lopez et al. (1998) both examine current accrual components of total accruals, because non-current accrual components (e.g., depreciation expenses) are not expected to have an impact on taxable income. But the Japanese Corporation Tax Code requires that financial statements for outside stakeholders shall form the basis for determining taxable income. For example, almost all Japanese firms adopt the same depreciation method in measuring taxable income as the one used in preparing financial statements. It suggests that non-current accruals could also affect taxable income. To test our hypotheses, we analyze total accruals instead of current accruals.

Although Hribar and Collins (2002) suggest that using balance sheet data introduce substantial measurement errors into accruals estimates, in this study, the statement of cash flow is not available over the entire sample period.<sup>10)</sup> We define total accruals ( $ACC_{\mu}$ ) as follows:<sup>11)</sup>

 $ACC_{ii} = \Delta Current \ Assets_{ii} - \Delta Cash_{ii} - \Delta Current \ Liabilities_{ii} + \Delta Current \ Maturities \ of \ Long \ - Term \ Debt_{ii} + \Delta Income \ Taxes \ Payable_{ii} - Depreciation_{ii},$ 

where the change ( $\Delta$ ) is computed from year t to year t-1.

Following prior research, we focus on discretionary accruals, not total accruals, as a proxy for earnings management. Discretionary accruals are computed by subtracting non-discretionary accruals from total accruals. DeAngelo (1986, 1988) assumes that the current period's non-discretionary accruals are equal to the last period's total accruals. Okabe and Suzuki (1998) are based on the DeAngelo model to measure non-discretionary accruals. However if non-discretionary accruals change from period to period, the model tends to measure them with an error. It is unlikely that the level of non-discretionary accruals is constant over time. For example, a firm must constantly increase the investment in merchandise inventories to maintain sales growth. That is, the level of non-discretionary accruals might be dependent on changes in a firm's economic circumstances. To control these effects on non-discretionary accruals, Jones (1991) describes them as a function of the change in revenue and the level of gross property, plant, and equipment. Guenther (1994)

(4)

uses the Jones model to estimate non-discretionary accruals. But managerial discretion could be exercised over revenues by accelerating credit sales with questionable customers or changing the timing of sales shipments. In this case, the Jones model results in the estimate of earnings management being biased toward zero. Dechow et al. (1995) propose that one should adjust the sales revenue variable for the change in account receivables. They then provide the evidence that among these methods, a modified version of the Jones (1991) model is the most powerful in detecting earnings management. Similar to Lopez et al. (1998), we estimate the following modified Jones model to measure non-discretionary accruals:

$$\frac{ACC_{it}}{A_{it-1}} = \beta_{1i} \frac{1}{A_{it-1}} + \beta_{2i} \frac{(\Delta SALES_{it} - \Delta AR_{it})}{A_{it-1}} + \beta_{3i} \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it},$$
(5)

where  $\Delta SALES_{it}$  is the change in sales for firm i from year t to year t-1,  $\Delta AR_{it}$  is the change in accounts receivable for firm i between year t and t-1, and  $PPE_{it}$  is gross property, plant, and equipment for firm i in year t. All variables are deflated by the beginning-of-the-year total assets  $(A_{it-1})$  to reduce heteroscedasticity. The parameters  $(\beta_{1i}, \beta_{2i}, \text{ and } \beta_{3i})$  of equation (5) are estimated using a separate OLS regression for each sample firm over the thirteen-year estimation period from 1983 through 1995.<sup>12)</sup> Then, these parameters are used to derive estimated non-discretionary accruals for the four-year prediction period

Prediction year	Definition	Corporation tax rate	Corporation inhabitants' tax rate <sup>a</sup>	Corporation enterprise tax rate	Integrated tax rate $(t)^{b}$				
1996	The taxable year that begins between April 1, 1996 and March 31, 1997	37.5 %	17.3 %	12.0 %	50.0%				
1997	The taxable year that begins between April 1, 1997 and March 31, 1998	37.5 %	17.3 %	11.0 %	50.0%				
1998	The taxable year that begins between April 1, 1998 and March 31, 1999	34.5 %	17.3 %	9.6 %	46.8%				
1999	The taxable year that begins between April 1, 1999 and March 31, 2000	30.0 %	17.3 %	9.6 %	40.9%				

	TABL	E 1		
rediction	Years	and	Tax	Rate

р

<sup>a</sup> As Corporation inhabitants' tax and corporation enterprise tax might be different among local government, the standard tax rate is shown.

<sup>b</sup> Integrated tax rate ( $\boldsymbol{t}$ ) is computed as follows:

$$=\frac{(1+t_2)t_1+t_3}{1+t_3}$$

t

where  $t_1$  is a corporation tax rate,  $t_2$  is a corporation inhabitants' tax rate, and  $t_3$  is a corporation enterprise tax rate.

from 1996 to 1999 as indicated in table 1. Discretionary accruals for firm i in the prediction year p are the prediction error  $u_{ip}$  computed as follows:

$$u_{ip} = \frac{ACC_{ip}}{A_{ip-1}} - \left(b_{1i}\frac{1}{A_{ip-1}} + b_{2i}\frac{\left(\Delta SALES_{ip} - \Delta AR_{ip}\right)}{A_{ip-1}} + b_{3i}\frac{PPE_{ip}}{A_{ip-1}}\right),\tag{6}$$

where  $b_{1i}$ ,  $b_{2i}$ , and  $b_{3i}$  are OLS estimates of  $\beta_{1i}$ ,  $\beta_{2i}$ , and  $\beta_{3i}$ , respectively.

#### 4.2. Empirical Model

To test our hypotheses, we use the following multiple regression model with the prediction error from equation (6) as the dependent variable:

$$u_{ip} = \gamma_0 + \gamma_1 SIZE_{ip} + \gamma_2 LEV_{ip} + \gamma_3 MGT_{ip}, \qquad (7)$$

where  $SIZE_{ip}$  is an indicator variable, which is equal to 1 if firm i's sales for 1997 are in the highest quartile and 0 otherwise.<sup>13) 14)</sup>  $LEV_{ip}$  is equal to the book value of long-term debt divided by total assets for firm i for each prediction year p.  $MGT_{ip}$  is the percentage of outstanding stock owned by officers for firm i for each prediction year p. Our main hypothesis (H1) predicts that  $\gamma_0$  is significantly negative for 1997 and 1998.<sup>15)</sup> Under hypotheses H2 and H3, we expect that  $\gamma_1$  and  $\gamma_2$  are significantly positive. It is expected that  $\gamma_3$  is significantly negative if hypothesis H4 is correct.

#### 4.3. Sample and Data

We start the sample selection with 4,774 firms (other than banks, stock brokerage firms, and insurance companies) covered on the 2003 edition of Nikkei NEEDS Corporation Financial Data. From this initial sample, we exclude firms that do not meet at least one of the following criteria:

- (1) The firm has listed on one of the Japanese stock exchanges over the sample period from 1983 through 1999 (3,275 firms)<sup>16)</sup>
- (2) The firm has not changed its fiscal year-end during the sample period (487 firms)
- (3) The firm has not been engaged in a merger or spin-off during the sample period (132 firms)
- (4) The financial data necessary to compute total accruals and other variables are available during the sample period (6 firms)

As indicated by table 2, this procedure retains 874 firms in the sample. Guenther (1994) is concerned that the reduction of tax rates might create little incentive for income shifting among the firms that, in the year immediately preceding the reduction, (a) have NOL or (b) are subject to the Alternative Minimum Tax (AMT). And he takes the additional step of removing such firms from his sample in order to increase the power of the empirical tests. However because there is no AMT in Japan, the identification and removal of firms subject to AMT is unnecessary. We could not identify if a firm has NOL or not. But when a firm has taxable income of ¥40 million and more, its amount becomes available to us. To limit the following analyses

to firms that have sufficient incentives for tax-related earnings management, we also remove firms that do not meet the following criterion:

(5) The firm reports taxable income of ¥40 million and more in both 1997 and 1998 (374 firms)

This results in a final sample of 500 firms.

#### TABLE 2

#### **Sample Selection**

Initia than	al sample obtained from Nikkei NEEDS Corporation Financial Data (other banks, stock brokerage firms, and insurance companies)	
	······································	4,774
(1)	The firm has listed on one of the Japanese stock exchanges over the	
.,	sample period from 1983 through 1999	3,275
(2)	The firm has not changed its fiscal year-end during the sample period	
. ,		487

- (3) The firm has not engaged in a merger or spin-off during the sample period 132
- (4) The financial data necessary to compute total accruals and other variables are available during the sample period
- The firm reports taxable income of ¥40 million and more in both 1997 (5) and 1998 374 Final sample 500

#### **TABLE 3**

#### Summary Statistics for Time Series Regressions (n=500)

Model: $\frac{ACC_{ii}}{ACC_{ii}} =$	$B \xrightarrow{1} B$	$(\Delta SALES)$	$S_{ii} - \Delta AR_{ii}$	$\beta \frac{PPE_{it}}{PPE_{it}}$	÷c	
$A_{it-1}$	$\int_{\mu_{ii-1}}^{\mu_{1i}} A_{\mu_{ii-1}} \int_{\mu_{ii-1}}^{\mu_{ii-1}} A_{\mu_{ii-1}}$	<sup>2i</sup> A	<i>it</i> –1	$P_{3i}$ $A_{it-1}$		
	Mean	10%	25%	Median	75%	90%
Estimated $\beta_{1i}$	-6122.909	-9676.775	-2963.255	-369.594	882.926	4198.774
t-stat.	-0.232	-1.814	-1.013	-0.255	0.540	1.268
Estimated $\beta_{2i}$	-0.025	-0.411	-0.196	-0.037	0.104	0.356
t-stat.	-0.275	-1.880	-1.120	-0.213	0.556	1.374
Estimated $\beta_{3i}$	0.026	-0.187	-0.097	-0.030	0.040	0.236
t-stat.	-0.501	-2.054	-1.166	-0.392	0.329	1.097
Adjusted R <sup>2</sup>	0.295	-0.163	-0.001	0.256	0.582	0.828
Durbin Watson Stat.	2.209	1.442	1.785	2.209	2.637	2.996

 $ACC_{ii}$  = total accruals for firm i in year t;  $A_{ii-1}$  = total assets for firm i in year t-1;  $\Delta SALES_{ii}$  = sales in year t less sales in year t-1 for firm i;  $\Delta AR_{it}$  = accounts receivable in year t less accounts receivable in year t-1 for firm i;  $PPE_{it}$  = gross property, plant, and equipment for firm i in year t. The total accruals are defined as follows:

$$ACC_{ii} = \Delta Current Assets_{ii} - \Delta Cash_{ii} - \Delta Current Liabilities_{ii}$$
  
+  $\Delta Current Maturities of Long - Term Debt_{ii} + \Delta Income Taxes Payable- Depreciation_{ii},$ 

where the change ( $\Delta$ ) is computed between year t and t-1.

#### **5. EMPIRICAL RESULTS**

#### 5. 1. Descriptive Statistics

Summary statistics from estimating equation (5) for each sample firm are presented in table 3. The modified Jones model has a moderate explanatory power; the mean (median) adjusted  $R^2$  is 0.295 (0.256). Based on Durbin Watson Statistics, the autocorrelation of residuals does not appear to be a serious problem.

Table 4 provides descriptive statistics and correlation matrices of each variable by prediction year. Mean (median) discretionary accruals ( $u_{ip}$ ) are -0.006 (-0.006) in 1997 and -0.007 (-0.006) in 1998, which are all significantly different from zero. As also seen in figure 1, before controlling for the effect of three non-tax costs, these discretionary accruals in the years immediately preceding tax rate reduction (i.e., 1997 and 1998) are negative, relative to those in other years (i.e., 1996 and 1999). This result is consistent with hypothesis H1.

#### 5. 2. Multivariate Regression Model

Table 5 reports the OLS estimation results of equation (7) for each prediction year. <sup>17)</sup> In estimating equation (7), we delete the highest and lowest 1 percent of observations for each continuous variable. The sample size in each prediction year is 473 firms in 1996 and 1997, and 471 firms in 1998 and 1999.<sup>18)</sup> The adjusted  $R^2$  for 1996, 1997, 1998, and 1999 are -0.002, 0.001, 0.035, and -0.001, respectively. The largest adjusted  $R^2$  is 1998, that is, the year preceding the tax rate reduction. The F statistic for the regression model is only significant at the 0.01 level in 1998.

Figure 2 presents the estimated intercept ( $\gamma_0$ ) of the regression model for each prediction year. This shape is almost the same as the one in figure 1. After controlling for the effect of size, leverage, and management ownership, the intercepts for 1997 and 1998 are negative and statistically significant. These results are consistent with hypothesis H1 that firms have negative discretionary accruals to reduce taxable income in the years immediately preceding the tax rate reduction. This result shows that Japanese firms manage their book income to minimize tax costs, although the reduction in the tax rate is smaller than the Tax Reform Act of 1986 in the U.S. This result is also consistent with the assertion that Japanese firms report book income while paying attention to the Tax Code.

The coefficients on SIZE are positive and significant in 1997 as predicted. This suggests that the smaller firms have more negative discretionary accruals in the year preceding the tax rate reduction. However, this coefficient is positive but insignificant in 1998. These results are weakly consistent with hypothesis H2. <sup>19)</sup> The coefficient on *LEV* is positive and significant in 1998 as predicted, suggesting that the lower the firm's long-term debt level, the more managers choose income-decreasing discretionary accruals. However, this coefficient is positive but insignificant in 1997. These results are weakly consistent with hypothesis H3. <sup>20)</sup> Finally, the coefficient on *MGT* is positive and significant in 1998, which is not consistent with the prediction of hypothesis H4. In summary, these results basically support the hypothesis

Tanoras Descriptive Statistics for each prediction year (1-500)								
Year	Variable	Mean		Media	un	Std. Dev.	Minimum	Maximum
1004	SIZE	0.250		0.000	0.000		0.000	1.000
	LEV	0.187		0.154		0.151	0.000	0.829
1770 Integrated Tay Date	MGT	0.026		0.005		0.058	0.000	0.720
50.0%	u <sub>ip</sub>	0.000		0.002		0.069	-0.531	0.455
50.070	t-stat. (z-stat.)	-0.011		0.175				
	p-value.	0.991		0.861				
	SIZE	0.250		0.000		0.433	0.000	1.000
1007	LEV	0.189		0.150		0.156	0.000	0.822
1777 Integrated Tay Date	MGT	0.024		0.005		0.057	0.000	0.724
	u <sub>ip</sub>	-0.006	*	-0.006	**	0.064	-0.290	0.485
50.070	t-stat. (z-stat.)	-1.911		-2.449				
	p-value	0.057		0.014				
	SIZE	0.250		0.000		0.433	0.000	1.000
1009	LEV	0.199		0.160		0.158	0.000	0.823
1770 Integrated Tay Date	MGT	0.022		0.005		0.052	0.000	0.725
A6.8%	u <sub>ip</sub>	-0.007	***	-0.006	***	0.062	-0.252	0.451
40.070	t-stat. (z-stat.)	-2.627		-3.196				
	p-value	0.009		0.001				
	SIZE	0.250		0.000		0.433	0.000	1.000
1000	LEV	0.200		0.172		0.156	0.000	0.772
I777 Integrated Tay Pata	MGT	0.022		0.005		0.052	0.000	0.725
	u <sub>ip</sub>	-0.003		0.002		0.073	-0.352	0.698
TU.970	t-stat. (z-stat.)	-0.818		0.640				
	p-value	0.414		0.522				

# TABLE 4 ª Descriptive Statistics and Correlation Matrix Panel A: Descriptive Statistics for each prediction year (n=500)

#### Panel B: Pearson Correlation Matrix for 1997 (n=500)<sup>b</sup>

	SIZE	LEV	MGT	u <sub>in</sub>
SIZE	1.000			······································
LEV	0.122	1.000		
MGT	-0.150	-0.114	1.000	
u <sub>ip</sub>	0.064	0.038	0.083	1.000

 $SIZE_{ip} = 1$  if firm i's sales for 1997 are in the highest quartile, and 0 otherwise;  $LEV_{ip} =$  the book value of long-term debt divided by total assets for firm i for prediction year p;  $MGT_{ip} =$  the percentage of outstanding stocks owned by officers for firm i for prediction year p;  $u_{ip} =$  the prediction error for firm i for prediction year p.  $u_{ip}$  is computed as follows:

$$u_{ip} = \frac{ACC_{ip}}{A_{ip-1}} - \left(b_{1i}\frac{1}{A_{ip-1}} + b_{2i}\frac{\left(\Delta SALES_{ip} - \Delta AR_{ip}\right)}{A_{ip-1}} + b_{3i}\frac{PPE_{ip}}{A_{ip-1}}\right),$$

where  $ACC_{ip}$  = total accruals for firm i in year p;  $A_{ip-1}$  = total assets for firm i in year p-1;  $\Delta SALES_{ip}$  = sales in year p less sales in year p-1 for firm i;  $\Delta AR_{ip}$  = accounts receivable in year p less accounts receivable in year p-1 for firm i;  $PPE_{ip}$  = property, plant, and equipment for firm i in year p. The total accruals are defined as follows:

$$\begin{split} ACC_{ip} &= \Delta Current \ Assets_{ip} - \Delta Cash_{ip} - \Delta Current \ Liabilities_{ip} \\ &+ \Delta Current \ Maturities \ of \ Long - Term \ Debt_{ip} + \Delta Income \ Taxes \ Payable_{ip} \\ &- Depreciation_{ip}, \end{split}$$

where the change (  $\Delta$  ) is computed between year p and p-1.

<sup>b</sup> We do not present correlation matrices for 1996, 1998 and 1999 because they are essentially the same as the one reported for 1997.

\*, \*\*, \*\*\* Significant at 10%, 5%, and 1% levels, respectively, using two-tailed t-test or Wilcoxon signed-rank tests.



FIGURE 1 Mean (Median) Discretionary Accruals ( $u_{ip}$ ) for Each Prediction Year p

The data points in this figure reflect mean and median of discretionary accruals ( $\mu_{ip}$ ) shown in table 4.

that managers in Japanese firms defer their income in response to changes in the statutory rate of corporate income taxes, to minimize tax costs.

#### 5. 3. Additional Tests

By considering that non-current accruals could affect taxable income in Japan, we use discretionary total accruals to test our hypotheses in the previous section. But prior research such as Guenther (1994) and Lopez et al. (1998) analyze discretionary current accruals. As a sensitivity check, we compute discretionary current accruals by regressing current accruals on a change in sales adjusted for accounts receivable. The results are almost the same as those reported in table 5. However, the estimated intercept of the regression model in 1999, is now significantly negative at the 0.05 level.

If managers use negative discretionary accruals to defer taxable income in the year preceding the tax rate reduction, it should be expected that they use positive ones to realize tax-savings after the tax rate reduction. But we do not find significant accruals reversal around the tax rate change. As described above, there are large negative book-tax differences in 1999 due to very poor accounting earnings. Dechow et al. (1995) and Kasznik (1999) indicate that a measurement error in the estimation of discretionary accruals is correlated with a firm's performance, in that firms with low (high) earnings tend to have negative (positive) prediction errors of the accruals model. To assess this potential bias in the main results, we first repeat the previous analyses after deleting loss firms in each prediction year from 1996 to 1999. Although mean (median) discretionary accruals in 1999 are positive, that is, 0.002 (0.005), the estimated intercept of the

# TABLE 5 Multivariate OLS Regression of Prediction Errors (Discretionary Accruals) on Explanatory Variables<sup>a</sup>

Year	γ <sub>0</sub>		$\gamma_1$		$\gamma_2$		γ <sub>3</sub>		Adjusted R <sup>2</sup>
1996 (50.0%)	-0.001		0.003		0.010		-0.064		-0.002
t-stat. (F stat.)	-0.212		0.527		0.562		-0.925		(0.639)
p-value	0.832		0.598		0.574		0.355		0.590
1997 (50.0%)	-0.011	**	0.010	*	0.008		0.033		0.001
t-stat. (F stat.)	-2.365		1.776		0.500		0.475		(1.186)
p-value	0.019		0.076		0.617		0.635		0.315
1998 (46.8%)	-0.026	***	0.007		0.064	***	0.159	**	0.035
t-stat. (F stat.)	-5.713		1.243		3.967		2.210		(6.674)
p-value	0.000		0.215		0.000		0.028		0.000
1999 (40.9%)	-0.004		0.004		0.009		-0.096		-0.001
t-stat. (F stat.)	-0.854		0.651		0.468		-1.178		(0.896)
p-value	0.394		0.515		0.640		0.240		0.443

Model<sup>b</sup>:  $u_{ip} = \gamma_0 + \gamma_1 SIZE_{ip} + \gamma_2 LEV_{ip} + \gamma_3 MGT_{ip}$ 

<sup>a</sup> In estimating the regression model, we delete the highest and lowest 1 percent of observations for each continuous variable. The sample size varies in each prediction year; it is 473 firms in 1996 and 1997, and 471 firms in 1998 and 1999.

<sup>b</sup> SIZE  $_{ip} = 1$  if firm i's sales for 1997 are in the highest quartile, and 0 otherwise;  $LEV_{ip} =$  the book value of long-term debt divided by total assets for firm i for prediction year p;  $MGT_{ip} =$  the percentage of outstanding stocks owned by officers for firm i for prediction year p;  $\mu_{ip} =$  the prediction error for firm i for prediction year p.  $\mu_{ip}$  is computed as follows:

$$u_{ip} = \frac{ACC_{ip}}{A_{ip-1}} - \left(b_{1i}\frac{1}{A_{ip-1}} + b_{2i}\frac{\left(\Delta SALES_{ip} - \Delta AR_{ip}\right)}{A_{ip-1}} + b_{3i}\frac{PPE_{ip}}{A_{ip-1}}\right)$$

where  $ACC_{ip}$  = total accruals for firm i in year p;  $A_{ip-1}$  = total assets for firm i in year p-1;  $\Delta SALES_{ip}$  = sales in year p less sales in year p-1 for firm i;  $\Delta AR_{ip}$  = accounts receivable in year p less accounts receivable in year p-1 for firm i;  $PPE_{ip}$  = property, plant, and equipment for firm i in year p. The total accruals are defined as follows:

$$\begin{split} ACC_{ip} &= \Delta Current \ Assets_{ip} - \Delta Cash_{ip} - \Delta Current \ Liabilities_{ip} \\ &+ \Delta Current \ Maturities \ of \ Long \ - \ Term \ Debt_{ip} + \Delta Income \ Taxes \ Payable_{ip} \\ &- \ Depreciation_{ip}, \end{split}$$

\*, \*\*, \*\*\* Significant at 10%, 5%, and 1% levels, respectively, using a two-tailed test.

regression model remains negative, but not statistically significant. The other results are essentially the same as those reported in table 4 and 5. Kothari et al. (2005) demonstrate that relative to the Jones and modified Jones models, performance-matched discretionary accruals are well specified and powerful under most circumstances. They also propose to include a constant term when estimating the Jones and modified Jones models because doing so serves to further mitigate model misspecification. We next re-estimate the equation (5) by adding constant term and current return on assets (ROA) as independent variables. Mean (median) performance-matched discretionary accruals in 1999 are positive, that is, 0.012 (0.004), and the estimated intercept in the equation (7) is insignificantly positive. The other results are basically the same as those



The data points in this figure reflect the estimated intercept ( $\gamma_0$ ) of regression model shown in table 5.

reported in table 4 and 5. These results suggest that negative discretionary accruals after the tax rate reduction are partially due to a poor accounting performance and temporarily enlarged book-tax differences, which are induced by a new accounting standard for post-retirement benefits.

#### 6. CONCLUSION

We investigate whether Japanese firms manage their book income in response to the statutory tax rate reductions in 1997 and 1998. The empirical results indicate that there are significantly negative discretionary accruals for the years immediately preceding the tax rate reduction, suggesting that managers in Japanese firms defer their income in response to changes in the statutory rate of corporate income taxes to minimize tax costs. These main results are consistent with Guenther (1994) and Lopez et al. (1998). In addition, we also provide moderate evidence that smaller firms, facing low political costs, and lower leverage firms, not being concerned about covenant violation, tend to have more negative discretionary accruals to shift income to the future periods. However, the hypothesis is not supported that firms with higher managerial ownership have more negative discretionary accruals.

This study contributes to a growing stream of research that investigates the behavior of managing earnings in response to tax rate changes. The results of this study, which is designed to show how managers respond to tax rate changes, should provide useful information to tax policy makers (e.g., in estimating changes in tax revenues as a result of revised tax rates). A finding that managers reduce income in the year immediately preceding a tax rate reduction should also provide useful information to capital market participants. More importantly, this study also has significant implications for discussion on the proposal to conform book income and taxable income. By investigating tax income shifting in Japan where book income and taxable income correspond more highly compared with the U.S., we provide evidence that conforming book and taxable incomes does not necessarily eliminate tax-induced earnings management.

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#### NOTES

- 1) In Japan, there are three types of tax imposed directly or indirectly on corporate taxable income. First, corporation tax is a national income tax on corporations. Second, corporation inhabitants' tax, which includes a prefecture tax and a municipality tax on corporations, is a local tax. Third, corporation enterprise tax is also a local tax, and payable by firms to benefit from public services such as the police and the road network. We use the term "corporate income taxes" as an aggregate of these three taxes.
- 2) On July 2001, the Accounting Standards Board of Japan (ASBJ), which is a private sector entity, was founded to replace the Business Accounting Council.
- 3) For example, Murray observes that "The gap can and should be narrowed. ... The result would be a stronger incentive for companies to tell it like it is. If executives want to overstate income to fool shareholders, they'll pay higher taxes as a result. If they are attempted to understate income in order to escape taxes, they'll suffer with their shareholders. That kind of a change in incentives would do far more to clean up corporate accounting than any amount of regulatory over sight."(*The Wall Street Journal* October 8, 2002, A5 "Narrowing Tax Gap Should Be Priority Of Next Congress").
- Although these two local tax rates might be different among local governments, we use the standard tax rate to develop our discussion.
- 5) The tax rate of 34.5 (30.0) percent is effective for taxable years beginning on or after April 1, 1998 (1999). Unlike the Tax Reform Act of 1986 in the U.S., the Japanese Corporation Tax Code didn't provide transitional rules that the tax rate for the transitional year is equal to a weighted average of the new rate and old rate.
- 6) For example, if a firm shifts \$1 of taxable income from 1997 to the next year and if the discount rate is 10 percent, then the firm can reduce its tax costs from \$0.5 to \$0.425.
- 7) In Japan, a new accounting standard for post-retirement benefits, similar to the Statement of Financial Accounting Standard No. 87, became effective from the fiscal year beginning after April 1, 2000. Moreover many firms voluntarily accounted for unfunded post-retirement obligations in the year just before its enforcement.
- 8) The exception is the LIFO conformity rule, which requires the use of LIFO for financial reporting purposes if adopting it for

tax purposes.

- 9) As noticed by an anonymous referee, some simultaneous macro-economics events, other than the tax rate change, might potentially have considerable impacts on our empirical analyses. Although it is very difficult to specify them entirely, an example would be the introduction of new accounting standard for post-retirement benefits. In this respect, our accruals measure does not include the change in allowance for post-retirement benefits. Moreover we perform some additional tests to carefully explore its effects on the main results.
- 10) Japanese firms are required to prepare the statement of cash flow for the fiscal years beginning after April 1, 1999.
- 11) According to Guenther (1994), the change in taxes payable is subtracted from the calculation of total accruals in equation(4). The reason is because we are concerned with management of pretax income rather than net income.
- 12) As an anonymous referee indicates, it contains the tax rate reduction period in the late 1980s. To check this effect on empirical results, we repeat the following analyses after excluding two years immediately preceding tax rate reduction (1988 and 1989) from the estimation period. The results are not entirely changed.
- 13) Zimmerman (1983) indicates that political costs do not increase in firm size monotonically, but that a group of the largest firms have higher political costs than other firms.
- 14) In redefining SIZE variable based on the beginning-of-the-year total assets, the following results are not entirely changed.
- 15) As an anonymous referee points out, in 1998 in which tax rate was reduced to 34.5 percent, some managers might have another incentive to realize tax-savings through positive accruals. But it is against finding significantly negative  $\gamma_0$  in 1998 as expected.
- 16) To identify if a firm has listed over the sample period, we use the 2003 edition of the Stock Price CD-ROM provided by TOYO KEIZAI INC.
- 17) In estimating equation (7), we also use rank regression, which does not necessarily assume the linear relationship between dependent and independent variables. All independent variables, excluding dummy ones, are ranked smallest to largest, and then converted to percentiles, defined as  $(\operatorname{rank} 1)/(\operatorname{number}$  of observations 1). This procedure yields the percentile of the observation's rank so that lowest-ranking observation receives a zero and the highest-ranking observation receives a one. The OLS regression is estimated using the percentiles as independent variables. The basic results are basically the same, except that the intercept in 1997 is insignificant and that the coefficient on MGT in 1999 is now significantly negative.
- 18) We also repeat the following analyses without eliminating those extreme observations. The main results, not reported, are qualitatively the same.
- 19) In using the alternative SIZE variable, which is equal to 1 if firm i's sales and return on assets (ROA) for 1997 are both in the highest quartile and 0 otherwise, the estimation results are the same, except for significantly positive coefficient on SIZE in 1998. ROA is defined as current net earnings, divided by the beginning-of-the-year total assets.
- 20) In using the alternative LEV variable, which is equal to 1 if firm i's long-term debt ratio are in the highest quartile and 0 otherwise, we can obtain the same results, except that the coefficient on LEV is now significantly positive at the 0.10 level in 1997.

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