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Corporate Governance Issues regarding Transfer Pricing Taxation: Evidence in Japan

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Abstract

This study focuses on a transfer pricing taxation (TPT) action as one of corporate governance issues. TPT is a tool for preventing the manipulation of transfer pricing. We investigate which factors affect corporate valuation, using a sample of Japanese companies to which TPT was unintentionally applied. With this regard, we put emphasis on the role of corporate governance for the preparation against a risk event. In addition, we attempt to determine what kinds of corporate governance structure are most likely to prepare for an unexpected TPT inspection. As a result of our examination, we find that the association of the directors' shareholding ratio (DIR) with the cumulative abnormal rate of return (CAR) is statistically significant. We also find that this relation has both a hump and a negative hump, which implies that it is a cubic function. Based on these results, we conclude that a DIR of about 5% is the optimum ratio for a firm facing an emergency situation, and this shows some implications about what kinds of corporate governance structure.

Keyword: alignment effect, entrenchment effect, CAR, nonlinear relation, directors' shareholding ratio

1. Introduction

While we have seen some governance issues arising from the separation of ownership and control in previous papers, it is not surprising that the form and structure between the performance of firms and managerial ownership has been the subject of empirical research (for example, see Morck, Shleifer, and Vishny, 1988; McConnell and Servaes, 1990, 1995; Krole, 1995). However, some questions remain. When a firm faces a risk event, such as an earthquake, hurricane, or other unexpected and damaging event, how should their valuation be determined?

This paper focuses on a transfer pricing taxation (TPT) action as a risk event. TPT is explained as a tool for preventing transfer pricing manipulation. In the current world economy, the presence of multinational firms (MNFs) has been increasingly so significant, that they create a phenomenal increase in their intrafirm transactions (Matsui, 2011). The United Nations Conference on Trade and Development (UNCTAD, 1996) shows one-third of all international trade occurs within MNFs, and naturally this is greater in some individual countries. Since transfer pricing affects the economic welfare of a country as well as corporate tax revenue, governments in a free economy pay significant attention to the transfer price (Matsui, 2011). However, tax authorities frequently encounter difficulties when auditing internal transfer prices, because MNFs have a strong incentive for tax evasion, manipulating transfer prices to retain as much profit as possible in a division located in a low-tax jurisdiction. To cope with this problem, tax authorities in countries within the Organization for Economic Co-operation and Development (OECD) are supposed to audit multinational transfer prices to determine whether they meet the *arm's length standard*: the transfer price is equal to the price at which two independent firms would trade (here, *independent* means that they are not controlled by the same MNF). In short, transfer pricing taxation is a system that controls the separation between domestic and foreign income. However, we posit that not every firm that is charged with a violation of transfer pricing laws is intentionally attempting to avoid a tax burden. In some such cases, a company might accidentally trigger an inspection by the tax authority, including an imposition of a penalty tax and an additional administrative procedure.

The objective of this study is to determine what types of corporate governance structure are most likely to result in an unexpected TPT action. We find that the association of the directors' shareholding ratio (DIR) with the

cumulative abnormal rate of return (CAR) is statistically significant. In addition, we find that this relation has both a hump and a negative hump, which implies that there is a cubic relation between DIR and CAR.

There are a few studies that have shown a nonlinear relation between DIR and CAR (e.g., Morck et al. 1988, McConnell and Servaes 1990, Slovin and Sushka 1993, and Shuto, 2010). In addition, Kim and Lu (2011) investigate the effects of the interaction between managerial ownership and risk-taking attitudes, such as the effects on research and development (R&D) activities.

In most of these previous studies, the typical dependent variable measuring corporate performance was the return on equity (ROE), return on assets (ROA), or Tobin's Q (e.g., Hu and Izumida 2008); however, in this study, we take CAR as the dependent variable. This is our main contribution to the study of the relation between corporate emergencies and the strength of corporate governance. We posit that when an emergent event is announced somewhere in the press, this attracts the attention of investors, and therefore, this is the time when the market reaction is the strongest. Furthermore, we infer that when there are reports about corporate affairs, people should pay attention to the corporate governance structure. Our evidence induced by the analysis suggests that due to the cubic relation, the DIR should be approximately 5% in order that the structure of the organization can appropriately handle a corporate emergency.

This paper is organized as follows. Section 2 reviews previous papers, and discusses the basis for interpreting the market reaction to the various events, and presents our hypothesis. Section 3 explains our data and research design. Section 4 presents our empirical results. Section 5 presents additional analyses, and Section 6 shows the suggestion and conclusion of this paper.

2. Prior Research and Development of Our Hypothesis

Kim and Lu (2011) show the interactive effects of two extensively governance instruments: managerial ownership as an internal mechanism, and external governance system as an external mechanism. They demonstrate the interactive effects of these mechanisms on shareholder value, and they examine R&D activities to recognize the canals in which the joint effects occur.

Hanlon and Slemrod (2009) analyze the influence of news releases about international tax shelter involving tax haven activities, tax avoidance announcement and something like that. They find that investors' reactions were significantly negative when the news releases were about companies using tax shelters; , they show that a company's stock price declines on average, when it is informed that they are involved in using tax shelters. (Note 1)

Armstrong, Barth, Jagolinzer, and Riedl (2010) examine European stock market reactions to 16 events associated with the adoption of International Financial Reporting Standards (IFRS) in Europe. Finally, Armstrong et al. (2010) find positive reaction to IFRS adoption events for firms with high-quality pre-adoption information, consistent with investors expecting that there would be net convergence benefits from the adoption of the IFRS.

Ohnuma, Sakurada, and Kato (2012) investigate 46 examples of newspaper reports of TPT actions against companies between June 15, 1989, and June 18, 2010, and they conduct an event study of these examples. Consistent with Hanlon and Slemrod (2009), Ohnuma et al. (2012) evaluate the abnormal rate of return (AR) in the days surrounding a press release about a TPT violation, and they determine that it is negative and statistically significant. This suggests that investors consider these press releases to be destructive to the value of the firm, and they view a TPT violation as a serious concern for the future stability of that firm.

Kato, Ohnuma, and Sakurada (2015) investigate a further 51 examples of newspaper reports of TPT actions against companies between June 15, 1989 and February 23, 2012, and they conduct an event study of the market reactions again. Kato et al. (2015) rely on the results of Ohnuma et al. (2012), but they examine whether the market reaction (especially the AR and CAR) to a TPT violation differs according to the quality of corporate governance and intangible assets. They employ the ordinary least-squares regression to examine which factors in the firms affected the CAR. The result in this paper shows a statistically significant positive relation of the CAR with intangible assets, the effective tax rate, and a couple of variables related to corporate governance.

Further, we note that Sakurada and Ohnuma (2015) examine the hypothesis that the investors' reaction to a TPT announcement depends on the corporate governance situation. Their analysis is based on Kato et al. (2015), and they investigate the influence of governance structure on investors' reactions to TPT reports; some of the corporate governance variables are found to be statistically significant.

The effect of managerial share ownership on a firm's value is a contentious issue. Earlier studies by Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990) document a hump-shaped relation between Tobin's Q and insider share ownership. They argue that at low levels, stock ownership improves the alignment of

managerial incentives with shareholder values, but beyond a certain threshold, entrenchment effects dominate. This causal interpretation has been challenged by a number of authors, who argue that managerial ownership is endogenous, and the hump-shaped relation is spurious. In a widely-cited study, Himmelberg, Hubbard, and Palia (1999) show that when one controls for firm fixed effects, the total combined insider share ownership of all directors and officers has no identifiable impact on Tobin's Q.

While Himmelberg et al. (1999) investigate the effect of insider share ownership, we focus on the share ownership of the corporate directors. We assume that if insider ownership has any identifiable effect on the value of a firm, the impact should be visible in the effect due to the directors' share ownership. We note that Morck et al. (1988) estimate a piecewise-linear relation between the board ownership and Tobin's Q. They find that Tobin's Q increases and then decreases as managerial ownership increases. McConnell and Servaes (1990) examine a data set included in the Fortune 500 firms, and they find an inverted U-shaped relation between Q and managerial ownership, with an inflection point between 40% and 50% ownership. (Note 2) McConnell and Servaes (1990, 1995), Slovin and Sushka (1993), and Daines (2001) show nonlinear relations between managerial ownership and the firm's value. These studies are generally interpreted the positive relation at low levels of managerial ownership as evidence of incentive alignment, and the negative relation at high levels of managerial ownership as evidence that the managers become entrenched and can indulge in non-value-maximizing activities without being disciplined by shareholders.

McConnell and Servaes (1995) regress Tobin's Q against managerial ownership and managerial ownership squared, and find that the coefficient on managerial ownership is positive and statistically significant, but that the coefficient on managerial ownership squared is negative and statistically significant. This suggests that the relation between managerial ownership and the value of the firm is curvilinear, as the value of the firm first increases and then decreases as ownership becomes concentrated in the hands of managers. Specifically, a positive relation between the performance of firms and managerial ownership exists for managerial ownership positions between 0% and approximately 40% to 50%; this is consistent with incentive alignment at relatively low levels of ownership. These findings, therefore, differ from those of Morck et al. (1988), who find that entrenchment occurred when ownership was in the range of 5% to 25%. Moreover, McConnell and Servaes (1995) are unable to replicate Morck et al.'s specific empirical findings using piecewise regression techniques. In addition, McConnell and Servaes (1995) replicate their earlier study over a later time period and reported similar results.

Short and Keasey (1999) extend the previous analysis to the UK, where there are important differences from the governance system used in the US. They showed how differences in the corporate governance system of the UK, as compared to the US, may impact the relation between the performance of a firm and its managerial ownership. Short and Keasey (1999) imply that key differences between the corporate governance systems of the US and UK lead to managers' entrenchment at a higher level of ownership in the UK. Some of the reasons for this suggestion are that in the UK, managers do not have the same freedom as their US counterparts to mount takeover defenses, and institutional investors in the UK are more able to co-ordinate their monitoring activities. In addition, they present empirical results that show a cubic relation between performance and managerial ownership exists for both market and accounting measures of performance. Their results from an extended analysis, which considered different measures of firm performance and a more generalized form of the relation, confirm the general findings of the US literature that there is a nonlinear relation between firm performance and managerial ownership. Therefore, the results suggest that the nonlinear relation between alignment and entrenchment is sufficiently robust to be present across samples from the UK and the US, different measures of the performance of firms, and an additional method of estimation.

Chen et al. (2004) review the theory and evidence of Morck et al. (1988), and they discuss the advantages and disadvantages of the various methods used to detect nonlinearity. They provide a detailed review of the methodologies used in the extant corporate finance research to detect nonlinearity. Fields and Mais (1994) regress the slope of a function (the ratio of AR to change in management ownership) against the independent variable (the level of management ownership). Finally, Allen and Cebenoyan (1991) and Pantzalis, Kim, and Kim (1998) apply switching regressions to investigate nonlinear relations in corporate finance.

Anderson and Reeb (2003) investigate the relation between founding-family ownership and firm performance. Contrary to the notion that family ownership is detrimental, they find stronger firm performance in family firms than in nonfamily firms. Controlling for industry and firm characteristics, they find that firms with continued founding-family presence exhibit significantly better accounting and market performance than nonfamily firms. They find that this was relatively unaffected by the consideration of other blockholders or by any discrepancy between the family's ownership and control rights. They also present an evidence that the relation between

founding-family holdings and firm performance is nonmonotonic; performance first increases as family ownership increases, but it then decreases with increasing family ownership. Differentiating between young (firm age less than 50 years) and old (greater than 50 years) family firms, they revealed that both groups perform better than nonfamily firms. (Note 3)

Rosenstein and Wyatt (1997) investigate the AR as of the date insider managers were appointed as director. They find that when inside directors were appointed to the corporate board and less than 5% of the shares of the firms' common stock was owned by insiders, the announcement of the appointment resulted in an AR that was statistically significantly negative. On the other hand, when 5% to 25% of the shares were owned by inside managers, such an announcement resulted in an AR that was statistically significantly positive; when ownership exceeded 25%, there are no statistically significant changes in the AR. Thus, these results suggest that the expected benefits of an inside director's expert knowledge clearly outweigh the expected costs of managerial entrenchment only when managerial and outside shareholder interests are closely aligned.

Shuto (2010) uses Japanese data to investigate the relation between managerial ownership and discretionary earnings management in Japanese firms, and this study also investigate the nonlinear relation between managerial ownership and discretionary earnings management by managers, with reference to Morck et al. (1988). Quadratic and cubic relations between managerial ownership and discretionary accrual are found. It is suggested that management emphasizes the evaluation by market participants, and the extent of managerial ownership creates a culture for the level of discretionary accruals. In analyzing this result, Shuto (2010) explains that Japanese managers attempt to boost the firm's earnings in order to make their private benefits as large as possible, and thus they utilize discretionary accrual to maximize their cash compensation.

In this article, we will focus on managerial ownership, in particular, ownership by directors, and we will base our investigation on the prior studies discussed above. Boards of directors generally determine the direction in which a company will grow and the corporate strategy for the future, but they also are expected to prevent or manage unexpected matters, such as an inspection by a tax authority. Therefore, if a board of directors increases their DIR, we will assume this leads to an enhancement of the alignment effect and is done in preparation for disappointing news about a TPT violation (Short and Keasey, 1999). On the other hand, we conjecture that, if the DIR exceeds a certain level, the board of directors may leave undone various countermeasures for unexpected affairs, due to the entrenchment effect.

In this respect, we focus on the relation between the DIR and the alignment and entrenchment effects of the board of directors. Moreover, we attempt to investigate the important role that corporate directors play in decision making. To evaluate how directors prepare for certain risk events by market participants, we consider the CAR around the time at which these emergency events are announced in the press. Given the context of these findings, we state our hypothesis as follows:

Hypothesis: The CAR resulting from a TPT announcement in the press is nonlinearly associated with the directors' shareholding ratio.

3. Data and Research Design

3.1 Overview of the Data

We use an event study methodology to test the market reaction to news that a TPT action has occurred. In this study, we use the three-factor model for stocks that was proposed by Fama and French (1992), as shown in Equation (1). We define the *event day* to be the day that the TPT news appeared in the press, and the estimated period is between day -180 and day -31, that is, 150 days total, all before the event day. Initially, we estimate the AR and CAR for the event day, and we examine the relation between the CAR and the corporate and governance structures. Based on this methodology, we collect a set of 60 cases in the period from 2005 to 2013. (Note 4)

We identify the important features of each of these 60 cases, which include aspects of the TPT actions, such as foreign sales of product and inventory, but also unpaid fees for utilized royalties, technology support fees related to patents and trademarks, and unpaid know-how charges. We note that most of these are related to intangibles. In addition, our previous investigation reveals that there has been a recent rapid increase in the refunds of TPT taxes by the government. However, it is generally considered that a TPT press report should be accepted as a compulsory and unavoidable tax payment event, so it is expected that TPT press releases trigger an a priori negative market reaction. Ohnuma et al. (2012) and Kato et al. (2015) support similar results. However, we note that there is no apparent lowering of the price except for three days before the event day.

Since this study is based on the results of Kato et al. (2015), we will also use the Fama-French three-factor model. Our measure of the risk-free rate, R_f , and the risk factors (SMB and HML, defined below) depend on a

database provided by Financial Data Solution Co., Ltd. In addition, the estimate window is set for the interval of 31 to 180 days before the event day.

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i(R_{M,t} - R_{f,t}) + s_iSMB_t + h_iHML_t + \varepsilon_{i,t} \quad (1)$$

$$AR_{i,t} = R_{i,t} - R_{f,t} - \hat{\alpha}_i - \hat{\beta}_i(R_{M,t} - R_{f,t}) - \hat{s}_iSMB_t - \hat{h}_iHML_t \quad (2)$$

Here, $R_{i,t}$ is the return on stock i on day t ; $R_{f,t}$ is the risk-free rate; $R_{M,t}$ represents the return on the Tokyo Stock Market portfolio on day t ; SMB is the “small minus big” market capitalization risk factor; and HML is the “high minus low” value premium risk factor. In this model, SMB measures the additional return investors have historically received by investing in stocks of companies with relatively small market capitalization. This additional return is often referred to as the “size premium”. HML has been constructed to measure the “value premium” provided to investors for investing in companies with high book-to-market values (essentially, the value placed on the company by accountants as a ratio relative to the value the public markets placed on it). The key point of the model is that it allows investors to weight their portfolios in such a way that they have greater or lesser exposure to each of the specific risk factors, and therefore, they can target different levels of expected return more precisely. The parameter α_i is the intercept, and β_i , s_i , and h_i indicate the slopes; the subscript i indicates the firm; and $\varepsilon_{i,t}$ is a disturbance term for stock i on day t . These all have the usual ordinary least-squares (OLS) properties. To obtain the AR for firm i on day t , we perform regression estimates of α_i , β_i , s_i , and h_i individually using Equation (1), and we then apply the estimates to Equation (2) for each company. In addition to an estimation of the average values shown in Figure 3 for a 21-day window (from 10 days before to 10 days after the event day), we examine the 10-day window surrounding the press report. These daily ARs are then summed over the desired time period to calculate the CAR. In particular, for the period from t_1 to t_2 , the CAR is calculated as follows:

$$CAR_t = \sum_{k=t_1}^{t_2} AR_{i,k} \quad (3)$$

In this section, we use newspaper reports about TPT actions. In terms of financial data, we collected the consolidated financial statements data from Nikkei NEEDS Financial Quest (FQ) 2.0, and we use the data in the accounting period from just before the newspaper report. Because one company was excluded due to unavailability of data, we were only able to analyze 60 examples, the same as in the analysis of AR and CAR in Section 3. Here, information that is not available is handled as missing data. On the basis of the survey by Short and Keasey (1999), we estimate that once a newspaper publishes a TPT action, the information spreads completely through the markets by the end of the following day (the day after the event day). A multiple linear regression model, given in Equation (4), is set up to study the relation between the CARs and the characteristics of the events. We perform a multiple nonlinear regression analysis, in which we use the following model (based on Short and Keasey, 1999), and we examine the cubic and quadratic relations with the DIR.

$$CAR_{i,t} = \alpha_0 + \alpha_1 DIR_t + \alpha_2 DIR_t^2 + \alpha_3 DIR_t^3 + \alpha_4 CG_i + \alpha_5 TAX_i + \alpha_6 FinancialNumber_i + \alpha_7 Web_i + \delta Controls_k + \varepsilon_i \quad (4) \text{ (Note 5)}$$

We attempt to divide the test variables into five groups, as follows: corporate governance (CG), taxation (TAX), financial ratio (FinancialNumber), degree of disclosure quality, and control variables (Controls). We then examine the association between these variables and the market valuation. Because we posit that a TPT violation is triggered by relaxed discipline in an organization, we are especially interested in the circumstances of corporate governance. We also note that even if firms have accepted a TPT inspection or penalty, they could enhance their market evaluation by constructing a solid governance structure. In other words, we posit that the investors' sense of security depends on the ability of the governance structure to remain stable when confronted with an unexpected event, e.g., a TPT inspection.

We test our hypothesis using 54 TPT inspection or penalty announcements, beginning with the RINNAI case in May 2006 and ending with the ROAM case in December 2013 in Japan. In terms of sample selection, a company's principal location must be in Japan; its shares must be traded on the Tokyo Stock Exchange (TSE); and real estate investment trusts and closed-end funds are excluded. We require that a company have available consolidated financial data, corporate characteristics data, and other data, and that no data be missing from the

Nikkei NEEDS FQ 2.0 database. We also require that a corporate governance data set could be provided by Nikkei Digital Media, Inc. The overall data set consists of 48 firm-years of observations.

3.2 Independent Variables for Our Research

Kato et al. (2015) find that the capital market shows a statistically significant negative reaction to newspaper reports of TPT actions. This is due to a strong distrust of corporate activity regarding transfer pricing (TP) strategies. Next, after an event study analysis, they carried out a multiple regression analysis to obtain the ARs. Then, these daily ARs are summed to obtain the CAR for a given time period. They find that intangible assets, the corporate effective tax rate, and the CG variables are statistically significant with respect to the market reaction. Based on this study, we estimate $CAR(-3,4)$ and utilize it as a dependent variable in our main research model. (Note 6)

This paper focuses on DIR, since it is the CG variable most deeply related to the AR. An increase in DIR is a predictor of a change in corporate valuation, and investor reaction to a media report of a TPT allegation against a firm may depend on its DIR. As noted above, Morck et al. (1988) show that the relation between the managerial ownership and corporate valuation is not monotonic; instead, corporate valuation at first increases with DIR but then decreases. When a TPT action is announced against a corporation, it may be that such an event may dispel investor unease when the DIR is below a certain level. We attempt to elucidate one aspect of this. For this reason, in the analytical model, we include the CG terms DIR, DIR^2 , and DIR^3 , as in Short and Keasey (1999), and we also predict that the sign on the coefficient will be positive for DIR and DIR^3 and negative for DIR^2 .

We also include an additional CG term, the foreign investors' shareholding ratio (FI). This is included based on the conjecture that a company in which this ratio is high may be sensitive to pressure from external investors, and therefore, it may be expected to have a strong positive relation to the DIR during the company's maturation. It is possible that a trend towards corporate governance maturation may be found in companies where this ratio is high, and on this basis, we predict that this ratio will have a positive relation to investor reaction in the event of a TPT allegation.

For Canon, Inc., which had long resisted the appointment of outside directors to its board, an invitation to outside directors was apparently a measure taken to avoid a TPT action. (Note 7) This case clearly suggests an example of a trend towards the appointment of outside directors as a source of expert advice in order to avoid a TPT action in a milieu of growing complexity in economic transactions. It is expected, in short, that the outside directors' ratio (Outside) in a firm will reflect the level of its CG maturity, and we thus predict that investors will react negatively to a report of a TPT action, because they will be disappointed in the maturity of the CG.

We also include as a CG variable the scale-adjusted number of directors who hold a position of executive director or higher (Executive). Executive directors presumably play a central role in maintaining CG, and we therefore predict that it will relate positively to corporate valuation in the event of a TPT action.

This paper includes two independent variables that refer to tax-related conduct. One is an indicator variable for TPT tax refund. The level of the CAR on the days surrounding an event may reflect a difference between cases of rectification and refund. To clarify this, the analytical model includes an indicator variable that is one in the case of a refund and zero in the case of rectification.

The Other variable is the tax burden ratio. Because we are considering short-term windows of events, we need to consider the variable Current ETR, which indicates the kind of valuation investors will deliver in the event of a TPT action against a firm with a high tax burden. We predict that the market valuation will be negatively affected by the tax burden ratio; this is based on the assumption that the companies under analysis are favorably disposed to conduct that reduces their tax burden. The higher the tax burden of a company is, the more it will presumably tend to reduce that burden through transfer pricing in overseas transactions, so the association between them will thus be negative. On the other hand, it has been argued with considerable strength by Chen et al. (2010) that companies developing overseas operations generally tend to avoid radical tax strategies and thereby avoid TPT penalties and inspections by tax authorities. Investors may place a positive value on this moderate conduct concerning reduction of the tax burden, and we expect a significantly statistically positive relation.

Intangible assets constitute the first independent variable and are a primary focus in the investigation on financial indicators that affect investor reactions to a TPT action. A compulsory TPT inspection involves imposition of an unavoidable additional payment. If there is an objection to this allegation, the firm may sue for amendment. There are high administrative costs for proving that a transaction price is equal to an arm's length price. TPT action was first applied in 1990 and thereafter involved cases of industrial products, in the form of Video Tape Recorder (VTRs) and semiconductors produced by Hitachi, Matsushita, and Toshiba. Given the growing trend

towards cases involving intangible assets, however, the cases considered in this paper include those involving royalties at Sony in 2005 and in the following year, trademark royalties at Wacoal, technical assistance fees at Rinnai, and fees for the provision of managers and know-how to resource plants of joint companies at Mitsui & Co. and at Mitsubishi Corp. In regard to intangible assets, Kato et al. (2015) note that the amount of current assets of a company is generally low, with the result that negative investor valuation in the event of a TPT allegation tends to increase with the accounting value of this type of asset. In this paper, as well, it is presumed that intangible assets are generally viewed by investors as a hallmark of non-transparency, and a negative sign is therefore predicted for this variable.

Discretionary accrual (DA) constitutes the second independent variable. Avoidance of TPT actions is generally considered part of standard management practice. If a TPT action does in fact occur, however, it means that resources must ultimately be allocated for defrayal of penalties and inspections by tax authorities. Ohnuma et al. (2012) and Kato et al. (2015) have shown the chain of cause and effect in regard to investor disappointment. It is generally regarded as common practice to avoid adoption of radical tax strategies as a means of avoiding penalties and inspections (Chen et al., 2010), so the press release of a TPT action will inform investors of an aggressive tax management. Investors thus may view a TPT action as revealing laxity in compliance with tax law, and they can then be expected to add their own discretionary adjustment in regard to corporate profit. It may therefore be reasonably concluded that in response to the report of a TPT action, investors will show disappointment at both lack of tax payment compliance and opportunistic managerial conduct. The predicted sign for DA is therefore negative. For this use of DA as an analytical tool, we calculated it using the Jones method as modified by Dechow et al. (1995). (Note 8)

A question that arises in this regard is whether investors can accurately gauge from news reports the circumstances and course of a TPT action. From the company's perspective, the initiation of a TPT action is a sudden event. As noted above, moreover, TPT actions increasingly originate in relation to revenues from fees and charges in a background of intangible asset holdings, as well as in the product and merchandise price transfers. It may therefore be reasonably concluded that, although the term TP itself has not changed, the growing diversification of business and fractionation of the assets that are transferred has markedly diminished the possibility of predicting tax assessments. Investors may simply be unable to decide on a valuation in the event of a TPT action. In these circumstances, a TPT action may be viewed as an unfamiliar and unprecedented event, and on report of such an event, the investors may descend into an extreme state of information deficiency. In this study, we assume that in the event of a TPT action, the investor reaction may well be affected by the degree of information disclosure provided on the company's website, and we therefore include the independent variable WEB, which represents the amount of relevant and informative content on that website; we predict that WEB will relate positively to CAR. (Note 9)

The grouping and definitions of the independent variables are shown in Table 1.

Table 1. Variable definitions

Variable		Description
Corporate Governance	FI	Shareholding ratio by Foreign Investors
	Outside	percentage of outside director in board of directors
	DIR	Shareholding ratio by corporate directors
	Executive	number of executive officers divided by natural log of total asset
Financial number	Intangibles	intangible asset divided by beginning total assets
	DA	Discretionary accruals based on the modified Jones model.
	CurrentRatio	Current assets divided by beginning current liabilities
Taxation	Refund	Indicator variable equal to 1 if the firm accepted a tax refund of TPT, and 0 otherwise.
	Current ETR	Current taxes paid, divided by adjusted pre-tax income (pre-tax income minus special items)
Web site	WEB	Web site score, valued by Nikko IR Co., Ltd. This score is assessed by readability, usability and extent of information about Web site.
Controls	SalesIncrease	Current sales minus last year's sales, divided by average total assets
	Leverage	Total assets divided by beginning of shareholders' equity
	LnAsset	Natural log of beginning of total assets
	ROE	Net income, divided by beginning of shareholders' equity

Table 2 shows the descriptive statistics of the variables used in the analysis, and Table 3 shows their correlation matrix. As noted above, all CAR averages used are negative in both the main and the supplementary analysis, as is the market reaction to a report of a corporate TPT event. In terms of standard deviation and maximum values alone, however, some companies show a positive reaction. It is inferred that the DIR is related to this divergence of reactions.

Table 2. Descriptive statistics

Variable	mean	standard deviation	min	max
car01	-0.401	3.086	-7.141	7.758
car11	-0.567	4.344	-12.987	9.114
car34	-1.666	5.439	-20.080	10.080
DIR	1.180	2.898	0.004	12.049
DIR ²	9.616	29.152	0.000	145.176
DIR ³	91.635	312.935	0.000	1749.202
FI	31.715	8.937	10.680	51.150
Outside	17.797	16.894	0.000	71.429
Executive	0.516	0.226	0.132	1.264
Intangible	2.499	4.511	0.000	14.232
DA	-0.008	0.038	-0.098	0.115
Current Ratio	0.348	0.151	0.000	1.000
Refund	0.313	0.468	0.000	1.000
Current ETR	0.347823	0.1509378	0	1
WEB	63.563	10.318	45.300	84.200
SalesIncrease	2.495	11.756	-27.750	41.600
Leverage	2.538	1.671	1.150	9.960
LnAsset	14.057	1.614	9.261	16.350
ROE	9.116	6.515	-9.940	20.040

As can be seen in Table 4, several independent variables appear to be highly correlated. We therefore calculated the variance inflation factor (VIF). The results, as expected, reinforced our suspicion that there is strong multicollinearity in DIR, DIR², and DIR³, and thus it is necessary to be careful when an analysis includes all three terms. The VIF is not found to be high for any of the other variables, which indicates that, except for these DIR variables, no substantial problem exists in regard to multicollinearity between variables.

Table 3. Correlation matrix

	car01	car11	car34	DIR	DIR2	DIR3	Refund	WEB	Current Ratio	Current ETR	FI	Outside	Leverage	ROE
car01	1.00													
car11	0.91	1.00												
car34	0.53	0.65	1.00											
DIR	-0.16	-0.29	-0.35	1.00										
DIR2	-0.16	-0.31	-0.39	0.97	1.00									
DIR3	-0.17	-0.32	-0.41	0.92	0.99	1.00								
Refund	-0.12	-0.12	-0.05	-0.02	-0.06	-0.08	1.00							
WEB	-0.13	-0.04	-0.19	-0.14	-0.19	-0.23	0.22	1.00						
Current Ratio	-0.20	-0.32	-0.35	0.18	0.22	0.26	0.03	-0.34	1.00					
Current ETR	0.01	0.07	0.06	-0.09	-0.11	-0.10	-0.25	-0.15	0.05	1.00				
FI	0.23	0.25	0.11	-0.30	-0.27	-0.26	0.03	0.21	0.18	0.04	1.00			
Outside	-0.26	-0.10	0.02	-0.29	-0.28	-0.28	-0.03	0.41	-0.30	0.29	0.26	1.00		
Leverage	0.12	0.19	0.26	-0.21	-0.17	-0.16	-0.22	0.32	-0.47	0.45	0.18	0.51	1.00	
ROE	0.30	0.26	0.01	-0.03	-0.03	-0.05	-0.10	0.09	-0.32	0.22	0.15	-0.03	0.41	1.00
DA	0.07	0.03	0.02	0.18	0.13	0.10	-0.10	0.10	-0.10	0.02	-0.05	0.02	0.24	0.46
SalesIncrease	-0.05	-0.01	-0.28	0.01	-0.01	-0.03	-0.10	-0.06	-0.09	0.15	0.05	-0.11	0.06	0.57
Executive	0.05	0.16	0.23	-0.19	-0.17	-0.17	-0.19	0.18	-0.33	-0.28	-0.11	-0.20	0.20	0.17
Intangible	0.09	0.16	0.26	-0.19	-0.18	-0.16	0.29	-0.06	0.10	0.23	-0.10	0.07	0.00	-0.21
LnAsset	0.10	0.26	0.20	-0.52	-0.45	-0.41	0.04	0.43	-0.31	0.02	0.50	0.31	0.44	0.36
	DA	SalesIncrease	Executive	Intangible	LnAsset									
DA	1.00													
SalesIncrease	0.34	1.00												
Executive	0.14	-0.01	1.00											
Intangible	-0.05	-0.10	-0.23	1.00										
LnAsset	-0.01	0.10	0.40	-0.08	1.00									

4. Results

4.1 Main Result

The ultimate objective of this study is the analysis of whether the effect of the DIR on opportunistic management could lead to TPT actions. Based on the analytical results of Sakurada and Ohnuma (2015), we wish to determine the market valuation of a company in the event of news reports of a TPT action. Sakurada and Ohnuma (2015) identified the fundamental factors involved in the market valuation of a company. They assume that the market valuation is lowered due to the corporate governance, and that it is the DIR that was the strongest factor. We derive the optimum level for this ratio.

Short and Keasey (1999) analyze British corporate data for the period 1988 to 1992, and they revealed a deeply interesting result regarding the optimum level for DIR and the choice between ROE and market capitalization as the dependent variable. With ROE as the dependent variable, the results show a positive relation when the ratio is 0% to 15.58%, negative when the ratio is in the range from 15.58% to 41.84%, and again positive when the ratio exceeds 41.84%. With market capitalization as the dependent variable, the same pattern is seen, but the negative values are between 12.99% and 41.99%. Thus, although these values differ somewhat, they strongly suggest that the optimum values for the DIR are somewhat stable, regardless of the choice of dependent variable. The results found in Rosenstein and Wyatt (1997), moreover, suggest that when directors are appointed via internal promotion, a DIR of 5% to 25% results in a positive AR and is apparently viewed as appropriate by the market.

Other empirical analyses of the relation between the DIR and corporate performance have yielded similar findings. These studies have found that, in general, both high and low DIRs are associated with corporate performance in a positive way, whereas those in the intermediate range are related negatively. This relation is in approximate agreement with the expectations of alignment and entrenchment.

Table 4 shows the results of our multiple regression analysis. The results are verified by using the White (1980) heteroscedasticity-consistent standard error. These results, like the results in Short and Keasey (1999), indicate a statistically significant relation between DIR and CAR. In particular, Models 1 and 2 show a positive relation to DIR and a negative relation to DIR². As described in the previous section, however, the suspicion of multicollinearity between the three different terms of DIR, DIR², and DIR³ is supported by Table 4. Although the results for Models 3 to 5 show no clear statistical relation for DIR, they show statistical significance for DIR² and DIR³ at significance levels of 10% and 5%, respectively. We think these results are clearly statistically significant with our hypothesis.

For the other CG variables, the results were generally as expected. For the foreign investors' shareholding ratio (FI), the results show a statistically significantly positive relation to the CAR in all five models; as predicted. For the outside directors' shareholding ratio (Outside), all of the results show a statistically significant negative relation, thus indicating a sense of market disappointment with the insufficient role played by outside directors, resulting in a TPT action. On the other hand, the number of persons in executive director or higher positions (Executive) appears to have no statistically significant relation to market reaction in the event of a TPT action. The results thus suggest that in regard to CG, it is the presence of foreign investors and outside directors that affects the AR.

Table 4. Result 1

	p.s	CAR(-3,4)	CAR(-3,4)	CAR(-3,4)	CAR(-3,4)	CAR(-3,4)
		model 1	model 2	model 3	model 4	model 5
DIR	+	4.242[1.83]*	3.719[4.18]***	-0.367[-1.21]		
DIR ²	—	-0.514[-1.17]	-0.395[-4.95]***		-0.051[-2.02]*	
DIR ³	+	0.007[0.30]				-0.006[-2.81]***
FI	+	0.15[2.46]**	0.142[2.39]**	0.23[2.42]**	0.211[2.83]***	0.19[2.96]***
Outside	—	-0.059[-2.11]**	-0.061[-2.19]**	-0.076[-1.95]*	-0.08[-2.22]**	-0.082[-2.36]**
Executive	+	1.053[0.34]	0.786[0.26]	2.978[0.81]	2.303[0.68]	1.625[0.50]
Refund	—	-1.412[-0.90]	-1.38[-0.92]	0.118[0.08]	-0.039[-0.03]	-0.184[-0.13]
Current ETR	—	-7.295[-1.84]*	-7.093[-1.87]*	2.751[0.50]	1.24[0.27]	0.062[0.02]
Intangible	—	0.452[3.78]***	0.442[4.19]***	0.33[2.50]**	0.319[2.54]**	0.313[2.59]**
DA	—	11.142[0.62]	12.583[0.76]	31.828[1.51]	30.95[1.51]	30.462[1.52]
Current Ratio	—	-0.016[-2.62]**	-0.016[-2.66]**	-0.027[-3.00]***	-0.025[-3.32]***	-0.024[-3.41]***
WEB	+	-0.36[-4.49]***	-0.358[-4.51]***	-0.25[-2.85]***	-0.258[-3.06]***	-0.268[-3.24]***
SalesIncrease	+	-0.205[-4.14]***	-0.204[-4.26]***	-0.194[-3.52]***	-0.198[-3.70]***	-0.199[-3.86]***
Leverage	—	1.077[3.07]***	1.07[3.07]***	0.26[0.54]	0.41[1.02]	0.527[1.44]
LnAsset	+	1.178[1.65]	1.171[1.67]	0.023[0.03]	0.045[0.07]	0.128[0.21]
ROE	+	-0.031[-0.30]	-0.036[-0.37]	-0.073[-0.57]	-0.062[-0.52]	-0.059[-0.51]
Intercept	?	2.425[0.29]	2.906[0.38]	10.395[1.33]	11.481[1.56]	11.863[1.66]
R-squared		0.781	0.78	0.653	0.68	0.7
Adj-R-squared		0.668	0.677	0.506	0.544	0.573
		48	48	48	48	48

We find that other variables, e.g., WEB, Intangible, and Current Ratio, are statistically significant. As for this result, it may be that the extent of information disclosed on the website may be involved with a reaction to the market sentiment of disappointment in the TPT action. Alternatively, it may be that investors interpret that the information disclosed previously was too weak to enable advance prediction of the TPT action. (Note 10) As far as Intangible is concern, we posit positive association with the market reaction is due to the asymmetry of

information against investors. Its behavior was the opposite of our prediction. It is highly probable that intangible assets are in fact the cause of the TPT actions. However, we suppose intangible assets should be an indicator of information asymmetry. Anyway, further investigation will be necessary to clarify an interpretation. A TPT action invites investors' disappointment and leads to the suspicion that the management performs rent extraction by TP manipulation. The current ratio, as described in the previous section, is viewed as an indicator of rent extraction risk. As initially predicted in this paper, the results show a statistically significant negative relation of the current ratio to CAR. It may well be that the negative relation stems from the effect of the current ratio level as an indicator of possible rent extraction, but further investigation is necessary as well.

4.2 Optimal DIR

As shown by the analysis in Sec. 4.1, the relation between DIR and CAR is statistically significant. Therefore, we investigate when an increase in the DIR is accompanied by an increase in CAR, based on prior studies by Short et al. (1999), Shuto (2010), and others. We examined the results for Model 2 for the optimum DIR, DIR², and DIR³. (Note 11) The results of this calculation are shown in Figure 1.

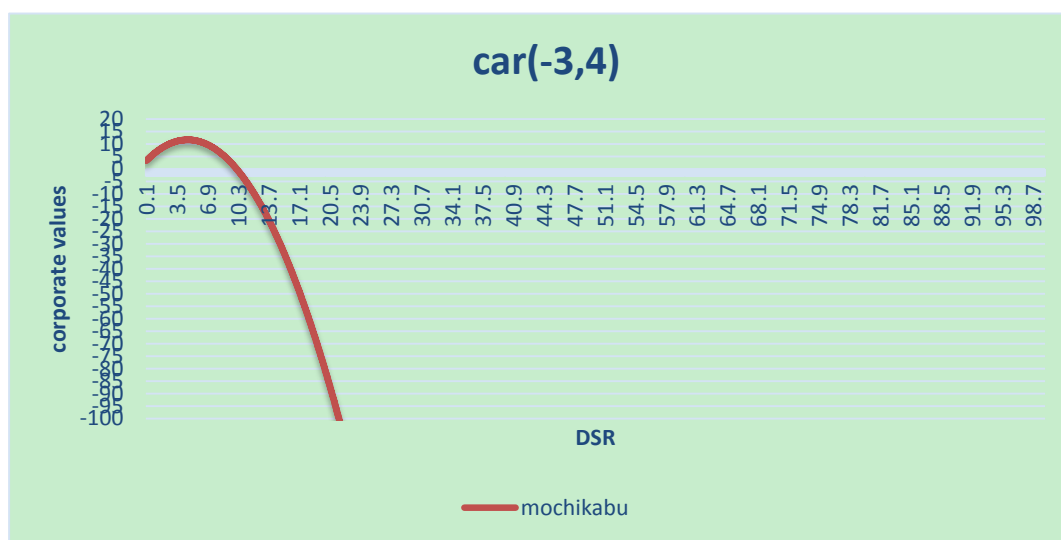


Figure 1. Optimal directors' shareholding ratio in case of the square of DSR

This calculation shows that the optimum DIR, at which the CAR is maximized, is 4.7%, and thus when the ratio is approximately 4.7%, the market expects an alignment effect. For Model 1, derivation of the optimum DIR obtained by calculating the CAR for the first, second, and third powers of DIR⁸ yields the results shown in Figure 2.

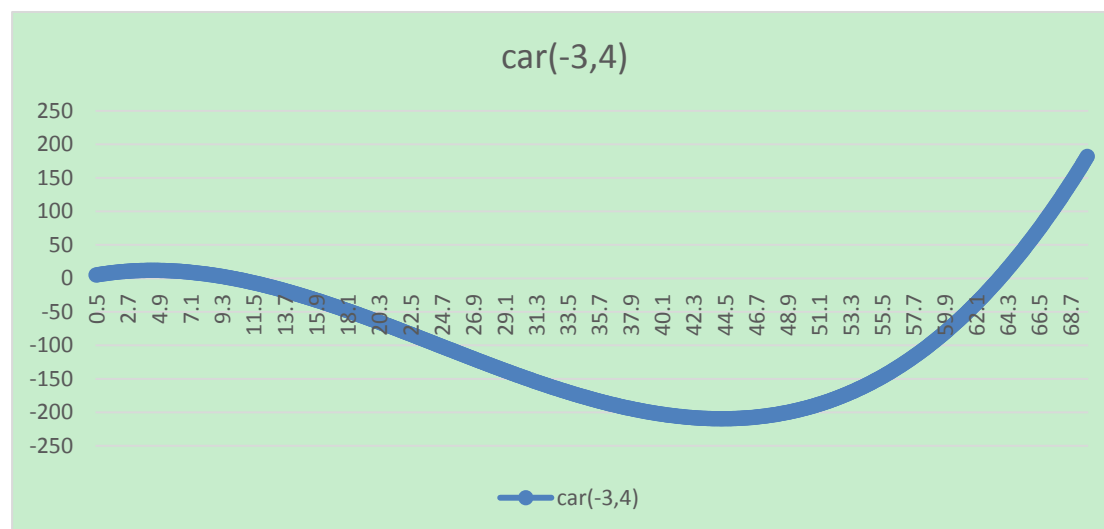


Figure 2. Optimal directors' shareholding ratio in case of the cube of DSR

By this calculation, the CAR value reaches a high positive maximum when the DIR is approximately 4.5%, and we imagine that it reaches a deeply negative minimum when the DIR is approximately 44.3%. This suggests that the market expects an alignment effect when the ratio is above 4.5% and an entrenchment effect when the ratio approaches 44.3%.

This analysis indicates that one finds the optimum CAR condition at an optimum DIR of 4.5% to 4.7%. This is close to the values of 5% to 25%, found by Rosenstein and Wyatt (1997), and it suggests that if the goal is to obtain an alignment effect, it is advisable to maintain the DIR at about of 4.5% to 4.7%. It must also be noted, however, that the average DIR in the region where the change in $CAR(-3, 4)$ is positive and the average directors' shareholding ratio in corporations is actually 1.5%, and in the region where $CAR(-3, 4)$ is negative, it is approximately 2.3%; this differs from the estimated values.

5. Additional Analysis

In addition to the multiple regression analysis performed with $CAR(-3, 4)$ as a dependent variable, we analyzed a three-day period of cumulative abnormal return as $CAR(-1, 1)$, comprising the event day and one day on either side, or a two-day period as $CAR(0, 1)$, comprising the event day and the day after. In each case, CAR is a dependent variable. The dependent and independent variables are all the same as in Section 4.

Table 5. Result 2

	p.s	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)
		model 1	model 2	model 3	model 4	model 5
DIR	+	-0.344	0.205	-0.196		
		[-0.19]	[0.31]	[-1.66]		
DIR ²	—	0.086	-0.039		-0.02	
		[0.25]	[-0.66]		[-1.88]*	
DIR ³	+	-0.007				-0.002
		[-0.40]				[-2.00]*
FI	+	0.15	0.158	0.167	0.162	0.157
		[3.78]***	[4.18]***	[4.97]***	[4.75]***	[4.49]***
Outside	—	-0.116	-0.114	-0.115	-0.115	-0.115
		[-4.43]***	[-4.65]***	[-4.78]***	[-4.80]***	[-4.82]***
Executive	+	-3.833	-3.553	-3.337	-3.469	-3.618
		[-1.69]	[-1.79]*	[-1.75]*	[-1.80]*	[-1.84]*
Intangible	—	0.164	0.174	0.163	0.168	0.169
		[1.56]	[1.86]*	[1.87]*	[1.98]*	[2.04]**
DA	—	7.403	5.89	7.779	6.902	6.597
		[0.58]	[0.56]	[0.86]	[0.77]	[0.74]
Current Ratio	—	-0.012	-0.012	-0.013	-0.013	-0.012
		[-3.03]***	[-2.99]***	[-4.24]***	[-4.09]***	[-3.90]***
Refund	—	-1.594	-1.627	-1.48	-1.553	-1.598
		[-1.19]	[-1.25]	[-1.25]	[-1.33]	[-1.37]
Current ETR	—	-1.464	-1.676	-0.709	-1.216	-1.509
		[-0.41]	[-0.50]	[-0.28]	[-0.49]	[-0.60]
WEB	+	-0.038	-0.039	-0.029	-0.034	-0.037
		[-1.05]	[-1.12]	[-0.87]	[-0.99]	[-1.07]
SalesIncrease	+	-0.107	-0.108	-0.107	-0.107	-0.107
		[-4.69]***	[-4.83]***	[-4.43]***	[-4.64]***	[-4.75]***
Leverage	—	0.131	0.138	0.058	0.102	0.128
		[0.45]	[0.49]	[0.24]	[0.41]	[0.51]
LnAsset	+	-0.137	-0.13	-0.243	-0.192	-0.151
		[-0.34]	[-0.33]	[-0.79]	[-0.66]	[-0.53]

ROE	+	0.159	0.164	0.16	0.162	0.162
		[2.44]**	[2.55]**	[2.60]**	[2.58]**	[2.55]**
Intercept	?	4.57	4.066	4.801	4.538	4.374
		[0.74]	[0.76]	[0.99]	[0.97]	[0.95]
R-squared		0.58	0.578	0.575	0.577	0.579
Adj-R-squared		0.363	0.381	0.394	0.398	0.4
N>>		48	48	48	48	48

Table 6. Result 3

	p.s	CAR(-1,1)	CAR(-1,1)	CAR(-1,1)	CAR(-1,1)	CAR(-1,1)
		model 1	model 2	model 3	model 4	model 5
DIR	+	0.847	0.836	-0.233		
		[0.46]	[1.01]	[-1.89]*		
DIR ²	—	-0.106	-0.103		-0.026	
		[-0.30]	[-1.36]		[-2.39]**	
DIR ³	+	0				-0.003
		[0.01]				[-2.66]**
FI	+	0.219	0.218	0.241	0.234	0.226
		[3.78]***	[3.92]***	[4.78]***	[4.73]***	[4.50]***
Outside	—	-0.113	-0.113	-0.118	-0.118	-0.118
		[-3.95]***	[-4.04]***	[-4.01]***	[-4.07]***	[-4.10]***
Executive	+	-1.584	-1.589	-1.016	-1.248	-1.488
		[-0.63]	[-0.65]	[-0.44]	[-0.54]	[-0.64]
Intangible	—	0.33	0.33	0.3	0.302	0.303
		[2.02]*	[2.13]**	[1.95]*	[2.00]*	[2.03]*
DA	—	4.077	4.107	9.143	8.238	7.882
		[0.25]	[0.28]	[0.70]	[0.64]	[0.60]
Current Ratio	—	-0.019	-0.019	-0.022	-0.021	-0.021
		[-4.05]***	[-4.09]***	[-5.50]***	[-5.47]***	[-5.25]***
Refund	—	-2.318	-2.318	-1.926	-2.016	-2.08
		[-1.13]	[-1.16]	[-1.05]	[-1.11]	[-1.15]
Current ETR	—	0.097	0.102	2.677	1.976	1.528
		[0.02]	[0.03]	[0.84]	[0.66]	[0.52]
WEB	+	-0.073	-0.073	-0.045	-0.051	-0.056
		[-1.45]	[-1.47]	[-0.96]	[-1.07]	[-1.16]
SalesIncrease	+	-0.101	-0.101	-0.099	-0.1	-0.1
		[-3.52]***	[-3.54]***	[-3.12]***	[-3.25]***	[-3.34]***
Leverage	—	-0.055	-0.055	-0.267	-0.204	-0.161
		[-0.18]	[-0.18]	[-0.88]	[-0.69]	[-0.54]
LnAsset	+	0.283	0.283	-0.017	0.03	0.081
		[0.50]	[0.52]	[-0.04]	[0.07]	[0.19]
ROE	+	0.123	0.123	0.113	0.117	0.117
		[1.39]	[1.44]	[1.37]	[1.42]	[1.41]
Intercept	?	-1.582	-1.572	0.388	0.357	0.263
		[-0.23]	[-0.25]	[0.07]	[0.06]	[0.05]
R-squared		0.535	0.535	0.521	0.527	0.53
Adj-R-squared		0.295	0.317	0.318	0.326	0.331
		48	48	48	48	48

The results of this additional analysis, shown in Tables 5 and 6, do not differ substantially from the results of the analysis described in Section 4, in which $CAR(-3,4)$ is taken as a dependent variable. Among the CG variables, those found statistically significant are DIR^2 and DIR^3 , the foreign investors' shareholding ratio (FI), and the outside directors' shareholding ratio (Outside). Among the other variables, those found to be generally statistically significant are the Current Ratio and Intangible, but not WEB. These results show that the independent variables selected in this paper are robust in regard to market reaction in the event of a TPT action, and they remain so even when different periods of cumulative AR are considered.

Figure 3 in particular shows the optimum DIR based on the analytical results is shown in Tables 5 and 6.

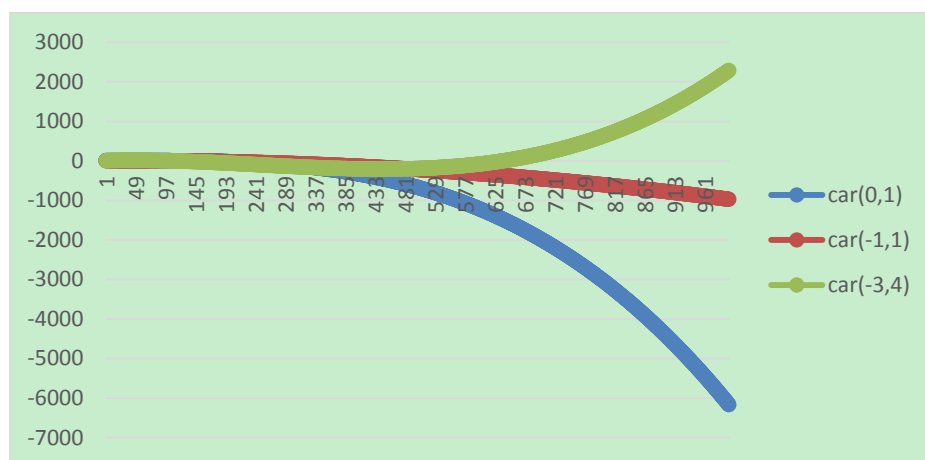


Figure 3. Optimal directors' shareholding ratio in case of the cube of DSR

Note that the optimum DIR is just 0.1% in the period of $CAR(0,1)$, but that it is 4% in the period of $CAR(-1,1)$ (this was calculated using the same procedure as for Figure 2); there is an expectation of an alignment effect, and there are no further increases in CAR with further increases in DIR. Therefore, we may conclude that, in theory, an alignment effect is increasingly expected during the period of $CAR(-1, 1)$ as the DIR increases to 4%. All of these results, taken together, lead to the conclusion that $CAR(-3,4)$ is the most appropriate indicator for reflecting the investors' disappointment.

6. Suggestion for and Scope of Future Work

The objective of this paper is to perform an empirical analysis in order to determine which factors affect the valuation of a firm when it is subjected to a TPT action. We assume that a low level of compliance with tax laws lies behind the occurrence of TPT actions, and we posit that CG entrenchment tends to lower compliance with tax law. A key research question in regard to investor valuation of companies with a TPT allegation is the degree to which the DIR affects this valuation. In this paper, we have therefore investigated the relation between that ownership ratio and corporate valuation.

The results of our analysis reveal a nonlinear relation between the DIR and CAR, and they also show that the outside DIR and the foreigners' shareholding ratio are significantly related to CAR. In particular, the results show that although CAR rises as DIR increases up to a certain ratio, it steadily falls with further increases; this continues up to an extremely high level, but then CAR again begins to rise with further increases in the ratio. The results of the analysis indicate that, at least in theory, an alignment effect is expected for increases in the DIR until the ratio reaches 4.5% to 4.7%, but as this ratio reaches in the region between 4.7% and approximately 44.3%, the fear of an entrenchment effect becomes overriding, and any further increases in the ratio again lead to the expectation of an alignment effect. In summary, the results clearly show that the relation between CAR and DIR is that of a cubic function.

This paper is characterized by its use of the observed CAR as a dependent variable that responds to reports of a TPT action as a corporate event. From extensive examination of many prior studies, we find that a large number of these studies reported nonlinear relations between the managerial shareholding ratio, the DIR, or other ownership ratios and the corporate valuation or performance.

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Notes

Note 1. Rent extraction means the action of monopolizing profit by means of possessing information. In this case, even if a manager monopolizes profit based on a complicated tax avoidance method, it is difficult for the details to be known to a stockholder and, as a result, will raise agency cost (see S. Chen, Chen, Cheng, and Shevlin, 2010; Desai and Dharmapala, 2006).

Note 2. The idea that shareholdings by managers help to align the interests of shareholders and managers is well documented in the agency literature (Jensen and Meckling, 1976). Jensen and Meckling's 'convergence of interest' hypothesis contends that, as managerial ownership in a firm increases, a firm's performance increases uniformly, as managers are less inclined to divert resources away from value maximization. In contrast, Demsetz (1983) and Fama and Jensen (1983) assert that market discipline will urge managers to adhere to value maximization at very low levels of ownership. At certain levels of equity ownership, however, managers' consumption of perquisites (for example, an attractive salary.) may outweigh the loss they suffer from a reduced value of the firm.

Note 3. Anderson and Reeb(2003) find that family ownership is both prevalent and substantial; families are present in one-third of the S&P 500 and account for 18 percent of outstanding equity. Contrary to their conjecture, they find family firms perform better than nonfamily firms.

Note 4. News reports regarding TPT were collected from the databases "Nikkei Telecom" (Nikkei Media Marketing), "Yomidasu" (Yomiuri Newspaper), and "Asahi-Kikuzo II" (Asahi Newspaper). We count as one case if our searches turned up hits regarding TPT in all three databases. After the TPT enforcement of 1986, we chose 51 of 78 cases (those for which we could get stock price data) that included news of TPT being applied. Finally, we excluded one company from the analysis because that company no longer exists and was unlisted from the stock market at the time of the news release, giving a set of 60 cases for analysis.

Note 5. The definition of all variables we take are included in the Table 1.

Note 6. On the other hand, we also test $CAR(-1,1)$ and $CAR(0,1)$ as a dependent variable in our additional analysis of this paper since we conjecture that these variables show limited reaction of investors.

Note 7. Nikkei business newspaper 2014/3/10, p.16.

Note 8. The third financial variable used in this paper is Current Ratio, which is an indicator of the company's surplus. It is presumed that investors assume that some part of this will be returned to them but not in the case of a TPT action, and accordingly, it is expected that they will be disappointed if the company is subjected to a TPT action. The value of the current ratio indicates the amount of funds that will not be returned, and it may therefore be deemed a rent extraction indicator. Therefore, in this article, we expect a negative sign for the current ratio.

Note 9. As control variables, we use the following: (1) the growth rate of sales as a proxy for the company's growth; we predict a positive sign; (2) financial leveraging as a proxy for capital structure; we predict a negative sign; (3) the natural logarithm of total assets as a proxy for the scale of the company; we predict a positive sign; and (4) return on equity as a proxy for profitability; we predict a positive sign.

Note 10. Regardless of the interpretation, we guess it is strongly necessary for further investigation of this aspect

Note 11. The turning points of a squared function are calculated as follows: Assuming all other variables are constant and denoting DIR by x : $y=2.906+3.719*x-0.395*x^2$. The turning points are found by differentiating y (CAR) with respect to x . To determine whether x is a maximum or minimum turning point, calculate the value of this model. Besides, the turning points of a squared function are calculated as follows: Assuming all other variables are constant and denoting DIR by x : $y=2.425+4.242*x-0.514*x^2+0.007*x^3$. The turning points are found by differentiating y (CAR) with respect to x .

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