

The Determinants of Internal Controls System and Audit Quality

-Evidence from Japan-

Shin'ya Okuda, Ph.D.

Osaka Gakuin University

Masumi Nakashima, Ph.D.

Fukushima College

Takashi Sasaki, Ph.D.

Hitotsubashi Univerisity

Ryosuke Nakamura, Ph.D.

Teikyo University

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Abstract: This study investigates the determinants of internal controls system and audit quality. We can provide the following implications: First, as for the effect of internal controls, the firms which should set up the good internal controls and risky firms have a negative attitude for the good internal controls. The firms likely consider the negatives more than merits for establishing good internal controls. However, the firms which have a great growth and should need to have a good internal control do not always have negative attitude, rather they evaluate the internal control positively. This suggests that they have a good internal control by employing the pressure outside. Second, we can imply that the stronger pressure from outside creditors the firms have the more likely the firms should set up internal controls.

Key Words: Internal control systems; audit quality; business complexity; logistic regression analyses; corporate governance

1 INTRODUCTION

This study examines the determinants of internal controls system and audit quality based on the results of a survey. While many studies regarding the internal control systems have been conducted in the U.S. (Ge and McVay 2005; Doyle et al. 2007a; Doyle et al. 2007b; Ashbaugh-Skife et al. 2008, Cohen et al 2008), only a few studies have been implemented in Japan (Yazawa 2010; Suda et al. 2011a; Suda et al. 2011b; Nakashima 2012; Chernobai and Yasuda 2012) . However, the existing literature investigates the information disclosed in internal control reports. They find that there is a difference between the firms which disclose material weakness and the firms which do not disclose material weakness. Considering that the number of firms which disclose material weakness is decreasing recently, it is hard to find the general characteristic of internal controls for each firm by such an approach. This study can ask the attitudes of firms regarding internal control system and audit quality directly through the survey questionnaires. This study can clarify the general characteristics of internal control system and audit quality not only for the firm which discloses material weakness but also for the firms which do not disclose material weakness. Similarly, we can examine the determinants of audit quality which each firm considers by asking the firm directly through the survey questionnaire, not through disclosed data.

This study contributes to the literature in the following ways. First, when the business complexity is higher, the effectiveness of internal control system should be higher. However, this study suggests that when the business complexity is higher, since the cost for internal control is higher as well, the firms consider the business complexity as a negative determinant. This attitude

is different from the ideal image. Second, this study suggests that when the firm has stronger pressure from external stakeholders, the firm considers the internal controls system positively. That is, we can suggest that the internal control system is not the alternative relationship, but the complementary relationship with other governance.

Third, this study examines the determinants of internal control systems by integrating the survey results and the archival data. As the existing studies are all archival studies, a study which focuses on the attitude and behaviors of the firms has not yet been done. On the other hand, much survey research just focuses on the results but they have not focused on unifying the archival data. This study examines the attitude of the firms objectively by combining the survey results and archival data. Archival analyses test hypotheses statistically by employing archival data and discussing alternative interpretations regarding whether a given theory is consistent with practice and by finding an appropriate proxy. Survey research using questionnaires is a useful analytical method to test the hypotheses since the survey can obtain new proxies and ideas which cannot be observed through public information by asking respondents directly (Graham et al, 2006, Suda and Hanaeda, 2008).

The remainder of this study proceeds as follows; Section 2 discusses hypotheses development; Section 3 shows the results. The final section concludes this study and suggests future possibilities.

2 HYPOTHESES DEVELOPMENT

This study focuses on the internal controls system and auditing quality. Also, we analyze the cost for internal controls system, the enforcement of internal control and governance, the effectiveness of “On The Setting of the

Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting (J-SOX)”¹ (Financial Service Agency 2007) , and the audit quality as the internal control system. This study employs the results of the survey research² in December 1, 2007. We sent a questionnaire to presidents of 3,018 public firms in Japan (First and Second Section of Tokyo Stock Exchange and Mothers of Tokyo Stock Exchange, First and Second Section of Osaka Stock Exchange and Heracles of Osaka Stock Exchange, First and Second Section of Nagoya Stock Exchange, Fukuoka Stock Exchange, Sapporo Stock Exchange) in December 1, 2007. We received 90 valid responses from Japanese firms. We do not use anonymous responses since we examine the survey results through multivariate analyses with financial data³.

This study analyzes using the scale in the responses as dependent variables. Also, since the questionnaire regarding the effectiveness of J-SOX ranges widely, we analyze each question item as a dependent variable and we have a principal component analysis which regards the attitude of firms for the effectiveness for J-SOX as the principle points at the same time.

We focus on the business complexity as the determinant of both internal controls system and audit quality. The more complicated the business, the higher

¹ The statement regarding the effectiveness of internal controls by management and auditing for internal controls is called “J-SOX” in Japan, but J-SOX is not the Japanese version of SOX. While there are some similar points between J-SOX and SOX, there are some different points such as the evaluation of material weakness between J-SOX and SOX.

² The Subject Committee of the Japan Accounting Association conducted survey research regarding Internal Controls, Corporate Governance and Auditing in 2005 (the survey 2005). They asked public firms in Japan about the situation of internal controls and corporate governance, quality of financial statements audit, and quarterly review. Based on these results, we conducted this survey of presidents in Japan public firms and CFOs in US public firms which have at least two-years’ experience with SOX. We asked them to describe their visions and attitudes for internal controls and corporate governance in 2007 using the same questionnaires as the survey 2005.

³ Three hundred twenty-four Japanese firms responded to the survey, for a response rate of 10.7%. Since Suda et al. (2011) examine the results through a cross analyses, they can employ the anonymous response.

the cost for firms to set up the internal controls system but the higher the necessity to set up the internal controls system. Whether the firms have a positive attitude for setting up the internal controls system depends on the governance structure. Therefore, we take the governance structure as the independent variable.

We consider *Firm size*, *Sales Variance*, *Inventory Ratio*, *R&D Ratio*, *PBR*, *LOSS PORTION*, and *Manufacture dummy* as a proxy of the business complexity. Although the bigger the firm size, the larger the sales variance, the higher the inventory ratio, the more complex the business, the firms should be under the situation of setting up the internal control system positively. Thus, we predict that the three variables, such as firm size, sales variance, and inventory ratio are positively correlated with the strength of internal controls and audit quality.

Since the lower the profitability is, the more loss portion the firms have, the more necessity the firms have to set up the internal control system and the auditing. The two variables, the profitability and *LOSS PORTION* are negatively correlated with internal controls and auditing.

As for *R&D ratio* and *PBR*, we consider that the higher *R&D ratio* and *PBR* are, the more information asymmetry the firms have. If so, *R&D ratio* and *PBR* should be positively correlated with internal controls and auditing. On the other hand, when the internal controls and auditing are maintained, the managers likely consider that the situation is not matched with the creativity which is a source of growth. If so, *R&D ratio* and *PBR* might be negatively correlated with internal controls and auditing. Therefore, we do not add the sign for these variables. Also, since there is a difference in industry between manufacturing and non-manufacturing, we introduce non-manufacturing as a dummy.

We take *Debt Equity Ratio*, *External Directors at Affiliates*, and *External*

Directors at Bank as a proxy for governance. *Debt Equity Ratio* should be considered as a proxy of the pressure from creditors. Therefore, if creditors want to set up the good internal control for the firm, the more Debt Equity ratio they possess, the more firms will likely have a positive attitude for setting up the good internal controls. Thus, *Debt Equity Ratio* is positively associated with the internal controls system. Also, the firms which introduce *External Directors at Affiliates* positively have the stronger pressure outside and have a positive attitude for the good internal control and governance. Thus, *External Directors at Affiliates* is positively associated with internal controls. In this study, we detach *External Directors Affiliates* from *External Directors at Bank*.

3. RESEARCH DESIGN

3.1 Model

The following model is introduced in this study.

INTERNAL CONTROL QUALITY= f (*SIZE, Sales Variance, Inventory Ratio, R&D Ratio, PBR, Debt Equity Ratio, External Directors at Affiliates, External Directors at Banks*)

AUDIT QUALITY= f (*SIZE, Sales Variance, Inventory Ratio, R&D Ratio, PBR dummy and Manufacturing dummy*)

3.2. Sample

Each variable has seven scales, this study estimates the variable by ordered logistic analyses. However, as mentioned before, as for the effectiveness of J-SOX, the variables have been composed by primary component analysis.

The sample used in this study is for the period 2000-2010 from the Nikkei

Economic Electronic Databank System (NEEDS) through following the criteria; (1) SEC standard firms, (2) the month in which the fiscal year ends is March or August, (3) not financial institutions. Financial data and Governance data are from October 2006 through September 2007. Only ninety firms corresponding to the data are available and this is our sample. Table 1 provides the descriptive statistics of the variables.

[Insert Table 1 here]

4. EMPIRICAL RESULTS

Table 2 presents the results of the cost for the internal controls. *Firm Size* is positively correlated with the cost, suggesting that this supports the hypothesis. The bigger the firm size, the more complex the business, and the more cost for the internal controls should be incurred. Furthermore, the variables such as *R&D ratio* and *PBR* are positively correlated with the cost for internal controls. The higher *R&D ratio* and *PBR*, the harder it is for the firm to set up the good internal control, and the more costly the firms are. Also, *External Directors at Banks* are positively correlated with the cost for internal control, suggesting that the bank is the pressure for the firms to set up the good internal controls. On the other hand, the higher *LOSS PORTION* is negatively correlated with the cost for the internal controls⁴. Although these firms should have a good internal control system, they cannot likely set up the good internal controls due to insufficient resources.

[Insert Table 2 Here]

⁴ Since there is no loss firm which answered the cost for documentation, we cannot examine the relationship between cost for the documentation and profitability.

Table 3 provides the results regarding the enforcement of internal controls and governance. As for the effectiveness of J-SOX, the coefficients of *Sales Variance*, *Inventory Ratio*, *R&D Ratio* which are the business complexity variables are all negative. This suggests that the more complexity the firms have, the less evaluation for the effectiveness of J-SOX the firms have. On the other hand, *PBR*, *External Directors at Banks*, and *Debt Equity Ratio* are positively significant. This suggests that the more growth the firms have, the more pressure the firms have from creditors, and the firms evaluate the J-SOX positively.

As for the proper procedures, *Sales Variance* is negatively significant, suggesting that the more complicated business the firms have, the lower evaluation the firm has for proper procedure. On the other hand, *PBR* is positively significant, suggesting that the more growth the firms have, the higher evaluation the firms have for the proper procedure. As for the effectiveness of audit by auditors, the coefficients of *Sales Variance* and *Inventory Ratio* are negatively significant, the more complicated the businesses the firms have, the more the firms accept the effectiveness of audit by auditors⁵.

Thus, we can suggest that the firms which have more complicated business likely evaluate the enforcement of the internal controls and governance, since they do not have a willingness to pay the costs for good internal controls. On the other hand, the growing firms have a positive attitude for the good internal controls.

[Insert Table 3 Here]

Table 4 shows the results regarding the effectiveness of J-SOX. The

⁵ We examine the level of documentation, but we cannot find the significant association for any variables.

coefficients of *Sales Variance* and *R&D Ratio* have a negative sign for all models and have some significant associations, suggesting that when the risk is high and the creativity should be needed, they have a negative attitude for J-SOX effectiveness. Also, *PBR* has a positively significant association, suggesting that the more growth the firms have, they expect the good internal controls systems. Considering the relationship between the governance and the effectiveness of J-SOX, *Debt Equity Ratio* is positively associated with compliance and positively associated with other variables. Also, *External Directors at Affiliates* are positively associated with efficiency for the compliance model and *External Directors at Banks* are positively associated with efficiency for the efficiency model. This suggests that the more outside pressure the firms have, the more expectation the firms have for the effectiveness of J-SOX.

[Insert Table 4 Here]

Table 5 provides the results regarding audit quality. *R&D Ratio* is negatively correlated with the quality for financial statement auditing. Also, the coefficient of *Sales Variance* is negatively significant and the coefficient of *PBR* is positively significantly correlated with the quality for internal control auditing. The situation of the internal control is generally similar to the expectation. The higher the uncertainty the firms have, the more creativity they expect, and they have a complaint against the auditing quality. The more growth the firms have, the more tendency they have to be satisfied with the existing auditing quality. However, as for the expectation for the direct reporting, we find that *R&D Ratio* and *PBR* are significantly negatively correlated with the expectation of the direct reporting. The more creativity and the more growth the firms have, the less they want the direct reporting. Especially, as for *PBR*, the

higher quality for internal control auditing the firms have, the more satisfied with the current situation they are. Since this result is opposite to the previous results, they do not have a change, since they are satisfied with the current situation.

[Insert Table 5 Here]

5. CONCLUSION

This study investigates the determinants of internal controls system and audit quality. We can provide the following implications: First, as for the effect of internal controls, the firms which should set up the good internal controls and risky firms have a negative attitude for the good internal controls. The firms likely consider the negatives more than merits for establishing good internal controls. However, the firms which have a great growth and should need to have a good internal control do not always have a negative attitude, rather they evaluate the internal control positively. This suggests that they have a good internal control by employing the pressure outside. Second, we can imply that the stronger pressure from outside creditors the firms have the more likely the firms should set up internal controls.

This study has limitations: Our sample size is small. The object of survey research is limited for just respondent firms by employing both the survey results and archival data. Thus, potential response bias means that we can examine the characteristics of only firms which have responded. Also, budget constraints make it unrealistic to study every year. And we only examined a limited number of periods. In order to resolve the problems, we need to perform another survey and to obtain a higher response rate.

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TABLE 1				
Descriptive Statistics (N=280)				
Variables	MEAN	S.D.	MIN	MAX
<i>Size (Yen 100,000)</i>	661,937	2,555,507	272	20,500,000
<i>Sales Variance</i>	0.11	0.08	0.01	0.32
<i>Inventory Ratio</i>	0.10	0.07	0.00	0.28
<i>R&D Ratio</i>	0.02	0.04	0.00	0.32
<i>PBR</i>	1.72	1.56	0.36	11.76
<i>Debt Equity Ratio</i>	0.51	0.20	0.09	0.88
<i>Outside Directors at Affiliates</i>	0.01	0.05	0.00	0.38
<i>Outside Directors at Banks</i>	0.01	0.03	0.00	0.13
<i>See the following for variable definition.</i>				
<i>Size (Yen 100,000)</i>	<i>Sales(Yen 100,000)</i>			
<i>Sales Variance</i>	<i>Five years standard deviation of (Sales / Total assets in the beginning of the year)</i>			
<i>Inventory Ratio</i>	<i>Inventory / Total assets in the end of the year</i>			
<i>R&D Ratio</i>	<i>R&D Costs / Total assets in the end of the year</i>			
<i>PBR</i>	<i>Market capitalization / Total assets in the end of the year</i>			
<i>Debt Equity Ratio</i>	<i>Total debts/ Total assets in the end of the year</i>			
<i>Outside Directors at Affiliates</i>	<i>the number of Outside Directors at Affiliates/ the number of all the directors</i>			
<i>Outside Directors at Banks</i>	<i>the number of Outside Directors at Banks/ the number of all the directors</i>			

TABLE 2
The Ordered Logistic

	Coefficient	SIZE	Sales Variance	Inventory Ratio	R&D Ratio	PBR	LOSS	Manufacture	Debt Equity Ratio	Outside Directors at Affiliates	Outside Directors at Banks	Adj R ²	N
The Cost for J-SOX Preparation	-2.96	0.51	0.75	1.64	7.52	0.12	-0.57	0.48	0.76	0.65	4.81	0.64	90
	-3.32 ***	9.06 ***	0.44	1.26	4.32 ***	1.85 *	-2.11 **	2.71	1.14	0.49	2.12 ***		
The Cost for Documentation in Operating	2.98	0.42	0.20	1.04	6.70	0.19		0.83	0.37	-0.95	2.98	0.45	76
	-2.42 ***	4.53 ***	0.08	0.62	3.38 ***	2.30 **		3.44 ***	0.48	-0.50	1.02		

Cost is a log of value.
t-value are located in the lower column.
*, **, and *** indicate significance at p< 10 %, p< 5%, p<1%.

TABLE 3
The Ordered Logistic

	SIZE	Sales Variance	Inventory Ratio	R&D Ratio	PBR	LOSS	Manufacture	Debt Equity Ratio	Outside Directors at Affiliates	Outside Directors at Banks	Adj R ²	N
Q1 Effectiveness of J-SOX	-0.15	-8.71	-7.82	-11.26	0.48	-0.86	0.16	2.49	4.20	-4.17	0.11	89
	-0.89	-2.37 **	-2.78 ***	-2.14 **	3.38 ***	-2.47 **	0.33	2.05 **	2.19 **	-0.82		
Q3 Effectiveness of Double	-0.07	-8.35	-2.49	-9.56	0.39	-0.84	0.07	0.35	3.06	-10.43	0.05	89
	-0.47	-2.44 **	-0.95	-2.23 **	2.56 ***	-0.94	0.17	0.32	0.67	-1.99 **		
Q4 Proper Procedures	0.23	-11.98	-3.02	3.56	0.66	0.77	0.62	2.28	2.77	-4.88	0.13	89
	1.45	-3.71 ***	-1.01	0.60	4.41 ***	0.37	1.18	1.58	0.72	-0.59		
Q5 Audit by Auditors	-0.16	-6.13	-7.61	-0.95	-0.04	-1.25	-0.17	1.64	1.31	4.19	0.05	90
	-1.02	-1.72 *	-2.38 **	-0.12	-0.32	-1.58	-0.34	1.57	0.79	0.63		
Q8 Range of Documentation	-0.17	-1.96	-3.95	1.30	0.01	-0.93	0.43	-0.31	0.44	-8.99	0.03	90
	-1.06	-0.72	-1.25	0.11	0.06	-0.90	0.79	-0.25	0.08	-1.20		

All are Estimated by Order Logit.

Coefficient should be neglected.

* z-value or t-value are located in the lower column.

*, **, and *** indicate significance at p< 10 %, p< 5%, p<1%.

TABLE 4
The Ordered Logistic

		<i>Sales Variance</i>	<i>Invent ory Ratio</i>	<i>R&D Ratio</i>	<i>PBR</i>	<i>LOSS</i>	<i>Manu- facture</i>	<i>Debt Equity Ratio</i>	<i>Outside Directors at Affiliates</i>	<i>Outside Directors at Banks</i>	<i>Adj R²</i>	<i>N</i>	
(1)	Improvement of Govenance	-0.17 -1.06	-6.55 -1.44	-1.87 -0.67	-8.71 -2.56 **	0.24 1.29	0.02 0.03	0.14 0.33	1.62 1.69 *	-0.04 -0.01	-2.27 -0.42	0.11	89
(2)	Effectiveness of Operation	-0.02 -0.13	-3.23 -0.74	-2.64 -0.99	-4.30 -1.08	0.33 1.55	0.61 0.47	0.35 0.80	-0.54 -0.40	-2.37 -0.97	8.43 1.07	0.05	89
(3)	Efficiency of Operation	-0.15 -1.29	-6.59 -1.99 **	-2.98 -1.15	-4.20 -0.84	0.45 3.08 ***	-1.15 -1.11	-0.27 -0.65	0.07 0.06	1.35 0.36	11.62 2.21 **	0.13	89
(4)	Creditability of Financial	-0.10 -0.57	-6.06 -1.33	-3.08 -0.89	-7.39 -0.51	0.38 2.11 **	0.31 0.77	-0.10 -0.18	1.62 1.63	1.09 0.62	-7.57 -1.10	0.05	90
(5)	Compliance	-0.39 -2.26 **	-7.09 -1.62	-1.37 -0.41	-10.35 -2.11 **	0.14 0.77	-1.31 -0.76	-0.42 -0.90	2.06 1.74 *	6.67 1.69 *	9.77 1.14	0.03	90
(6)	Assets protection	0.05 0.34	-4.44 -1.16	-3.50 -1.12	-0.69 -0.07	0.36 1.73 *	-1.51 -1.20	0.13 0.28	0.93 0.80	-1.27 -0.55	3.08 0.60	0.03	90
Joint Inde	(2)-(6) Components	-0.13 -0.92	-6.39 -1.87 *	-3.07 -1.05	-7.02 -1.09	0.35 3.92 ***	-0.53 -0.58	-0.05 -0.12	1.15 1.14	0.78 0.32	4.73 0.86	0.02	90

(1) through (6) are estimated by the order logit and joint index is estimated by OLS regression.
determination coefficient is a vitural coefficient and adjusted R2.

Coefficient should be neglected.

All are Estimated by Ordered Logistic.

Coefficient should be neglected.

z-value or t-value are located in the lower column.

*, **, and *** indicate significance at $p < 10\%$, $p < 5\%$, $p < 1\%$.

TABLE 5
The Ordered Logistic

Dependent Variables		SIZE	Sales Variance	Inventory Ratio	R&D Ratio	PBR	LOSS	Manu- facture	Adj R ²	n	
Q6	<i>Expectation for Direct Reporting</i>	<i>Expectation for Direct Reporting</i>	-0.05	4.30	-2.11	-7.70	-0.33	0.23	-0.43	0.04	90
			-0.43	1.30	-0.71	-3.26 ***	-2.28 **	0.42	-1.13		
Q9	<i>Quality of Financial Statement Audit</i>	<i>Quality of Financial Statement Audit</i>	0.04	-4.54	-2.48	-10.28	0.38	0.40	0.07	0.04	90
			0.32	-0.87	-0.73	-2.91 ***	1.58	0.25	0.15		
Q10	<i>Quality of Internal Control Audit</i>	<i>Quality of Internal Control Audit</i>	0.17	-12.48	1.89	-0.43	0.72	1.36	-0.06	0.09	90
			1.48	-2.45 **	0.70	-0.12	2.87 ***	1.03	-0.13		

(1) through (6) are estimated by the order logit and joint index is estimated by OLS regression.

Coefficient should be neglected.

z-value or t-value are located in the lower column.

*, **, and *** indicate significance at p< 10 %, p< 5%, p<1%.

