Audit fees and earnings management under different litigation environment

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INTRODUCTION

Accounting research on litigation risk and audit fees has been raised since 1980. Simunic (1980) found that audit fees reflect risk differences across litigation regimes. From 1984 to 1999, several researchers had performed empirical research to find evidence linking litigation risk to audit fees. However, their findings are inconclusive due to lack of a large audit fees data (Francis, 1984; Chung and Lindsay, 1988; Chan et al., 1993; Johnson et al., 1995; Craswell and Francis, 1999). Seetharaman et al. (2002) used cross-listed firms data and found that UK auditors charge higher fees for their services when their UK clients are cross-listed in US market, but not for non-US cross-listed UK firms. The finding suggests that audit fees reflect risk differences across litigation regimes. Choi et al. (2009) examined data from 14 countries and asserted that auditors charge higher fees for firms that are cross-listed in stronger legal regimes than for non-cross-listed firms. Based on previous literature, we can observe that audit fees is influenced by the difference in litigation environment. In other words, litigation is an important determinant of audit fees.

Meanwhile, earnings management risk is also a fundamental determinant of audit fees. Bedard and Johnstone (2004) found that auditors respond to earnings management risk with ex ante increase in planned audit hours and billing rates. Abbott et al. (2006) found that audit fees are inversely related to income-decreasing discretionary accruals. They also find that the positive relationship between audit fees and positive discretionary accruals is magnified for high P/E firms. Therefore, it is necessary to analyze the audit fees with these two aspects: litigation environment and earnings management.

Based on previously mentioned research, we find methodology limitation in analyzing samples of cross-listed and non-cross-listed firms: Seetharaman at al. (2002) matched the sample by size and industry, while Choi et al. (2009) matched the sample by country, year, and industry. They did not analyze the sample using a more rigorous matching model. Recent audit research suggests that the potential threat of selection bias in auditing research is likely to occur when comparing large and small accounting firms that can have quite different characteristics. Lawrence et al. (2011) found that after using propensity-score matching models, the treatment effect of Big 4 auditors

turned to be insignificantly different from those of non-Big 4 auditors with respect to their clients' discretionary accruals.

To the best of our knowledge, empirical research on the association between audit fees and earnings management using Japanese data is still scarce. Yazawa (2011) performed research on the association between audit fees and earnings management, but he did not consider the effect of litigation environment on audit fees. In this paper, we consider the effect of audit fees, earnings management risk, and litigation environment risk and use the sample of Japanese firms cross-listed in US markets to answer several questions: what the correlation between audit fees and difference litigation environments is and whether the extent of correlation between audit fees and earnings management in one litigation environment is different from the other.

In order to answer the above questions, we use propensity-score matching model to control for differences in firm characteristics between two litigation environments and carried multivariate regression test to verify the three hypotheses about correlation among audit fees, earnings management risk and litigation risk.

Based on our results, we found that there are still differences in audit fees under different litigation environment after using propensity-score matching model for Japanese firms cross-listed in US markets, and the audit fees increasing with the high litigation risk. Further analyses show that high risk of earnings management is associated with higher audit fees. We also find that the effect of audit fees resulting from risk of upward earnings management (i.e., income-decreasing discretionary accruals) is magnified under higher litigation risk environment.

Compared with prior research, this paper has two distinct characteristics: first, we provide empirical evidence on the relationship between audit fees and earnings management considered from the perspective of different litigation environments; second, we use sample of Japanese firms cross-listed in US market and Japanese firms not cross-listed in US market, which is then matched by propensity-score matching model.

HYPOTHESES

Audit Fees and Litigation Risk

Houston et al. (1999) found that the presence of accounting choices reflecting higher risks of accounting irregularities leads to higher litigation risk assessments and fee premiums. Seetharaman et al. (2002) documented that UK auditors charge higher fees for their services when their UK clients are cross-listed in US market, and attribute this premium mostly to the US high litigation environment. Choi et al. (2009) asserted that auditors charge higher fees for firms that are cross-listed in stronger legal regimes than for non-cross-listed firms. Using the above rationale, we formulate the first hypothesis:

H1 Audit fees increase with high litigation risk.

Consider the limitation of previous research in sample matching method (Seetharaman at al., 2002; Choi et al., 2009), which did not analyze the sample using a more rigorous matching model. In this paper, we will use propensity score marching method to relieve the selection bias problem.

Audit Fees and Earnings Management Risk

Several empirical papers suggested that audit fees are influenced by the risk of earnings management. Heninger (2001) argued for a positive association between income-increasing abnormal accruals and ex-post auditor litigation. Lee and Mande (2003) examine how the passage of the Private Securities Litigation Act affects auditors' incentives to curtail earnings management, they found that after the Private Securities Litigation Act, income-increasing discretionary accruals rise for auditees of Big 6 firms. Bedard and Johnstone (2004) found that auditors respond to earnings management risk with ex ante increase in planned audit hours and billing rates. Using the above rationale, we formulate the second hypothesis:

H2 Audit fees increase with high earnings management risk.

Yazawa (2011) measured the risk of earnings management by measure the rate of (net income - net income former year) / net asset. If the value of this variable is between 0-1 percent, it indicates a high possibility that managers using earnings management to achieve earnings increasing.

Audit Fees, Earnings Management Risk and Litigation Risk

Dechow et al. (2000) found that high-growth firms are more likely to use large accruals to manage earnings. Barron et al. (2001) hypothesized that the risk effect resulting from a client's propensity to manage earnings is magnified for clients in greater litigation risk environments. Abbott at al. (2006) found that the positive discretionary accruals has an incremental explanatory effect when interacted with litigation risk. Thus this leads to our third hypothesis:

H3 Effect of audit fees resulting from upward earnings management risk is magnified under greater litigation risk environments.

While the hypothesis above is similar in spirit to the earnings management risk hypothesis presented by Abbott at al. (2006), there is one important difference that merit discussion. Abbott at al. (2006) used high (low) earnings-to-price multiples to represent the high (low) litigation risk. In our paper, we use firm's cross-listing status to represent the high litigation risk environment (US) and low litigation risk environment (Japan).

METHOD

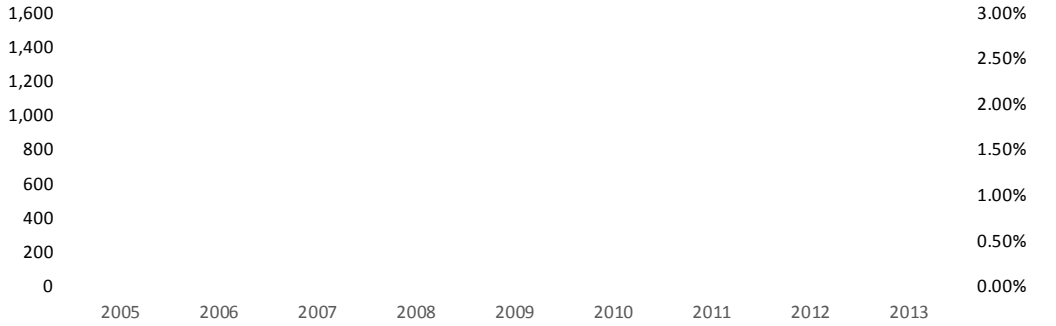
Sample Selection

Porta et al. (1998) found that common-law countries (e.g. United States, United Kingdom, Australia, etc.) generally have the strongest legal protection for investors, while French-civil-law countries (e.g. France, Brazil, etc.) and German and Scandinavian-civil-law countries (Japan, Germany, Finland, etc.) have weaker legal regime. In this paper, the litigation environment of United States is stronger than that of Japan. This paper is different from the Seetharaman at al.'s (2002) research on audit fees and litigation risk since our study employs sample of Japanese firms which belong to the German and Scandinavian-civil-law countries, which is quite different from the common-law countries like United States and United Kingdom. This paper provides a new research perspective on the topic of audit fees and earnings management.

Non-US firms selling their securities in the United States are exposed to liability under US securities laws. As a result, Japanese firms offering to sell their securities publicly in the US provide an ideal opportunity to research under different litigation environment. We use samples of Japanese firms cross-listed on US market and Japanese firms non-cross-listed on US market to account for different litigation characteristics between Japanese and United States. Using this data allow our paper to provide an insight for discussing the association between audit fees and earnings management under different litigation risk.

Table 1 presents the information of sample selection.

TABLE 1
Sample Selection



	2005	2006	2007	2008	2009	2010	2011	2012	2013	sum
US_listed	26	31	24	33	23	28	24	26	21	236
Total	1,276	1,315	1,364	1,396	1,033	1,056	1,074	1,099	1,084	10,697
% of Total	2.04%	2.36%	1.76%	2.36%	2.23%	2.65%	2.23%	2.37%	1.94%	2.21%

For our analyses, we use firm-year data from 2005 to 2013. All variables except for LAF and US_LISTED are obtained from the NEEDS Financial Quest database. Information about LAF and US_LISTED is obtained from the EOL database. After excluding securities, banking, and insurance firms, restricting our sample to firms with fiscal year ended as of March 31, our final sample size consists of 10,697firm-years.

Matching Process

Propensity score matching model is becoming an increasingly popular research method adopted in the auditing literature. In this paper, we use the propensity score matching model to match the sample on a broad range of firm characteristics to examine whether the difference in audit fees exists under different litigation environment. Propensity score matching model matches observations based on the probability of undergoing the treatment, which in our case is the probability of Japanese firms' public offering to sell their securities in the United States. This matching process has two advantages. First, this model generates samples in which both the US-listed Japanese firms and non US-listed Japanese firms are matched to have similar characteristics. Second, Li and Prabhala (2007) argued that matching models do not rely on a specific functional form and provide a more direct estimate of the treatment effects.

We use a logit model to estimate the probability of Japanese firms offering to sell their securities in the United States, as it is the most prevailing approach for estimating propensity scores (Guo and Fraser 2010; Lawrence et al. 2011). Following prior research (Seetharaman et al. 2002; Abbott et al. 2006; Lawrence et al. 2011) we estimate the propensity score using the following logit regression model:

$$US\_\text{LISTED}_{i,t} = \beta_0 + \beta_1 LNTA_{i,t} + \beta_2 ATURN_{i,t} + \beta_3 CURR_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CRATIO_{i,t} + \beta_7 DE_{i,t} + \beta_8 LOSS_{i,t} + Industry\_d + Year\_d + \varepsilon_{i,t} \quad (1)$$

For firm i and fiscal year t, where:

US _ LITED
: Dummy variable equaling 1 if a firm was listed on the US market and 0 otherwise;

LNTA
: Natural logarithm of total assets at the end of year $_t$;

ATURN
: Sales $_t$/totalassets$_{t-1}$;

CURR
: Current assets $_t$/currentliabilities$_t$;

LEV
: (Long term debt $_t$plusdebtincurrentliabilities$_t$) / average total assets $_{t-1}$;

ROA
: Net income $_t$/averagetotalassets$_{t-1}$;

CRATIO
: Current asset $_t$/totalassets$_t$;

DE
: Long term debt $_t$/totalassets$_t$;and,

LOSS
: Dummy variable equaling 1 if a firm was net loss at the end of year $_t$.

Lawrence et al. (2011) asserted that the estimation results are robust to the inclusion of all redundant variables simultaneously or to including only one redundant variable at a time. As a result, we estimate the propensity score model by including all audit proxy control variables.

Regression Model

Audit Fees and Litigation Environment

Our tests on first hypothesis are based on cross-sectional regressions of the natural logarithm of disclosed audit fees on a number of variables, including dummy variables to identify Japanese firms trading on US markets. The aim of these tests is to find the association between audit fees and different litigation risk environment. We use the following cross-sectional regression model:

$$LAF_{i,t} = \beta_0 + \beta_1 US\_LISTED_{i,t} + \beta_2 LNTA_{i,t} + \beta_3 ATURN_{i,t} + \beta_4 CURR_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 CRATIO_{i,t} + \beta_8 DE_{i,t} + \beta_9 LOSS_{i,t} + Industry\_d + Year\_d + \varepsilon_{i,t} \quad (2)$$

For firm i and fiscal year t, where:

LAF : The natural log of audit fees $_t$;

US_LITED : Dummy variable equaling 1 if a firm was listed on the US market and 0 otherwise;

LNTA : Natural logarithm of total assets at the end of year $_t$;

ATURN : Sales $_t$/totalassets$_{t-1}$;

CURR : Current assets $_t$/currentliabilities$_t$;

LEV : (Long term debt $_t$plusdebtincurrentliabilities$_t$) / average total assets $_{t-1}$;

ROA : Net income $_t$/averagetotalassets$_{t-1}$;

CRATIO : Current asset $_t$/totalassets$_t$;

DE : Long term debt $_t$/totalassets$_t$;and,

LOSS : Dummy variable equaling 1 if a firm was net loss at the end of year $_t$.

Audit Fees, Earnings Management, and Litigation Environment

To verify the second and third hypotheses on the association between audit fees and earnings management under different litigation risk environment, we use the following cross-sectional regression model:

$$LAF_{i,t} = \beta_0 + \beta_1 EM\_RISK_{i,t} + \beta_2 US * \text{DA\_INCR}_{i,t} + \beta_3 LNTA_{i,t} + \beta_4 ATURN_{i,t} + \beta_5 CURR_{i,t} + \beta_6 LEV_{i,t} + \beta_7 ROA_{i,t} + \beta_8 CRATIO_{i,t} + \beta_9 DE_{i,t} + \beta_{10} LOSS_{i,t} + Industry\_d + Year\_d + \varepsilon_{i,t} \quad (3)$$

For firm i and fiscal year t, where:

LAF : The natural log of audit fees $_t$;

EM_RISK : The value of discretionary accruals times 1 if the rate of (net income - net income former year) / net asset is between 0 and 1%, and 0 otherwise.

US * DA_INCR : The value of income-increasing discretionary accruals times 1 if a firm was listed on the US market and 0 otherwise.

LNTA : Natural logarithm of total assets at the end of year $_t$;

ATURN : Sales $_t$/totalassets$_{t-1}$;

CURR : Current assets $_t$/currentliabilities$_t$;

LEV : (Long term debt $_t$plusdebtincurrentliabilities$_t$) / average total assets $_{t-1}$;

ROA : Net income $_t$/averagetotalassets$_{t-1}$;

CRATIO : Current asset $_t$/totalassets$_t$;

DE : Long term debt $_t$/totalassets$_t$;and,

LOSS : Dummy variable equaling 1 if a firm was net loss at the end of year $_t$.

Discretionary accruals are calculated with CFO modified Jones model (Kasznik, 1999).

Variable definitions are summarized in Table 2.

TABLE 2
Definition of Variables

	Model (1)		Model (2)		Model (3)	
	Variable Name	Description	Variable Name	Description	Variable Name	Description
Dependent Variable	US_LISTED	Dummy variable equaling 1 if a firm was listed on the US market and 0 otherwise.	LAF	The natural log of audit fees t.	LAF	The natural log of audit fees t.
Test Variables			US_LISTED	Dummy variable equaling 1 if a firm was listed on the US market and 0 otherwise.	EM_RISK	The value of discretionary accruals times 1 if the rate of (net income – net income former year) / net asset is between 0 and 1%, and 0 otherwise.
					US*DA_INCR	The value of income-increasing discretionary accruals times 1 if a firm was listed on the US market and 0 otherwise.
Control Variables	LNTA	Natural logarithm of total assets at the end of year t.	LNTA	Natural logarithm of total assets at the end of year t.	LNTA	Natural logarithm of total assets at the end of year t.
	ATURN	Sales t / total assets t-1 .	ATURN	Sales t / total assets t-1 .	ATURN	Sales t / total assets t-1 .
	CURR	Current assets t / current liabilities t.	CURR	Current assets t / current liabilities t.	CURR	Current assets t / current liabilities t.
	LEV	(Long term debt t plus debt in current liabilities t) / average total assets t-1.	LEV	(Long term debt t plus debt in current liabilities t) / average total assets t-1.	LEV	(Long term debt t plus debt in current liabilities t) / average total assets t-1.
	ROA	Net income t / average total assets t-1.	ROA	Net income t / average total assets t-1.	ROA	Net income t / average total assets t-1.
	CRATIO	Current asset t / total assets t.	CRATIO	Current asset t / total assets t.	CRATIO	Current asset t / total assets t.
	DE	Long term debt t / total assets t.	DE	Long term debt t / total assets t.	DE	Long term debt t / total assets t.
	LOSS	Dummy variable equaling 1 if a firm was net loss at the end of year t.	LOSS	Dummy variable equaling 1 if a firm was net loss at the end of year t.	LOSS	Dummy variable equaling 1 if a firm was net loss at the end of year t.

RESULTS

Descriptive Statistics

Table 3 presents the descriptive statistics for both the full and propensity score matched samples. The full sample consists of 10,697 firm-years, out of which 118 (1.1%) and 10,579 (98.9%) firm-years represent US-listed Japanese firms and non US-listed Japanese firms, respectively. The descriptive statistics for the full sample and PSM sample indicate that US-listed Japanese firms and non US-listed Japanese firms have significantly different audit fees.

TABLE 3
Descriptive Statistics

	Full Sample					PSM sample				
	NON_US_listed		US_listed		Difference in Means	NON_US_listed		US_listed		Difference in Means
	Mean	Std. Dev.	Mean	Std. Dev.	(t-statistic)	Mean	Std. Dev.	Mean	Std. Dev.	(t-statistic)
LAF	1.456	0.267	2.774	0.453	-52.835 ***	2.011	0.577	2.774	0.453	-11.294 ***
LNTA	4.737	0.608	6.407	0.789	-29.553 ***	6.001	0.560	6.407	0.789	-4.557 ***
ATURN	1.168	0.669	0.834	0.239	5.429 ***	0.886	0.287	0.834	0.239	1.520
CURR	2.031	4.170	1.890	1.241	0.367	2.309	1.813	1.890	1.241	2.071 **
LEV	0.521	0.219	0.506	0.182	0.750	0.479	0.235	0.506	0.182	-0.995
ROA	5.683	6.846	6.687	4.888	-1.590	6.798	5.050	6.687	4.888	0.170
CRATIO	0.551	0.178	0.468	0.130	5.073 ***	0.509	0.136	0.468	0.130	2.392 **
DE	0.155	0.120	0.196	0.107	-3.735 ***	0.170	0.113	0.196	0.107	-1.807 *
LOSS	0.079	0.269	0.042	0.202	1.462	0.017	0.130	0.424	0.202	-1.149
No. Obs	10,579		118			118		118		
% of Total	98.9%		1.1%			50.0%		50.0%		

*,**,*** Indicate significance at the 0.10, 0.05 and 0.01 level.

Regression Results

In Table 4, we find a positive and significant US-LISTED coefficient of 0.817 in the full sample column and a positive significant multivariate US-LISTED coefficient of 0.572 in the PSM sample, suggesting that the treatment effects of US-listed Japanese firms are significantly different from those of non US-listed Japanese firms with respect to audit fees, even after controlling for client characteristics for both sample groups. Also we can confirm the result of Seetharaman et al. (2002), as the H1 is supported that audit fees increasing with the high litigation risk environment.

TABLE 4
Audit Fees and Litigation Environment Analysis

		Dependent Variable: LAF					
		Full Sample			PSM Sample		
Variable Name	Expected Sign	Multivariate Estimate	t-statistic	p-value	Multivariate Estimate	t-statistic	p-value
Intercept		0.162	5.670	0.000 ***	-2.067	-5.420	0.000 ***
US_LISTED	+	0.817	41.810	0.000 ***	0.572	13.770	0.000 ***
LNTA		0.275	78.240	0.000 ***	0.542	11.780	0.000 ***
ATURN		0.009	2.140	0.033 **	0.301	2.520	0.013 **
CURR		0.000	0.780	0.435	-0.017	-0.580	0.560
LEV		0.013	1.120	0.264	0.089	0.370	0.712
ROA		0.000	0.620	0.536	-0.005	-0.940	0.350
CRATIO		0.091	5.620	0.000 ***	0.586	1.940	0.053 *
DE		0.097	3.760	0.000 ***	0.862	2.150	0.033 **
LOSS		0.043	5.300	0.000 ***	0.116	0.880	0.382
Industry_d			Included			Included	
Year_d			Included			Included	
Adj R-squared			0.573			0.787	
No. Obs.			10,700			236	

*,**,*** Indicate significance at the 0.10, 0.05 and 0.01 level.

From Table 5, we find a positive and significant EM_RISK coefficient of 0.226 in the full sample column, thus the results from full sample column can support for the H2 that audit fees increasing with high earnings management risk. Also we find a positive and significant US*DA_INCR coefficient of 8.445 in the full sample column, thus the results from full sample column can support for the H3 that audit fees effects resulting from upward earnings management risk are magnified under greater litigation risk environments.

The last column of Table 5 presents the result of the propensity score matched sample. We find a positive significant multivariate EM_RISK coefficient of 1.838, confirming hypothesis that audit fees increasing with high earnings management. Although the significance of the coefficient is a matter of judgment, after client characteristics are controlled for the two sample groups, the results at least provide limited empirical support for H2. Also we find a positive and significant US*DA_INCR coefficient of 4.119 in the PSM sample column, suggesting that H3 is still supported after controlling for client characteristics for both sample groups.

As a side notice, from comparing the adjusted R-squared of full sample and PSM sample, we conclude that propensity score marching method can improve the results of multivariate tests.

TABLE 5
Audit Fees, Rarnings Management and Litigation Environment Analysis

		Dependent Variable: LAF					
		Full Sample			PSM Sample		
Variable Name	Expected Sign	Multivariate Estimate	t-statistic	p-value	Multivariate Estimate	t-statistic	p-value
Intercept		0.010	0.330	0.744	-2.228	-4.350	0.000 ***
EM_RISK	+	0.226	2.100	0.036 **	1.838	1.690	0.093 *
US*DA_INCR	+	8.445	15.120	0.000 ***	4.119	3.170	0.002 ***
LNTA		0.311	85.610	0.000 ***	0.654	10.670	0.000 ***
ATURN		0.008	1.720	0.086 *	0.130	0.820	0.413
CURR		0.001	1.170	0.243	-0.087	-2.240	0.026 **
LEV		0.030	2.030	0.042 **	-0.096	-0.300	0.765
ROA		0.000	0.380	0.702	0.001	0.120	0.903
CRATIO		0.049	2.810	0.005 ***	0.578	1.440	0.152
DE		0.060	2.060	0.040 **	0.560	1.040	0.298
LOSS		0.047	5.330	0.000 ***	0.143	0.800	0.424
Industry_d			Included			Included	
Year_d			Included			Included	
Adj R-squared			0.514			0.624	
No. Obs.			10,697			236	

*,**,*** Indicate significance at the 0.10, 0.05 and 0.01 level.

CONCLUSION

This paper examines the correlation among audit fees, earnings management, and litigation risk, using discretionary accruals as a proxy for earnings management risk and cross-listing status of Japanese firms in US market as a proxy for two different litigation environments. We hypothesize that, audit fees increasing with high litigation risk. We also hypothesize that audit fees increasing with high earrings management risk. We finally hypothesize that the effect of audit fees resulting from upward earnings management risk is magnified under greater litigation risk environments. We test our hypotheses with propensity score marching sample of 236 firm-year data for the year 2005 to 2013.

We find that after adopting the propensity score matching method, audit fees are still different in each litigation environment and positive relationship exists between audit fees and litigation risk. Then we found that high earnings management risk is associated with higher audit fees. We also found that the effect of audit fees resulting from risk of upward earnings management (i.e., income-increasing discretionary accruals) is magnified under greater litigation risk environment.

From comparing the adjusted R-squared of full sample and PSM sample, we concluded that propensity score marching method can improve the results of multivariate tests. However, the propensity score marching model still needed to be improved, as too many relevant variables should be considered as factors lead Japanese firm cross-listed on US market. Additionally, earnings management is just one aspect of audit quality. This paper does not investigate another factors of audit quality such as professional experience, restatements, economic dependent and so on. So for the future study, it would be useful to analyze the association between audit fees and another factor of audit quality under different litigation environment.

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