The Economic Consequences of Convergence with the International Financial Reporting Standards in Japan

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This paper examines whether the convergence of Japan GAAP with the IFRSs reduce the cost of equity capital. We focus on the consolidated financial reporting of Japanese listed companies. We measure the cost of equity capital using the implied cost of equity capital models. The results of our tests provide that the appropriate costs of equity capital are estimated by the Residual Income Model and the Abnormal Earnings Growth Model in Japan, and the converging Japan GAAP toward IFRSs decreases the cost of equity capital until 2009.3, however it increases in 2010.3 because of the economic recession by Lehman Shock.

INTRODUCTION

The purpose of this paper is to investigate whether the convergence of Japan Generally Accepted Accounting Principles (GAAP) with the International Financial Reporting Standards ("IFRSs") reduce the cost of equity capital. We focus on the consolidated financial reporting of Japanese listed companies. We measure the cost of equity capital using the implied cost of equity capital models proposed by Gebhards et al. (2001) and Easton (2004) and the average estimates from those costs of equity capital proposed by Hail and Leuz (2006) and Daske (2006). We evaluate the appropriate costs of equity capital by the regression with some risk and economic factors and find whether the internationally convergence of domestic accounting standards make decrease them.

In Japan, the Business Accounting Council (BAC) was the accounting standards setter in the Ministry of Finance until 2001. The BAC started the "Accounting Big-bang" as the international harmonization of accounting standards from 1997. In 2001, the Accounting Standards Board of Japan (ASBJ) was established as a private sector and has developed and revised many accounting standards to harmonize with the IFRSs. In 2008, the Committee of European Securities Regulators (CESR) in the European Union (EU) indicated the Japan GAAP to be equivalent with the IFRSs.

The International Accounting Standards Board (IASB) issues that one of the objectives of the IASB is to develop a single set of high quality, understandable and enforceable global accounting standards that require high quality, transparent and comparable information in financial statements and other financial reporting to help participants in the various capital markets of the world and other users of the information to make economic decisions (IASB (2001)). IASB has focused on developing a set of high quality standards to provide the high quality financial information to the information users. IFRSs will reduce the cost of equity capital and open new opportunities for diversification and improved investment returns (Tweedie, 2006). Then we are interested in that the international convergence of accounting standards is expected to reduce the cost of equity capital and develop a chance to invest for Japanese

listed companies.

The organization of this paper is as follows. At first we overview the progress of convergence toward IFRSs in Japan. Secondly the estimation model of the expected cost of equity capital is considered. Next we review the relevant literatures. Then our sample selection and descriptive statistics for the sample will be showed and a research design is proposed. Lastly we show the results of empirical analysis and present the concluding remarks.

INTERNATIONAL CONVERGENCE OF JAPANESE ACCOUNTING STANDARDS

The BAC was Japanese accounting standards-setter until the establishment of the ASBJ in 2001. The BAC started the accounting revolution called the "Accounting Big-bang." Many Japanese accounting standards were revised to increase the transparency of the disclosures by Japanese firms, to harmonize with the international standards, and to establish the international comparability of financial statements. The Accounting Big-bang brought about paradigm changes in Japanese accounting system, such as regulation of consolidated financial statements, fair value measurement to financial instruments, and preparing cash flows statements. Table 1 shows the accounting standards developed by the BAC after the Accounting Big-bang.

The ASBJ was established in 2001 as part of the Financial Accounting Standards Foundation (FASF). The ASBJ is directly responsible for the development and deliberation of accounting standards in Japan. The ASBJ has developed and improved Japanese generally accepted accounting standards to converge with the international accounting standards. However, the IASB and the CESR did not evaluate Japanese convergence with international accounting standards.

TABLE 1
ACCOUNTING STANDARDS BY BAC AFTER "ACCOUNTING BIG-BANG"

In Effect	Original Issued			Revised	Standards
Year	M.	D.	Year		
1999	6	6	1997	---	Statement of Opinion on Revising the Consolidated Financial Statements
1999	6	6	1997	Revised by ASBJ	Accounting Standard for Consolidated Financial Statements
1999	3	13	1998	---	Accounting Standard for Preparing Consolidated Statements of Cash Flows
1999	3	13	1998	---	Accounting Standard for Preparing Interim Consolidated Financial Statements
1999	3	13	1998	Revised by ASBJ	Accounting Standard for Research and Development Costs
1999	10	30	1998	---	Accounting Standard for Tax Effect Accounting
2000	6	16	1998	Revised by ASBJ	Accounting Standard for Retirement Benefits
2000	1	22	1999	Revised by ASBJ	Accounting Standard for Financial Instruments
2000	1	22	1999	---	Accounting Standard for Foreign Currency Translations
2005	8	9	2002	---	Accounting Standard for Impairment of Fixed Assets
2006	10	31	2003	Revised by ASBJ	Accounting Standard for Business Combinations

In 2004 Sir David Tweedie, the chair of the IASB characterized the Japanese financial reporting systems as one of the most opaque in the world and, consequently, the reason why Japanese companies face difficulties listing on stock exchanges other countries (Financial Times (2004)).

The CESR published the Technical Advice in 2005 and evaluated the equivalence of generally accepted accounting principles (GAAP) in the US, Canada, and Japan with IFRSs. The Technical Advice concluded that the GAAP in each of these countries were equivalent to IFRSs. However, CESR requested additional disclosure adjustments to Japan's GAAP, more than those required to the US and Canada (CESR (2005)).

TABLE 2
ISSUED AND REVISED ACCOUNTING STANDARDS BY ASBJ

In Effect	Original Issued			Revised			No.	Standards	Notes [2)]
Year	M.	D.	Year	M.	D.	Year			
2005	3	16	2005	---	---	---	No.3	Amendment to a part of the Accounting Standard for Retirement Benefits	
2005	11	29	2005	---	---	---	No.4	Accounting Standard for Directors' Bonus	
2006	2	21	2002	8	11	2006	No.1	Accounting Standard for Treasury Shares and Reversal of Legal Reserve	
2006	9	25	2002	6	30	2010	No.2	Accounting Standard for Earnings per Share	*
2006	12	27	2005	6	30	2010	No.6	Accounting Standard for Statement of Changes in Net Assets	
2008	12	9	2005	3	27	2009	No.5	Accounting Standard for Presentation of Net Assets Section in the Balance Sheet	
2008	7	5	2006	12	26	2008	No.9	Accounting Standard for Measurement of Inventories	*
2008	10	17	2006	12	26	2008	No.11	Accounting Standard for Related Party Disclosures	*
2008	3	30	2007	---	---	---	No.13	Accounting Standard for Lease Transactions	*
2008	5	15	2007	---	---	---	No.14	Amendment to a part of the Accounting Standard for Retirement Benefits (part II)	*
2009	8	11	2006	3	10	2008	No.10	Accounting Standard for Financial Instruments (revised)	*
2009	7	31	2008	---	---	---	No.19	Amendment to a part of the Accounting Standard for Retirement Benefits (part III)	*
2009	11	28	2008	3	25	2011	No.20	Accounting Standard for Disclosures about Fair Value of Investment and Rental Property	*
2010	12	27	2005	12	26	2008	No.7	Accounting Standard for Business Divestitures	*
2010	12	27	2005	---	---	---	No.8	Accounting Standard for Share-based Payment	*
2010	3	14	2007	3	25	2011	No.12	Accounting Standard for Quarterly Financial Reporting	*

In Effect	Original Issued			Revised			No.	Standards	Notes [2]
Year	M.	D.	Year	M.	D.	Year			
2010	12	27	2007	---	---	---	No.15	Accounting Standard for Construction Contracts	*
2010	3	10	2008	12	26	2008	No.16	Accounting Standard for Equity Method of Accounting for Investments	*
2010	3	21	2008	3	27	2009	No.17	Accounting Standard for Disclosures about Segments of an Enterprise and Related Information	*
2010	3	31	2008	6	30	2010	No.18	Accounting Standard for Asset Retirement Obligations	*
2010	12	26	2008	---	---	---	No.21	Accounting Standard for Business Combinations	*
2010	12	26	2008	3	25	2011	No.22	Accounting Standard for Consolidated Financial Statements	*
2010	12	26	2008	---	---	---	No.23	Amendment to a part of the Accounting Standard for Research and Development Costs	*
---[1]	12	4	2009	---	---	---	No.24	Accounting Standard for Accounting Changes and Error Corrections and its Implementation Guidance	*
2011	6	30	2010	---	---	---	No.25	Accounting Standard for Presentation of Comprehensive Income and amendment to a related Accounting Standard	*

1) Application as occasion demands
2) Issued or revised for converging with the IFRSs

ESTIMATE THE COST OF EQUITY CAPITAL

Several alternative approaches to estimating the cost of equity capital were considered. One approach estimates this cost using ex-post data like an average realized return. This is traditional state-of-the-art method such as the Capital Asset Pricing Model (CAPM) and Fama & French Three-Factor Model. Another approach estimates this cost using forward-looking data. This approach uses a corporate valuation model such as Residual Income Model (RIM) and Abnormal Earnings Growth Model (AEGM).

CAPM defines expected return as the sum of the expected risk free rate and the product of a firm's estimated market beta and the expected risk premium. CAPM is expressed as follow.

$$r_e = r_f + \beta (r_m - r_f)$$

where;
r_e : cost of equity capital
r_f : risk free rate
r_m : expected return on the risky asset
$r_m - r_f$: risk premium
β : beta

The CAPM approach assumes that cross-sectional variation in market beta alone drives variation in the cost of equity capital. As the result, CAPM provides no role for disclosure level, unless one assumes cross-sectional variation in disclosure level induces variation in beta, a notion that has no theoretical support.

Fama & French Three-Factor Model was developed as a result of increasing empirical evidence that the CAPM performed poorly in explaining realized returns. Fama & French Three-Factor Model assumes that the factor loadings are a linear combination of firm characteristics such as beta, firm size, book-to-market, and trading volume.

Fama & French Three-Factor Model is expressed as follow.

$$r_e = r_f + \beta (r_m - r_f) + bs\ SMB + bv\ HML + \alpha$$

where;

SMB : the excess average return of portfolios with small equity class over portfolios of big equity class

HML : the excess average returns of portfolios with high book-to-market equity class over those with low book-to-market equity class

bs : the coefficient loading for the SMB

bv : the coefficient loading for the HML

However, average realized returns provide an extremely noisy measure of cost of equity capital. The empirical results by using these models have produced disappointing results. Then, another approach has been proposed that does not rely on realized returns and instead applies forward-looking data (Botosan, 1997; and Gebhardt et al. (2001)).

The underlying idea of Corporate Valuation Model such as RIM and AEGM is to generate a market implied cost of equity capital. This model defines the cost of equity capital as the internal rate of return that equates the current stock price to the present value of market's expected future residual or abnormal income flows to common shareholders.

RIM and AEGM are expressed as follows.

$$RIM : P_t = \sum_{t=1}^{\infty} B_t + \frac{(NI_t - r_e B_{t-1})}{(1+r_e)^t} \quad \cdots\cdots (1)$$

$$AEGM : P_t = \sum_{t=1}^{\infty} \frac{NI_t}{(1+r_e)^t} \quad \cdots\cdots (2)$$

where;

P_t : price per share at date t

B_t : book value per share at date t (BPS)

NI_t : earnings per share at date t (EPS)

The cost of equity capital of RIM is calculated by following equation.

$$P_t = B_t + \frac{FROE_{t+1} - r_e}{(1+r_e)} B_t + \frac{FROE_{t+2} - r_e}{(1+r_e)^2} B_{t+1} + TV$$

$$TV = \sum_{i=3}^{T-1} \frac{FROE_{i+1} - r_e}{(1+r_e)^i} B_{t+i-1} + \frac{FROE_{t+T} - r_e}{r_e (1+r_e)^{T-1}} B_{t+T-1}$$

$$r_{residual} = \frac{FROE_{t+1} - (1-w)\ (P_t - B_t)}{P_t} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (3)$$

where;
$FROE_t$: forecasted return on equity at date t
TV : terminal value

The cost of equity capital of AEGM is calculated based on equations (4) and (5).

$$P_t = \frac{NI_1}{r_e} + \frac{1}{r_e} \sum_{t=1}^{\infty} \frac{agr_{t^-}}{(1+r_e)}$$

$$P_t = \frac{NI_{t+1}}{r_e} + \frac{agr_{t+1}}{r_e(r_e - \delta agr)} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (4)$$

$$P_t = \frac{[NI_2 + D_1 - NI_2]}{r_e^{\,2}} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (5)$$

where;
agr_t : forecasted growth rate of abnormal earnings ($NI_{t+1} + D_t - (1+r) NI_t$)
$\sigma\, agr$: (agr_{t+1} / agr_t) - 1
D_t : dividend per share at date t

Easton (2004) calculated PEG ratio and EP ratio from AEGM. PEG ratio assumed $D_1=0$ in equation (5). EP ratio assumed agr = 0 in equation (4). PEG ratio and EP ratio are expressed as followings.

$$\text{PEG Ratio}: r_{abP} = \sqrt{\frac{NI_2 - NI_1}{P_0}} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (6)$$

$$\text{EP Ratio}: r_{abE} = \frac{NI_1}{P_0} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (7)$$

RELATED RESEARCH

The related research is classified to (a) the relationship between disclosure level and cost of equity capital and (b) the relationship between adoption of the IFRSs and cost of equity capital. The research papers classified to (a) are published before discussing about convergence to IFRSs. Many of these papers find that the greater disclosure level decreases the cost of equity capital. The reason of it is that the greater disclosure level dissolves the asymmetric of information. The research papers relating to (b) are published in the 2000. In the EU, the application of IFRSs is admitted from the early 2000 and the mandatory

adoption of IFRSs is regulated. Then much research focuses on the EU countries and examines the respondence of the cost of equity capital by the changes of accounting policy.

Botosan (1997) is published before the international convergence toward International Accounting Standards (IAS) becoming the focus of public. This paper examines the association between disclosure level and the cost of equity capital by regressing firm-specific estimates of cost of equity capital on market beta, firm size and a self-constructed measure of disclosure level. The cost of equity capital is calculated from RIM. Disclosure level was measured by the amount of voluntary disclosure in the 1990 annual reports of US manufacturing firms. The result of this paper indicates that greater disclosure is associated with a lower cost of equity capital.

Easley and O'Hara (2004) investigate the role of information in affecting a firm's cost of equity capital. They used the CAPM as the cost of capital. They focus on the US listed companies and show that differences in the composition of information between public and private information affect the cost of capital. The result of them indicates that greater private information means decreasing investment risk and cost of equity capital.

Francis et al. (2005) investigates whether firms reliant on external financing are more likely to undertake a higher level of disclosure, and a higher disclosure level should lead to a lower cost of external financing. They focus on the listed companies in 34 countries, except for US. The results of their tests show that firms in industries with greater external financing needs have higher voluntary disclosure levels, and that an expanded disclosure policy for these firms leads to a lower cost of equity capital.

Hail and Leuz (2006) examines international differences in firms' cost of equity capital across 40 countries. They use several models to estimate firms' implied or ex ante cost of capital. Their results support the conclusion that firms from countries with more extensive disclosure requirements, stronger securities regulation, and stricter enforcement mechanisms have a significantly lower cost of capital.

Daske (2006) investigates whether the adopting internationally recognized financial reporting standards (IAS/IFRS or US-GAAP) reduce the cost of capital. The cost of capital is calculated from RIM, AEGM, and the average of them. He focuses on the German listed companies. He finds that the evidence from the 1993–2002 period fails to document lower expected cost of equity capital for firms applying IAS/IFRS or US-GAAP and during the transition period, after 2002, the expected cost of equity capital in fact appear to have rather increased under non-local accounting standards.

Li (2010) examines whether the mandatory adoption of IFRS in the EU in 2005 reduces the cost of equity capital. The cost of equity capital is calculated by the mean of the four implied cost of equity estimates based on Claus and Thomas (2001), Gebhardt et al. (2001), Gode and Mohanram (2003), and Easton (2004). Using a sample of EU firms during the 1995 to 2006 period, he finds that the mandatory application of IFRS reduces the cost of equity capital.

Many results of papers analyzing on the relationship between adoption of the IFRSs and cost of equity capital, except for Daske (2006), showed that the internationalization of accounting standards decreased the cost of equity capital.

RESEARCH DESIGN

The first step of our research measures the cost of equity capital of Japanese listed companies from 2001.3 to 2010.3. We estimate the cost of equity capital using the implied cost of equity capital models, such as RIM and AEGM (PEG Ratio and EP Ratio), and the average of them. We evaluate the most appropriate cost of equity capital by the regression with some risk factors.

$$RIM: r_{residual} = \frac{FROE_{t+1} - (1-w)(P_t - B_t)}{P_t} \quad \cdots\cdots\cdots\cdots\cdots\cdots (3)$$

$$\text{PEG Ratio}: r_{abP} = \sqrt{\frac{NI_2 - NI_1}{P_0}} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (6)$$

$$\text{EP Ratio}: r_{abE} = \frac{NI_1}{P_0} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (7)$$

$$\text{Average Ratio}: \text{The average of RIM and EP Ratio}$$

Daske (2006) evaluates the most appropriate cost of equity capital by regressing with some risk factors. The evaluation model is expressed as follow.

$$r_e = \alpha_0 + \alpha_1 \text{ Beta} + \alpha_2 \text{ Size} + \alpha_3 \text{ BtM} + \alpha_4 \text{ Lev} + \alpha_5 \text{ RetVar} \quad \cdots\cdots\cdots (8)$$

where;
Size : natural log of the total assets at the closing date
BtM : book to the market
Lev : leverage
RetVar: annual standard deviation of monthly stock return

The most appropriate cost of equity capital is evaluated from the two aspects of the results: the adjusted R^2 and the signs of the coefficient. The signs of the coefficient are appropriate as follows.

Beta : +
Size : -
BtM : +
Lev : +
RetVar : +

SAMPLE SELECTION AND DESCRIPTIVE STATISTIC

Sample selection criteria are (a) the listed companies on the first section of Tokyo Stock Market, (b) their closing dates are the end of March. We analyze the financial data in every year from 2001.3 to 2010.3. The financial data are collected from "NIKKEI NEEDS" database and "YU-HO KAKUMEI" database. The stock price information is from a database of TOYO KEIZAIzai Co. 2010. Sample observations are shown on the Table3. Table 4 provides a descriptive statistics of the data. "Beta" has been below 1 and "BtM" ratio has been more than 1 for many years. This trend means that stock prices of many Japanese companies are going down. "Lev" is relatively decreasing. This shows that the debt finance has not increased. "RetVar" that is the standard deviation of monthly stock return is comparatively large. This means that Japanese economy has not been stable and there has been a sharp fluctuation in stock prices for many years.

TABLE 3
SAMPLE OBSERVATION

Year	2001.3	2002.3	2003.3	2004.3	2005.3
No. of Samples	1449	1465	1519	1524	1552
Year	2006.3	2007.3	2008.3	2009.3	2010.3
No. of Samples	1575	1565	1592	1636	1637

TABLE 4
DESCRIPTIVE STATISTICS FOR CONTROL VARIABLES

Year	Variables	Beta	Size	BtM	Lev	RetVAR
2001.3	Mean	0.896	7.339	1.020	0.601	0.106
	Median	0.809	7.272	0.912	0.612	0.099
	SD	0.819	0.647	0.630	0.203	0.045
2002.3	Mean	1.047	7.323	1.153	0.577	0.106
	Median	1.024	7.266	1.064	0.588	0.101
	SD	0.580	0.652	0.615	0.214	0.038
2003.3	Mean	0.968	7.310	1.213	0.570	0.087
	Median	0.859	7.275	1.057	0.580	0.081
	SD	0.683	0.673	0.698	0.209	0.039
2004.3	Mean	1.203	7.339	1.030	0.558	0.099
	Median	1.090	7.301	0.959	0.567	0.090
	SD	0.991	0.700	0.510	0.204	0.050
2005.3	Mean	1.129	7.359	0.926	0.547	0.075
	Median	1.038	7.315	0.873	0.549	0.068
	SD	0.713	0.719	0.399	0.199	0.032
2006.3	Mean	0.842	7.408	0.787	0.535	0.086
	Median	0.823	7.371	0.745	0.542	0.077
	SD	0.655	0.747	0.318	0.192	0.041
2007.3	Mean	1.604	7.435	0.825	0.531	0.137
	Median	1.539	7.397	0.775	0.540	0.116
	SD	1.775	0.743	0.363	0.189	0.080
2008.3	Mean	0.851	7.420	0.842	0.523	0.087
	Median	0.804	7.377	0.810	0.529	0.081
	SD	0.798	0.755	0.399	0.193	0.039
2009.3	Mean	0.264	7.356	1.174	0.527	0.137
	Median	0.248	7.317	1.091	0.530	0.121
	SD	0.256	0.754	0.544	0.207	0.133
2010.3	Mean	1.092	7.387	1.279	0.521	0.108
	Median	1.021	7.338	1.172	0.528	0.096
	SD	0.735	0.780	0.631	0.198	0.059

RESULTS OF THE TEST

Table 5 shows the implied cost of equity capital. Generally, implied costs of equity capital increased from fiscal year 2001.3 to 2004.3 or 2005.3, decreased greatly from fiscal year 2005.3 to 2009.3, and went up greatly from fiscal year 2010.3.

Then, we tried to evaluate each implied cost of equity capital by regressing with some risk factors. The cross-sectional analysis of risk premium is inspected by two aspects.

The "adjR^2" indicates the explanatory power of the evaluation model. Table 6 showed that the "adjR^2" of "$r_{residual}$" was the highest. The signs of the coefficient show the theoretical validity of model and result. The areas in circle on Table 6 show the coincidence with theoretical signs of the coefficient. The signs of the "r_{abPEG}" provided the most appropriate signs.

TABLE 5
IMPLIED COST OF EQUITY CAPITAL

Year		(a) r-residual	(b) r-abPEG	(c) r-abEP	(d) Average (a)&(c)
2001.3	Mean	0.192	0.142	0.02	0.104
	Median	0.155	0.118	0.017	0.085
	SD	0.152	0.099	0.017	0.078
2002.3	Mean	0.148	0.151	0.031	0.086
	Median	0.103	0.123	0.022	0.064
	SD	0.153	0.111	0.032	0.086
2003.3	Mean	0.139	0.163	0.039	0.085
	Median	0.117	0.14	0.03	0.074
	SD	0.109	0.102	0.036	0.06
2004.3	Mean	0.224	0.21	0.031	0.126
	Median	0.206	0.201	0.028	0.118
	SD	0.151	0.085	0.019	0.079
2005.3	Mean	0.289	0.139	0.062	0.189
	Median	0.259	0.122	0.056	0.161
	SD	0.173	0.082	0.036	0.132
2006.3	Mean	0.265	0.108	0.047	0.156
	Median	0.248	0.097	0.046	0.148
	SD	0.149	0.064	0.02	0.081
2007.3	Mean	0.209	0.113	0.052	0.13
	Median	0.191	0.097	0.05	0.122
	SD	0.128	0.072	0.025	0.071
2008.3	Mean	0.177	0.202	0.051	0.107
	Median	0.156	0.176	0.045	0.095
	SD	0.123	0.138	0.035	0.073
2009.3	Mean	0.14	0.235	0.063	0.096
	Median	0.119	0.204	0.056	0.084
	SD	0.108	0.15	0.044	0.064
2010.3	Mean	0.179	0.123	0.073	0.129
	Median	0.158	0.104	0.064	0.116
	SD	0.111	0.085	0.047	0.074

TABLE 6
CROSS-SECTIONAL ANALYSIS OF RISK PREMIUM

Year	Variables	Ex-pected Signs	(a) r-residual				(b) r-abPEG			
			Co-efficient	Signs	t-value		Co-efficient	Signs	t-value	
2001.3	Beta	+	-0.000		1.652	[ ]	0.014	○	1.652	[ ]
	Size	-	-0.002	○	-1.451	[**]	-0.008	○	-1.451	[ ]
	BtM	+	-0.001		8.603	[**]	0.070	○	8.603	[**]
	Lev	+	0.015	○	7.062	[**]	0.197	○	7.062	[**]
	RetVAR	+	0.005	○	0.868	[ ]	0.129	○	0.868	[ ]
	Constant		0.009		0.056		0.003		0.056	
	R^2		0.228			[**]	0.247			[**]
2002.3	Beta	+	-0.000		1.633	[ ]	0.016	○	1.633	[ ]
	Size	-	-0.001	○	-1.216	[**]	-0.007	○	-1.216	[ ]
	BtM	+	-0.001		5.252	[**]	0.038	○	5.252	[**]
	Lev	+	0.012	○	8.038	[**]	0.212	○	8.038	[**]
	RetVAR	+	0.023	○	2.298	[**]	0.326	○	2.298	[*]
	Constant		0.006		-0.335		-0.016		-0.335	
	R^2		0.191			[**]	0.188			[**]
2003.3	Beta	+	-0.002		-1.945	[ ]	-0.020		-1.945	[ ]
	Size	-	-0.002	○	-1.448	[*]	-0.009	○	-1.448	[ ]
	BtM	+	-0.003		6.467	[*]	0.054	○	6.467	[**]
	Lev	+	0.022	○	5.810	[**]	0.179	○	5.810	[**]
	RetVAR	+	0.070	○	6.551	[*]	1.116	○	6.551	[**]
	Constant		0.006		0.042		0.002		0.042	
	R^2		0.051			[**]	0.219			[**]
2004.3	Beta	+	0.001	○	3.632	[**]	0.012	○	3.632	[**]
	Size	-	-0.001	○	-0.636	[**]	-0.002	○	-0.636	[ ]
	BtM	+	-0.001		7.519	[**]	0.044	○	7.519	[**]
	Lev	+	0.008	○	7.632	[**]	0.132	○	7.632	[**]
	RetVAR	+	0.002	○	-1.413	[ ]	-0.057		-1.413	[ ]
	Constant		0.010		3.546		0.097		3.546	
	R^2		0.235			[**]	0.169			[**]
2005.3	Beta	+	0.000	○	0.134	[ ]	0.001	○	0.134	[ ]
	Size	-	-0.002	○	-1.968	[**]	-0.008	○	-1.968	[*]
	BtM	+	-0.002		3.223	[**]	0.033	○	3.223	[**]
	Lev	+	0.012	○	5.742	[**]	0.134	○	5.742	[**]
	RetVAR	+	0.004	○	1.000	[ ]	0.108	○	1.000	[ ]
	Constant		0.015		2.571		0.099		2.571	
	R^2		0.134			[**]	0.071			[**]

Year	Variables	Ex-pected Signs	(a) r-residual				(b) r-abPEG			
			Co-efficient	Signs	t-value		Co-efficient	Signs	t-value	
2006.3	Beta	+	0.000	○	-1.473	[ ]	-0.007		-1.473	[ ]
	Size	-	-0.002	○	-1.866	[**]	-0.006	○	-1.866	[ ]
	BtM	+	-0.003		1.879	[**]	0.021	○	1.879	[ ]
	Lev	+	0.007	○	4.524	[**]	0.090	○	4.524	[**]
	RetVAR	+	0.001	○	0.134	[ ]	0.010	○	0.134	[ ]
	Constant		0.015		3.365		0.103		3.365	
	R^2		0.361			[**]	0.043			[**]
2007.3	Beta	+	-0.000		1.487	[ ]	0.005	○	1.487	[ ]
	Size	-	-0.001	○	-1.383	[**]	-0.007	○	-1.383	[ ]
	BtM	+	-0.001		1.289	[**]	0.019	○	1.289	[ ]
	Lev	+	0.007	○	2.355	[**]	0.080	○	2.355	[*]
	RetVAR	+	0.001	○	2.066	[ ]	0.130	○	2.066	[*]
	Constant		0.010		1.823		0.092		1.823	
	R^2		0.400			[**]	0.126			[**]
2008.3	Beta	+	0.000	○	4.184	[ ]	0.038	○	4.184	[**]
	Size	-	-0.002	○	-0.817	[**]	-0.005	○	-0.817	[ ]
	BtM	+	-0.002		6.665	[**]	0.096	○	6.665	[**]
	Lev	+	0.008	○	4.137	[**]	0.149	○	4.137	[**]
	RetVAR	+	0.001	○	-1.064	[ ]	-0.070		-1.064	[ ]
	Constant		0.011		1.187		0.064		1.187	
	R^2		0.337			[**]	0.126			[**]
2009.3	Beta	+	0.001	○	8.288	[ ]	0.089	○	8.288	[**]
	Size	-	-0.002	○	-1.016	[**]	-0.008	○	-1.016	[ ]
	BtM	+	-0.002		3.358	[**]	0.045	○	3.358	[**]
	Lev	+	0.009	○	2.881	[**]	0.134	○	2.881	[**]
	RetVAR	+	0.000	○	0.611	[ ]	0.010	○	0.611	[ ]
	Constant		0.017		1.724		0.122		1.724	
	R^2		0.173			[**]	0.191			[**]
2010.3	Beta	+	0.001	○	1.419	[**]	0.022	○	1.419	[ ]
	Size	-	-0.002	○	-3.302	[**]	-0.051	○	-3.302	[**]
	BtM	+	-0.002		2.152	[**]	0.042	○	2.152	[*]
	Lev	+	0.008	○	0.460	[**]	0.031	○	0.460	[ ]
	RetVAR	+	0.003	○	0.561	[*]	0.073	○	0.561	[ ]
	Constant		0.015		3.409		0.385		3.409	
	R^2		0.234			[**]	0.141			[**]
Consistence with the sign				36				46		
Average of R^2			0.234				0.152			

TABLE 6
CROSS-SECTIONAL ANALYSIS OF RISK PREMIUM (cont.)

Year	Variables	Signs	(c) r-abEP				(d) Average (a)&(c)			
			Co-efficient	Sign	t-value		Co-efficient	Sign	t-value	
2001.3	Beta	+	-0.004		-2.559	[*]	-0.006		-2.135	[*]
	Size	-	-0.001	○	-0.535	[ ]	-0.003	○	-1.595	[ ]
	BtM	+	0.003	○	1.387	[ ]	-0.002		-0.738	[ ]
	Lev	+	0.019	○	3.132	[**]	0.034	○	3.527	[**]
	RetVAR	+	0.017	○	0.577	[ ]	0.103	○	2.252	[*]
	Constant		0.015		1.509		0.012		0.753	
	R^2		0.033			[**]	0.032			[**]
2002.3	Beta	+	-0.004		-1.399	[ ]	-0.002		-1.468	[ ]
	Size	-	-0.001	○	-0.857	[ ]	-0.001	○	-1.688	[ ]
	BtM	+	0.003	○	1.260	[ ]	0.001	○	0.675	[ ]
	Lev	+	0.036	○	5.216	[**]	0.022	○	6.280	[**]
	RetVAR	+	0.077	○	1.806	[ ]	0.048	○	2.179	[*]
	Constant		0.013		1.078		0.010		1.571	
	R^2		0.050			[**]	0.077			[**]
2003.3	Beta	+	-0.008		-1.266	[ ]	-0.002		-0.489	[ ]
	Size	-	0.021		6.294	[**]	0.010		5.631	[**]
	BtM	+	0.014	○	2.705	[**]	0.006	○	2.366	[*]
	Lev	+	0.055	○	3.045	[**]	0.034	○	3.688	[**]
	RetVAR	+	0.322	○	3.132	[**]	0.107	○	1.965	[*]
	Constant		-0.184		-5.964		-0.082		-5.298	
	R^2		0.077			[**]	0.065			[**]
2004.3	Beta	+	0.003	○	3.581	[**]	0.002	○	4.099	[**]
	Size	-	0.001		0.591	[ ]	-0.000	○	-0.970	[ ]
	BtM	+	0.005	○	2.525	[*]	0.001	○	1.630	[ ]
	Lev	+	0.019	○	3.669	[**]	0.013	○	4.959	[**]
	RetVAR	+	0.030	○	2.598	[**]	0.016	○	2.740	[**]
	Constant		0.008		0.981		0.009		2.255	
	R^2		0.084			[**]	0.121			[**]
2005.3	Beta	+	0.002	○	1.031	[ ]	0.001	○	1.210	[ ]
	Size	-	0.000		0.039	[ ]	-0.001	○	-1.565	[ ]
	BtM	+	0.004	○	1.554	[ ]	0.000	○	0.247	[ ]
	Lev	+	0.032	○	4.818	[**]	0.021	○	6.347	[**]
	RetVAR	+	-0.018		-0.581	[ ]	-0.009		-0.561	[ ]
	Constant		0.039		3.635		0.027		4.959	
	R^2		0.026			[**]	0.049			[**]

Year	Variables	Signs	(c) r-abEP				(d) Average (a)&(c)			
			Co-efficient	Sign	t-value		Co-efficient	Sign	t-value	
2006.3	Beta	+	0.001	○	0.765	[ ]	0.000	○	0.959	[ ]
	Size	-	0.001		0.999	[ ]	-0.000	○	-0.976	[ ]
	BtM	+	0.002	○	0.823	[ ]	-0.000		-0.297	[ ]
	Lev	+	0.023	○	5.274	[**]	0.015	○	6.919	[**]
	RetVAR	+	-0.008		-1.340	[ ]	-0.004		-1.307	[ ]
	Constant		0.029		4.263		0.020		5.934	
	R^2		0.032			[**]	0.059			[**]
2007.3	Beta	+	-0.007		-12.846	[**]	-0.004		-12.841	[**]
	Size	-	-0.001	○	-1.017	[ ]	-0.001	○	-2.449	[*]
	BtM	+	0.010	○	4.092	[**]	0.004	○	3.591	[**]
	Lev	+	0.028	○	4.815	[**]	0.018	○	5.992	[**]
	RetVAR	+	0.057	○	5.514	[**]	0.029	○	5.617	[**]
	Constant		0.042		4.768		0.026		5.910	
	R^2		0.195			[**]	0.206			[**]
2008.3	Beta	+	0.008	○	4.001	[**]	0.004	○	3.859	[**]
	Size	-	0.000		0.046	[ ]	-0.001	○	-0.965	[ ]
	BtM	+	0.013	○	3.613	[**]	0.006	○	3.078	[**]
	Lev	+	0.032	○	3.976	[**]	0.019	○	4.526	[**]
	RetVAR	+	-0.020		-1.245	[ ]	-0.009		-1.111	[ ]
	Constant		0.021		1.870		0.016		2.766	
	R^2		0.059			[**]	0.065			[**]
2009.3	Beta	+	-0.019		-3.844	[**]	-0.010		-3.950	[**]
	Size	-	0.005		1.786	[ ]	0.001		0.771	[ ]
	BtM	+	0.015	○	3.819	[**]	0.005	○	2.127	[*]
	Lev	+	0.098	○	6.019	[**]	0.051	○	6.264	[**]
	RetVAR	+	0.001	○	0.631	[ ]	0.001	○	0.603	[ ]
	Constant		-0.016		-0.702		0.006		0.536	
	R^2		0.116			[**]	0.101			[**]
2010.3	Beta	+	0.022	○	4.085	[**]	0.012	○	4.485	[**]
	Size	-	0.012		2.980	[**]	0.005		2.294	[*]
	BtM	+	0.006	○	0.758	[ ]	0.001	○	0.328	[ ]
	Lev	+	-0.029		-1.201	[ ]	-0.013		-1.072	[ ]
	RetVAR	+	0.097	○	3.032	[**]	0.052	○	3.256	[**]
	Constant		-0.038		-1.037		-0.007		-0.406	
	R^2		0.027			[**]	0.027			[**]
Consistence with the sign				34				36		
Average of R^2			0.070				0.080			

CONCLUDING REMARKS

Japanese accounting standards have been developed toward convergence with the IFRSs in the 2000. Tweedie told that IFRSs will reduce the cost of equity capital and open new opportunities for diversification and improved investment returns. We investigate whether the convergence of Japanese accounting standards to IFRSs reduce the cost of equity capital.

We estimate the cost of equity capital using the implied cost of equity capital models, such as RIM and AEGM (PEG Ratio and EP Ratio), and the average of them. We evaluate the most appropriate cost of equity capital by the regression with some risk factors. And the most appropriate cost of equity capital is evaluated from the two aspects of the results: the adjusted R^2 and the signs of the coefficient.

Our results of the tests provide evidences as follows. We find that the most appropriate cost of equity capital is the costs of "$r_{residual}$" in RIM and "r_{abPEG}" in AEGM. This result means that the converging to IFRSs decrease the cost of equity capital for Japanese listed companies until 2009.3. However, the cost of equity capital grew up in 2010.3. The reason of increasing cost of capital may be based on the economic recession by the Lehman Shock. This result is similar to those of many prior literatures, except for Daske (2006). Our research contributes to the discussion on the potential economic consequences of global IFRSs introduction.

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