Kunio Ito
Makoto Nakano   *Editors*

International Perspectives on Accounting and Corporate Behavior

Springer

Advances in Japanese Business and Economics 6

Advances in Japanese Business and Economics

Advances in Japanese Business and Economics showcases the research of Japanese scholars. Published in English, the series highlights for a global readership the unique perspectives of Japan's most distinguished and emerging scholars of business and economics. It covers research of either theoretical or empirical nature, in both authored and edited volumes, regardless of the sub-discipline or geographical coverage, including, but not limited to, such topics as macroeconomics, microeconomics, industrial relations, innovation, regional development, entrepreneurship, international trade, globalization, financial markets, technology management, and business strategy. At the same time, as a series of volumes written by Japanese scholars, it includes research on the issues of the Japanese economy, industry, management practice and policy, such as the economic policies and business innovations before and after the Japanese "bubble" burst in the 1990s.

Overseen by a panel of renowned scholars led by Editor-in-Chief Professor Ryuzo Sato, the series endeavors to overcome a historical deficit in the dissemination of Japanese economic theory, research methodology, and analysis. The volumes in the series contribute not only to a deeper understanding of Japanese business and economics but to revealing underlying universal principles.

Kunio Ito • Makoto Nakano
Editors

International Perspectives on Accounting and Corporate Behavior

 Springer

Editors
Kunio Ito
Professor
Hitotsubashi University, Graduate
   School of Commerce
   and Management
Kunitachi, Tokyo, Japan

Makoto Nakano
Professor
Hitotsubashi University, Graduate
   School of Commerce
   and Management
Kunitachi, Tokyo, Japan

Preface

With the rapid globalization of the world economy, accounting standards are gradually being integrated and are increasingly resonating with one another. Of the issues this process has created, convergence to International Financial Reporting Standards (IFRS) is one of the most controversial and is the subject of increasing interest in both financial accounting research and practice. Despite the push towards convergence, accounting rules in individual countries remain deeply intertwined with their unique institutions, such as corporate and economic systems and legal practice, i.e., "enforcement." The approach of *New Institutional Accounting* is to analyze the economic consequences of converging accounting rules by focusing attention on each country's conditions and historical path. This empirical book uses the above-mentioned approach to conduct research on convergence in Japan.

Despite the globalization of accounting standards occurring through convergence to IFRS, every country retains local aspects in its institutions. As a result, for each country an individual mix of global and local factors determines the economic consequences or relevance of the convergence of accounting standards or the adoption of IFRS. Thus, the information value of accounting standards is a complicated mix of these factors. This concept underlies the present work.

This book investigates the differences between IFRS and local (particularly Japanese) accounting standards from the point of view of earnings property and their economic consequences. In particular, the authors empirically analyze the effects of convergence upon Japanese firms' corporate investment behavior and dividend payout policies.

Based on the evidence of economic consequences, this book provides empirical implications for global accounting standards setting. The International Accounting Standards Board (IASB), which developed IFRS, recently has tended to listen to feedback from individual countries in order to improve the quality of IFRS. This book attempts to articulate the issues encountered in the globalization and localization of accounting standards.

A further dimension is also explored in this volume. Despite the globalization of accounting standards, each country continues to have its own corporate disclosure

systems or regulations, regardless of whether they are mandatory or voluntary, because securities administration systems and corporate governance standards lack convergence or a common model like IFRS.

The latter part of the book identifies the inherent characteristics of disclosure behavior by Japanese firms and empirically diagnoses its effects on corporate behavior and capital market.

The authors are consistent in terms of research methodology, issue awareness, and motive. As the contributors and editors have held workshops on numerous occasions, their experience and enjoyment in sharing exciting and simulating issues have been helpful. Without them this outcome would not have been achieved.

Many people have assisted us in editing this book. One of the editors, K.I., especially acknowledges Ryuzo Sato (New York University), who invited him to be a member of the editorial board of the Advances in Japanese Business and Economics series and provided inspiring comments. Publishing this book would not have been possible without his encouragement. K.I. thanks Bill Beaver (Stanford University), who welcomed him as a Fulbright research fellow and is his role model. He also acknowledges Baruch Lev (New York University), who encouraged him to publish the outcome of his research in English as soon as possible.

Kunitachi, Tokyo, Japan   Kunio Ito
                                                                                   Makoto Nakano

Contents

Part II   Disclosure and Enforcement

About the Editors

Kunio Ito is a professor and a director of the MBA program at Hitotsubashi University, Graduate School of Commerce and Management, in Japan. He earned his Ph.D. from Hitotsubashi University. He is also the President of Japan Accounting Association (since 2012). During the last 15 years, Ito has taught accounting, financial statement analysis and valuation in the school's MBA and doctoral courses and senior executive program. He has served as outside director to several leading Japanese corporations and as advisor to the Tokyo Stock Exchange.

Makoto Nakano is a professor at Hitotsubashi University, Graduate School of Commerce and Management, in Japan, where he completed his Ph.D. in management and accounting in 1995. His research is related to financial reporting, corporate finance, corporate governance, and equity valuation. Dr. Nakano has published on these subjects in *Corporate Governance: An International Review* (vol. 20, 2012), *Applied Financial Economics* (vol. 23, 2013), and *The Japanese Accounting Review* (vol. 2, 2012). He is also the author of *Reliance on Foreign Markets: Multinationality and Performance* (Springer, 2013).

Framework and Overview

Kunio Ito

Abstract This chapter explains the background, motive, and analytical framework as well as the underlying notion adopted in this book. Convergence to International Financial Reporting Standards (IFRS) is one of the most controversial issues and is the subject of increasing interest in both accounting research and practice. Despite the push toward convergence, accounting systems in individual countries remain deeply intertwined with their unique institutions, such as corporate and economic systems and legal practice, i.e., "enforcement." As a result, for each country, an individual mix of global and local factors determines the economic consequences or relevance of accounting standards convergence. Based on the evidence of economic consequences this book intends to provide empirical implications for a global accounting standards setting. A further dimension is explored in the volume. Despite the globalization of accounting standards, each country continues to have its own corporate disclosure systems or regulations, regardless of whether they are mandatory or voluntary, because securities administration systems and corporate governance standards lack convergence or a common model like IFRS. We make attempts to identify the inherent characteristics of disclosure behavior by Japanese firms and empirically diagnose its effects on corporate behavior and capital market in terms of enforcement unique to Japan.

Keywords Accounting standards • Convergence • Corporate system • Earnings attributes • Enforcement • IFRS • Management forecast • Risk disclosure

K. Ito (✉)
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: kuni.ito@r.hit-u.ac.jp

1   Part I: Earnings Attributes and Corporate Behavior

1.1   The Trend Toward Global Convergence of Accounting Standards

This book consists of two parts. In Part I, the relationships between accounting standards and corporate behavior are analyzed. In conjunction with the globalization of corporate accounting, accounting standards in various countries have changed greatly. To begin with, what role did the accounting system play in Japan? Furthermore, how is the above-mentioned transformation of the accounting system affecting corporate behavior? Part I investigates the types of economic consequences being generated by the progress in the global convergence of accounting standards and how this trend is changing corporate behavior.

Since the middle of the 1990s, the globalization of corporate accounting has progressed at a bewildering speed. Reforms in accounting standards have advanced rapidly in Japan as part of a series of responses to the so-called Financial Big Bang in Japan—a term that refers to the globalization of Japan's capital markets. The country has made significant progress toward globalizing its accounting standards. As part of its economic integration, the European Union (EU) resolved to mandate the adoption of International Financial Reporting Standards (IFRS) ahead of other countries and regions in order to integrate the corporate accounting underlying the economy. Developing countries that lack mature accounting standards have also actively adopted IFRS as part of the establishment of systems to support their economic foundations. This trend has been accelerated by the fact that the introduction of IFRS has been one of the conditions imposed by the International Monetary Fund (IMF) in order to receive financing.

Initially, the United States, which is proud of the quality of its own accounting standards, did not respond positively to this trend toward the global integration and convergence of accounting standards. However, following a series of accounting scandals at the start of the 2000s, the U.S. had no choice but to steer a course toward the global integration and convergence of accounting standards. The Financial Accounting Standards Board (FASB) is the organization that determines accounting standards in the U.S., and the International Accounting Standards Board (IASB) is the organization that formulates the IFRS. In September 2002, FASB concluded the Norwalk Agreement with IASB, and both parties agreed to work together to determine the highest, globally comparable accounting standards and have since been working together toward this goal.

The trend toward global integration and convergence was further accelerated by "equivalence assessments" implemented by the Committee of European Securities Regulators (CESR) beginning in the middle of the 2000s. The EU announced that it would require companies from outside the EU region that were raising funds within the region to prepare financial statements based on IFRS or on accounting standards recognized as being equivalent to IFRS. Therefore, in 2005 the EU requested that

the CESR assess and identify whether certain accounting standards—such as those of the U.S and Japan—were equivalent to IFRS. This approach put substantial pressure on the relevant parties and accelerated both global integration and the convergence of accounting standards. Hence in 2007, the U.S. recognized the adoption of IFRS by foreign companies, and since 2010, Japan has also begun to recognize the voluntary adoption of IFRS by listed companies.

However, there have been signs observed in recent years that this trend is starting to change. The U.S. had scheduled a resolution for 2011 on whether the adoption of IFRS would become mandatory. However, based on interviews with a large number of interested parties, the Securities and Exchange Commission (SEC) found in its final staff report published in July 2012 that interested parties in the capital markets did not support the wholesale incorporation of IFRS into the U.S. system. However, it also found that the U.S. was committed to the objective of formulating unified, high-quality global accounting standards and that proposals to examine other ways of introducing IFRS had received a great deal of support. The SEC indicated that there were still many problems to be overcome before introducing IFRS. Among these were the possibility of its adoption in regulations for public-interest industries, the regulatory environment in terms of tax law and corporate law, the possibility of audits, and the effects of IFRS on agreements among individual companies. In particular, accounting information in the U.S. is rooted in various agreements and regulations, and concerns were expressed that the U.S. system would be converted from being "rule-based" to being "principle-based." This concern has been a very large obstacle to IFRS adoption.

Furthermore, these problems are not limited to the U.S.: sufficient progress is yet to be made in China and India toward global integration and the convergence of accounting standards. Moreover, countries such as Malaysia and Indonesia are investigating ways to "carve out" certain parts of IFRS in their accounting standards. Even in recent years, Europe was a forerunner in the mandatory adoption of IFRS for listed companies. However, in more recent years, there have increasingly been questions on whether IFRS is consistent with even the accounting standards of European countries. The trend toward the global integration and convergence of accounting standards is approaching a turning point.

Japan has continued its convergence with IFRS. As part of this process, on June 20, 2013, the Financial Services Agency and the Business Accounting Council published the Interim Policy Relating to IFRS (subsequently, the "Interim Policy"). A new approach was advocated in this Interim Policy regarding the "establishment of an endorsement process that allows for each [IFRS] standard to be individually reviewed and, if necessary, parts to be deleted or amended." In other words, it has decided to adopt an "endorsement approach" (as the procedure to incorporate IFRS into Japan's own standards), in which not all of the IFRS standards would be adopted. Under the approach on the basis of consistent judgment criteria, some standards would be adopted and others deleted or modified (i.e., a "carve out"). In other words, IFRS would be endorsed from the perspective of how appropriate it would be for Japan. It means that the formulation of J-IFRS as a Japanese version of IFRS has also been proposed.

Changes have also started to appear in the IASB's posture on formulating IFRS. In order to formulate accounting standards that would be preferable in the sense that they incorporated the "voice" of each country, the Accounting Standards Advisory Forum (ASAF) was established as a new framework to facilitate cooperation between the IASB and the organizations responsible for setting accounting standards in each country. Its establishment is highly significant within the flow of events toward the global integration and convergence of accounting standards. Twelve countries and groups are members of ASAF, including the Accounting Standards Board of Japan (ASBJ). Some of these members, including Japan, also sit on the Monitoring Board which monitors the IFRS Trustees and each country through the ASAF (which is held four times a year) explains its own position and opinions. This is expected to contribute to the preparation of IFRS. When expressing opinions to the IASB, it is important that the impact or effect of IFRS adoption on corporate behavior and competitiveness be empirically verified. Against this backdrop, this report offers empirical evidence regarding the situation in Japan in a global context.

1.2 Economic Consequences of the Adoption of IFRS

What economic consequences, i.e., effects, are being produced by this trend toward the global integration and convergence of accounting standards? Here, based on the classifications of Brüggemann et al. (2013) and Hail et al. (2010), the effects have been divided into three categories: (1) effects on capital markets and macroeconomics, (2) effects on the attributes of accounting data, and (3) effects on contract agreements and investment/distribution operations.

A number of studies on capital markets have investigated the effects of IFRS introduction on the liquidity of stock markets and the cost of equity capital; these effects have been verified to be positive in general. Specifically, it was discovered in previous research that liquidity in stock markets increases with the introduction of IFRS (Daske et al. 2008), that the bid–ask spread decreases (Muller et al. 2011), and that the cost of equity capital decreases (Li 2010). Moreover, Florou and Kosi (2013) found that after introducing IFRS, companies saw a reduction in the yield spread of their bonds, suggesting that its introduction even provides benefits in bond markets. In addition to investigating the direct effects of IFRS on capital markets, research has also investigated its indirect effects on analysts' behavior. It was observed that after a company introduced IFRS, there was an increase in the number of analysts tracking it, and also an improvement in the accuracy of their forecasts (Landsman et al. 2012; Tan et al. 2011).

As shown above, research into capital markets has verified the micro-level economic consequences of introducing IFRS. However, in recent years, verifications have been carried out at the macro level in addition to research verifying its micro-level effects. For example, Khurana and Michas (2011) discovered that after the introduction of IFRS, the home bias of U.S. investors decreased. Furthermore,

Beneish et al. (2012) found that investment in overseas credit increased in countries where IFRS was introduced.

As described above, research into the capital markets has verified that the introduction of IFRS has generally positive economic consequences. However, it is important to be aware that the above findings cannot be generalized to all countries. For example, Daske et al. (2008) found evidence suggesting that liquidity in the capital markets increases following the introduction of IFRS. However, it has been reported that this capital-market effect has been observed only in countries where enforcement of laws and regulations is comparatively strong and where the institutional environment provides incentives for companies to try to be transparent. Moreover, Shima and Gordon (2011) found that there is no evidence that equity investment from the U.S. increases in countries where IFRS has been introduced; they did, however, discover that equity investment rises in the event that the introducing country strongly enforces its laws and regulations. These kinds of verified findings can also be seen in other prior research. In other words, the consequences of IFRS introduction on capital markets in a country will depend on the extent to which the laws and regulations are enforced.

Next, the consequences for accounting information attributes are considered. Much of the research in this area has verified the effects that the introduction of IFRS has had on the comparability of accounting information as well as earnings quality obtained from accounting information. However, the evidence provided by this body of research has generally lacked consistency. Concerning comparability, Yip and Young (2012) discovered evidence indicating that nations where IFRS was introduced observed improved comparability of financial statements. This was slightly contradictory to the findings of Liao et al. (2012), who investigated French and German companies. Liao et al. (2012) found that the comparability of French and German companies improved immediately after the introduction of IFRS. However, they also reported that this effect was not observed at a later time. Additionally, Kvaal and Nobes (2010) investigated whether accounting policies became unified in countries where IFRS was introduced. They observed systematic differences among these countries and reported that although such differences did exist beforehand, the introduction of IFRS did not seem to unify their accounting policies.

The findings presented by research focusing on earnings quality have also been complex. Barth et al. (2008) verified the earnings quality of companies that reported their accounts based on International Accounting Standards (IAS) compared with those that used domestic, generally accepted accounting principles (GAAP) in their reports (the latter were non-U.S. countries). Barth et al. (2008) reported that companies whose reports were based on IAS showed fewer tendencies to smooth their earnings than those companies using domestic GAAP and recognizing losses in a timely fashion, which led them to conclude that earnings quality improved with the introduction of IAS. However, Ahmed et al. (2013) presented evidence to the contrary. Specifically, on comparisons with benchmark companies, they reported that IFRS companies more frequently used earnings smoothing and did not recognize loss at appropriate times. With regard to this difference between the

verification results of Ahmed et al. (2013) and Barth et al. (2008), the latter assessed companies that had voluntarily adopted IFRS; hence, their findings may have been affected by this voluntary selection bias. However, Chua et al. (2012) examined companies in Australia, where the adoption of IFRS is mandatory, and reported that after the introduction of IFRS, earnings smoothing among Australian companies did not occur—and that loss was also recognized in a timely fashion. Therefore, we cannot be certain that the bias of voluntary selection was necessarily a factor in the verification findings of Ahmed et al. (2013) and Barth et al. (2008).

Hence, we can see that the evidence presented by research into accounting information attributes is not necessarily consistent. The introduction of IFRS may indirectly affect individual agreements (such as compensation for executives and restrictive financial covenants), dividend regulations and the taxation system, and industry regulations or agreements. However, there is still a paucity of research on the effect of IFRS on the behavior of company executives, who are accountable to shareholders, in terms of investment and distribution (dividends). For instance, Li (2010) discovered that following the introduction of IFRS, the cost of shareholders' equity significantly decreased. Conversely, Daske et al. (2008) reported that they found no significant changes in the existing corporate values (Tobin's q) of companies after the introduction of IFRS. The findings of these two studies indicate that the introduction of IFRS simultaneously decreases capital cost and cash flow, with capital cost as the denominator and cash flow as the numerator in the corporate value equation. In other words, they suggest that companies may lose competitiveness following the introduction of IFRS. The global convergence of accounting standards is also likely to affect corporate behavior, starting with a company's capital investment.

The majority of these verifications suggest that enforcement differences in each country and the resulting differences in stakeholder incentives have major effects on the consequences of IFRS introduction. For example, Ahmed et al. (2013) and Verriest et al. (2013) presented evidence suggesting that systemic factors determine whether or not comparability and earnings quality improve following the introduction of IFRS. In addition, changes in the extent to which comparability and earnings quality improve can be determined by these factors. Christensen et al. (2013) document an increase in research using international comparisons and other methods in attempts to clarify the influence that these incentives and enforcement have on the economic consequences of mandatory IFRS introduction.

1.3 Incentives and Enforcement for Financial Reporting by Japanese Companies

What are the characteristics of the incentives and enforcement for financial reporting by Japanese companies? Below, we clarify these characteristics while comparing them with those in the U.S. and Europe. It is possible to investigate the

Table 1 Ratio of top executives whose compensation is above 100 million yen (about 1 million U.S. dollars)

	Japan	U.S.	Europe
Total compensation (%)	1.52	16.98	15.97

Table 2 Number of mergers and acquisitions

	Japan	U.S.	Europe
Number of M&A	1,291	5,175	4,251

factors determining incentives for financial reports from a variety of aspects. Here, however, we analyze the differences in terms of executive compensation.

Table 1 shows the ratios (as percentages of all listed companies) of companies that employ top executives whose yearly compensation is 100 million yen or more. Capital IQ from S&P was used, and actual conditions of compensation for executives in Europe, Japan, and the U.S. (i.e., developed countries) were investigated. From the table, we can see that in comparison with the U.S. and Europe, where slightly less than 20 % of companies employ top executives with compensation of over 100 million yen, only 1.5 % of companies in Japan employ such highly paid executives. Previous research has shown that in the majority of cases, executive compensation is tied to a company's earnings performance and stock price; in other words, compensation tends to be related to how a company manages its earnings. Hence, compared with Japan, it is more necessary to orient company performance to restrict the potential for executives to manage their company's earnings in the U.S. and Europe.

Table 2 shows a comparison of the number of cases of company mergers and acquisitions (M&A) in the countries and regions under comparison. Capital IQ from S&P was used, and published data on the number of M&A was referenced. In addition, it was possible to confirm that compared with Japan, companies in the U.S. and Europe are more actively carrying out M&A, and more companies record net losses. This mostly reinforces the tendency for valuations to depend on fair values in company balance sheets. Hence, it is very possible that this creates an environment susceptible to introducing accounting systems based on the fair values of balance sheet assets and liabilities, or other fair value corporate accounts

Next, the extent to which each country and region invests its resources to thoroughly enforce laws and regulations in its security markets was investigated. To this end, we calculated the investment made by each country and region in terms of the number of staff per one million people and the budget amount per one billion dollars of GDP with reference to Jackson and Roe (2009). For Europe (23 countries of which were considered for this research), these totals were calculated based on numerical values weighted according to the respective country's population and GDP. As shown by the results in Table 3, the U.S. invests a large amount of resources as is required by its Securities and Exchange Law, whereas Japan's investment is at a low level even when compared with that of Europe.

Table 3 Resource-based securities law enforcement data: staffing/population and budget/GDP

	Japan	U.S.	Europe
Number of staff per 1 million people	4.32	23.75	9.14
Budget amount per $1 billion of GDP	15,754	83,232	45,166

Table 4 Corporate longevity

	Japan	U.S.	Europe
Number of years since establishment (average)	61.1	33.7	53.8
Ratio of companies established 50 years ago or more (%)	60.7	18.0	34.6

Hence, we can conclude that company executives in the U.S. tend to be opportunistic in carrying out earnings management affecting their own compensation. Also, the large number of companies recording a loss and the relatively larger number of M&A indicates a high likelihood of its accounting system being orientated toward a high level of transparency. Moreover, since it is difficult for financial reporting based on the introduction of such accounting systems alone to create sufficient economic impact, it can be confirmed that the U.S. adopts the approach of investing a large amount of resources for the thorough enforcement of laws and regulations in its security markets. Conversely, in the case of Japan, there has not been a strong tendency from the beginning for company executives to engage in opportunistic earnings management for the purposes of boosting their own compensation, and the ratio of companies recording a net profit in the country is high. Meanwhile, we can confirm that Europe's position lies between those of Japan and the U.S.

Japanese companies also tend to survive longer than their U.S. and European counterparts (Table 4). The U.S. aims to develop its companies and economy through the dynamism of its markets while promoting the activity of its security markets, such as through compensation for executives and M&A. However, Japan aims to develop its companies and economy through stakeholders that support companies and the construction of long-term-orientated accounting. Hence, it places importance on the ongoing existence of its companies. Therefore, rather than focusing on achieving highly transparent earnings performance, Japan tends to be oriented toward earnings smoothing and matching costs with revenue for enabling long-term performance trends, and it adopts conservative accounting practices for highly uncertain future events.

1.4 Analytical Framework of Part I

In conjunction with the progress being made toward international integration and the convergence of accounting standards, the differences in accounting standards between countries and regions are gradually shrinking. However, we have seen that
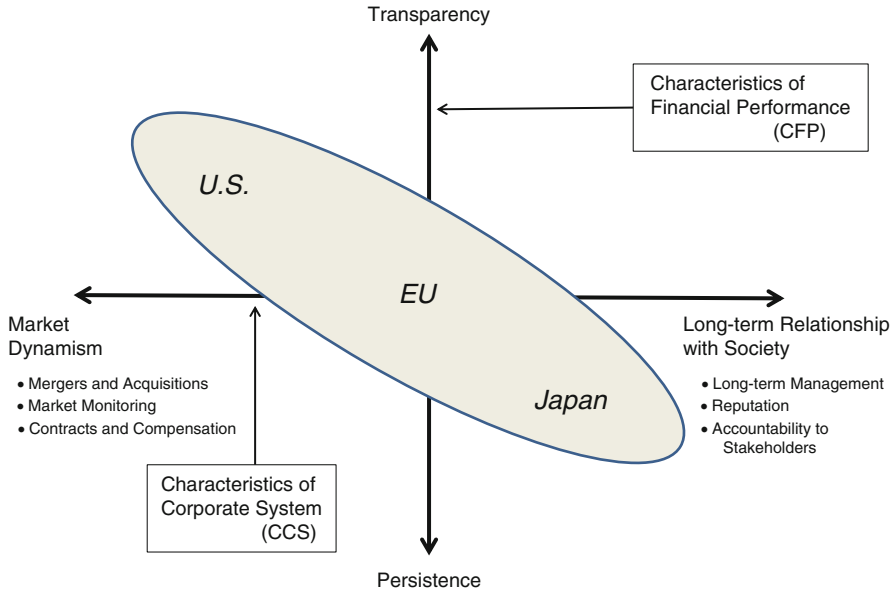
Fig. 1 Analytical framework of Part I

changes are not taking place rapidly and that each country's system has its own path dependent upon (1) attributes for corporate performance and earnings in each country and region, (2) the incentives that support these attributes, and (3) the power to enforce laws (enforcement). Therefore, although the globalization of accounting standards is progressing, local aspects are being maintained in accordance with economic and institutional factors specific to each country. In other words, the global convergence of accounting standards is yielding complicated and mixed outcomes as a result of both global and local factors in each country—a notion underlying the book. This book takes on the challenge of investigating this theme.

"New Institutional Accounting"—a new paradigm of empirical research-oriented approach currently coming to prominence—is based on the idea that convergence of accounting standards does not produce uniform or simple outcomes, and that its economic consequences are inevitably influenced by country-specific economic and institutional factors (Leuz et al. 2003; Hail and Leuz 2006; Leuz 2010; Wysocki 2011). This volume has constructed an analytical framework based on the same assumption (Fig. 1).

We compare the above-mentioned incentive structure and the characteristics of enforcement and classify them into patterns, following which we place the characteristics of corporate systems (CCS) on the horizontal axis and the characteristics of financial performance (CFP) on the vertical axis: for each of these factors, the international characteristics of the mechanisms used to regulate corporate activity in each country and region become apparent. In the U.S., for CCS, we see that

dynamics established from market principles are at work. As a result, M&A frequently take place, monitoring by the markets is strong, and compensation for executives is closely linked to stock prices and earnings performance. Consequently, the "survival of the fittest"-type struggle among U.S. companies is fierce, as a result of which their average lifespan is comparatively short. To allow these kinds of market dynamics to function, a high level of transparency is required as a CFP.

However, the dominant corporate system in Japan differs from the system followed in the U.S. Iwai (2009) states that capitalism is not monolithic and explains how capitalism in the U.S. is different from that in Japan. Iwai notes that Japanese companies tend to place more emphasis on employee benefits and welfare rather than profit margins that directly benefit shareholders. The goal of Japanese companies has been to ensure long-term corporate growth.

Itami (2010) insists that the corporate system is the linchpin between knowledge and innovation and has identified two types of corporate systems: the market-oriented corporate system and the organization-oriented corporate system. In the market-oriented system, the market mechanism is central to the resource allocation across the economy. On the other hand, the organization-oriented corporate system is one where an organization mechanism performs the resource allocation for the economy. The market mechanism involves "the pattern of transaction where individual economic units consider only their self-interest and decide which party to transact with and how much to transact at what price freely without command from some other party" (Itami 2010, p. 17). In contrast, in the organization mechanism, resources are allocated and people organized via coordination by the organizational sphere. The evidence squarely indicates that Japan can be characterized as an organization-centered system, while the U.S. is a market-centered system, although any country will ultimately be a complicated mixture of these two mechanisms. Based upon the organization-centered corporate system, Japanese management upholds the principle of enhancing the corporations' long-term growth and prioritizing employee interests rather than those of stockholders.

These views, as well as the above-mentioned data and evidence, suggest that Japanese companies tend to place strong emphasis on sustainability and seek to establish enduring relationships with society, i.e., management has a long-term outlook. In other words, Japanese companies are accountable not just to their shareholders but also to other stakeholders, such as employees banks, and suppliers. Hence from an international perspective, the compensation paid to executives of major Japanese companies is usually low. A company's sustainability depends heavily on its reputation and level of trust from society. If a company loses trust, it will find it difficult to maintain its operations. Accordingly, Japanese companies tend to despise volatilities in earnings in favor of maintaining continuity from the CFP standpoint.

As demonstrated above, the underlying mechanisms that affect corporate activity in Japan and the U.S. are highly contrasting. To classify Europe in a similar fashion, its position can be assumed to be between those of Japan and the U.S.

Based on the above frameworks, Part I of this book investigates relationships between corporate behavior and accounting phenomena such as (1) the revenue and

expense view that supports the conventional accounting system, (2) earnings smoothing with which it has a high affinity, and (3) conservatism or the principle of matching costs with revenues. In addition, Part I clarifies the nature of the relationship between corporate behavior and accounting on basis of the "asset and liability view," which has been introduced from the convergence or adoption of accounting standards. In this way, we aim to present empirical evidence on the effects of the trend toward the international integration and convergence of accounting standards on Japanese companies.

Iwai and Sato (2011) argue that the asset and liability view, which involves assessing fair value using forecast of cash flows discounted to the present, would be suitable for firms controlling high levels of financial instruments or assets, such as financial firms. However, this approach would not be suitable for manufacturers that own factories and other fixed assets. Thus, according to Iwai and Sato, the asset and liability view is suitable for the U.K., whose economy has a high proportion of financial services, but not for Japan, which depends heavily on manufacturing for economic competitiveness.

Saito (2013) states that different valuation measures should be applied depending on the nature of the assets being valued. Investing exposes one's present cash holdings to the risk of uncertain future cash flows. Investors first assess whether past activities have met their expectations and then make new forecasts based on these feedbacks. In other words, profits are investments that have been freed from risk. The fair mark-to-market valuation of such investment activities can be easily determined because their value is the same for everyone. However, investments in nonfinancial businesses are different. Expectations depend on asset mixtures and manager capabilities, which is how goodwill is generated. Because this type of investment cannot be freed from risks, it is therefore not suited for valuation by mark-to-market valuation methods. Rather, an appropriate valuation method would be based on acquisition costs.

In Part I, the economic consequences of IFRS (or the specific accounting standards that compose it) for Japan are empirically clarified. Specifically, the focus is on clarifying the relationship between accounting standards, including IFRS, and four types of corporate behavior: (1) dividend behavior that has a relatively deep connection with the accounting system, (2) investment behavior, (3) signaling, and (4) earnings management (Fig. 2).

1.5 Overview of Part I

1.5.1 Matching Concept and Earnings Attributes

In the first three chapters, we aim to clarify the manner in which the concepts that are given importance in Japan—namely, earnings smoothing, conservative accounting behavior (unconditional conservatism), and the matching of revenues

Accounting Systems   *Corporate Behavior*
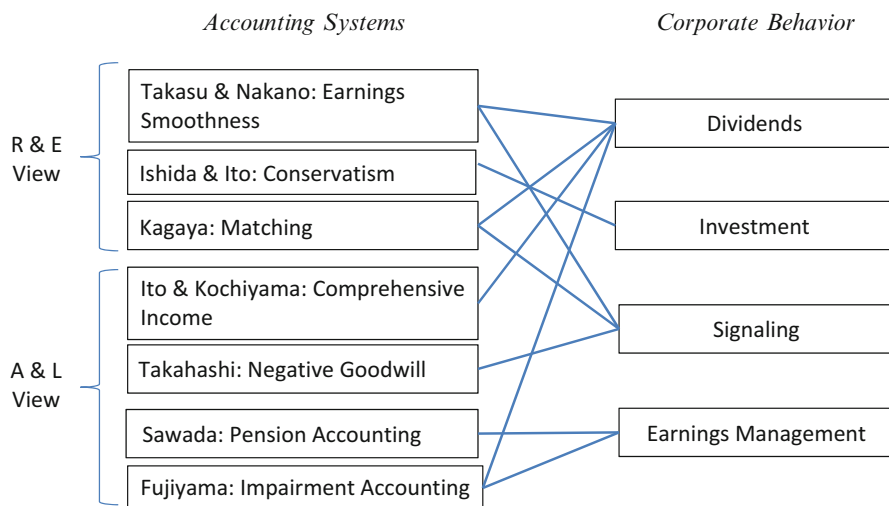
Fig. 2 The relationship between accounting systems and corporate behavior

and expenses—relate to corporate behavior. These concepts have a high level of affinity with an accounting system based on the revenue and expense view.

In the chapter titled "What Do Smoothed Earnings Tell Us About the Future?," we investigate the relationship between earnings smoothing, signaling behavior, and dividend behavior by companies. The research explains how in the U.S. and Europe, these concepts are positioned as one method of earnings management by company executives, and how earnings smoothing behavior, which is not necessarily highly evaluated, is closely connected to a company's future earnings performance and its future stable dividend behavior. Also, we clarify that in Japan, earnings smoothing also plays a constant economic role.

In the chapter titled "The Effect of Accounting Conservatism on Corporate Investment Behavior," we investigate the relationship between companies' conservative accounting behavior and investment behavior. This study looks at the relationship between investment behavior and conservative accounting using standards of both "conditional conservatism" and "unconditional conservatism" based on previous research. Our study clarifies the following points. On one hand, conditional conservatism, which tends toward conservative accounting only when a negative event occurs, has the tendency to restrict investment behavior. On the other hand, unconditional conservatism, which tends toward conservative accounting whatever the timing, generates a constant level of slack in terms of accounting, which consequently promotes investment activities.

In conjunction with the global convergence of accounting standards, there has been a growing trend toward conditional conservatism and a decline in unconditional conservatism, which was up until recently the dominant method of conservative accounting. This research suggests that this shift in accounting conservatism may have a major impact on the investment behavior of Japanese companies.

In the chapter titled "Matching Expenses with Revenues Around the World," we make an international comparison of levels to which revenues and expenses are matched and investigate how the function and role of this accounting concept differs in Japan and other countries. We also examine the possible effects of these differences. From the results, we confirm that in East Asia, including Japan, revenues and expenses are matched to a high level and that these levels have not significantly declined in the past 20 years. This matching of revenues and expenses helps in controlling fluctuations in profit and communicating future cash flow. Research indicates that these effects might be considered important by companies in East Asia, including in Japan. Moreover, the research shows that these effects may be related to a company's dividend behavior, and suggests that the principle of matching revenues and expenses plays a constant economic role in Japan and the rest of East Asia.

1.5.2 Standard Setting and Corporate Behavior

Following four chapters investigate what effects a reformed accounting system will have on corporate behavior, in conjunction with the trend toward the international integration and convergence of accounting standards.

The chapter titled "Does Comprehensive Income Influence Dividends? Empirical Evidence from Japan" addresses the relationship between "comprehensive income" and "other comprehensive income" and dividend behavior: results show that "comprehensive income" and "other comprehensive income" are effective for explaining changes to dividends. Moreover, they indicate that negative "other comprehensive income" has the effect of reducing dividends. Together with the trend toward global integration and convergence of accounting standards, the concept of "comprehensive income" has even been introduced into Japan. This research suggests that Japanese companies are being compelled to change their dividend policies in conjunction with the introduction of this concept.

In the chapter titled "Accounting Policy Choice for Negative Goodwill," we explore the relationship between negative goodwill generated by business combinations and signaling behavior that reflects accounting choices. With the trend toward global integration and convergence of accounting standards, companies are being required to abolish accounting that amortizes negative goodwill within a fixed period and are instead required to carry out batch-posting accounting that records the goodwill within extraordinary profit. In this research, we investigate the factors being used by companies for selecting the period of amortization before such amortization is required.

The results of the analysis show that shorter periods of amortization are selected in bailout-type business integrations, where there is a tendency for reconstruction to be demanded in a short space of time. In contrast, transactions under conditions of shared control have a tendency to choose a longer amortization period (these transactions are expected to remain for long periods). The findings of this study suggest that it is possible for a company to aim to calculate profit in line with

economic reality by using accounting practices that correspond to the actual management conditions in the company. They also suggest that this loss of leeway in the company's selection of its amortization period ultimately reduces the signaling effects of its earnings results.

In the chapter titled "Fair Value Accounting of Pension Liabilities and Discretionary Behavior," we examine the relationship between the number of years set for amortization for past work service liabilities originating from a reduction in termination benefits, and corporate behavior as regards earnings management. Because of the trend toward global integration and convergence of accounting standards, companies are being required to reflect calculations of profit and loss relating to past service liabilities in a single batch at the time of occurrence. In this research, prior to the change in accounting standards, we clarify how past service liabilities have been used in earnings management.

From our findings, we ascertained that the number of years set for amortization for past service liabilities tended to be selected in order to achieve earnings-performance targets. Also, the tendency was for this sort of earnings management to be restricted in companies under a large amount of pressure from overseas and institutional investors. The findings of this study suggest that by reflecting these amounts in the profit and loss account in a single batch at the time they occur, it is possible that the leeway companies have for this sort of earnings management will ultimately be removed.

In the chapter titled "The Influence of Informal Institutions on Impaired Asset Write-Offs: Securing Future and Current Pies for Payouts in Japan," we analyze the relationship between dividend behavior and impairment accounting for fixed assets. With the opportunity provided by global convergence of accounting standards, even Japan is starting to adopt impairment accounting for fixed assets. In this research, we first investigated the actual conditions for the adoption of impairment accounting for fixed assets to investigate the possible effects of the introduction of such impairment accounting for fixed assets on the dividend behavior of companies. The results of the investigation clarified that Japanese companies tend to adopt impairment accounting when executing a "big bath" to get rid of all their losses at once; they also tend to adopt impairment accounting when profits are rising.

Why do they adopt impairment accounting when profits are increasing? We ascertained that stable dividend companies are particularly orientated toward this type of accounting. Impairment accounting for fixed assets was introduced with an aim toward improved transparency in the accounting system. However, this research shows that if company incentives and the market enforcement mechanism are different, company earnings management may be restricted. Impairment accounting is not necessarily adopted to increase transparency.

The series of validation results outlined in Part I suggest that if company incentives and the enforcement mechanism in the markets are different, then increasing global integration and convergence in accounting does not necessarily mean that sufficient economic effects will be secured. Conversely, it is possible that

alterations to these accounting standards may cause changes to dividends, investment, and signaling behaviors that have taken root in each country. This research suggests that, after comprehensively investigating factors such as company incentives and enforcement mechanisms in global markets, it is necessary to then search for methods to achieve global integration and convergence of accounting standards.

2 Part II: Disclosure and Enforcement

2.1 *Analytical Framework of Part II*

In Part II, we continue this discussion while focusing on Japan's disclosure system and the disclosure behaviors of Japanese companies. Although the influence of IFRS is becoming stronger and accounting standards are increasingly shared on a global level, there remain disclosure systems that reflect the characteristics of their country and do not necessarily include standards like IFRS; therefore, in this sense, local elements remain. In recent years, the world of accounting has witnessed the simultaneous occurrence of globalization and localization.

As local elements remain within disclosure systems, we can expect that the disclosure behaviors of companies in different countries will also be significantly different. In fact, the system used in Japan for disclosing management forecasts or earnings forecasts has developed differently than that used in the U.S. and possesses, even today, quite a large number of exclusive features. For example, only a limited number of companies in the U.S. disclose any earnings guidance, whereas approximately 95 % of companies in Japan disclose their management forecasts.

The disclosure discussed in Part II can be classified into three types. The first is mandatory disclosure, which includes the disclosure of risk information. It is dealt with in the first two chapters, and refers to disclosure mandated by the Financial Instruments and Exchange Law; the second is the disclosure of environmental information, which is dealt with in the following chapter and included in voluntary disclosure; and the third is management forecasts, which is positioned between mandated disclosure and voluntary disclosure. In Japan, management forecasts are requested by the stock exchanges, but this request is not based on any law. However, since nearly all companies in Japan disclose this information, it can be considered substantially mandated disclosure.

Two themes are investigated in this part. First, we present empirical evidence on the kinds of economic consequences that result from the various types of disclosure systems in Japan. Second, we investigate how the international characteristics of corporate systems, which are explained by the framework of the first part, manifest themselves in terms of disclosure (Fig. 3).
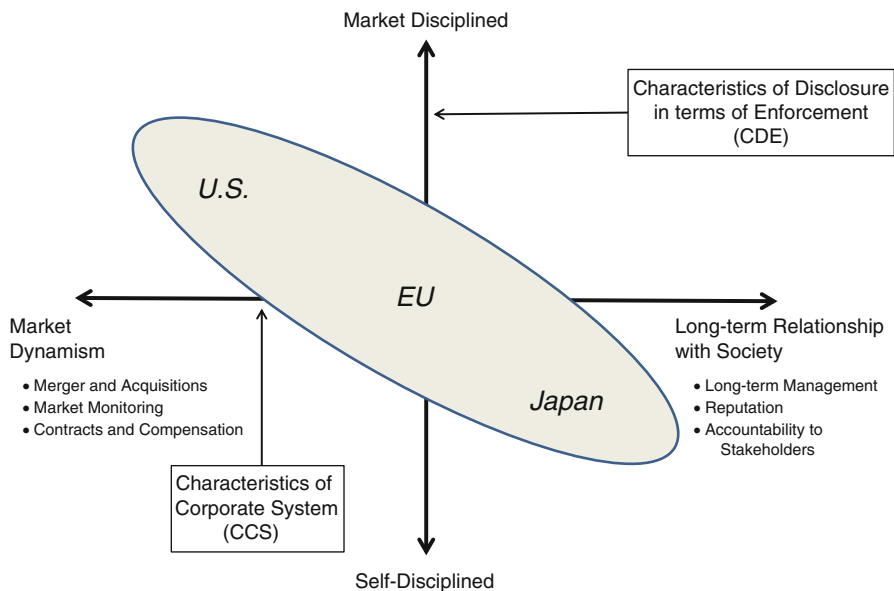
Fig. 3 Analytical framework of Part II

The horizontal axis represents CCS and is the same as that used in Part I; the vertical axis represents CDE. In the U.S., market principles are strong and corporate systems are designed to conform to these principles. In these systems, consistency in disclosure is achieved through external regulation and control.

Conversely, in Japan, systems of accountability are based on long-term vision and managers assume the duty of accountability to stakeholders. Also, because Japanese companies value reputation above rule-based systems governed by external regulation, there is a strong tendency in Japan to create systems that are regulated by the companies themselves.

Based on this sort of analytical framework, the hypothesis put forward in Part II is that "self-disciplining enforcement" is a shared characteristic of disclosure systems in Japan. In this book, the term "enforcement" is used in a broad sense. In a narrow sense, the word refers to the implementation of a legal system, laws, or auditing standards, whereas in a broader sense, its meaning can further encompass incentive structures or institutional customs that induce or regulate corporate activities.

In the first two chapters in Part II, we discuss risk information, which is a form of mandatory disclosure. In the third chapter, we focus on the disclosure of environmental information, which is a type of voluntary disclosure. In the following two chapters, we investigate how self-disciplining mechanisms function, and in the last chapter, we analyze potential pitfalls of Japan's self-disciplining enforcement.

2.2 Economic Consequences of Disclosure Based on Self-Disciplining Enforcement

2.2.1 Ex-post Information Value and Impact on Management Forecast Revisions of Risk Disclosure

In the first two chapters, we focus on risk information, a type of mandated disclosure. The disclosure of risk information itself is not only directly connected to the risk assessment of a company, it also shows the value of information when the relevant risk manifests itself at a later time.

In the chapter titled "Ex-post Information Value of Risk Disclosure," we address the effects of information security measures on corporate value, and discuss the significance of information security and governance structures. To this end, we first examine the effects that incidents relating to information security have on stock market valuations of companies, as there are concerns that these incidents result in significantly lowered valuations.

We performed the validation process described below to identify whether information security-related disclosure produces any economic effects. First, we focused on companies that disclose risks related to information security within their securities reports. These were then compared with companies that do not disclose this information, in relation to their stock market valuations in response to information security-related incidents. The results of the validation confirmed that compared with companies that do not disclose information on risks relating to information security, those that do disclose experience a significantly smaller decline in stock price when a relevant incident occurs.

The results of a questionnaire survey distributed to companies that utilize IT-related equipment confirmed that compared with those that do not disclose their measures for information security, companies that do disclose benefit from an improved appraisal of their security measures. Moreover, it was found that explicit security measures have a positive effect on both transaction preferences and levels of satisfaction.

These results suggest that efforts to inform both internal and external stakeholders of the implementation of information security measures will have two economic effects. First, the external stakeholder will view the implementation of these measures as good examples of social responsibility, thereby dispelling feelings of anxiety or distrust toward the company. As with environmental problems such as global warming, and depending on the nature of the incident, there can be major consequences for companies, consumers, and society at large. However, external stakeholders cannot confirm to what extent each company is serious about implementing information security measures. Therefore, this might sometimes invite underinvestment from the perspective of public welfare. However, from the standpoint of preventing this sort of anxiety and distrust being generated among external stakeholders, companies should consider the disclosure of their

information security measures as important for their social and corporate reputations.

The second effect is the generation of future cash flow. Knowledge that information security is important to a company instills feelings of trust among business partners and customers, resulting in stable relationships with these groups. The strategic management of royalties and premiums from customers, or information assets, might also contribute to the company's future cash flow. However, as long as information is not being disclosed from the company side, these sorts of economic effects are rarely connected to valuations by investors or other stakeholders.

The results of our validation in this chapter suggest that strengthening measures for information security and disclosing these measures to external stakeholders is an effective way of generating these two effects. In other words, when an information leakage incident is reported, both the companies that disclosed the relevant risk information prior to the incident and those that do not will experience a fall in their stock prices. However, the stock price of companies that disclose this information will rebound more quickly than the companies that did not—their stock prices will not recover for some time. Risk information also affects stock prices, even controlling for other variables that might affect CAR. This signifies that when an information-leakage incident occurs, the risk information that was disclosed prior to the event is utilized by investors; therefore, if a contingency event occurs, value relevance is generated and the risk information has ex-post information value. This is called value relevance on contingency and has not been found in research on disclosure up to the present time. This effect suggests that through companies' disclosures of risk information, capital markets can ascertain if, after an occurrence, a particular company has the self-disciplining ability to enforce its measures in advance. In other words, it will be interpreted that self-disciplining enforcement is at work.

In the chapter titled "The Effects of Risk Disclosure on Evaluation of Management Forecast Revisions," we analyze the effects that the prior disclosure of risk information has on market valuations of revisions to management earnings performance forecasts, and we also identify one aspect of the economic consequences of self-disciplining enforcement.

Since the period ending March 2004, Japanese companies have been required by law to disclose risk information, which has three characteristics. First, risk information is qualitative information (text-based information), which differs from quantitative information such as earnings information. Second, even though a company is legally required to disclose risk information, it has a high degree of discretion regarding the content of the disclosure. Third, risk information is fundamentally negative and has an adverse impact on future earnings performance and corporate value.

A significant amount of the information that a company discloses is text information; moreover, because much of the same content is repeated in these documents, their presentation is often in a template format, leading to criticisms that these documents contain no actual information. There may indeed be incentives for management not to disclose information that will have a negative effect on their

company's corporate value, thus limiting the disclosed information. Nevertheless, some are of the opinion that text information does include meaningful information precisely because its disclosure is regulated; the usefulness of text information has been confirmed by previous studies. These studies indicated the usefulness of risk information, even though it was qualitative, and predicted it would impact investors' decision making.

In that chapter the usefulness of post-disclosure risk information is confirmed. Specifically, we investigate the effect that risk information has on revisions to management forecasts of earnings performance carried out after the disclosure of risk information. From this analysis, we ascertained the following three points. First, when risk information is disclosed in advance, it has the effect of discounting the market valuation of the revisions to management forecasts of earning performance that are carried out in the subsequent period. However, it was discovered that this effect does not appear when the earnings performance forecast is revised downward. Hence, when risk is disclosed in advance, it has the effect of mitigating the shock felt by markets after the bad news of a downward revision. This finding signifies that when an earnings performance forecast is revised downward, the markets incorporate the information into their valuation of the company's self-disciplined approach, which is exemplified by their prior risk information disclosure.

As indicated by the results, in Japan, rather than a company's risk disclosure immediately impacting and directly affecting the market's assessment of risk for that company, it has informational value should the risk in question manifest itself in the future or should management revise its earnings performance forecast. In the U.S., where market discipline works effectively, a company's risk disclosure is immediately reflected in the market's valuation of that company given efficient markets. In Japan, however, if a risk event actually occurs following disclosure, the markets judge the company's self-disciplined approach, which is reflected in the company's valuation. This means that there is ex-post informational value in the risk information that a company discloses; in other words, self-disciplining enforcement is at work in Japanese companies, and the disclosure of risk information provides companies with a new dimension of value relevance.

2.2.2 The Effects of Continuous Environmental Disclosure

In the chapter titled "The Effect of Continuous Disclosure of Environmental Report," we focus on environmental disclosure, a type of voluntary disclosure. The results of the validation process back up the argument that not only does the disclosure of environmental information result in a decrease in capital costs but the continuous disclosure of environmental information reduces capital costs.

Currently in Japan, there are no regulations that require all companies to disclose environmental information; rather, the Ministry of the Environment merely announces guidelines. Despite this, practically every company above a certain size voluntarily releases an environmental report. The percentage of companies doing

this in Japan is higher than in those countries that actively encourage companies to voluntarily disclose environmental information in a same fashion. Moreover, it is also higher than in countries that require companies to disclose environmental information within their business reports. One possible explanation is that Japanese companies maintain a culture that impels management to disclose environmental information. Here, we focus on the possibility that investors incorporate environmental information into their decision making as an indicator of corporate self-discipline.

In this chapter, we do not focus on a one-off disclosure of environmental information but rather analyze the economic effects that continuous disclosure has on the cost of equity capital. In previous research on disclosure, there is a negative correlation observed between the level of the disclosure (information quality, information quantity, timing, and disclosure method) and the cost of equity capital. According to Easley and O'Hara (2004), when there is both generally available public information and private information held by investors with an inherent information advantage, the proportion of public to private information announced by a company affects its cost of equity capital: as the proportion of private to public information increases, so does the company's cost of equity capital. One part of this private information would include the environmental information that Japanese companies can choose to voluntarily disclose.

The results of the analysis showed that even after controlling for company scale, the cost of equity capital of companies that publish an environmental report is lower than that of companies that do not. This suggests that private information in the form of environmental information is converted into public information through its disclosure in an environmental report and that this might contribute to the lowering of the investment risk felt by investors.

Furthermore, it has been found that the longer a company continuously publishes an environmental report, the lower its cost of equity capital. If we posit one company that has only recently started disclosing its environmental report and another company that has been doing so continuously over a period of 10 years, it has been demonstrated that even if the content being disclosed by these two companies is the same, the information published by the company that has a longer record of disclosure will be considered by investors to be more trustworthy than that of the other and will consequently experience a decrease in its cost of equity capital. Moreover, it has been confirmed that these two aspects tend to be synchronized, in accordance with a survey on the number of years an environmental report has been continuously published and the presence of environmental management systems within companies (e.g., a specific post or appointment of an executive, green procurement, environmental accounting, or implementation of environmental audits). Alongside developing an environment management system, a company can simultaneously proceed with the practical work required to publish an environmental report and continuously accumulate expertise in this area.

The empirically validated results of this chapter signify an "amelioration over time" effect, which occurs when value is generated in environmental information with the passage of time. This suggests that self-disciplining enforcement is

working effectively, as the capital markets monitor the voluntary self-disciplining behavior of management that is not intended to comply with regulations on environmental problems and assess these companies with regard to the number of years they have been continuously disclosing this information.

2.2.3 The Effects on Analysts and Incentives of Management Forecasts

In the following two chapters, we analyze the behavior of companies, specifically management forecasts that constitute substantially mandated disclosure as the form of disclosure in between mandated disclosure and voluntary disclosure.

First, in the chapter titled "Analyst Herding Around Management Forecasts," we verify the relationship between management forecasts and analyst forecasts. A phenomenon in the securities markets is that of analysts' forecasts being strongly influenced by other analysts' forecasts, also known as "analyst herding." This means that an analyst's revision of a buy/sell recommendation influences the buy/sell recommendations of other analysts. Moreover, the more accurate the forecasts of the first analyst, the stronger the effect that analyst will have on others. The phenomenon of analyst herding has been confirmed in previous research on analysts in U.S. securities markets.

Conversely, in Japanese securities markets, analysts follow up on fewer than 20 % of all publicly traded companies. However, nearly every company discloses a management forecast. Therefore, it is possible that analyst herding does not occur in Japan as it does in the U.S.

The following two points were ascertained from the analysis in this chapter. First, evidence supports the argument that "expectation management" is being done as management often announces earnings forecasts that are only slightly above those of the analysts. Management has an incentive to announce conservative earnings forecasts to manage expectations. However, when the management forecast is lower than the market forecast, the company's stock price will fall. Management also has an incentive to announce earnings forecasts above the market forecast, i.e., above the analysts' forecasts. By announcing an earnings forecast that is only slightly above the analysts' forecasts, it is thought that management can avoid a decline in their company's stock price while at the same time not raising analysts' expectations.

Second, when a management forecast is announced, analysts have a tendency to revise their own earnings forecasts to a level close to that of the management forecast. When a management forecast is revised against the backdrop of the analysts' revisions of their own forecasts to a level close to that of the management forecast, analysts develop confidence in the management forecasts. This conclusion is supported by the observation that these will be slightly above the analysts' forecasts.

In Japan's securities markets, analyst herding occurs in the form of analysts copying management forecasts, or when management forecasts guide analysts' forecasts. This phenomenon is an economic consequence of self-disciplining

enforcement. When we compare the analyst herding taking place in the securities markets of Japan and the U.S., we find that some U.S. analysts' forecasts guide other analysts' forecasts, whereas in Japan, management forecasts guide analysts' forecasts. In other words, in the U.S., analysts' forecasts ultimately form the core part of earnings performance forecasts, whereas in Japan, management forecasts constitute the core of earnings performance forecasts. This suggests that analysts interpret management self-discipline to be functioning in Japanese companies through their disclosure of earnings performance forecasts and, therefore, analysts tend to have confidence in these forecasts. We might call this Japanese phenomenon "self-disciplining enforcement." Conversely, in the U.S., where analysts' forecasts play a central role in earnings performance forecasts, bargaining and mutual action take place among the analysts in the securities markets, thus defining the form that market mechanisms and dynamics take in the U.S.

In the chapter titled "Management Incentives to Publish Aggressive or Conservative Earnings Forecasts and Disclosure Policy Change," we consider one aspect of the mechanism that functions for self-disciplining enforcement through an analysis of management forecasts. Specifically, while analyzing the motivations and incentives of management to make positive or conservative forecasts, we examine situations where management decides to review its forecast policy.

From a positive analysis, we ascertained the following two points. First, from our analysis of the motivations and incentives of management to make positive or conservative forecasts, as seen through a comparison with previous period performance, changes in ordinary profit forecasts were found to be larger in companies where management is rewarded for a high stock price, companies in financial difficulties, companies under pressure from the stock markets, and companies who raise funds during the forecast period through shareholders equity. Conversely, it was observed that companies who were under significant lender pressure tended to announce conservative forecasts.

Since the latter half of the 1990s, slumping Japanese companies have learned and incorporated many of the business approaches implemented by U.S. companies. In other words, companies incorporated management approaches that aligned with their environment and acknowledged the shareholders that were given short shrift in the past. As a result, management considers the benefit to shareholders in their decision making. If we consider this point in the context of this chapter's analysis, we see that, due to an increase in the market discipline-type factors of stock compensation systems and overseas investors, management is being increasingly required to disclose earnings performance forecasts. However, excessive market discipline is prone to lapsing into "short-termism," which will impede companies' sustained development. In this regard, the main banks in Japan have worked to suppress the announcement of excessively optimistic financial forecasts; in other words, self-disciplining enforcement is at work through pressure applied by the main banks.

In this chapter, it was found that among companies recording positive ordinary profit when replacing a management member, the level of positivity in forecasts tends to be weaker. In contrast, it was discovered that companies that

posted an ordinary loss under a previous manager, tended to announce a positive forecast.

From the results of the analysis, we can infer that newly appointed managers are prone to putting their own personal stamp on performance and—while considering the situation of their company—will tell a story in which self-discipline has been put to work and in which they assiduously carry out their mission. More specifically, managers appointed when business conditions are poor (e.g., a loss was recorded in the previous period) aim to rapidly improve earnings performance; however, if appointed when conditions are not poor, they then prioritize building long-term relations of trust with stakeholders, starting with the shareholders, and so tend to announce sound forecasts. Not being in the red is highly valued by Japanese companies and society. Companies that record a loss tend to give priority to becoming profitable and returning to "normal" as quickly as possible.

2.2.4 Possible Limitations of Self-Disciplining Enforcement

What are the possible pitfalls for this type of self-disciplining enforcement style of disclosure by Japanese companies? To answer this question, the chapter titled "Effects of Biased Earnings Forecasts: Comparative Study of Earnings Forecasts Disclosures by US and Japanese Firms" presents the results of an investigation to shed light on the characteristics of and problems in the style of disclosure of management earnings performance forecasts in Japan.

In Japan, listed companies are practically obliged to announce management forecasts. Moreover, this functions as a self-disciplining mechanism for the companies themselves. This conclusion has been supported by the findings of a variety of questionnaire surveys. Some studies have reported that in both Japan and the U.S., earnings performance forecasts tend to include a variety of biases that stem from a company's characteristics and its management incentives. Japanese companies that use bias-containing earnings forecasts will face risks associated with self-discipline. For example, unlike in Europe and the U.S., it is not obligatory in Japan to appoint outside directors and, therefore, external monitoring would be weak, which most likely makes it difficult to put the brakes on a decline (or loss) in self-discipline caused by earnings forecasts that contain bias. In this chapter, we focus on bias in earnings forecasts and the structure of the board of directors, as well as risks lurking within the Japanese style of self-disciplined management.

This chapter has three objectives, the first of which is to focus on earnings performance forecast information and explain the characteristics of disclosure by Japanese companies. Following this, we report that earnings forecasts have become the most important benchmarks of publicly traded companies and that the securities markets (namely, securities analysts) also highly value earnings forecast information. As a consequence, this presents the possibility that management forecast information provides a self-disciplining tool for management in Japanese companies.

The second objective, which is based on the results of a questionnaire survey, is to identify the types of intentions that management has when it prepares and announces

earnings forecast information. In Japan, the earnings forecasts announced by management at the beginning of a period occupy an important position as profit benchmarks for the company. Management anticipates that if the company is unable to achieve its forecasts, it will be penalized by capital markets, as a result of which they prepare earnings forecasts based on a variety of incentives.

The third objective is to identify one of the risks inherent in the self-discipline-type management practiced by Japanese companies. Specifically, in Japan, where companies are not legally required to appoint external directors, external monitoring tends to be weak and there is a possibility that management will announce earnings forecasts with added bias. There are concerns that biased earnings performance forecasts mean a failure of management discipline, and, moreover, that the bias may become "noise" in the securities markets. This problem indicates the possible limitations of Japanese-style self-discipline management.

In the second half of this chapter, we empirically validated the relationship between optimism, in terms of a company's earnings performance forecasts, and whether the company appoints external directors, thereby pointing out the potential pitfalls that may lay in wait for a self-disciplining enforcement-type of disclosure. It is feasible that a board of directors, composed solely of internal company directors, will create overly optimistic earnings forecasts. It is also possible that the appointment of external directors will add an external, neutral perspective, thereby suppressing optimistic tendencies. From the results of this validation, we showed that the appointment of external directors may suppress optimism (or extreme conservatism) in one part of a company's earnings performance forecasts. This finding suggests that while self-disciplining enforcement has been working to a considerable extent in Japan, it has possible limits and should be supplemented with institutional enforcement.

References

Ahmed, A. S., Neel, M., & Wang, D. (2013). Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. *Contemporary Accounting Research, 30*(4), 1344–1372.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467–498.

Beneish, M. D., Miller, B. P., & Yohn, T. L. (2012). The impact of financial reporting on equity versus debt markets: Macroeconomic evidence from mandatory IFRS adoption. Working Paper. Bloomington: Indiana University.

Brüggemann, U., Hitz, J. M., & Sellhorn, T. (2013). Intended and unintended consequences of mandatory IFRS adoption: Extant evidence and suggestions for future research. *European Accounting Review, 22*(1), 1–37.

Christensen, H. B., Hail, L., & Leuz, C. (2013). Mandatory IFRS reporting and changes in enforcement. Working Paper. Chicago: University of Chicago.

Chua, Y. L., Cheong, C. S., & Gould, G. (2012). The impact of mandatory IFRS adoption on accounting quality: A review of evidence from Australia. *Journal of International Accounting Research, 11*(1), 119–146.

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research, 46*(5), 1085–1142.

Easley, D., & O'Hara, M. (2004). Information and the cost of capital. *The Journal of Finance, 59* (4), 1553–1583.

Florou, A., & Kosi, U. (2013). Does mandatory IFRS adoption facilitate debt financing? Working Paper. London: University of London.

Hail, L., & Leuz, C. (2006). International differences in the cost of equity capital: Do legal institutions and securities regulation matter? *Journal of Accounting Research, 44*(3), 485–531.

Hail, L., Leuz, C., & Wysocki, P. (2010). Global accounting convergence and the potential adoption of IFRS by the U.S. (Part I): Conceptual underpinnings and economic analysis. *Accounting Horizons, 24*(3), 355–394.

Itami, H. (2010). Organization accumulates and market utilizes: A framework of knowledge-corporate system-innovation dynamics. In H. Itami, K. Kusunoki, T. Numagami, & A. Takeishi (Eds.), *Dynamics of knowledge, corporate systems and innovation*. Berlin, Heidelberg: Springer.

Iwai, K. (2009). *Kaisha wa korekara dou naru noka (Where are corporations going?)*. Tokyo: Heibonsha Ltd.

Iwai, K., & Sato, T. (2011). *IFRS ni igiari – kokusai kaikei kijun no hinshitsu wo tou (Objections to IFRS: Questioning the quality of IFRS)*. Tokyo: Nikkei Publishing.

Jackson, H. E., & Roe, M. J. (2009). Public and private enforcement of secuirities laws: Resource-based evidence. *Journal of Financial Economics, 93*(2), 207–238.

Khurana, I. K., & Michas, P. N. (2011). Mandatory IFRS adoption and the U.S. home bias. *Accounting Horizons, 25*(4), 729–753.

Kvaal, E., & Nobes, C. (2010). International differences in IFRS policy choice: A research note. *Accounting and Business Research, 40*(2), 173–187.

Landsman, W. R., Maydew, E. L., & Thornock, J. R. (2012). The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics, 53*(1–2), 34–54.

Leuz, C. (2010). Different approaches to corporate reporting regulation: How jurisdictions differ and why. *Accounting and Business Research, 40*(3), 229–256.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics, 69*(3), 505–527.

Li, S. (2010). Does mandatory adoption of international financial reporting standards in the European Union reduce the cost of equity capital? *The Accounting Review, 85*(2), 607–636.

Liao, Q., Sellhorn, T., & Skaife, H. A. (2012). The cross-country comparability of IFRS earnings and book values: Evidence from France and Germany. *Journal of International Accounting Research, 11*(1), 155–184.

Muller, K. A., Riedl, E. J., & Sellhor, T. (2011). Mandatory fair value accounting and information asymmetry: Evidence from the European real estate industry. *Management Science, 57*(6), 1138–1153.

Saito, S. (2013). *Kaikei kijun no kenkyu (Research in accounting standards)* (rev. ed.). Tokyo: Chuo keizaisha.

Shima, K. M., & Gordon, E. A. (2011). IFRS and the regulatory environment: The case of U.S. investor allocation choice. *Journal of Accounting and Public Policy, 30*(5), 481–500.

Tan, H., Wang, S., & Welker, M. (2011). Analyst following and forecast accuracy after mandated IFRS adoptions. *Journal of Accounting Research, 49*(5), 1307–1357.

Verriest, A., Gaeremynck, A., & Thornton, D. B. (2013). The impact of corporate governance on IFRS adoption choices. *European Accounting Review, 22*(1), 39–77.

Wysocki, P. (2011). New institutional accounting and IFRS. *Accounting and Business Research, 41*(3), 309–328.

Yip, R. W. Y., & Young, D. (2012). Does mandatory IFRS adoption improve information comparability? *The Accounting Review, 87*(5), 1767–1789.

Part I
Earnings Attributes and Corporate Behavior

What Do Smoothed Earnings Tell Us About the Future?

Yusuke Takasu and Makoto Nakano

Abstract This study analyzes the information contents of income smoothing behavior, especially the role of income smoothing behavior as a signal of future performance. What do smoothed earnings tell us about the future? To answer this research question, this paper focuses on earnings persistence and dividend policy based on two prior survey papers. These two issues (earnings persistence and dividend policy) are the foci of this study, based on Japanese managers' responses to questions regarding their motivation for income smoothing. This paper provides two new pieces of evidence. First, income smoothing in the previous period relates positively to future earnings persistence. Second, firms that engage in more smoothing tend to pay more stable dividends in the future, even when we control for past dividend policy, fundamental factors, and corporate governance factors. These results indicate that income smoothing behavior is likely to reflect future stability of earnings performance. Income smoothing acts as a vehicle through which managers can reveal private information about future earnings persistence and future dividend policy. The empirical evidence supports the information view rather than a garbling view of income smoothing, and sheds light on the bright side of smoothed earnings rather than its dark side.

Keywords Dividend policy • Earnings persistence • Income smoothing • Private information

Y. Takasu (✉) • M. Nakano
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo, Japan
e-mail: ysk.takasu@gmail.com; makoto.nakano@r.hit-u.ac.jp

1 Introduction

Earnings quality is one of the most controversial issues, and a subject of growing concern in financial accounting research and accounting-standards settings (Francis et al. 2004; Barth et al. 2008; Dechow et al. 2010). It has been examined from a number of perspectives. There exist several concepts and measures of earnings quality; Francis et al. (2004), for example, present seven earnings attributes: accrual quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism. Among these earnings attributes, this study sheds light on income smoothing. The existence of income smoothing itself has long been discussed in practice and in academic literature, and some empirical and analytical studies focus on income smoothing. In particular, many researchers have analyzed the relationship between income smoothing behavior and either stock returns or cost of equity capital (Hunt et al. 2000; Francis et al. 2004; Tucker and Zarowin 2006; McInnis 2010). These studies assume that income smoothing behavior reflects a manager's private information regarding future performance (Francis et al. 2004). There is, however, a counterargument that income smoothing behavior obfuscates earnings information (Bhattacharya et al. 2003; Leuz et al. 2003). This study analyzes the information contents of income smoothing behavior, especially the role of income smoothing behavior as a signal of future performance. What do smoothed earnings tell us about the future? To answer this research question, this paper focuses on earnings persistence and dividend policy, based on two survey papers by Graham et al. (2005) and Suda and Hanaeda (2008).

Top management has shown a clear preference for income smoothing. Graham et al. (2005, p. 44) reported that "an overwhelming 96.9 % of the survey respondents indicate that they prefer a smooth earnings path," as it keeps cash flow constant. Why do top managers prefer income smoothing? In a comparable survey undertaken in Japan, the two reasons most frequently cited were (1) it enables stable dividends, and (2) it assures customers/suppliers that a business is stable (Suda and Hanaeda 2008). Therefore, it seems that "stability" is a key word in understanding the motivation for income smoothing. If income smoothing behavior reflects a manager's private information about future performance, the earnings of firms that engage in more smoothing are more informative. On the other hand, if income smoothing reflects garbling (opportunistic) behavior, the earnings of firms that engage in more smoothing would not inform outsiders about any valuable information.

This study focuses on Japanese firms for two reasons. First, John et al. (2008) and Acharya et al. (2011) reported that the time-series volatility of return on assets in Japan is the lowest among 35 countries around the world. For example, although the average volatility of American, British, German, and Australian firms is 8.8 %, 7.1 %, 5.7 %, and 12.1 %, respectively, the average volatility of Japanese firms is only 2.2 %. This evidence suggests there is a high possibility that Japanese firms' managers aggressively smooth earnings compared with managers in other countries. It is beneficial for us to test our hypotheses in the Japanese setting because we

can explore the unique earnings management behaviors that may be specific to Japanese firms.

Second, Denis and Osobov (2008) found that more Japanese firms pay dividends compared with firms in other countries. For example, although the proportion of dividend-paying firms in the United States and Canada in 2002 was 19.0 % and 19.9 %, respectively, the proportion of dividend-paying firms in Japan in 2002 is 83.8 %. This fact may produce pressure on managers to pay dividends. Because most Japanese firms pay dividends, we can use a large sample to test our hypothesis. Moreover, during the sample period, approximately 40 % of Japanese firms adopted a stable dividend policy. This may produce pressure on managers to maintain stable dividends, thereby encouraging managers to smooth earnings in order to maintain stable dividends. This pressure might urge managers to engage in ad hoc income smoothing without ample consideration of future performance.

This study provides two new empirical findings. First, income smoothing relates positively to earnings persistence. This implies that income smoothing behavior reflects high earnings persistence in the future. Second, firms those engage in more smoothing pay stable dividends in the future. There are fewer non-dividend payers among firms that engage in more smoothing than among firms that engage in less smoothing. Income smoothing is informative with respect to a firm's future stable dividends, and functions as a signal even when we control for past dividend policy, fundamental factors, and corporate governance factors. Given Lintner (1956)'s argument that the change in dividend amount reflects the change in the level of long-term and persistent earnings, it would appear that income smoothing behavior reflects long-term stability of firm performance.

Overall, the evidence shows that Japanese managers, on average, tend to smooth earnings with future earnings performance in mind. The results are robust to the alternative definitions of income smoothing posited by Hunt et al. (2000), Leuz et al. (2003), Francis et al. (2004), and Tucker and Zarowin (2006), and to varying model specifications.

This study makes several contributions to the literature and understanding of income smoothing behavior. First, we build on recent advances in the literature vis-à-vis earnings quality, especially income smoothing. Although most prior studies focus on the economic consequences of income smoothing—for example, Francis et al. (2004) found that firms that engage in more smoothing have lower cost of capital than firms that engage in less smoothing—few studies provide evidence as to whether or not income smoothing reflects future performance. The current study fills this gap.

Second, the empirical evidence supports the information view rather than a garbling view of income smoothing. As mentioned above, few studies provide evidence as to whether income smoothing reflects future performance. The exception is Tucker and Zarowin (2006), who provided evidence that income smoothing reflects future earnings persistence, although earnings persistence may not fully stand as a proxy for future stability. Managers' discretion may be included in both current and future net income. Furthermore, the earnings persistence coefficient estimated from the first-order auto-regressive calculation process might capture

only the short-term stability of a firm's performance. The current study analyzes the information content of income smoothing from two perspectives; short-term stability (earnings persistence) and long-term stability (dividend policy). From these analyses, this study sheds light on the bright side of smoothed earnings rather than its dark side.

The remainder of this paper is organized as follows. Section 2 reviews the literature and presents the hypotheses. Section 3 provides details about the research design and sampling methodology. Section 4 examines the relationship between income smoothing and future earnings persistence and the relation between income smoothing and future dividend policy, to investigate the role of smoothed earnings paths as a signal about a firm's future performance stability. Section 5 includes robustness checks. Section 6 summarizes the paper and provides concluding remarks.

2 Prior Literature and Hypotheses

With respect to managers' motivations vis-à-vis financial reporting, some influential survey articles have come from the United States (Graham et al. 2005) and Japan (Suda and Hanaeda 2008). In the United States, "an overwhelming 96.9 % of the survey respondents indicate that they prefer a smooth earnings path" (Graham et al. 2005, p. 44), as it keeps cash flow constant. In Japan, 44 % of the respondents in Suda and Hanaeda (2008)'s survey indicated that they might sacrifice corporate value in order to report smoothed income. Managers have a high tendency to avoid a bumpy earnings path, in both the United States and Japan.

Why do Japanese managers smooth earnings? What are their motivations for doing so? According to Suda and Hanaeda (2008),[1] the top two answers are that doing so (1) enables stable dividends (62.5 %) and (2) assures customers/suppliers that the business is stable (55.2 %). This study investigates the link between income smoothing and the stability of Japanese firms, in terms of these two managerial responses.[2]

Although managers have strong preference for income smoothing, there are two conflicting viewpoints on income smoothing: (1) the information view and (2) the garbling view. First, the information view posits that managers can communicate private information about future earnings through smoothing behavior, as well as

---

[1] When asked why they smooth income, the top three answers among managers in the United States were that doing so (1) leads to perceptions among investors that the firm is not risky, (2) makes it easier for analysts/investors to predict future earnings, and (3) assures customers/suppliers that the business is stable (Graham et al. 2005).

[2] Shuto and Iwasaki (2012) found that a stable shareholder structure encourages managers to perform income smoothing in Japan. They focused on the determinants of income smoothing. Our study, in contrast, investigates both the economic consequences and signaling role of income smoothing.

mitigate any information asymmetry problems (Francis et al. 2004). Tucker and Zarowin (2006) found that the future earnings of firms that engage in more smoothing are more likely to be impounded into their current stock returns than those of firms that engage in less smoothing; they concluded that income smoothing improves the informativeness of earnings.

Second, in contrast, smoothed income may include garbling information. Managers may manipulate reported earnings for private reasons, including those related to their own compensation (Healy 1985) and career-related concerns in the manager labor market. Leuz et al. (2003) viewed income smoothing as a device used by insiders to obfuscate their consumption of private-control benefits, and Bhattacharya et al. (2003), in their international comparison study, contended that smoothing leads to greater earnings "opacity." Which perspective is correct? This is still an open question, and it seems to be an empirical issue.

While it is possible to categorize viewpoints conceptually as being in one of the two aforementioned conflicting streams, it can be difficult to disentangle the actual smoothness of reported earnings. Reported earnings may reflect the smoothness of (1) the fundamental earnings process, (2) financial accounting rules, or (3) managers' intentional earnings manipulation (Dechow et al. 2010).

The current paper defines income smoothing as a manager's tendency to exhibit accounting behavior that decreases reported income volatility, compared to that of pre-discretionary income. Cohen et al. (2008) found that firms have changed from accrued to real earnings management following the implementation of the *Sarbanes–Oxley Act* (SOX); the reason is that SOX has made accrual-based earnings management more costly. Considering their finding, the current paper's definition of smoothing considers both accrual discretion and real discretion.

Using this definition, and given above managers' preference for income smoothing, their motivation to smooth earnings, and the two conflicting perspectives, we investigate whether income smoothing behavior is informative or opportunistic. If income smoothing behavior reflects managers' private information regarding future performance, which is consistent with Francis et al. (2004)'s argument, then the earnings of firms that engage in more smoothing are more informative. In particular, if income smoothing behavior truly reflects future firm stability, which is what managers want to convey to outsiders by smoothing earnings (Suda and Hanaeda 2008), then outsiders can recognize the stability by observing the smoothed earnings path. On the other hand, if income smoothing reflects garbling (opportunistic) behavior, that is, managers' behavior to deceive outsiders and obfuscate their consumption of private-control benefits (Leuz et al. 2003), then the earnings of firms that engage in more smoothing would not offer outsiders any valuable information.

To investigate this effect of income smoothing behavior, we test two hypotheses. In the first hypothesis, we directly test the relationship between current smoothed earnings and future performance. This study focuses on earnings persistence. Dichev and Tang (2009) found that earnings volatility relates negatively to earnings persistence. This implies that low earnings volatility in the past has the role of a signal regarding future persistent earnings to outsiders. Extending Dichev and Tang

(2009)'s research, Nakano and Takasu (2011) provided evidence that earnings management in the previous period has a negative impact on future earnings persistence. This implies that past earnings management has the role of a negative signal to outsiders regarding future earnings persistence. Although these studies analyzed the relationship between earnings volatility and earnings persistence, they did not address income smoothing behavior.[3] As mentioned above, earnings smoothness (i.e., low earnings volatility) may reflect both a firm's fundamentals and manager discretion (Dechow et al. 2010). However, Dichev and Tang (2009) made little consideration for this point in their research design. If income smoothing behavior is ad hoc behavior in order to smooth current earnings without consideration on future performance, discretionary smoothed earnings might not have a role as a signal regarding future earnings persistence. On the other hand, as long as income smoothing behavior reflects managers' private information about future earnings stability, discretionary smoothed earnings could have a role as a signal about future earnings persistence.

From the above discussions, we develop the first hypothesis:

Hypothesis 1 Firms that engaged in more smoothing in the past (period $t - 4$ to t) have higher earnings persistence (period t to $t + 1$) than firms that engaged in less smoothing.

A similar analysis was conducted by Tucker and Zarowin (2006), who analyzed the relationship between income smoothing and earnings persistence. Earnings persistence, however, may not be fully appropriate to estimate future performance stability because future net income includes management discretion. To cope with this problem, we also analyze "adjusted" earnings persistence, which is the coefficient of the regression of pre-discretionary income for year $t + 1$ on net income for year t. If income smoothing behavior reflects managers' private information about future earnings stability and approximates permanent earnings thorough current smoothed earnings, the coefficient would also become higher even when pre-discretionary income for year $t + 1$ is used as the dependent variable.

In the second hypothesis, we analyze the relationship between current smoothed earnings and future dividend policy. Although this test indirectly analyzes the relationship between current smoothed earnings and future earnings, we consider future dividend policy as worthwhile in investigating whether income smoothing behavior is informative or opportunistic because it was suggested by Lintner (1956) that the change in dividend amount is dependent on the change in the level of long-term and persistent earnings. Therefore, from this argument, it is implied that the change in dividend policy might reflect management belief about future earnings performance.

Denis and Osobov (2008) reported that over 80 % of Japanese firms paid dividends during the period 1990–2002. When compared with other countries, this is a unique dividend policy. For instance, the percentage of dividend payers

---

[3] Although Nakano and Takasu (2011) analyzed earnings management in general situations, they did not focus on the income smoothing situation specifically.

in 2002 was 19.0 % in the United States and 19.9 % in Canada. In contrast, 83.8 % of Japanese firms paid dividends in 2002. In addition, our calculation documents that 40 % of firms, on average, are categorized as "stable payers" over the period 1995–2009. "Stable payers" are firms paying the same amount of dividend per share for the second consecutive year. It should be noted that stable dividends are a uniquely Japanese payout strategy.

Through a survey of Japanese firms, Suda and Hanaeda (2008) found that 62.5 % of respondents expected income smoothing to enable stable dividends, and recognized this point as the most important motivation behind their smoothing behavior. Since this income smoothing motivation seems to reflect managers' recognition of the importance of stable dividends, it seems managers tend to smooth current earnings in order to pay stable dividends in the current year.[4] If income smoothing behavior reflects earnings garbling behavior to pay stable dividends in the current year without consideration of future performance, firms that engage in more smoothing will tend to pay volatile dividends in the future because managers may not be able to maintain ad hoc income smoothing behavior in the future. On the other hand, if income smoothing behavior reflects future firm performance stability, firms that engaged in more smoothing will tend to pay stable dividends in the future. If current income smoothing behavior positively relates to a stable dividend policy in the future, current income smoothing has a role as a positive signal about the firm's future performance stability because, following Lintner (1956)'s implication, a stable dividend policy reflects managers' belief about future performance stability,

From the above discussions, we develop the second hypothesis:

Hypothesis 2 Firms that engaged in more smoothing in the past (period $t - 4$ to t) have a higher tendency to pay stable dividends in the future (periods t to $t + 1$ and $t + 1$ to $t + 2$) than firms that engaged in less smoothing.

Hypothesis 2 assumes that income smoothing behavior functions as a signal of future dividend stability.

Testing these two hypotheses (earnings persistence and stable dividend policy), we investigate the relationship between income smoothing behavior and future firm stability. In this study, we capture the firm's stability through future earnings persistence and future stable dividends. On one hand, we regard future earnings persistence as short-term stability of firm performance because future earnings persistence is measured by the coefficient estimated from the regression of net income for year $t + 1$ on the net income for year t. On the other hand, we

---

[4] Note that there is little consensus regarding the reason why managers prefer stable dividends in Japan, despite their strong preference for stable dividends. This is one of the limitations of our research. Serita et al. (2011), however, provided a clue to interpreting this phenomenon. They showed that some institutional investors, specifically banks and pension funds, prefer stable dividends. If managers want to cater to the demands of these institutional investors, they might choose stable dividend policies. In particular, because Japanese firms are highly connected with a specific bank (i.e., main bank), managers might cater to the demands of that bank.

regard future stable dividend policy as longer-term stability of firm performance because Lintner (1956) suggested that the change in dividend amount is dependent on the change in the level of long-term and persistent earnings. Although short-term earnings persistence is viewed as one of the factors that affect dividend policy, it would appear that stable dividend policy reflects not only short-term earnings persistence but also long-term stability of earnings performance.

3 Research Design

3.1 Income Smoothing Measure

The current study defines "income smoothing" as a manager's will to decrease reported income volatility compared to that of pre-discretionary income. The proxy variable of the degree of smoothing is defined as firm-specific historical volatility of net income that is calculated as standard deviation of it over the most recent 5 years, divided by volatility of pre-discretionary income that is calculated as standard deviation of it over the most recent 5 years (*VNI/VPDI*). Both net income (*NI*) and pre-discretionary income (*PDI*) are deflated by total assets at the beginning of year. The smaller this variable is, the more likely managers are to smooth income. Leuz et al. (2003) and Francis et al. (2004) use basically the same variable: volatility of reported income, divided by volatility of cash flow from operations. Hunt et al. (2000)'s smoothness variable is similar to that of the current study, except the former includes only accounting discretion; the proxy variable of the current study, on the other hand, includes both accounting discretion and a part of real discretion. The current study's measure of manager's smoothing behavior is the most accurate, because the denominator is measuring the purely pre-discretionary income portion, before either accrual discretion or real discretion has been exercised.

When measuring *PDI*, the discretionary portion must be specified. As mentioned, discretion includes both accounting discretion and real discretion. First, this study explains the procedure used to estimate discretionary accruals (*DAC*); it follows the standard methodology. Total accruals (*TAC*) are defined as follows[5,6]:

---

[5] Δfinancing item is the sum of the following items: change in short-term debt, change in commercial paper, change in current portion of bonds and convertible bonds.

[6] Δother allowance is the sum of the following items: change in allowance for doubtful accounts classified as fixed assets and change in long-term provision.

Total accrual = (Δcurrent assets − Δcash and cash equivalents)
          − (Δcurrent liabilities − Δfinancing item) − Δother allowance
          − depreciation

DAC is estimated as *TAC* minus nondiscretionary accruals (*NDAC*). *NDAC* is estimated via a regression-based approach, following Kothari et al. (2005).[7] In particular, this study estimates *NDAC* by industry-year from regression Model (1).

$$TAC_t = \delta_0 + \delta_1(1/A_{t-1}) + \delta_2(\Delta S_t - \Delta REC_t) + \delta_3 PPE_t + \varepsilon_t \qquad (1)$$

TAC_t = total accruals in Fiscal Year t, deflated by total assets at the beginning of Fiscal Year t

A_{t-1} = total assets at the end of Fiscal Year $t-1$

ΔS_t = the change in sales from Fiscal Year $t-1$ to t, deflated by total assets at the beginning of Fiscal Year t

ΔREC_t = the change in accounts receivables from Fiscal Year $t-1$ to t, deflated by total assets at the beginning of Fiscal Year t

PPE_t = gross plant, property and equipment at the end of Fiscal Year t, deflated by total assets at the beginning of Fiscal Year t

ROA_t = net income before extraordinary items in Fiscal Year t, deflated by total assets at the beginning of Fiscal Year t (net income before extraordinary items = net income ± loss and gain from minority interests − gain form extraordinary items + loss from extraordinary items)

DAC is defined as the residual of Model (1).

Second, this study adopts the gain/loss on the sale of marketable securities reported in extraordinary items, as a real discretion (*RD*) proxy. This paper does not include other real discretion items such as research and development (R&D), advertising, or labor expenses because these items are included in calculation of operating income and we cannot distinguish the effect of these discretionary expenses on the calculation of *DAC* from the overall effect of the discretionary expenses on earnings. Also, similar variable is used in Herrmann et al. (2003). They regard excess income from the sale of assets which is measured as income from the sale of fixed assets and marketable securities minus the median for the corresponding industry and year. They find that firms tend to increase (decrease) earnings through the sale of fixed assets and marketable securities when current reported income is below (above) managers' forecasts. Due to data restrictions,

---

[7] This study uses discretionary accruals estimated from Kothari et al. (2005) model. This study focuses on income smoothing wherein proxies are calculated by considering the variability of earnings. Because Kothari et al. (2005) model uses ROA as an explanatory variable, the effect of earnings on discretionary accruals is, already and at least partially, removed from our main analyses. The results, however, remain unchanged even when we use alternative models, in particular Jones (1991) model and Dechow et al. (1995) model to calculate discretionary accruals.

however, we could not include other items such as gains/losses from the sale of fixed assets. Furthermore, in our sample, over 50 % of firm-years report that the gain/loss on the sale of marketable securities in extraordinary items is zero. This might imply that there is a low possibility that a firm's sale of marketable securities is affected by the trend of the same industry-year firms. If certain firm's sale of marketable securities was affected by the trend, there are more firm-years that report the gain/loss on the sale of marketable securities in extraordinary items would be non-zero. Therefore, we regard the gain/loss on the sale of marketable securities reported in extraordinary items as *RD*.[8] In order to take account of the effect of tax, we estimate the gain/loss on the sale of marketable securities after tax. In this paper, after tax *RD* (*ATRD*) is calculated by multiplying *RD* by 0.6.[9] *ATRD* is also deflated by total assets at the beginning of Fiscal Year.[10]

The sum of *DAC* and *ATRD* is defined as total earnings management portion (*TEM*). *PDI* is defined as *NI* minus *TEM*.

$$\text{Total Earnings Management } (TEM) = DAC + ATRD$$

$$\begin{aligned} \text{Pre-discretionary income } (PDI) &= \text{Net income } (NI) \\ &\quad - \text{Total earnings management } (TEM) \end{aligned}$$

Finally, this study's proxy variable of smoothness is calculated as the volatility of *NI* divided by the volatility of *PDI* (i.e., *VNI/VPDI*). To control for industry and time effects, following Tucker and Zarowin (2006), this study uses a firm's reversed fractional ranking of income smoothing (between 0 and 1) within its industry-year[11] and refers to it as Income Smoothing (*IS*).[12] Higher-*IS* firms aggressively smooth income in the industry-years to which they belong. Hereafter, this paper uses *IS* as a measure of degree of income smoothing. In Sect. 5, we conduct several robustness checks with three additional *IS* measures; *IS2*, *IS3*, *IS4*.

---

[8] Tests are also performed using the gain/loss on the sale of marketable securities minus the median for the corresponding industry and year as *RD*. The results remain similar to those reported.

[9] To compute the after tax amounts, generally, 40 % is used as effective tax rate in Japan.

[10] In prior literature, normal asset sales are estimated to calculate abnormal asset sales (e.g., Gunny 2010). If a large part of *RD* is normal asset sales, our results might be misleading. We regard, however, this concern as a trivial one, because in the robustness checks where we assume only *DAC* to be the discretionary portion of NI, the results remain unchanged.

[11] This paper uses the industry codes of the Securities Identification Code Committee in Japan, which relate to 33 different industries.

[12] For example, assume an industry-year that includes three firms (A, B, and C). If A's value of the proxy of Income-Smoothing (*VNI/VPDI*) is higher than those of the others and C's value is lower than those of the others, we rank A, B, and C as 1, 2, and 3 respectively, and divide each ranking by the number of observations in the industry-year. Therefore, 1/3, 2/3, and 3/3 are the IS values of A, B, and C, respectively.

3.2 Framework of Analysis

This paper investigates whether smoothed earnings reflect firm's future stability of performance through the analyses about earnings persistence and dividend policy. This subsection explains the framework and models of this study's analysis.

3.2.1 Earnings Persistence

In order to investigate the link between smoothing and earnings persistence, this study relies on commonly used autoregressive regressions of one-year-ahead earnings on current earnings.

$$NI_{t+1} = \alpha + \beta NI_t + \varepsilon_{t+1} \tag{2}$$

Based on cross-sectional regression, earnings persistence (β) is estimated. When β is close to 1, earning persistence is high. In contrast, when β is close to 0, earnings include a more transitory factor and persistence is low.

In the first analysis, IS_t quintiles are formed based on the value of IS_t and persistence is compared. The methodology of Dichev and Tang (2009) is followed for testing differences in persistence coefficients across quintiles. More specifically, Quintiles 1 (the least smoothing quintile) and 5 (the most smoothing quintile) observations are combined, and Regression (3) on these combined data is estimated. In Regression (3), $Dummy_t$ is a dummy variable that is coded as 1 if a firm-year belongs to Quintile 1, and 0 if a firm-year belongs to Quintile 5. If the coefficient on the interaction variable (β_3) is statistically significant, the difference in persistence coefficients between Quintiles 1 and 5 is considered statistically significant.

$$NI_{t+1} = \alpha + \beta_1 Dummy_t + \beta_2 NI_t + \beta_3 Dummy_t * NI_t + \varepsilon_{t+1} \tag{3}$$

In the same way, the methodology of Dichev and Tang (2009) is followed for testing differences in adjusted R^2 across quintiles. This study uses a bootstrap test based on a simulation of the empirical distribution of the test statistic, assuming the null is true. In this case, the null hypothesis is that IS_t is unrelated to adjusted R^2, and the test statistic is the difference in adjusted R^2 between Quintiles 1 and 5. The empirical distribution under the null is simulated by randomly splitting the null sample (15,890 observations) into pseudo-IS_t quintiles. Regression (2) is then run within pseudo-Quintiles 1 and 5 to obtain a difference in adjusted R^2 between the two quintiles. This difference is one observation from the simulated distribution under the null. This procedure is repeated 1,000 times, yielding a 1,000-observation empirical distribution of adjusted R^2 differences under the null. The formal statistical test is based on a comparison of the actual observed difference in adjusted R^2 against the simulated distribution of differences.

The second analysis is based on Model (4), following Tucker and Zarowin (2006).

$$NI_{t+1} = \alpha + \beta_1 NI_t + \beta_2 IS_t + \beta_3 NI_t * IS_t + \varepsilon_{t+1} \qquad (4)$$

Although Model (4) looks similar to Model (3), the former adopts IS_t itself rather than a dummy variable. This model has the advantage of being able to test the relation between income smoothing behavior and future earnings persistence by using all observations. Of particular interest is the coefficient on NI_t*IS_t, which should be positive if income smoothing reflects future earnings persistence.[13]

NI_{t+1} may not be appropriate to estimate future stability because NI_{t+1} includes management discretion. To cope with this concern, we estimate model (5) in addition to model (4). In model (5), PDI_{t+1} is used as the dependent variable. If management use their private information about future performance and inform their business stability through income smoothing, PDI_{t+1} may be better proxy for future stability. In this model, we call β_1 "adjusted" earnings persistence.

$$PDI_{t+1} = \alpha + \beta_1 NI_t + \beta_2 IS_t + \beta_3 NI_t * IS_t + \varepsilon_{t+1} \qquad (5)$$

3.2.2 Dividend Policy

This study explores the link between income smoothing and dividend policy in two ways. First, it compares the percentages of firms that have "no dividends," "stable dividends," "increase dividends," "decrease dividends," and "dividends omission" conditioning, based on IS_t quintile. Second, logit regressions are run to investigate the relation between income smoothing in the past and future dividend policy.

This study classifies a firm's dividend policy as being in one of four categories: no dividends (*Nothing*), stable dividends (*Stable*), increase dividends (*Increase*), and decrease dividends (*Decrease*). In addition to these categories, we identify firm-years that omit dividends (*Omission*). This is because investors may be interested in future dividend omission. These five categories are defined in Table 1. Because *Omission* is the particular type of *Decrease*, the observations which are included in *Omission* also are included in *Decrease*.

In the logit regression analysis, several factors that affect a firm's dividend policy are controlled. If the IS_t factor is found to be statistically significant even after those factors are controlled, then the link between smoothing and dividend policy is considered significant. In Japanese corporate law, earnings available for dividends are determined on the basis of unconsolidated earnings. It seems, however, that consolidated earnings and consolidated payout ratios recently play an

---

[13] Instead of NI_{t+1}, Tucker and Zarowin (2006) use the sum of net income from $t+1$ to $t+3$ as the dependent variable. Although we use the same variable as the dependent variable, the results remain unchanged.

Table 1 Definitions of types of dividend policies

| | Future dividend policy | | | |
	From t to $t + 1$	Our final sample size	From $t + 1$ to $t + 2$	Our final sample size
Nothing	$DPS_t = DPS_{t+1} = 0$	1,844	$DPS_{t+1} = DPS_{t+2} = 0$	1,826
Stable	$DPS_t = DPS_{t+1} \neq 0$	7,176	$DPS_{t+1} = DPS_{t+2} \neq 0$	7,032
Increase	$DPS_t < DPS_{t+1}$	4,510	$DPS_{t+1} < DPS_{t+2}$	4,428
Decrease	$DPS_t > DPS_{t+1}$	2,360	$DPS_{t+1} > DPS_{t+2}$	2,604
Omission	$DPS_t > DPS_{t+1} = 0$	521	$DPS_{t+1} > DPS_{t+2} = 0$	599

DPS_t is the dividend per share for Fiscal Year t

important role in the practice. Therefore we analyze the relation between income smoothing based on the consolidated earnings and dividends policy. Logit regression is run on Model (6).

$$
\begin{aligned}
Y_{t\ or\ t+1} = {}& \alpha + \beta_1 IS_t + \beta_2 Rank.ROA_t + \beta_3 Rank.Growth_t + \beta_4 Tobin'sQ_t \\
& + \beta_5 Rank.VPDI_t + \beta_6 Size_t + \beta_7 Foreign_t \\
& + \beta_8 Financial_t + \beta_8 DInc_t + \beta_{10} RE/BVE_t + \beta_{11} DNothing_{t-1} \\
& + \beta_{12} DStable_{t-1} + \beta_{13} DIncrease_t + \Sigma Year \\
& + \varepsilon_t
\end{aligned}
\tag{6}
$$

$$
Y_{t\ or\ t+1} = \left\{ \begin{array}{c} DNothing_t, DStable_t, DIncrease_t, DDecrease_t DOmission_t \\ DNothing_{t+1}, DStable_{t+1}, DIncrease_{t+1}, DDecrease_{t+1}, DOmission_{t+1} \end{array} \right\}
$$

The dependent variables (Y_t or Y_{t+1}) comprise the following ten dummy variables, each of which takes one of two possible values. $DNothing_t$ ($DNothing_{t+1}$) is a dummy variable that is 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Nothing*, and 0 otherwise. $DStable_t$ ($DStable_{t+1}$) is a dummy variable that is 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Stable*, and 0 otherwise. $DIncrease_t$ ($DIncrease_{t+1}$) is a dummy variable that is 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Increase*, and 0 otherwise. $DDecrease_t$ ($DDecrease_{t+1}$) is a dummy variable that is 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Decrease*, and 0 otherwise. Finally, $DOmission_t$ ($DOmission_{t+1}$) is a dummy variable that is 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Omission*, and 0 otherwise.

The independent variables include the main variable IS_t, as well as twelve other control variables. Denis and Osobov (2008) report that the propensity to pay dividends is higher among firms that are larger, are more profitable, and have higher retained earnings. In order to control for the effect these factors have on dividend policy, the natural logarithm of market value of equity at the end of Fiscal Year t ($Size_t$) is added, along with net income before extraordinary income in Fiscal Year t divided by total assets at the beginning of Fiscal Year t (ROA_t), and retained earnings divided by book value of equity at the end of Fiscal Year t (RE/BVE_t).

In addition, an earnings growth dummy ($Dinc_t$) is added; it takes a value of 1 if a firm reports positive earnings growth for Fiscal Year t, and 0 otherwise, because it is possible that the earnings growth affects the firm's dividend policy. According to the lifecycle hypothesis vis-à-vis dividends, high-growth firms tend to retain earnings for reinvesting, thus leading such firms to take a no-dividends strategy. In contrast, the propensity to pay stable dividends or increase dividends is higher among low-growth, relatively mature firms. Firms in a declination stage would decrease dividends. The geometric average of the five-year sales growth rate (from Fiscal Year $t - 4$ to t) is a proxy for past growth ($Growth_t$). Tobin's Q_t is a proxy variable for investment opportunity in the future. Tobin's Q_t is defined as the ratio of the sum of the market value of equity and book value of total debt, to the sum of the book value of equity and total debt at the end of Fiscal Year t. PDI_t volatility ($VPDI_t$) is added as a control variable, because managers are sensitive about performance uncertainty when making decisions about payouts. The survey of Brav et al. (2005) shows that institutional investors affect dividends. Here, the equity ownership percentage of financial institutions at the end of Fiscal Year t ($Financial_t$) and that of foreign investors at the end of Fiscal Year t ($Foreign_t$) are used; these two factors may function as discipline for Japanese managers and facilitate aggressive payouts. In addition, we include $DNothing_{t-1}$, $DStable_{t-1}$, and $DIncrease_{t-1}$ in Model (6) in order to control for the effect of past dividend policy.

Considering the effects of industry and year on profitability, growth, and uncertainty, ROA_t, $Growth_t$, and $VPDI_t$ are adjusted. These variables are ranked in ascending order within its industry-year and divided by the number of observations in each industry-year. This study defines these as $Rank.ROA_t$, $Rank.Growth_t$, and $Rank.VPDI_t$.[14] Moreover, to control other year effects, we include year dummies in the model.

In this study, all t-statistics and z-statistics are corrected for heteroskedasticity, and cross-sectional and time-series dependence using a two-way cluster at the firm and year level proposed by Petersen (2009) and Cameron et al. (2011).[15]

3.2.3 Sample

The empirical analysis is based on Japanese non-financial firms over the 1990–2010 period. The initial sample includes 59,261 firm-years. Data are basically screened according to the following criteria (figure in parentheses represents sample size after each criterion):

---

[14] Even when unranked ROA_t, unranked $Growth_t$, and unranked $VPDI_t$ are used instead of $Rank.ROA_t$, $Rank.Growth_t$, and $Rank.VPDI_t$, the empirical results remain unchanged.

[15] If clustering of the standard errors does not allow for the inclusion of all of our currently included year dummy variables, we combine at least two year dummy variables into one year dummy variable in order to estimate the regression.

1. The firms have to be Japanese listed firms (59,261 firm-years).
2. Fiscal Year-end should be March (43,498 firm-years).
3. The firms should be compliant with Japanese accounting standards (42,928 firm-years).
4. All data must be available for *DAC* estimation (40,259 firm-years).
5. To ensure that the results are not outlier-sensitive, variables in the top and bottom 0.5 % have been eliminated from the Model (1) estimation (38,599 firm-years).
6. Firms in the industry-year with more than ten firms (38,078 firm-years)
7. All financial and market data are available (19,558 firm-years)[16]
8. Change in number of shares outstanding (from t to $t + 1$, $t + 1$ to $t + 2$) is within 20 %[17] (17,947 firm-years)
9. To ensure that the results are not sensitive to outliers, except for dummy variables, variables in the top and bottom 0.5 % have been eliminated in Models (2)–(6) estimation[18] (15,890 firm-years).

Through the use of these criteria, a final sample of 15,890 firm-year observations is generated.[19]

Table 2 provides descriptive statistics. Table 3 presents a correlation matrix of variables used in OLS and logit regressions. At first glance, high correlations are observed between $Size_t$ and $Tobin's\ Q_t$, $Size_t$ and $Foreign_t$, and $Size_t$ and $Financial_t$. To cope with multicollinearity issues, regressions are run in advance, with either variable alone, on Models (6). The results remain the same.[20] Hence, all these variables are, hereafter, included in the logit regression analysis.

Figure 1 presents distribution of dividend policy over the period 1995–2009. We can observe interesting dividend policies of Japanese firms. First, there are very few *Nothing*. Approximately, 90 % of firms pay dividends. Second, during 2002–2007,

---

[16] This criteria dramatically reduces the sample size. This is mainly because the calculation of our fourth income smoothing measure (see Sect. 5) requires current and past five years' net income before accrual discretion and *DAC* (from year $t - 5$ to t) in order to calculate the measure for year t, and dividend policy measures (from year $t + 1$ to $t + 2$) require both $DPS_{t + 1}$ and $DPS_{t + 2}$ in calculation.

[17] Following Ishikawa (2007), we adopt this criteria.

[18] Even when we skip criteria (9), the empirical results remain unchanged.

[19] The top and bottom 0.5 % of the regression variables are truncated twice [i.e., criteria (5) and (9)], not only to prevent outliers from affecting estimations of Regression (1), but also to obtain a large sample to test the hypotheses. To mitigate the effect of a change in the number of shares outstanding on dividends per share, criterion (8) is included. In addition, instead of using *Rank.ROA_t*, *Rank.Growth_t*, and *Rank.VPDI_t*, to delete outliers, the ROA_t, $Growth_t$, and $VPDI_t$ values are used.

[20] Furthermore, we calculate the VIF in the logit regression of $D\_Stable_{t + 1}$. The results show that $DIncrease_{t-1}$ has the highest VIF value (2.77). Considering the value of VIF under 10, there exists little concern about multicollinearity problem.

Table 2 Descriptive statistics (observations during 1995–2008)

	Mean	Std. dev.	Min	25 %	Median	75 %	Max	N
NI_t	0.016	0.029	−0.134	0.004	0.015	0.031	0.124	15,890
VNI_t	0.017	0.015	0.000	0.007	0.012	0.022	0.185	15,890
PDI_t	0.015	0.050	−0.165	−0.015	0.015	0.045	0.195	15,890
$VPDI_t$	0.044	0.024	0.008	0.026	0.038	0.055	0.158	15,890
$VNI/VPDI_t$	0.443	0.353	0.024	0.185	0.348	0.604	2.559	15,890
$ROAt$	0.024	0.027	−0.164	0.009	0.021	0.038	0.172	15,890
$Growth_t$	−0.004	0.044	−0.148	−0.032	−0.005	0.022	0.170	15,890
$Sizet$	10.071	1.46	6.85	9.01	9.92	10.99	14.23	15,890
$Tobin's Q_t$	1.063	0.311	0.480	0.866	1.007	1.187	2.998	15,890
$RE/BVEt$	0.364	0.351	−3.054	0.067	0.419	0.623	0.952	15,890
$Foreign_t$	0.062	0.078	0.000	0.007	0.028	0.091	0.417	15,890
$Financial_t$	0.282	0.143	0.013	0.168	0.267	0.388	0.648	15,890
DPS_t	22.2	234.7	0	4	7.5	12	8,400	15,890

NI_t = the net income for Fiscal Year t, deflated by the total assets at the beginning of Fiscal Year t
VNI_t = the firm-specific volatility of earnings that is calculated as the standard deviation of NI over the most recent five years
TAC_t = total accrual that is defined as (change in current assets − change in cash and cash equivalents) − (change in liabilities − change in financing item) − change in other allowance − depreciation for Fiscal Year t, deflated by the total assets at the beginning of Fiscal Year t
$NDAC_t$ = non discretionary accrual that is estimated by using Kothari et al. (2005)'s model
DAC_t = discretionary accrual that is definded by TAC_t minus $NDAC_t$
$ATRD_t$ = real discretion after tax that is definded by the gain/loss on the sale of marketable securities reported in extraordinary items at Fiscal Year t multiplied by 0.6, deflated by the total assets at the beginning of Fiscal Year t
PDI_t = the pre-discretionary income that is defined as NI_t minus both DAC and $ATRD$ for Fiscal Year t
$VPDI_t$ = the firm-specific volatility of PDI that is calculated as the standard deviation of PDI over the most recent five years
$VNI/VPDI_t$ = the ratio of VNI_t to $VPDI_t$
ROA_t = the ratio of net income before extraordinary items for Fiscal Year t over total assets at the beginning of Fiscal Year t
$Growth_t$ = the geometric average of the sales growth rate from Fiscal Year $t − 4$ to Fiscal Year t
$Size_t$ = the natural logarithm of the market value at the end of Fiscal Year t
$Tobin's Q_t$ = the ratio of the sum of the market value and total debt to the sum of the book value of equity and total debt at the end of Fiscal Year t
RE/BVE_t = the ratio of the retained earnings to the book value of equity at the end of Fiscal Year t
$Foreign_t$ = the foreign ownership at the end of Fiscal Year t
$Financial_t$ = the financial institute ownership at the end of Fiscal Year t
DPS_t = the dividend per share for Fiscal Year t

Japanese economy enjoyed booming, which resulted in more *Increase* and less *Decrease*. Third, in 2008–2009, world financial crisis caused more *Decrease* and less *Increase*. Fourth, and most importantly, it should be noted that percentage share of *Stable* is stable. The share ranges from 37.7 to 53.3 %. Even after world financial crisis in 2008, 39.3 % of Japanese firms did not change their *DPS*.

Table 3 Pearson and spearman correlations (15,890 observations)

	NI_t	Rank. $VPDI_t$	IS_t	Rank. ROA_t	Rank. $Growth_t$	$SIZE_t$	Tobin's Q_t	RE/BVE_t	$Foreign_t$	$Financial_t$	$DNothing_{t-1}$	$DStable_{t-1}$	$DIncrease_{t-1}$	$DInc_t$
NI_t		0.042	0.094	0.667	0.110	0.268	0.291	0.296	0.358	−0.006	−0.265	−0.064	0.438	0.367
$Rank.VPDI_t$	0.020		0.319	0.035	−0.023	−0.114	0.054	−0.049	−0.050	−0.119	0.109	−0.087	0.012	−0.012
IS_t	0.135	0.319		0.048	−0.035	0.041	−0.039	0.155	0.020	−0.003	−0.167	0.161	−0.019	0.016
$Rank.ROA_t$	0.608	0.035	0.048		0.163	0.238	0.234	0.206	0.271	0.065	−0.221	−0.023	0.286	0.167
$Rank.Growth_t$	0.111	−0.023	−0.035	0.163		0.127	0.132	−0.104	0.062	0.114	0.015	−0.042	0.090	0.115
$SIZE_t$	0.260	−0.119	0.037	0.242	0.131		0.484	−0.002	0.704	0.564	−0.199	0.030	0.166	0.097
Tobin's Q_t	0.339	0.066	−0.043	0.272	0.112	0.451		−0.223	0.232	0.225	0.069	−0.135	0.179	0.153
RE/BVE_t	0.304	−0.059	0.173	0.209	−0.093	0.036	−0.135		0.124	−0.122	−0.340	0.115	0.140	0.010
$Foreign_t$	0.321	−0.032	0.012	0.250	0.055	0.624	0.278	0.165		0.392	−0.210	−0.021	0.218	0.067
$Financial_t$	0.011	−0.121	0.001	0.071	0.116	0.572	0.186	−0.090	0.310		−0.122	0.065	0.020	0.025
$D\_Nothing_{t-1}$	−0.261	0.109	−0.167	−0.221	0.015	−0.199	0.042	−0.402	−0.177	−0.126		−0.341	−0.234	0.006
D_Stable_{t-1}	−0.029	−0.087	0.161	−0.023	−0.042	0.027	−0.136	0.141	−0.042	0.069	−0.341		−0.594	−0.102
$D\_Increase_{t-1}$	0.404	0.012	−0.019	0.286	0.090	0.171	0.193	0.150	0.222	0.019	−0.234	−0.594		0.283
D_inc_t	0.358	−0.012	0.016	0.167	0.115	0.099	0.155	0.012	0.078	0.027	0.006	−0.102	0.283	

Pearson (Spearman) correlations are reported below (above) the diagonal

IS_t = the within industry-year reversed fractional ranking (between 0 and 1) of $VNI/VPDI$ for Fiscal Year t (see text for full details)

$Rank.VPDI_t$ = the within industry-year fractional ranking (between 0 and 1) of $VPDI$ for Fiscal Year t (see text for full details)

$Rank.VPDI_t$ = the within industry-year fractional ranking (between 0 and 1) of $VPDI$ for Fiscal Year t (see text for full details)

ROA_t = the ratio of net income before extraordinary items for Fiscal Year t over total assets at the beginning of Fiscal Year t

$Rank.ROA_t$ = the within industry-year fractional ranking (between 0 and 1) of ROA for Fiscal Year t (see text for full details)

$Growth_t$ = the geometric average of the sales growth rate from Fiscal Year $t − 4$ to Fiscal Year t

$Rank.Growth_t$ = the within industry-year fractional ranking (between 0 and 1) of Growth for Fiscal Year t (see text for full details)

$DInc_t$ = 1 if a firm reports earnings growth for Fiscal Year t and 0 otherwise

$DNothing_{t-1}$ = 1 if a firm-year without any dividend for both Fiscal Year $t − 1$ and Fiscal Year t

$DStable_{t-1}$ = 1 if a firm-year paying as much DPS for Fiscal Year $t − 1$ as Fiscal Year t

$DIncrease_{t-1}$ = 1 if a firm-year paying more DPS for Fiscal Year $t −1$ than DPS for Fiscal Year t

Other variables are as defined in Table 2
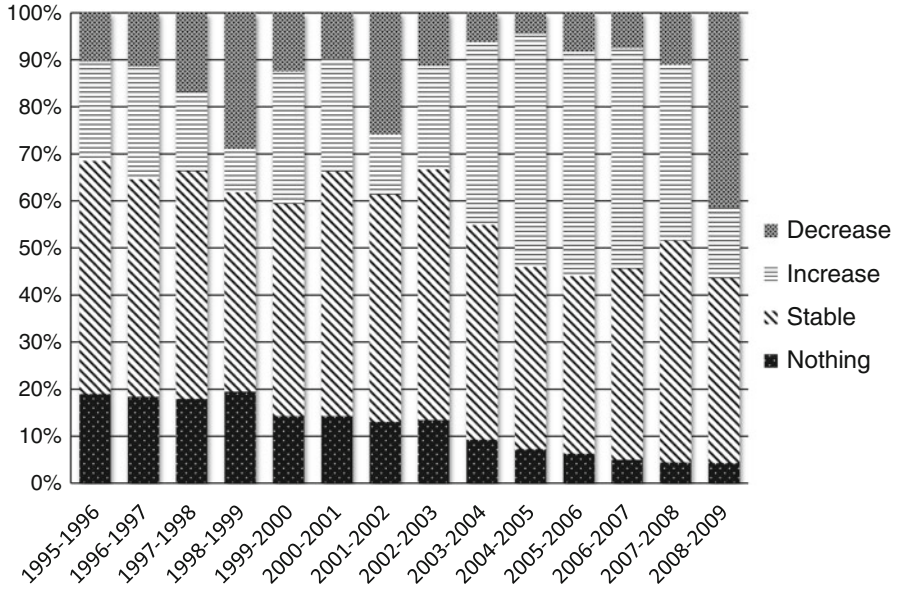
Fig. 1 Distribution of dividend policy. DPS_t = the dividend per share for Fiscal Year t. Nothing means a firm-year without any dividend for both Fiscal Year t (t + 1) and Fiscal Year t + 1 (t + 2). Stable means a firm-year paying as much DPS for Fiscal Year t + 1 (t + 2) as Fiscal Year t (t + 1). Increase means a firm-year paying more DPS for Fiscal Year t + 1 (t + 2) than DPS for Fiscal Year t (t + 1). Decrease means a firm-year paying less DPS for Fiscal year t + 1 (t + 2) than Fiscal Year t (t + 1)

4   Results

4.1   *Income Smoothing Behavior and Volatility*

Table 4 compares *NI* volatility and *PDI* volatility conditioning, in terms of IS_t quintiles. Firms in Quintile 1 have the lowest IS_t (i.e., least income smoothing), while firms in Quintile 5 have the highest IS_t (i.e., most income smoothing). The results clearly indicate the effect of smoothing behavior. Quintile 5 has the highest volatility of pre-discretionary income (0.054) before its earnings management; the firms in there, however, have the most-smoothed reported net income (0.006), compared to those in Quintile 1 (0.032). It is clear that firms in Quintile 5 try to control *PDI* volatility via smoothing and successfully reduce the volatility of reported *NI*.

Table 4 Comparison of *VNI* and *VPDI* across quintiles

Quintiles by IS_t	N	VNI_t			$VPDI_t$		
		Mean	Std. dev.	Median	Mean	Std. dev.	Median
Quintile 1	3,178	0.032	0.021	0.028	0.034	0.020	0.030
Quintile 2	3,178	0.021	0.014	0.018	0.039	0.021	0.035
Quintile 3	3,178	0.016	0.010	0.013	0.043	0.022	0.039
Quintile 4	3,178	0.011	0.007	0.009	0.046	0.023	0.041
Quintile 5	3,178	0.006	0.004	0.005	0.054	0.026	0.048
Difference (Quintile 5–Quintile 1)		−0.026		−0.022	0.020		0.018
p-value on difference		<0.001		<0.001	<0.001		<0.001

All variables are as defined in Table 2. Quintile 1 is the lowest *IS* (least income smoothing) quintile, and Quintile 5 is the highest *IS* (most income smoothing) quintile. The p-value for the difference in mean values across quintiles is derived from a *t*-test. The p-value for the difference in median values across quintiles is derived from a Mann-Whitney test

4.2 Income Smoothing Behavior and Earnings Persistence

The regression results of Model (2) are reported in Table 5. Earnings persistence coefficients, β, increase from Quintile 1 to Quintile 5. It is worth noting that the difference of persistence between Quintile 5 and Quintile 1 (0.871 and 0.425, respectively) is statistically significant at the 0.1 % level. It would be reasonable to conclude that there is a positive relation between income smoothing behavior in the past and future earnings persistence.

Table 6 indicates the results of regression, for the full sample, on Model (4). Consistent with the results of Tucker and Zarowin (2006), the coefficient of the intersection term, NI_t*IS_t, is positive and statistically significant at the 1 % level. This result again implies that a manager's smoothing behavior in the five previous years relates positively to earnings persistence for future periods. This evidence reinforces the results found in Table 5.[21] Even when we use PDI_{t+1} as the dependent variable instead of NI_{t+1} (Table 7), these results remain unchanged. In the light of these results, it seems that income smoothing behaviors in the past succeed in exhibiting future earnings persistence.

4.3 Income Smoothing Behavior and Dividend Policy

Table 8 indicates firms' dividend policies, by IS_t quintile. With regard to the period $t \sim t + 1$, the most income-smoothing Quintile 5 includes the least number of no-dividend firms (4.9 %), dividend omission firms (2.7 %), and the greatest

---

[21] When we analyze the relation between income smoothing measures that are based on *DAC* (i.e. *IS2* and *IS4*, see also Sect. 5) and ROA persistence, the tenor of the results remains unchanged.

Table 5 Results for the earnings persistence regression in Model (2)

Quintiles by IS_t	α		β		Adj. R^2	N
	Coefficient	*t*-value	Coefficient	*t*-value		
Quintile 1	0.009	3.54***	0.425	14.46***	0.232	3,178
Quintile 2	0.005	2.12**	0.552	17.55***	0.285	3,178
Quintile 3	0.003	1.56	0.665	12.64***	0.333	3,178
Quintile 4	0.000	−0.21	0.799	12.75***	0.354	3,178
Quintile 5	−0.002	−1.07	0.871	17.94***	0.385	3,178
Difference (Quintile 5–Quintile 1)			0.446		0.152	
p-value on difference			<0.001		<0.001	

All variables are as defined in Tables 2 and 3. Quintile 1 is the lowest *IS* (least income smoothing) quintile, and Quintile 5 is the highest *IS* (most income smoothing) quintile. The p-value for the difference in persistence coefficients across quintiles is derived from a *t*-test. The p-value for the difference in the Adj.R^2 across quintiles is derived from a bootstrap test (see text for full details). All *t*-statistics are corrected for heteroskedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level proposed by Petersen (2009)

*** and ** indicate significance at 1 % and 5 %, respectively

Table 6 Result of earnings persistence regression in Model (4)

	Predicted sign	Coefficient	*t*-value
NI_t	+	0.367	11.68***
IS_t	?	−0.013	−5.67***
$NI{*}IS_t$	+	0.590	7.80***
Cons.	/	0.009	3.52***
Adj. R^2			0.310
N			15,890

*NI*IS* is the interaction term, which is defined as $NI \times IS$. Other variables are as defined in Tables 2 and 3. All t-statistics are corrected for heteroskedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level proposed by Petersen (2009)

*** indicates significance at 1 %

Table 7 Result of earnings persistence regression in Model (5)

	Predicted sign	Coefficient	*t*-value
NI_t	+	0.396	15.57***
IS_t	?	−0.010	−4.61***
$NI{*}IS_t$	+	0.487	6.95***
Cons.	/	0.008	3.23***
Adj. R^2			0.113
N			15,890

Dependent variable: PDI_{t+1}

*NI*IS* is the interaction term, which is defined as $NI \times IS$. Other variables are as defined in Tables 2 and 3. All t-statistics are corrected for heteroskedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level proposed by Petersen (2009)

*** indicates significance at 1 %

Table 8 Comparison of dividend policy across *IS* quintiles

Panel A: Comparison of dividend policy (from t to t + 1) across IS quintiles

Dividend policy from t to $t + 1$

Quintiles by IS_t	N	Nothing Number	(%)	Stable Number	(%)	Increase Number	(%)	Decrease Number	(%)	Omission Number	(%)
Quintile 1	3,178	663	20.9	1,142	35.9	929	29.2	444	14.0	125	3.9
Quintile 2	3,178	464	14.6	1,321	41.6	909	28.6	484	15.2	121	3.8
Quintile 3	3,178	321	10.1	1,482	46.6	902	28.4	473	14.9	99	3.1
Quintile 4	3,178	240	7.6	1,525	48.0	916	28.8	497	15.6	91	2.9
Quintile 5	3,178	156	4.9	1,706	53.7	854	26.9	462	14.5	85	2.7
Difference (Quintile 5–Quintile 1)			−16.0		17.7		−2.4		0.6		−1.3
p-value on difference			<0.001		<0.001		0.036		0.518		0.005

Panel B: Comparison of dividend policy (from t + 1 to t + 2) across IS quintiles

Dividend policy from $t + 1$ to $t + 2$

Quintiles by IS_t	Nothing Number	(%)	Stable Number	(%)	Increase Number	(%)	Decrease Number(%)		Omission Number	(%)
Quintile 1	641	20.2	1,136	35.7	892	28.1	509	16.0	148	4.7
Quintile 2	444	14.0	1,360	42.8	866	27.2	508	16.0	132	4.2
Quintile 3	315	9.9	1,438	45.2	911	28.7	514	16.2	107	3.4
Quintile 4	247	7.8	1,463	46.0	920	28.9	548	17.2	109	3.4
Quintile 5	179	5.6	1,635	51.4	839	26.4	525	16.5	103	3.2
Difference (Quintile 5–Quintile 1)		−14.5		15.7		−1.7		0.5		−1.4
p-value on difference		<0.001		<0.001		0.135		0.587		0.004

All variables are as defined in Tables 1 and 3. Quintile 1 is the lowest *IS* (least income smoothing) quintile, and Quintile 5 is the highest *IS* (most income smoothing) quintile
The p-value for the difference in percentages across quintiles is derived from a chi-square test

number of stable-dividend firms (53.7 %). The difference between Quintiles 5 and 1 (-16.0 %, -1.3 %, and 17.7 %, respectively) is statistically significant at the 1 % level. For the period $t + 1 \sim t + 2$, reported on Table 8, similar patterns are observed. Higher-smoothing firms have a tendency to pay stable dividends in the future, and they seldom adopt a no-dividends or dividend omission policy. With regard to *Increase*, lower-smoothing firms have a moderate tendency to adopt dividends increase policy compared to higher-smoothing firms. This trend might imply that managers smooth income to avoid increasing dividends in the future. Meanwhile, income smoothing in the past period has no effect on a future dividends decrease.

Table 9 presents the results of logit regression, for the full sample, on Model (6).[22] This table shows the results with fully controlled variables. IS_t has a negative impact on *Nothing* and *Omission*. Meanwhile, it has a positive and statistically significant effect on *Stable*. The results of the current analysis clearly indicate that income smoothing has a negative association with both a no-dividends policy and a dividend omission policy and a positive association with a stable-dividends strategy. Even when several possible fundamental factors and corporate governance factors are being controlled, IS_t remains significant, in both the t to $t + 1$ window and the $t + 1$ to $t + 2$ window. *Financial$_t$* and *Foreign$_t$* negatively relate to *Nothing*; this may have been due to the "prudent man" investment restrictions on institutional investors (Brav et al. 2005). As for *Increase* and *Decrease*, IS_t has a negative effect on *Increase*, but this effect is not so powerful. Moreover, there is no statistically significant effect on *Decrease*. Our results might suggest managers' income smoothing relates to avoidance of future dividends increase.

The results of our two tests (earnings persistence and dividend policy) indicate income smoothing behavior is likely to reflect future stability of earnings performance. Therefore, outsiders could consider a manager's income smoothing behavior as a signal about the firm's future stability of performance.

5   Robustness Check

In this paper, the degree of smoothing is defined as firm-specific historical volatility of net income, divided by volatility of pre-discretionary income ($VNI/VPDI_t$). In addition, to control for industry and time effects, following Tucker and Zarowin (2006), this study uses a firm's reversed fractional ranking of income smoothing (between 0 and 1) within its industry-year and refers to it as Income Smoothing (IS). Our IS measure includes both accrual discretion and real discretion.

---

[22] In some model, observations' number is not 15,890. This is because, in these models, some independent variables' values can fit dependent variable values perfectly (e.g. observations whose $DStable_{t-1}$ equal to one can fit $DNothing_t$ that equals to zero perfectly). Therefore, we have to drop these observations in the estimation.

Table 9 Tests of relation between income smoothing and dividend policy

	Dividend policy from t to $t+1$					Dividend policy from $t+1$ to $t+2$				
	Coefficient					Coefficient				
	DNothing	DStable	DIncrease	DDecrease	DOmission	DNothing	DStable	DIncrease	DDecrease	DOmission
	z-value					z-value				
Cons	1.338	−0.427	−2.955	0.338	−0.459	1.856	−0.703	−2.382	−1.045	−2.066
	1.98**	−1.470	−14.68***	1.20	−0.57	4.39***	−2.11**	−9.03***	−3.50***	−2.59***
IS_t	−0.675	0.362	−0.172	−0.128	−0.711	−0.665	0.352	−0.121	−0.083	−0.465
	−2.49**	4.02***	−1.65*	−1.05	−0.711	−3.15***	3.83***	−0.94	−1.07	−2.54**
$Rank.ROA_t$	−1.914	0.000	1.102	−1.223	−2.816	−2.204	0.264	0.496	−0.177	−2.025
	−8.15***	0.00	14.20***	−7.59***	−11.82***	−7.86***	2.00**	5.16***	−0.97	−10.35***
$Rank.Growth_t$	−0.192	−0.040	0.232	−0.208	−0.001	−0.022	−0.089	0.165	−0.035	0.172
	−1.22	−0.44	2.58***	−2.14**	−0.01	−0.16	−1.48	2.17**	−0.45	1.21
$Tobin's\ Q_t$	1.050	−0.383	0.337	−0.445	0.601	0.772	−0.383	0.270	−0.096	0.66
	4.64***	−3.88***	2.58***	−2.89***	3.35***	4.11***	−3.23***	2.07**	−0.54	3.64***
$Rank.VPDI_t$	0.300	−0.274	0.105	0.157	0.550	0.429	−0.250	0.110	0.033	0.334
	2.17**	−3.68***	1.54	1.53	4.26***	3.11***	−3.28***	1.39	0.34	2.89***
$Size_t$	−0.210	0.061	0.067	−0.120	−0.199	−0.253	0.061	0.073	−0.076	−0.136
	−3.70***	2.19**	3.00***	−4.48***	−2.17**	−5.14***	1.93*	2.75***	−2.93***	−1.61
$Foreign_t$	−2.817	−2.070	1.522	0.586	−0.996	−2.220	−2.258	1.583	0.746	−1.259
	−2.72***	−6.45***	3.86***	0.94	−0.69	−1.72*	−5.53***	3.36***	1.91*	−0.96
$Financial_t$	−0.810	0.163	−0.309	0.473	−0.310	−0.453	0.357	−0.418	0.229	−0.235
	−1.30	0.72	−1.47	1.69*	−0.83	−0.79	1.60	−1.61	0.73	−1.06
$Dinc_t$	−0.094	−0.001	0.332	−0.504	−0.155	−0.199	0.036	0.102	−0.133	−0.232
	−1.06	−0.03	8.16***	−7.76***	−1.31	−1.77*	0.86	1.77*	−2.47**	−1.98**
RE/BVE_t	−1.583	0.346	0.361	−0.277	−1.486	−1.426	0.348	0.259	−0.113	−0.723
	−5.20***	2.24**	2.39**	−1.81*	−5.88***	−5.87***	1.97**	2.21**	−0.93	−4.53***
$DNothing_{t-1}$	2.768		−0.389			1.932	−1.701	−0.321	−1.642	−1.207
	10.73***		−1.63			8.24***	−5.02***	−1.56	−6.76***	−5.88***
$DStable_{t-1}$		1.046	−0.665	0.064	0.250	−1.669	0.653	−0.419	0.181	0.389
		12.76***	−4.94***	0.63	1.91*	−11.78***	9.79***	−5.07***	2.31**	2.26**

(continued)

Table 9 (continued)

	Dividend policy from t to $t + 1$					Dividend policy from $t + 1$ to $t + 2$				
	Coefficient					Coefficient				
	z-value					z-value				
	DNothing	DStable	DIncrease	DDecrease	DOmission	DNothing	DStable	DIncrease	DDecrease	DOmission
$DIncrease_{t-1}$		−0.118	−0.039	1.370	0.232	−1.693	0.221	−0.001	0.313	0.523
		−1.11	−0.32	7.35***	0.87	−6.74***	2.69***	−0.01	2.78***	2.22**
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R²	0.440	0.083	0.139	0.147	0.167	0.509	0.090	0.105	0.112	0.102
N	3,919	14,004	15,890	14,004	14,004	15,890	15,890	15,890	15,890	15,890

$DNothing_t$ = 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Nothing*, and 0 otherwise

$DStable_t$ = 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Stable*, and 0 otherwise

$DIncrease_t$ = 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Increase*, and 0 otherwise

$DDecrease_t$ = 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Decrease*, and 0 otherwise

$DOmission_t$ = 1 if a firm-year's dividend policy from t ($t + 1$) to $t + 1$ ($t + 2$) is *Omission*, and 0 otherwise

Other variables are as defined in Tables 2 and 3. All z-statistics are corrected for heteroskedasticity, and cross-sectional and time-series correlation using a two-way cluster at the firm and year level proposed by Petersen (2009) and Cameron et al. (2011)

***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively

It may be possible that this measure includes bias. For the purpose of robustness check, we adopts three additional *IS* measures. The second measure (*IS2*) is defined as the ratio of the firm's standard deviation of *NI* over the most recent five years to its standard deviation of net income before accrual discretion (*NI* minus *DAC*, hereafter *NIBAD*) over the most recent five years: *VNI/VNIBAD*. Although *IS2* is used by Hunt et al. (2000), *IS2* does not include real discretion portion.

$$Our\ Second\ Income\ Smoothing\ Measure = VNI/VNIBAD$$

IS2 = the within industry-year reversed fractional ranking (between 0 and 1) of *VNI/VNIBAD* for Fiscal Year *t*

Our third measure (*IS3*) is defined as the ratio of the firm's standard deviation of *NI* over the most recent five years to its standard deviation of *CFO* over the most recent five years: *VNI/VCFO*. This measure is widely used in prior studies (Leuz et al. 2003; Francis et al. 2004). In this paper, *CFO* is defined as the net income before extraordinary items minus *TAC*.

$$Our\ Third\ Income\ Smoothing\ Measure = VNI/VCFO$$

IS3 = the within industry-year reversed fractional ranking (between 0 and 1) of *VNI/VCFO* for Fiscal Year *t*

The fourth measure (*IS4*) follows Tucker and Zarowin (2006)'s idea. We redefined "smoothing" as a correlation coefficient between change in *DAC* and change in *NIBAD* over the most recent five years.

$$Our\ Forth\ Income\ Smoothing\ Measure = \rho(\Delta DAC, \Delta NIBAD)$$

IS4 = the within industry-year reversed fractional ranking (between 0 and 1) of $\rho(\Delta DAC, \Delta NIBAD)_t$ for Fiscal Year *t*

To maintain consistency with our primary tests, these three alternative proxies for income smoothing are also converted into the within industry-year reversed fractional ranking (between 0 and 1), respectively, to control for industry and time effects.

These three alternative definitions for *IS* are substituted for all analyses in this paper, including those presented in Tables 4, 5, 6, 7, 8, and 9. In total, with regard to *IS*'s definitions, we conduct eighteen robustness check analyses. Still the tenor of the results remains unchanged. In that sense, there are good grounds to consider this study's evidence robust, irrespective of the alternative income smoothing measures. These robustness check results are qualitatively similar to main results (untabulated).

In addition, we use industry-years' median values to standardize some proxies (i.e., *VNI/VPDI*, *ROA*, *Growth*, *VPDI*) instead of the firms' fractional rankings within their industry-year. In particular, these alternative standardized variables are

defined as the differences between raw variables and each industry-year median, deflated by the absolute value of the industry-year median. Even in this case, the empirical results remain also unchanged (untabulated).

6 Conclusion

This study analyzes the information contents of income smoothing behavior, especially the role of income smoothing behavior as a signal about future performance. What do smoothed earnings tell us about the future? To answer this research question, this paper focuses on earnings persistence and dividend policy based on two prior survey papers by Graham et al. (2005) and Suda and Hanaeda (2008). These two issues are the foci of this study, based on Japanese managers' responses to questions regarding their motivation for income smoothing. In a survey study in Japan, the top two reasons given by managers as to why they prefer smoothed income were that (1) it enables stable dividends and (2) it assures customers/ suppliers that the business is stable (Suda and Hanaeda 2008).

This paper provides two new pieces of evidence. First, income smoothing in the previous period relates positively to future earnings persistence. This implies that income smoothing behavior reflects high earnings persistence in the future. Second, firms that engaged in more smoothing will tend to pay stable dividends in the future, even when we control for past dividend policy, fundamental factors, and corporate governance factors. Given Lintner (1956)'s argument that the change in dividend amount is dependent on the change in the level of long-term and persistent earnings, it would appear that income smoothing behavior reflects long-term stability of firm performance. Therefore, income smoothing is informative with respect to a firm's future stable dividends, in line with the findings within the signaling literature.

In aggregating these pieces of evidence, it becomes clear that Japanese managers, on average, tend to smooth earnings with future earnings performance in mind. Skinner and Soltes (2011) found that dividends function as a signal of a firm's future earnings persistence. The current study's findings suggest that income smoothing in the previous five years plays a role of signaling both future dividends stability and future earnings persistence. It should be noted that income smoothing behavior itself incorporates valuable information.

Our study makes several contributions to the literature and understanding of income smoothing behavior. First, we build on recent advances in the literature vis-à-vis earnings quality, especially income smoothing. Although most prior studies focus on economic consequence of income smoothing, few studies provide evidence as to whether or not income smoothing reflects future performance. The current study fills this gap.

Second, the empirical evidence supports the information view rather than a garbling view of income smoothing. This study sheds light on the bright side of smoothed earnings rather than its dark side.

In technical terms, the current study's definition of income smoothing is comprehensive, as it encompasses both accrual-based discretion and real discretion. In addition, the results are robust to alternative definitions of "income smoothing."

This study, of course, has several limitations. Most importantly, it does not cover market valuation concerning income smoothing. Francis et al. (2004) examined a link between cost of capital and income smoothing, and they find a negative association between them. In contrast, McInnis (2010) found no evidence those smooth earnings paths lead to a lower cost of equity. A survey study, on the other hand, found that 36.17 % of Japanese top-level managers answered that having their firms be "perceived as less risky by investors" was an important factor in choosing to take a smooth earnings path. This answer was the fourth most frequently cited factor. "Reduce the return that investors demand," meanwhile, was in seventh place, with 18.57 % of the responses (Suda and Hanaeda 2008). The economic consequences of income smoothing in the capital market would be the next issue to be explored, in future research.[23]

This study suggests that, with regard to firms that have succeeded in income smoothing, income smoothing behaviors in the past may provide private information about future stability of firm performance. The current study, however, provides few implications about firms that failed in income smoothing. Some prior literature examines about these firms. For instance, Myers et al. (2007) and Shuto (2010) found that firms with long strings of consecutive increases in earnings enjoyed economically significant abnormal returns while the strings were ongoing and suffered significant stock price declines when the strings were broken. These results might be one of negative economic consequences of income smoothing. It is not until understanding both effects of succeeding in income smoothing and that of failing that we can understand a complete picture of economic consequences of income smoothing. This is another topic that is to be explored in the future research.

References

Acharya, V. V., Amihud, Y., & Litov, L. (2011). Creditor rights and corporate risk-taking. *Journal of Financial Economics, 102*(1), 150–166.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467–498.

Bhattacharya, U., Daouk, H., & Welker, M. (2003). The world price of earnings opacity. *The Accounting Review, 78*(3), 641–678.

Brav, A., Graham, J. R., Harvey, C. R., & Michaely, R. (2005). Payout policy in the 21st century. *Journal of Financial Economics, 77*(3), 483–527.

---

[23] For example, Takasu (2012) attempts to figure out this puzzle. He uses cost of bank loans as a proxy for cost of capital. From his analysis, he finds an information asymmetry between a firm and capital providers plays a key role that determines the relation between income smoothing behavior and cost of capital.

Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2011). Robust inference with multi-way clustering. *Journal of Business and Economic Statistics, 29*(2), 238–249.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual based earnings management in the pre and post Sarbanes Oxley periods. *The Accounting Review, 83*(3), 757–787.

Dechow, P. M., Myers, L. A., & Shakespeare, C. (2010). Fair value accounting and gains from asset securitizations: A convenient earnings management tool with compensation side-benefits. *Journal of Accounting and Economics, 49*(1–2), 2–25.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193–225.

Denis, D. J., & Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy. *Journal of Financial Economics, 89*(1), 62–82.

Dichev, I., & Tang, V. W. (2009). Earnings volatility and earnings predictability. *Journal of Accounting and Economics, 47*(1–2), 160–181.

Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Costs of equity and earnings attributes. *The Accounting Review, 79*(4), 967–1010.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1), 3–73.

Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(3), 855–888.

Healy, P. M. (1985). The effect of bonus chemes on accounting decisions. *Journal of Accounting and Economics, 7*(1–3), 85–107.

Herrmann, D., Inoue, T., & Thomas, W. B. (2003). The sale of assets to manage earnings in Japan. *Journal of Accounting Research, 41*(1), 89–107.

Hunt, A., Moyer, S., & Shevlin, T. (2000). Earnings volatility, earnings management, and equity value. Working Paper.

Ishikawa, H. (2007). *Dividend policy: An empirical analysis*. Tokyo: Chuokeizai-sha (in Japanese).

John, K., Litov, L., & Yeung, B. (2008). Corporate governance and risk-taking. *The Journal of Finance, 63*(4), 1679–1728.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163–197.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics, 69*(3), 505–527.

Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *The American Economic Review, 46*(2), 97–113.

McInnis, J. (2010). Earnings smoothness, average returns, and implied cost of equity capital. *The Accounting Review, 85*(1), 315–341.

Myers, J. N., Myers, L. A., & Skinner, D. J. (2007). Earnings momentum and earnings management. *Journal of Accounting, Auditing and Finance, 22*(2), 249–284.

Nakano, M., & Takasu, Y. (2011). Earnings persistence and earnings management. *Hitotsubashi Review of Commerce and Management, 6*(1), 15–29 (in Japanese).

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480.

Serita, T., Hanaeda, H., & Sasaki, T. (2011). Payout policy and share splitting in Japan—Empirical study based on survey of institutional investors. *Japan Journal of Finance, 31*(1), 2–25 (in Japanese).

Shuto, A. (2010). *Earnings management: Theory and empirical evidence from Japan*. Tokyo: Chuokeizai-sha (in Japanese).

Shuto, A., & Iwasaki, T. (2012). Stable shareholdings, the decision horizon problem, and patterns of earnings management. Working Paper.

Skinner, D. J., & Soltes, E. (2011). What do dividends tell us about earnings quality? *Review of Accounting Studies, 16*(1), 1–28.

Suda, K., & Hanaeda, H. (2008). Corporate financial reporting strategy: Survey evidence from Japanese firms. *Securities Analysts Journal, 46*(5), 51–69 (in Japanese).

Takasu, Y. (2012). Income smoothing and the cost of bank loans—The effect of information asymmetry. Working Paper.

Tucker, J. W., & Zarowin, P. A. (2006). Does income smoothing improve earnings informativeness? *The Accounting Review, 81*(1), 251–270.

The Effect of Accounting Conservatism on Corporate Investment Behavior

Souhei Ishida and Kunio Ito

Abstract We examine how two types of conservatism—conditional conservatism and unconditional conservatism—affect corporate investment behavior. Conditional conservatism forces managers to recognize the loss resulting from an investment project on a timely basis. When risk-averse managers are aware that their reputation and compensation are affected adversely by recognizing the loss resulting from project failure, they are less likely to undertake the project ex ante despite its positive net present value (NPV). Thus, conditional conservatism probably inhibits corporate investment behavior. In contrast, unconditional conservatism mitigates a firm's earning volatility, especially downward volatility, by providing an accounting slack. Thus, it is likely that unconditional conservatism promotes corporate investment behavior. Using a large sample of Japanese companies, we empirically analyze how conditional conservatism and unconditional conservatism affect corporate investment behavior. These results suggest that although firms with higher conditional conservatism take more negative investment initiatives, those firms with higher unconditional conservatism take more positive investment initiatives.

Keywords Capital investment • Conditional conservatism • Conservatism • Corporate behavior • Unconditional conservatism

1 Introduction

This study examines how two types of conservatism—conditional conservatism and unconditional conservatism—affect corporate investment behavior. For at least 500 years, conservatism has been an important qualitative characteristic of

S. Ishida (✉) • K. Ito
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: cd132001@g.hit-u.ac.jp; kuni.ito@r.hit-u.ac.jp

accounting information (Basu 1997), and among the most controversial issues. For example, the Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) published a joint statement on conservatism in 2005, stating the following about conservatism (FASB 2005, p. 12):

> Financial information needs to be neutral—free from bias intended to influence a decision or outcome. To that end, the common conceptual framework should not include conservatism or prudence among the desirable qualitative characteristics of accounting information.

The FASB and IASB exclude conservatism as inconsistent with the desirable qualitative characteristics of accounting information. Their attitudes also affect those of the Accounting Standards Board of Japan (ASBJ) through accounting standards convergence; conservatism tends to be excluded in Japan (e.g., Nakamura 2009; Yaekura 2007). In contrast, recent research concluded that conservatism has a certain amount of rationality. For example, Watts (2003) proposes four hypotheses for conservatism's existential reason: contracting, litigation, taxation, and regulation. Consistent with these hypotheses, recent empirical research demonstrates that conservatism improves the efficiency of contracting and mitigates firm litigation risk (e.g., Chung and Wynn 2008; Huijgen and Lubberink 2005; Iyengar and Zampelli 2010; Wittenberg-Moerman 2008; Zhang 2008).

Conservatism has recently become a controversial issue. We categorize conservatism as conditional conservatism or unconditional conservatism and examine how each type affects corporate investment behavior. We perform this research for two reasons. First, most research on conservatism combine conditional conservatism and unconditional conservatism together. However, there is a gap between the conservatism that standard setters discuss and the one that is addressed in previous research. Examples of conservatism include (1) lower cost or market for inventory, (2) impairment of long-lived tangible and intangible assets, (3) immediate expensing of the cost of internally generated intangible assets, and (4) amortization of long-lived assets at a rate above the expected economic amortization rate (i.e., accelerated amortization) (e.g., Edwards 1989; Ryan 2006; Sanders et al. 1938). Although expenses are recognized earlier under these accounting rules, they treat timing of recognizing expenses differently. For example, impairment accounting recognizes expenses when the value of fixed assets declines, whereas accelerated amortization accounting recognizes expenses before the value of fixed assets declines. Recent studies refer to the former as conditional conservatism and the latter as unconditional conservatism (e.g., Ryan 2006). Many empirical studies consider accounting rules such as impairment as an example of conservatism and examine such conservatism (i.e., conditional conservatism) (e.g., Ball et al. 2000; Ball and Shivakumar 2005; Basu 1997; Francis and Martin 2010). However, the conservatism that standard setters discuss is likely to be different from what researchers address. For example, Kanamori (2009) examines accounting standards published by FASB from 1973 to 2002 and finds that approximately 40 % of published accounting standards exclude unconditional conservatism. Considering that FASB and IASB exclude conservatism, Kanamori (2009) suggests that the conservatism that standard setters discuss is unconditional conservatism.

Barth et al. (2008) also discuss the relationship between International Accounting Standards (IAS) and accounting quality, and argue that timely loss recognition (i.e., conditional conservatism) is a high-quality accounting system on the basis of IASB's conceptual framework. In addition, Barth et al. (2008) find that firms preparing financial statements under IAS recognize losses more timely than firms preparing financial statements under non-U.S. domestic accounting standards. Considering that the IASB excludes conservatism, the findings of Barth et al. (2008) suggest that the conservatism discussed by the IASB is not conditional. Therefore, these previous studies suggest that although the conservatism that standard setters discuss is unconditional, that discussed by previous researchers is conditional conservatism. Therefore, it is important to categorize conservatism as conditional and unconditional.

Second, although many studies examine the relationship between conservatism and contracting or litigation risk, only few analyze the effect of conservatism on corporate investment behavior. In addition, those researches express different opinions. For example, Watts (2003) and Roychowdhury (2010) discuss the relationship between conditional conservatism and corporate investment behavior, drawing contradictory conclusions. Watts (2003) suggests that conditional conservatism improves corporate investment decision-making, whereas Roychowdhury (2010) argue that conditional conservatism distorts corporate investment decision-making. Previous studies also focus on conditional conservatism and ignore the relationship between unconditional conservatism and corporate investment behavior. Considering that standard setters exclude unconditional conservatism, it is important to discuss its relationship with corporate investment behavior.

Therefore, we examine how conditional conservatism and unconditional conservatism affect corporate investment behavior. Following previous studies, we use the conditional conservatism measurement developed by Khan and Watts (2009) and the unconditional conservatism measurement developed by Beaver and Ryan (2000). Following DeFond et al. (2012) and Louis et al. (2012), we rank these measurements annually and standardize them to take values between 0 and 1 to reduce the noise in such estimates. We use capital investment as proxy for corporate investment behavior, and include lagged capital investment in the model as an independent variable, enabling us to examine how conservatism affects corporate investment behavior year over year.

This study provides two empirical findings. First, the conditional conservatism measurement relates negatively to the measurement of corporate investment behavior. Second, the unconditional conservatism measurement relates positively to the measurement of corporate investment behavior. These results are robust to (1) including variables relating to capital investment as control variables, (2) including lagged capital investment as an independent variable, (3) using non-standardized raw data as proxies for conditional conservatism and unconditional conservatism, (4) using the abnormal depreciation rate of tangible fixed assets as a proxy for unconditional conservatism, and (5) using Basu's (1997) model to examine the relationship between conditional conservatism and corporate investment behavior. Our findings suggest that firms with higher conditional conservatism take more

negative investment initiatives, whereas those with higher unconditional conservatism take more positive investment initiatives.

Our study has at least two limitations. First, while our findings are robust to the use observable firm-specific control variables and alternative empirical specifications, we cannot definitively rule out the possibility that our results may be driven by an unidentified factor that is correlated with both conservatism and corporate investment behavior. Second, conservatism is difficult to measure and therefore the validity of our inferences is critically dependent on the validity of our proxy for the construct.

This study contributes to the literature on conservatism by providing new insight into the economic consequences of conservatism. Although many previous studies examine the relationship between conservatism and contracting or litigation risk, we provide evidence suggesting that conservatism affects corporate investment behavior. This study also has implications for regulators and standard setters. In recent years, standard setters have excluded unconditional conservatism as inconsistent with the desirable qualitative characteristics of accounting information. If this trend continues, firms probably take more negative investment initiatives and are unlikely to make long-term investment.

The remainder of this paper proceeds as follows. Section 2 reviews the literature and presents the hypotheses. Section 3 provides the detailed research design and sampling methodology. Section 4 examines the corporate capital investment relationship to conditional conservatism and to unconditional conservatism. Section 5 assesses the robustness of our results. Section 6 concludes.

2 Literature Review and Hypotheses

2.1 Conditional Conservatism and Unconditional Conservatism

Conservatism is defined as downward bias in accounting the net asset value relative to economic net asset value resulting from the asymmetric recognition of economic value in accounting income (Ruch and Taylor 2011). Based on this definition, conservatism takes two approaches. One that recognizes expenses earlier, and the other recognizes revenue later. However, many previous studies present only the former as examples of conservatism. Examples of conservatism include (1) lower cost or market for inventory, (2) impairment for long-lived tangible and intangible assets, (3) immediate expensing of the cost of internally generated intangible assets, and (4) amortization of long-lived assets at a rate above the expected economic amortization rate (i.e., accelerated amortization) (e.g., Edwards 1989; Ryan 2006; Sanders et al. 1938). Because the recognition of revenue is generally based on its realization, and conservatism has no room for the recognition of revenue, many

previous studies may present recognizing expenses earlier as an example of conservatism. Based on this view, whether a firm is conservative depends entirely on when it recognizes expenses.

Recent studies find two ways to recognize expenses on the basis of conservatism (e.g., Beaver and Ryan 2005; Kanamori 2009; Ryan 2006). One is recognizing expenses at the time when the value declines, the other is recognizing it before the value declines. Consider the recognition of goodwill expenses, they can be recognized in two ways: (1) amortization and (2) impairment. Although impairment accounting recognizes the expense when the value of goodwill declines, amortization accounting recognizes the expense before the value of goodwill declines. Given that the revenue recognition is based on realization, accounting net asset value is underestimated by these two methods. However, because the timing of recognizing expenses by impairment is more difficult than that of recognizing expenses by amortization, the timings differ between these two methods of underestimating accounting net asset value. Recent studies focus on the difference of the timings and call the conservatism of recognizing expenses when the value declines as "conditional conservatism" and the conservatism of recognizing expense before the value declines as "unconditional conservatism" (e.g., Beaver and Ryan 2005; Kanamori 2009; Ryan 2006).

Recent studies argue that these two types of conservatism have an inverse relationship (e.g., Basu 2001; Beaver and Ryan 2005; Kanamori 2009). Impairment accounting is an example of conditional conservatism, and amortization accounting is an example of unconditional conservatism. When the expense of goodwill is recognized by amortization accounting before the value of goodwill declines, it is less likely to impair goodwill than when such accounting does not recognize it. This result suggests that unconditional conservatism disables conditional conservatism. Recent empirical studies demonstrate that these two types of conservatism do, in fact, have an inverse relationship (e.g., Gassen et al. 2006).

2.2 Conservatism and Corporate Investment Behavior

Although many studies examine the relationship between conservatism and contracting or litigation risk, only few analyze the effect of conservatism on corporate investment behavior. Watts (2003) and Roychowdhury (2010) discuss the relationship between conditional conservatism and corporate investment behavior. Watts (2003) notes that conditional conservatism improves corporate investment decision-making. If managers can delay the timing of recognizing losses, they are likely to make more investments regardless of the sign of the NPV (Jensen 1986). However, Watts (2003) argues that an accounting system that forces managers to timely recognize losses (i.e., conditional conservatism) can inhibit their opportunistic behaviors. In contrast, Roychowdhury (2010) suggests that conditional conservatism distorts corporate investment decision-making, arguing that if managers are risk-averse, under conditional conservatism they are

less likely to invest in the project ex ante though that project has positive NPV. Under conditional conservatism, despite timely recognized losses, gain is deferred until realized. If by undertaking risky projects, managers are aware that their reputation and compensation are adversely affected by timely recognizing the losses resulting from project failures, they are less likely to undertake these investments despite their positive NPVs. Thus, conditional conservatism is likely to inhibit corporate investment behavior. Although Watts (2003) and Roychowdhury (2010) suggest that conditional conservatism affects corporate investment behavior, they present no consistent evidence of exactly how it does so. However, a recent empirical research provides new insight into these different views. Using a large sample of U.S. firms from 1987 to 2007, Ma (2010) empirically examines the relationship between conditional conservatism and corporate investment behavior, finding that firms with higher conditional conservatism tend to under-invest in capital investment, suggesting that conditional conservatism inhibits corporate investment behavior. From the preceding discussions, we develop the first hypothesis:

Hypothesis 1 Firms with higher conditional conservatism take more negative investment initiatives.

Although several studies examine the relationship between conditional conservatism and corporate investment behavior, to our knowledge, no research examines how unconditional conservatism affects corporate investment behavior. However, if managers are risk-averse and conditional conservatism inhibits corporate investment behavior, unconditional conservatism is likely to promote it. As noted above, unconditional conservatism disables conditional conservatism by providing firms accounting slack (Beaver and Ryan 2005). Therefore, unconditional conservatism provides managers with certain insurance when they undertake risky projects. Specifically, in case of project failure, managers can make up for the losses by using accounting slacks resulting from unconditional conservatism. Such insurance provided by unconditional conservatism alters risk-averse managers' preferences and encourages their willingness to invest. From the preceding discussions, we develop the second hypothesis:

Hypothesis 2 Firms with higher unconditional conservatism take more positive investment initiatives.

To test these two hypotheses, we examine the relationship between corporate investment behavior and conditional or unconditional conservatism. We use capital investment as a proxy for corporate investment behavior.

3 Research Design

3.1 Conditional Conservatism Measurement

Following previous studies, we use the measurement developed by Khan and Watts (2009) as a proxy for conditional conservatism. Many previous studies use the measurement developed by Basu (1997) as a proxy for conditional conservatism. Basu (1997) estimates the following pooling regression model:

$$X_{i,t} = \beta_0 + \beta_1 D_{i,t} + \beta_2 R_{i,t} + \beta_3 D_{i,t} * R_{i,t} + \varepsilon_{i,t}, \tag{1}$$

where i indexes the firm and t indexes the year. Earnings are denoted by $X_{i,t}$ and are calculated as net income for the period t divided by the market value of equity at the beginning of period t. $R_{i,t}$ denotes 12-month compounded returns beginning nine months before the end of period t. $D_{i,t}$ denotes a dummy variable equal to 1 if $R_{i,t} < 0$, and 0 otherwise. β_2 captures the timeliness of gain recognition in earnings. β_3 captures the incremental timeliness of loss recognition in earnings relative to the gain and the degree of conditional conservatism.

Although many previous studies estimate Eq. (1) to measure conditional conservatism, it is not sufficient to estimate firm-year measurement. To estimate the timeliness of gain recognition in earnings measurement and the incremental timeliness of loss recognition in earnings measurement (i.e., conditional conservatism measurement) at the firm-year level, Khan and Watts (2009) specify that both these timeliness are linear functions of three firm-specific characteristics (size, market to book, and leverage):

$$G\_SCORE_{i,t} = \beta_2 = \gamma_1 + \gamma_2 Size_{i,t} + \gamma_3 Market\_to\_Book_{i,t} + \gamma_4 Leverage_{i,t}, \tag{2}$$

$$C\_SCORE_{i,t} = \beta_3 = \delta_1 + \delta_2 Size_{i,t} + \delta_3 Market\_to\_Book_{i,t} + \delta_4 Leverage_{i,t}, \tag{3}$$

where $Size_{i,t}$ is firm size and the natural log of market value of equity at the end of period t. $Market\_to\_Book_{i,t}$ is the ratio of market value of equity to book value of equity at the end of period t. $Leverage_{i,t}$ is leverage and the ratio of interest-bearing debt to market value of equity at the end of period t.

$C\_SCORE_{i,t}$ is the firm-year measurement of conditional conservatism, and $G\_SCORE_{i,t}$ is the firm-year measurement of the timeliness of gain recognition in earnings. Empirical estimators of γ_u and δ_u are constant across firms but vary over time because they are estimated annual cross-sectional regressions ($u = 1 \sim 4$). Thus, $C\_SCORE_{i,t}$ and $G\_SCORE_{i,t}$ vary across firms through a cross-sectional variation in the firm-year characteristics and over time through an intertemporal variation in γ_u and δ_u and the firm-year characteristics. However, Eqs. (2) and (3) are not regression models. To estimate γ_u and δ_u, we substitute Eqs. (2) and (3) into Eq. (1) to obtain Eq. (4) and annually estimate Eq. (4):

$$
\begin{aligned}
X_{i,t} = {}& \beta_0 + \beta_1 D_{i,t} \\
& + \beta_2 R_{i,t}(\gamma_1 + \gamma_2 Size_{i,t} + \gamma_3 Market\_to\_Book_{i,t} + \gamma_4 Leverage_{i,t}) \\
& + \beta_3 D_{i,t} * R_{i,t}(\delta_1 + \delta_2 Size_{i,t} + \delta_3 Market\_to\_Book_{i,t} + \delta_4 Leverage_{i,t}) \\
& + \big(\mu_1 Size_{i,t} + \mu_2 Market\_to\_Book_{i,t} + \mu_3 Leverage_{i,t} + \mu_1 D_{i,t} * Size_{i,t} \\
& + \mu_2 D_{i,t} * Market\_to\_Book_{i,t} + \mu_3 D_{i,t} * Leverage_{i,t}\big) + \varepsilon_{i,t},
\end{aligned}
\tag{4}
$$

Because Eq. (4) includes interaction terms between returns and firm-specific characteristics, we must control for firm-specific characteristics separately. Thus, we include the terms in the last parenthesis in Eq. (4). We substitute γ_u and δ_u resulting from the estimation of Eq. (4) and firm-specific characteristics into Eq. (3) each year to obtain the firm-year measurement of conditional conservatism ($C\_SCORE_{i,t}$). We refer to $C\_SCORE_{i,t}$ as $CC_{i,t}$. A higher value of $CC_{i,t}$ represents higher conditional conservatism.

3.2 Unconditional Conservatism Measurement

Following previous studies, we use the measurement developed by Beaver and Ryan (2000) as a proxy for unconditional conservatism. Beaver and Ryan (2000) estimate the following fixed effect model:

$$
Book\_to\_Market_{i,t} = \alpha_t + \alpha_i + \sum_{j=0}^{6} \beta_j Return_{i,t-j} + \varepsilon_{i,t},
\tag{5}
$$

where $Book\_to\_Market_{i,t}$ is the ratio of the book value of equity to market value of equity at the end of period t. $Return_{i,t-j}$ is 12-month compound returns starting at the beginning of period $t - j$ ($j = 0 \sim 6$). α_t is the time effect. α_i denotes the firm effect; it captures the degree of unconditional conservatism.

Because α_i (i.e., unconditional conservatism measurement) is the firm effect, we need a certain length of estimation period to obtain it. Our estimation period is five years. Specifically, we estimate Eq. (5) using data from period $t - 4$ to t and obtain the unconditional conservatism measurement at the end of period t. Higher α_i represents lower unconditional conservatism. Considering the consistency with the conditional conservatism measurement, we refer to α_i multiplied by -1 as $UCC_{i,t}$. Higher $UCC_{i,t}$ represents higher unconditional conservatism.

3.3 Standardization of Conditional Conservatism and Unconditional Conservatism Measurements

We estimate the firm-year measurements of conditional conservatism and unconditional conservatism, and empirically examine the relationship between the two types of conservatism and corporate investment behavior using these measurements.

Table 1 Method of standardizing conditional and unconditional conservatism measurements

	$CC_{i,t}$	$CC\_Rank_{i,t}$	$STCC_{i,t}$	$UCC_{i,t}$	$UCC\_Rank_{i,t}$	$STUCC_{i,t}$
Firm A	−2.0	1	0.2	1.5	4	0.8
Firm B	1.0	4	0.8	0.0	2	0.4
Firm C	1.5	5	1.0	0.5	3	0.6
Firm D	−1.0	2	0.4	2.0	5	1.0
Firm E	0.5	3	0.6	−1.0	1	0.2

$CC_{i,t}$ = conditional conservatism measurement estimated in Eq.(3)

$CC\_Rank_{i,t}$ = the value obtained from ranking $CC_{i,t}$ each year in ascending order

$STCC_{i,t}$ = standardized conditional conservatism measurement that is obtained from dividing $CC\_Rank_{i,t}$ by the number of observations each year

$UCC_{i,t}$ = unconditional conservatism measurement estimated in Eq. (5)

$UCC\_Rank_{i,t}$ = the value obtained from ranking $UCC_{i,t}$ each year in ascending order

$STUCC_{i,t}$ = standardized unconditional conservatism measurement that is obtained from dividing $UCC\_Rank_{i,t}$ by the number of observations each year

However, several previous studies note of noise while estimating these measurements (e.g., DeFond et al. 2012; Louis et al. 2012; Zhang 2008). Following these studies, we rank these measurements annually in ascending order and divide the values obtained by the number of observations to reduce this noise. We refer to the conditional (unconstitutional) conservatism measurement obtained from this procedure as $STCC_{i,t}$ ($STUCC_{i,t}$). $STCC_{i,t}$ ($STUCC_{i,t}$) takes the value between 0 and 1; a higher value of $STCC_{i,t}$ ($STUCC_{i,t}$) represents higher conditional (unconditional) conservatism. Table 1 presents an example of this procedure.

3.4 Proxy for Corporate Investment Behavior

We use capital investment as a proxy for corporate investment behavior. Following previous studies, we calculate capital investment ($INVEST_{i,t}$) as follows:

$$INVEST_{i,t} = (PPE_{i,t} - PPE_{i,t-1} + DEP_{i,t} + IMP_{i,t})/ASSET_{i,t-1}, \qquad (6)$$

where $PPE_{i,t}$ denotes property, plant, and equipment at the end of period t. $DEP_{i,t}$ denotes depreciation expenses, and $IMP_{i,t}$ denotes impairment cost for period t. $ASSET_{i,t-1}$ denotes the total assets at the beginning of period t.

3.5 Empirical Models

To test the relationship between corporate investment behavior and conditional or unconditional conservatism, we estimate the following pooling regression model:

$$INVEST_{i,t+1} = \beta_1 + \beta_2 Conservatism_{i,t} + \beta_3 ROC_{i,t} + \beta_4 COF_{i,t} + \beta_5 OCF_{i,t}$$
$$+ \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 RET_{i,t} + \beta_9 GROWTH_{i,t}$$
$$+ \beta_{10} CAPIN_{i,t} + \beta_{11} LAGINVEST_{i,t} + \sum_{j=1}^{12} \alpha_j Year_j$$
$$+ \sum_{k=1}^{31} \gamma_k Industry_k + \varepsilon_t, \tag{7}$$

In Eq. (7), $INVEST_{i,t}$ is the dependent variable, and the independent variable includes the conservatism measurement ($Conservatism_{i,t}$) and 9 control variables related to capital investment. $Conservatism_{i,t}$ denotes the conditional conservatism ($STCC_{i,t}$) or unconditional conservatism measurement ($STUCC_{i,t}$) described in Sects. 3.1–3.3.

Following Thuy and Hanazaki (2003), we include return on capital ($ROC_{i,t}$) and cost of funds ($COF_{i,t}$) in Eq. (7) as control variables. Capital investment theory begins with the acceleration principle, goes through the capital stock adjustment investment principle and Jorgenson's investment theory, and largely ends with the Tobin's q theory. Based on Tobin's q theory, capital investment (I) is defined as an increasing function of q, that is, $I = f(q)$ ($f' > 0$) (Suzuki and Takenaka 1982). q is the ratio of firm value to the replacement value of capital stock. If q exceeds 1, the firm make capital investments. In particular, firms with growth opportunity make capital investments as long as the benefit of their capital investments exceeds the cost. Previous studies specify capital investment function on the basis of Tobin's q theory and use the ratio of the sum of market value of equity and total debts to total assets as proxy for q (e.g., Ma 2010). However, it is unclear whether this ratio captures q or the degree of conservatism because the book value of total assets is likely to be lower than the replacement value for firms with higher conservatism. Therefore, we do not use this ratio as a proxy for q. Following Thuy and Hanazaki (2003), as a substitute to measure q directly from a firm's balance sheet, we measure q as the ratio of marginal productivity of capital to cost of funds. We include $ROC_{i,t}$ and $COF_{i,t}$ in Eq. (7). $ROC_{i,t}$ is calculated as the operating income for period t divided by the total assets at the end of period t. $COF_{i,t}$ is calculated as the interest expenses for period t divided by the interest-bearing debt at the end of period t.

We also include cash flow ($OCF_{i,t}$) in Eq. (7) as control variables. Thuy and Hanazaki (2003) find that the level of internal funds influences the level of capital investment. Because agency cost arises from information asymmetry between external investors and managers, external funds are more costly than internal funds, resulting in externally funded investments being more costly than internally funded investments and causing a gap in the level of capital investment between firms with more internal funds and those with less. Therefore, we include $OCF_{i,t}$ in Eq. (7). $OCF_{i,t}$ is calculated as the operating cash flow for period t divided by total assets at the end of period t. We also include leverage ($LEV_{i,t}$) in Eq. (7) as a control variable. Because higher leverage increases the financial risk, firms with higher leverage have difficulty in raising external funds. Thus, these firms are likely to

reduce capital investments. $LEV_{i,t}$ is calculated as interest-bearing debt divided by the total assets at the end of period t.

Next, we include firm size ($SIZE_{i,t}$) in Eq. (7) as a control variable. Previous studies suggest that the informational environment is richer, and thus agency cost is lower for larger firms (e.g., Khan and Watts 2009). Therefore, larger firms have a level of capital investment. $SIZE_{i,t}$ is the natural log of total assets at the end of period t.

In addition to these control variables, we include stock return ($RET_{i,t}$), and sales growth rate ($GROWTH_{i,t}$) in Eq. (7). As noted above we include $ROC_{i,t}$ and $COF_{i,t}$ in Eq. (7) because we measure q as the ratio of the marginal productivity of capital to the cost of funds. However, these variables may not completely capture q. Thus, as additional control variables, we include the two variables used as proxies for growth opportunities by previous studies in Eq. (7) (e.g., Biddle et al. 2009; Ma 2010). $RET_{i,t}$ is 12-month compound returns starting at the beginning of period t. $GROWTH_{i,t}$ is the arithmetic average of the sales growth rate from period $t-4$ to t.

Because the level of capital investment is higher for more capital-intensive firms, we include capital intensity ($CAPIN_{i,t}$) in Eq. (7) as a control variable. $CAPIN_{i,t}$ is calculated as property, plant, and equipment divided by total assets at the end of period t. We also include lagged capital investment ($LAGINVEST_{i,t}$) in Eq. (7). This procedure examines how conservatism affects corporate investment behavior from period $t-1$ to t. Finally, we include the year dummy ($Year_j$) and industry dummy ($Industry_k$) in Eq. (7) to control for year and industry effects. $Industry_k$ is based on the Nikkei Middle Classification of Industries.

We include these variables in Eq. (7) and test the relationship between conservatism and corporate investment behavior. In this study, all t-statistics are based on White's (1980) heteroskedasticity-corrected standard errors and clustering procedure by each firm (Petersen 2009).

3.6 Sample

To estimate Eq. (7), we draw a sample that meets the following criteria from 1989 to 2011:

1. The firms must be listed on Japanese stock markets.
2. The firms must be compliant with Japanese accounting standards.
3. Month of fiscal year-end must be March.
4. A fiscal period must have 12 months.
5. The firms must be non-financial.
6. All data must be available for the estimation of Eq. (7).
7. To ensure that the results are not sensitive to outliers, except for dummy variables, variables at the top and bottom 0.5 % have been eliminated in Eq. (7) for each year.

We obtained our data from the NEEDS-FinancialQUEST database. As described in (6), our observations must have all data available for the estimation of Eq. (7).

Thus, they must have conditional conservatism and unconditional conservatism measurements. We estimate Eqs. (4) and (5) to obtain these two measurements. We use different samples to estimate Eqs. (4) and (5). The sample to estimate Eq. (4) includes observations that meet criteria (1)–(4) and the three criteria presented by Khan and Watts (2009): (a) the book value of equity must exceed 0, (b) all data must be available for the estimation of Eq. (4), and (c) variables in the top and bottom 1 % have been eliminated in Eq. (4) for each year. Using the sample that meets these seven criteria, we estimate Eq. (4) to obtain the conditional conservatism measurement. As described in Sect. 3.3, we standardize this measurement. The sample to estimate Eq. (5) includes the observations that meet criteria (1)–(4) and the four criteria presented by Beaver and Ryan (2000): (a) the book value of equity must exceed 0, (b) $Book\_to\_Market_{i,t}$ must be less than 4, (c) $Return_{i,t-j}$ must be less than 3, and (d) all data must be available for the estimation of Eq. (5). Using the sample that meets these eight criteria, we estimate Eq. (5) to obtain the unconditional conservatism measurement. Following the procedure described in Sect. 3.3, we standardize this measurement.

Table 2 provides the descriptive statistics. Table 3 presents a correlation matrix of variables used in Eq. (7), and reports that $STCC_{i,t}$ and $STUCC_{i,t}$ have a significantly negative correlation. This result is consistent with previous researches which show that unconditional conservatism disables conditional conservatism (e.g., Basu 2001; Beaver and Ryan 2005; Gassen et al. 2006; Kanamori 2009). Table 3 also reports that $STCC_{i,t}$ and $INVEST_{i,t+1}$ have a significantly negative correlation, and $STUCC_{i,t}$ and $INVEST_{i,t+1}$ have a significantly positive correlation. These results suggest that univariate analysis supports Hypothesis 1 and Hypothesis 2. Finally, Table 3 reports high positive correlations between $ROC_{i,t}$ and $OCF_{i,t}$, $ROC_{i,t}$ and $GROWTH_{i,t}$, $LEV_{i,t}$ and $CAPIN_{i,t}$, $CAPIN_{i,t}$ and $LAGINVEST_{i,t}$. To assess the possibility of multicollinearity, we calculate the value of the variance inflation factor (VIF) in Eq. (7). The results reveal that $CAPIN_{i,t}$ has the highest VIF value (2.19). Considering that the value of VIF is below 10, concerns about multicollinearity are marginal.

4   Results

Table 4 reports the results of the estimation of Eq. (7). Rows A and C in Table 4 report the results of the estimation of Eq. (7) using $STCC_{i,t}$ as the conservatism measurement, and rows B and D report the results of the estimation of Eq. (7) using $STUCC_{i,t}$.

Rows A and B in Table 4 report the results of estimation of Eq. (7) without $LAGINVEST_{i,t}$. By estimating Eq. (7) without $LAGINVEST_{i,t}$, we examine how conservatism affects the level of capital investment at the end of period $t + 1$. We find that the coefficient of $STCC_{i,t}$ is significantly negative at 1 % level in row A, and the coefficient of $STUCC_{i,t}$ is significantly positive at 1 % level in row B. These results suggest that although conditional conservatism negatively affects the level

Table 2 Descriptive statistics

	Mean	Std. dev.	Min	25 %	Median	75 %	Max	N
$INVEST_{i,t+1}$	0.035	0.037	−0.141	0.011	0.026	0.050	0.368	14.417
$STCC_{i,t}$	0.473	0.276	0.004	0.236	0.461	0.701	0.996	14.417
$STUCC_{i,t}$	0.483	0.280	0.006	0.242	0.478	0.720	0.995	14.417
$ROC_{i,t}$	0.041	0.035	−0.116	0.020	0.037	0.061	0.184	14.417
$COF_{i,t}$	0.023	0.040	0.000	0.013	0.018	0.024	1.111	14.417
$OCF_{i,t}$	0.053	0.045	−0.137	0.027	0.053	0.080	0.257	14.417
$LEV_{i,t}$	0.220	0.175	0.000	0.064	0.197	0.343	0.749	14.417
$SIZE_{i,t}$	11.083	1.363	7.832	10.076	10.947	11.958	15.244	14.417
$RET_{i,t}$	0.043	0.392	−0.761	−0.207	−0.028	0.204	2.788	14.417
$GROWTH_{i,t}$	0.019	0.056	−0.153	−0.017	0.012	0.046	0.380	14.417
$CAPIN_{i,t}$	0.320	0.158	0.011	0.204	0.307	0.410	0.873	14.417
$LAGINVEST_{i,t}$	0.036	0.042	−0.150	0.011	0.026	0.050	0.582	14.417

$INVEST_{i,t}$ = capital investment that is defined as PPE at the end of period $t + 1$ minus PPE at the beginning of period $t + 1$ plus depreciation expense for period $t + 1$ plus impairment cost for period $t + 1$, deflated by total assets at the end of period t

$STCC_{i,t}$ = standardized conditional conservatism measurement

$STUCC_{i,t}$ = standardized unconditional conservatism measurement

$ROC_{i,t}$ = return on capital that is calculated as operating income for period t divided total assets at the end of period t

$COF_{i,t}$ = cost of fund that is calculated as interest expense for period t divided interest debt with interest at the end of period t

$OCF_{i,t}$ = cash flow that is calculated as operating cash flow for period t divided total assets at the end of period t

$LEV_{i,t}$ = leverage that is calculated as debt with interest divided total assets at the end of period t

$SIZE_{i,t}$ = firm size that is calculated as the natural log of total assets at the end of period t

$RET_{i,t}$ = stock return that is 12-month compound returns starting at the beginning of period t

$GROWTH_{i,t}$ = sales growth rate that is calculated as the arithmetic average of sales growth rate form period $t − 4$ to period t

$CAPIN_{i,t}$ = capital intensity that is calculated as PPE divided by total assets at the end of period t

$LAGINVEST_{i,t}$ = lagged capital investment that is defined as $INVEST_{i,t}$

of capital investment at the end of period $t + 1$, unconditional conservatism positively affects it.

Rows C and D in Table 4 report the results of the estimation of Eq. (7) with $LAGINVEST_{i,t}$. By estimating Eq. (7) with $LAGINVEST_{i,t}$, we examine how conservatism affects firm capital investment behavior from period $t + 1$ to period t. We find that the coefficient of $STCC_{i,t}$ is significantly negative at 1 % level in row C. We also find that the coefficient of $STUCC_{i,t}$ is significantly positive at 5 % level in row D. These results suggest that although conditional conservatism negatively affects firm capital investment behavior from period $t + 1$ to period t, unconditional conservatism positively affects it. From these results, we conclude that multivariate analysis supports Hypothesis 1 and Hypothesis 2.

For control variables, we find that the coefficients of $ROC_{i,t}$, $OCF_{i,t}$, $SIZE_{i,t}$, $RET_{i,t}$, $GROWTH_{i,t}$, and $CAPIN_{i,t}$ are significantly positive in rows A–D. In contrast, we find that the coefficients of $LEV_{i,t}$ is significantly negative in rows A–D. In addition, the coefficients of $LAGINVEST_{i,t}$ are significantly positive (rows C and D).

Table 3 Pearson and Spearman correlations

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
① $INVEST_{i,t+1}$		−0.196	0.131	0.282	0.010	0.354	0.021	0.190	0.092	0.263	0.333	0.575
② $STCC_{i,t}$	−0.132		−0.255	−0.230	0.009	−0.166	0.097	−0.538	−0.116	−0.171	−0.014	−0.164
③ $STUCC_{i,t}$	0.099	−0.264		0.181	0.076	0.150	0.282	0.260	−0.029	0.066	0.101	0.141
④ $ROC_{i,t}$	0.227	−0.225	0.180		−0.039	0.494	−0.258	0.113	0.154	0.421	−0.016	0.201
⑤ $COF_{i,t}$	0.014	−0.041	−0.007	0.051		−0.065	0.228	0.070	−0.078	0.055	0.072	0.066
⑥ $OCF_{i,t}$	0.291	−0.159	0.135	0.477	0.016		−0.106	0.114	0.134	0.205	0.219	0.299
⑦ $LEV_{i,t}$	0.002	0.117	0.313	−0.257	−0.082	−0.103		0.126	−0.017	−0.090	0.399	0.063
⑧ $SIZE_{i,t}$	0.137	−0.522	0.272	0.114	0.019	0.113	0.142		0.034	0.179	0.064	0.202
⑨ $RET_{i,t}$	0.082	−0.111	−0.033	0.134	−0.027	0.124	0.007	0.027		−0.054	−0.009	−0.030
⑩ $GROWTH_{i,t}$	0.211	−0.164	0.061	0.402	0.038	0.176	−0.084	0.173	−0.047		0.015	0.301
⑪ $CAPIN_{i,t}$	0.255	−0.016	0.117	−0.038	−0.020	0.202	0.427	0.098	−0.016	−0.004		0.402
⑫ $LAGINVEST_{i,t}$	0.383	−0.081	0.111	0.122	0.044	0.206	0.078	0.144	−0.038	0.239	0.320	

Pearson (Spearman) correlations are reported below (above) the diagonal. See Table 2 or the text about the definition of all variables

Table 4 Tests of relationship between conservatisms and capital investment

	A			B			C			D		
	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)
Constant	0.003	(0.633)	(0.527)	−0.002	(−0.590)	(0.555)	0.004	(1.006)	(0.315)	−0.002	(−0.491)	(0.623)
$STCC_{i,t}$	−0.004	(−2.630)***	(0.009)				−0.004	(−2.940)***	(0.003)			
$STUCC_{i,t}$				0.005	(2.848)***	(0.004)				0.003	(2.192)**	(0.028)
$ROC_{i,t}$	0.046	(3.282)***	(0.001)	0.039	(2.809)***	(0.005)	0.049	(4.076)***	(0.000)	0.046	(3.794)***	(0.000)
$COF_{i,t}$	0.001	(0.100)	(0.921)	0.001	(0.101)	(0.920)	−0.006	(−0.923)	(0.356)	−0.005	(−0.894)	(0.371)
$OCF_{i,t}$	0.110	(10.981)***	(0.000)	0.109	(10.819)***	(0.000)	0.095	(10.607)***	(0.000)	0.094	(10.475)***	(0.000)
$LEV_{i,t}$	−0.014	(−4.864)***	(0.000)	−0.018	(−6.097)***	(0.000)	−0.012	(−4.744)***	(0.000)	−0.015	(−5.826)***	(0.000)
$SIZE_{i,t}$	0.002	(4.086)***	(0.000)	0.002	(5.028)***	(0.000)	0.001	(3.094)***	(0.002)	0.001	(4.504)***	(0.000)
$RET_{i,t}$	0.004	(4.464)***	(0.000)	0.005	(5.259)***	(0.000)	0.005	(5.440)***	(0.000)	0.006	(6.137)***	(0.000)
$GROWTH_{i,t}$	0.072	(9.132)***	(0.000)	0.074	(9.308)***	(0.000)	0.044	(6.403)***	(0.000)	0.045	(6.578)***	(0.000)
$CAPIN_{i,t}$	0.046	(11.163)***	(0.000)	0.047	(11.412)***	(0.000)	0.028	(8.418)***	(0.000)	0.029	(8.671)***	(0.000)
$LAGINVEST_{i,t}$							0.211	(14.166)***	(0.000)	0.210	(14.003)***	(0.000)
Year	Yes			Yes			Yes			Yes		
Industry	Yes			Yes			Yes			Yes		
R-squared	0.225			0.225			0.268			0.268		
Adj-R-squared	0.222			0.223			0.265			0.265		
N	14,417			14,417			14,417			14,417		

All *t*-statistics are based on White's (1980) heteroskedasticity-corrected standard errors and clustering procedure by each firm (Petersen 2009). ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively. See Table 2 or the text about the definition of all variables

5 Robustness Check

Following previous studies, we use the conditional conservatism measurement developed by Khan and Watts (2009) and the unconditional conservatism measurement developed by Beaver and Ryan (2000). Following DeFond et al. (2012) and Louis et al. (2012), we annually rank these measurements and standardize them to take values between 0 and 1 to reduce noise in the estimates.

This section re-examines the relationship between conservatism and corporate investment behavior using alternative conservatism measurements. The first alternative measurements are non-standardized conservatism measurements: conditional conservatism ($CC_{i,t}$) and unconditional conservatism measurements ($UCC_{i,t}$). Using these two measurements as $Conservatism_{i,t}$, we re-estimate Eq. (7). Table 5 reports these results, similar to those reported in Table 4.

Second, we use the abnormal depreciation rate of tangible fixed assets ($ADEP_{i,t}$) as an alternative unconditional conservatism measurement. $ADEP_{i,t}$ is calculated as the depreciation rate of tangible fixed assets of a firm minus the average depreciation rate in the firm's industry. Considering a situation in which a firm can estimate the rational rate of depreciation, the firm actually estimates the higher depreciation rate. This process implies that the firm recognizes more depreciation expense relative to the decrease in the economic value of tangible fixed assets, that is, it is unconditionally conservative. Thus, a higher value of $ADEP_{i,t}$ represents higher unconditional conservatism. Using this $ADEP_{i,t}$ as $Conservatism_{i,t}$, we re-estimate Eq. (7). Table 6 reports these results. Row A in Table 6 reports the results of the estimation of Eq. (7) without $LAGINVEST_{i,t}$, and row B reports the results of the estimation of Eq. (7) with $LAGINVEST_{i,t}$. We find that the coefficients of $ADEP_{i,t}$ are significantly positive at 1 % level in both rows A and B, suggesting that firms with higher unconditional conservatism take more positive investment initiatives.

Third, we use the model developed by Basu (1997) to examine the relationship between conditional conservatism and corporate investment behavior. To analyze this relationship, we estimate the following pooling regression model:

$$
\begin{aligned}
X_{i,t} = {} & \beta_0 + \beta_1 D_{i,t} + \beta_2 R_{i,t} + \beta_3 D_{i,t} * R_{i,t} + \beta_4 INVEST_{i,t+1} \\
& + \beta_5 D_{i,t} * INVEST_{i,t+1} + \beta_6 R_{i,t} * INVEST_{i,t+1} \\
& + \beta_7 D_{i,t} * R_{i,t} * INVEST_{i,t+1} + \beta_8 SIZE_{i,t} + \beta_9 D_{i,t} * SIZE_{i,t} \\
& + \beta_{10} R_{i,t} * SIZE_{i,t} + \beta_{11} D_{i,t} * R_{i,t} * SIZE_{i,t} + \beta_{12} MTB_{i,t} \\
& + \beta_{13} D_{i,t} * MTB_{i,t} + \beta_{14} R_{i,t} * MTB_{i,t} + \beta_{15} D_{i,t} * R_{i,t} * MTB_{i,t} \\
& + \beta_{16} LEV_{i,t} + \beta_{17} D_{i,t} * LEV_{i,t} + \beta_{18} R_{i,t} * LEV_{i,t} \\
& + \beta_{19} D_{i,t} * R_{i,t} * LEV_{i,t} + \varepsilon_{i,t},
\end{aligned}
\tag{8}
$$

where $X_{i,t}$, $D_{i,t}$, $R_{i,t}$, and $INVEST_{i,t+1}$ are as defined in Sects. 3.1 and 3.4. β_3 captures the incremental timeliness of loss recognition in earnings relative to gain and the degree of conditional conservatism. β_7 captures the relationship between conditional conservatism and corporate investment behavior.

Table 5 Tests of relationship between conservatisms and capital investment using non-standardized conservatism measurements

	A			B			C			D		
	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)
Constant	0.002	(0.520)	(0.603)	−0.000	(−0.094)	(0.925)	0.004	(0.975)	(0.330)	−0.000	(−0.104)	(0.917)
$CC_{i,t}$	−0.009	(−2.946)***	(0.003)				−0.010	(−3.476)***	(0.001)			
$UCC_{i,t}$				0.002	(2.583)***	(0.010)				0.002	(2.007)**	(0.045)
$ROC_{i,t}$	0.045	(3.219)***	(0.001)	0.040	(2.880)***	(0.004)	0.048	(3.986)***	(0.000)	0.047	(3.846)***	(0.000)
$COF_{i,t}$	0.001	(0.155)	(0.877)	0.001	(0.127)	(0.899)	−0.005	(−0.861)	(0.389)	−0.005	(−0.874)	(0.382)
$OCF_{i,t}$	0.110	(10.982)***	(0.000)	0.109	(10.826)***	(0.000)	0.095	(10.607)***	(0.000)	0.094	(10.479)***	(0.000)
$LEV_{i,t}$	−0.014	(−4.801)***	(0.000)	−0.018	(−5.959)***	(0.000)	−0.011	(−4.645)***	(0.000)	−0.015	(−5.716)***	(0.000)
$SIZE_{i,t}$	0.001	(3.917)***	(0.000)	0.002	(5.141)***	(0.000)	0.001	(2.812)***	(0.005)	0.001	(4.595)***	(0.000)
$RET_{i,t}$	0.004	(4.606)***	(0.000)	0.005	(5.236)***	(0.000)	0.005	(5.585)***	(0.000)	0.006	(6.122)***	(0.000)
$GROWTH_{i,t}$	0.073	(9.158)***	(0.000)	0.074	(9.278)***	(0.000)	0.044	(6.432)***	(0.000)	0.045	(6.550)***	(0.000)
$CAPIN_{i,t}$	0.046	(11.208)***	(0.000)	0.047	(11.393)***	(0.000)	0.028	(8.472)***	(0.000)	0.029	(8.652)***	(0.000)
$LAGINVEST_{i,t}$							0.211	(14.191)***	(0.000)	0.210	(14.023)***	(0.000)
Year	Yes			Yes			Yes			Yes		
Industry	Yes			Yes			Yes			Yes		
R-squared	0.225			0.225			0.268			0.268		
Adj-R-squared	0.222			0.223			0.265			0.265		
N	14,417			14,417			14,417			14,417		

All t-statistics are based on White's (1980) heteroskedasticity-corrected standard errors and clustering procedure by each firm (Petersen 2009). ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively. See Table 2 or the text about the definition of all variables

Table 6 Tests of relationship between unconditional conservatisms and capital investment using abnormal depreciation rate of tangible fixed assets as proxy for unconditional conservatism

	A			B		
	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)
Constant	−0.003	(−0.830)	(0.407)	−0.002	(−0.705)	(0.481)
$ADEP_{i,t}$	0.189	(15.021)***	(0.000)	0.160	(13.945)***	(0.000)
$ROC_{i,t}$	0.086	(6.836)***	(0.000)	0.083	(7.313)***	(0.000)
$COF_{i,t}$	−0.001	(−0.084)	(0.933)	−0.005	(−0.961)	(0.337)
$OCF_{i,t}$	0.051	(5.881)***	(0.000)	0.047	(5.767)***	(0.000)
$LEV_{i,t}$	−0.012	(−4.717)***	(0.000)	−0.010	(−4.682)***	(0.000)
$SIZE_{i,t}$	0.001	(3.670)***	(0.000)	0.001	(3.106)***	(0.002)
$RET_{i,t}$	0.005	(5.797)***	(0.000)	0.006	(6.538)***	(0.000)
$GROWTH_{i,t}$	0.062	(8.373)***	(0.000)	0.040	(6.045)***	(0.000)
$CAPIN_{i,t}$	0.071	(18.228)***	(0.000)	0.052	(15.528)***	(0.000)
$LAGINVEST_{i,t}$				0.177	(12.812)***	(0.000)
Year		Yes			Yes	
Industry		Yes			Yes	
R-squared			0.269			0.298
Adj-R-squared			0.267			0.296
N			14,417			14,417

All *t*-statistics are based on White's (1980) heteroskedasticity-corrected standard errors and clustering procedure by each firm (Petersen 2009). ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively. See Table 2 and the text about the definition of all variables

To alleviate the correlated omitted variable problem, we control for variables that can affect conservatism documented by previous studies. Specifically, we include firm size ($SIZE_{i,t}$), market to book ($MTB_{i,t}$), leverage ($LEV_{i,t}$), and their interaction with $D_{i,t}$, $R_{i,t}$, and $D_{i,t} * R_{i,t}$. $SIZE_{i,t}$ is the natural log of total assets at the end of period t. $MTB_{i,t}$ is the ratio of market value of equity to book value of equity at the end of period t. $LEV_{i,t}$ is calculated as the interest-bearing debt divided by the total assets at the end of period t.

Table 7 reports the results of estimating Eq. (8). Row A in Table 7 reports the results of estimating Eq. (8) without control variables, and row B reports the results of estimating Eq. (8) with control variables. We find that the coefficients of $D_{i,t} * R_{i,t} * INVEST_{i,t+1}$ are significantly negative in both rows A and B. These results suggest that firms with higher conditional conservatism take more negative investment initiatives.

Table 7 Tests of relationship between conditional conservatisms and capital investment using the model developed by Basu (1997)

	A			B		
	Coeff.	(t-Stat)	(p-Stat)	Coeff.	(t-Stat)	(p-Stat)
Constant	0.032	(10.650)***	(0.000)	0.070	(4.688)***	(0.000)
$D_{i,t}$	−0.003	(−0.627)	(0.531)	−0.015	(−0.674)	(0.501)
$R_{i,t}$	0.041	(4.503)***	(0.000)	0.021	(0.468)	(0.640)
$D_{i,t}*R_{i,t}$	0.141	(6.854)***	(0.000)	0.412	(4.303)***	(0.000)
$INVEST_{i,t}$	0.210	(4.159)***	(0.000)	0.244	(4.597)***	(0.000)
$D_{i,t}*INVEST_{i,t}$	−0.027	(−0.311)	(0.756)	−0.008	(−0.091)	(0.928)
$R_{i,t}*INVEST_{i,t}$	0.111	(0.801)	(0.423)	0.063	(0.445)	(0.656)
$D_{i,t}*R_{i,t}*INVEST_{i,t}$	−1.271	(−3.402)***	(0.001)	−0.725	(−2.041)**	(0.041)
$SIZE_{i,t}$				−0.002	(−1.389)	(0.165)
$D_{i,t}*SIZE_{i,t}$				0.001	(0.294)	(0.769)
$R_{i,t}*SIZE_{i,t}$				0.004	(0.850)	(0.395)
$D_{i,t}*R_{i,t}*SIZE_{i,t}$				−0.035	(−4.031)***	(0.000)
$MTB_{i,t}$				−0.004	(−1.158)	(0.247)
$D_{i,t}*MTB_{i,t}$				0.005	(1.007)	(0.314)
$R_{i,t}*MTB_{i,t}$				−0.004	(−0.657)	(0.511)
$D_{i,t}*R_{i,t}*MTB_{i,t}$				−0.034	(−1.815)*	(0.070)
$LEV_{i,t}$				−0.068	(−5.489)***	(0.000)
$D_{i,t}*LEV_{i,t}$				−0.009	(−0.444)	(0.657)
$R_{i,t}*LEV_{i,t}$				−0.013	(−0.359)	(0.719)
$D_{i,t}*R_{i,t}*LEV_{i,t}$				0.448	(5.593)***	(0.000)
Year	Yes			Yes		
Industry	Yes			Yes		
R-squared			0.075			0.120
Adj-R-squared			0.075			0.118
N			14,417			14,417

All t-statistics are based on White's (1980) heteroskedasticity-corrected standard errors and clustering procedure by each firm (Petersen 2009). ***, **, and * indicate significance at 1 %, 5 %, and 10 %, respectively. See Table 2 and the text about the definition of all variables

6 Conclusion

We examine how two types of conservatism—conditional conservatism and unconditional conservatism—affect corporate investment behavior. Conditional conservatism forces managers to timely recognize their losses resulting from an investment project. When risk-averse managers are aware that their reputation and compensation are affected adversely by timely recognizing the loss resulting from project failure, they are less likely to undertake the project ex ante despite its positive NPV. Thus, conditional conservatism is likely to inhibit corporate

investment behavior. In contrast, unconditional conservatism mitigates a firm's earning volatility, especially downward, by providing an accounting slack. Thus, unconditional conservatism is likely to promote corporate investment behavior. Using a large sample of Japanese companies, we empirically analyze how conditional conservatism and unconditional conservatism affect corporate investment behavior.

This study provides two empirical findings. The conditional conservatism measurement relates negatively to the corporate investment behavior measurement, while the unconditional conservatism measurement relates positively to it. These results are robust to (1) including variables relating to capital investment as control variables, (2) including lagged capital investment as an independent variable, (3) using the non-standardized raw data as proxies for conditional conservatism and unconditional conservatism, (4) using the abnormal depreciation rate of tangible fixed assets as a proxy for unconditional conservatism, and (5) using Basu's (1997) model to examine the relationship between conditional conservatism and corporate investment behavior. Our findings suggest that firms with higher conditional conservatism take more negative investment initiatives, whereas firms with higher unconditional conservatism take more positive investment initiatives.

Our study has at least two limitations. First, while our findings are robust to the use observable firm-specific control variables and alternative empirical specifications, we cannot definitively rule out the possibility that our results may be driven by an unidentified factor that is correlated with both conservatism and corporate investment behavior. Second, conservatism is difficult to measure and therefore the validity of our inferences is critically dependent on the validity of our proxy for the construct.

This study contributes to the literature on conservatism by providing new insight into the economic consequences of conservatism. Although many previous studies examine the relationship between conservatism and contracting or litigation risk, we provide evidence suggesting that conservatism affects corporate investment behavior. This study has implications for regulators and standard setters. In recent years, standard setters have excluded unconditional conservatism as inconsistent with the desirable qualitative characteristics of accounting information. If this trend continues, firms probably take more negative investment initiatives and are unlikely to make long-term investment.

References

Amir, E., Guan, Y., & Livne, G. (2009). The association between auditor independence and conservatism. Working Paper, University of Hong Kong.

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics, 29*(1), 1–51.

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics, 39*(1), 83–128.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467–498.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics, 24*(1), 3–37.

Basu, S. (2001). Discussion of on the asymmetric recognition of good and bad news in France, Germany and the United Kingdom. *Journal of Business Finance and Accounting, 28*(9/10), 1333–1349.

Beaver, W. H., & Ryan, S. G. (2000). Biases and lags in book value and their effects on the ability of the book-to-market ratio to predict book return on equity. *Journal of Accounting Research, 38*(1), 127–148.

Beaver, W. H., & Ryan, S. G. (2005). Conditional and unconditional conservatism: Concepts and modeling. *Review of Accounting Studies, 10*(2–3), 269–309.

Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics, 48*(2–3), 112–131.

Chung, H. H., & Wynn, J. P. (2008). Managerial legal liability coverage and earnings conservatism. *Journal of Accounting and Economics, 46*(1), 135–153.

DeFond, M. L., Yeow, C. Y., & Zhang, Y. (2012). Do auditors value client conservatism? Working Paper, University of Southern California.

Edwards, J. R. (1989). *A history of financial accounting*. London: Routledge.

Financial Accounting Standards Board. (2005). Joint Conceptual Framework Project Attachment F. *Neutrality and Other Faithful Representation*.

Francis, J. R., & Martin, X. (2010). Acquisition profitability and timely loss recognition. *Journal of Accounting and Economics, 49*(1–2), 161–178.

Gassen, J., Uwe Fülbier, R., & Sellhorn, T. (2006). International differences in conditional conservatism: The role of unconditional conservatism and income smoothing. *European Accounting Review, 15*(4), 527–564.

Huijgen, C., & Lubberink, M. (2005). Earnings conservatism, litigation and contracting: The case of cross-listed firms. *Journal of Business Finance and Accounting, 32*(7–8), 1275–1309.

Iyengar, R. J., & Zampelli, E. M. (2010). Does accounting conservatism pay? *Accounting and Finance, 50*(1), 121–142.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review, 76*(2), 323–329.

Kanamori, E. (2009). Two concepts and the persistence of accounting conservatism. In commemoration of Prof. Kunio Chiyoda and Prof. Takashi Watanabe. *The Ritsumeikan Business Review*, 47(5), 177–192.

Khan, M., & Watts, R. L. (2009). Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics, 48*(2–3), 132–150.

Louis, H., Sun, A. X., & Urcan, O. (2012). Value of cash holdings and accounting conservatism. *Contemporary Accounting Research, 29*(4), 1249–1271.

Ma, T. (2010). Accounting conservatism and corporate investment. Working Paper, Washington University.

Nakamura, R. (2009). The association between measures of conservatism and the conservatism principle. *The Teikyo University Economic Review, 43*(1), 119–128.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480.

Roychowdhury, S. (2010). Discussion of: "Acquisition profitability and timely loss recognition" by J. Francis and X. Martin. *Journal of Accounting and Economics, 49*(1–2), 179–183.

Ruch, G. W., & Taylor, G. (2011). Accounting conservatism and its effects on financial reporting quality: A review of the literature. Working Paper, University of Alabama.

Ryan, S. G. (2006). Identifying conditional conservatism. *European Accounting Review, 15*(4), 511–525.

Sanders, T. H., Hatfield, H. R., & Moore, U. (1938). *A statement of accounting principles*. New York: American Institute of Accountants.

Suzuki, K., & Takenaka, H. (1982). Taxation system and capital investment: Estimation of investment function including adjustment cost and rational expectation. *Economics Today, 3*(3), 6–61.

Thuy, T. T. T., & Hanazaki, M. (2003). Comparative analysis of corporate investment behavior in Japan, the United States and France. *The Economic Review, 54*(1), 33–46.

Watts, R. L. (2003). Conservatism in accounting part I: Explanations and implications. *Accounting Horizons, 17*(3), 207–221.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817–838.

Wittenberg-Moerman, R. (2008). The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics, 46*(2–3), 240–260.

Yaekura, T. (2007). Conceptual framework and empirical research. In S. Saito (Ed.), *Objectives of financial reporting, qualitative characteristics of accounting information, elements of financial statements, recognition and measurement in financial statements*. Tokyo: Chuokeizai Sha.

Zhang, J. (2008). The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics, 45*(1), 27–54.

Matching Expenses with Revenues Around the World

Tetsuyuki Kagaya

Abstract The purpose of this research is to examine changes in the relation between revenue and expense over the last 16 years around the world. I show that the correlation between revenue and expense has declined around the world, especially in English Speaking countries. Meanwhile, it has not necessarily decreased in the Far East countries and Western Europe countries. In addition, I investigate the relation between earnings smoothness and matching, based on the analysis of the country-year data, and analyzed the relation between the current accruals and current and next cash flows from operations in each country. These results suggest that accrual process, supported by matching and accruals, promotes the earnings smoothing and signaling the future cash flows in the Far East countries, especially in Japan. These findings indicate that there are major differences in the roles of matching around the world.

Keywords Accounting attributes • Accruals • International comparison • Matching concept • Path dependence

1 Introduction

The purpose of this study is to examine changes in the property of matching expenses with revenues over 16 years around the world. In addition, I examine the relation between accruals and cash flows worldwide. These themes are of interest for the following three reasons.

First, the concept of earnings has undergone a shift from a revenue and expense view to an asset and liability view, driven by convergence toward or adoption of International Financial Reporting Standards (IFRS) all over the world.

T. Kagaya (✉)
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: t.kagaya@r.hit-u.ac.jp

IFRS promotes the assets and liabilities view and fair value accounting, therefore it discourages the revenue and expenses view and accrual accounting. However, we cannot accumulate the evidences how the revenue and expense view, including the process of matching expenses with revenues or accruals, has some roles in the financial accounting and reporting around the world. We need to analyze the economic effects of the revenue and expense view. Matching expenses with revenues is the important process, which supports the revenue and expense view. We can examine what roles the revenue and expense view have by investigating the international differences of the extent of matching and its roles around the world.

Second, some empirical studies show that accounting information has become considerably less useful over several decades (e.g., Collins et al. 1997; Brown et al. 1999; Lev and Zarowin 1999). Dichev and Tang (2008) point out that poor matching reduces the usefulness of financial information. They show that mismatch between revenue and expense has increased over 40 years and that this has led to the decreasing the usefulness of financial information. Then, has the mismatch between expenses and revenues been developing over several decades around the world? Prior research has not examined this issue, leaving it to us to accumulate evidence of the effects or roles of matching.

Third, we have few studies on the international comparison of earnings attributes under the revenue and expense view. Recently, many researchers have provided substantial international evidences on the comparison of earnings attributes to examine economic consequences or effects by the convergence or adoption of the International Financial Reporting Standards. International harmonization of accounting standards has driven by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB), which put more emphasis on the asset and liability view. Therefore, most studies tend to focus on the earnings attributes, based on the view, like timeliness, conservatism, and earnings opaqueness. On the other hand, I assume that earnings based on the revenue and expense view have some roles in some countries. However, we have few evidences about the international comparison of the properties, based on the view, like a matching expenses with revenues. While shifting from the revenue and expense view to the asset and liability view in setting accounting standards, I think that it is important to examine the roles and functions of matching under the revenue and expense view.

I examine how the matching has changed around the world and what consequences its changes would emerge. Dichev and Tang (2008) show that matching, measured as the correlation between contemporaneous revenues and expenses, has decreased in the U.S. over 40 years. However, there are some open issues on matching. How has the property of matching been becoming poorer over decades worldwide? And, if there have been differences in the changes of matching in each country or area, why have those emerged?

First, I examine the changes in the properties of matching around the world over the past 16 years. Specifically, I focus on the nine countries (Canada, China, Germany, French, India, Japan, Korea, the U.K., and the U.S.), and three cultural areas (English-speaking, Western Europe, and the Far East). I find that the

correlation between revenues and expenses in the 2000s is lower than that in the 1990s, but the correlation has not necessarily decreased worldwide over 16 years. The degrees of matching have statistically significantly decreased only in English-speaking areas like Canada, the U.K., and the U.S., while the decrease has been statistically insignificant in the Far East area, excluding China. The changes in properties of matching are different between English-speaking area and the Far East area. Second, I analyze the relation between the degree of matching and stability of earnings (permanent profitability) to check the function of matching by using the country-year data. Matching process contributes to the stability of earnings through the accrual process. If firms put more emphasis on the earnings persistence in some countries, matching may have some roles in it. The result shows that the matching scores in the Far East countries are closely related to the extent to earnings persistence, because firms focus on the long-term relation with each stakeholders and need to keep stable earnings in the Far East countries, especially in Japan. Third, I focus on accruals, which are composed of deferred items and accrued items. These are identified through the process of matching. I examine how accruals contribute to stability of earnings to show permanent incomes in each country. The results show that accruals contribute to smoothing cash flows from operating activities in Western Europe and the Far East more than in English-speaking areas. And fourth, I investigate how accruals can contribute to the prediction of future cash flows from operating activities to examine the roles of matching in the information signaling in each country. I find that current changes of accruals are correlated with next changes of cash flows from operating activities in Western Europe and the Far East more than in English-speaking areas.

These findings indicate that there are major differences in the roles and functions of matching around the world. Recently, accounting standards setters, like the IASB and the FASB, have placed more emphasis on accounting procedures under the asset and liability view, so the presence of the revenue and expense view has become smaller all over the world, together with the adoption of or convergence toward IFRS. However, matching can play an important role in conveying future information to stakeholders in Western Europe and the Far East areas. Recently, many literature show that economic, legal, and corporate system affect huge impacts to the functions and effects of accounting system (e.g., Hail et al. 2010; Christensen et al. 2012). Therefore, the adoption or convergence has the potential to influence the corporate behavior in the case of extinguishment of the matching or accrual process.

The remainder of this paper is organized as follows; Sect. 2 describes prior research and examines the relationship between those prior studies and the Hicks (1946) theory; Sect. 3 presents the data sample and research design; empirical tests and results are presented in Sects. 4; and 5 offers some conclusions.

2 Prior Literature and Conceptual Underpinnings

I review prior literature about international comparison of earnings attributes and derive research agendas from it. In particular, I set conceptual underpinnings, focusing on the theory based on the Hicks (1946) to do it, because it is effective for us to make it clarify the differences between assets and liabilities view and revenues and expenses view. I show research agendas on international comparison of earnings attributes, based on the revenues and expenses view.

2.1 *International Comparison of Earnings Attributes*

There are a lot of papers on the international comparison of earnings attributes after the beginnings of the 2000s. We can organize prior literature into two ones. One focuses on value relevance, earnings timeliness and conservatism, which are based on the measures in the stock market, and the other concentrates on earnings management or earnings transparency, which are based on the measures of management behavior.

Prior literature of earnings timeliness and conservatism is based on the Basu (1997) model. Basu (1997) assumes that the stock market is efficient and can properly and quickly evaluate economic assets and liabilities and we can estimate the economic income as the changes in stock prices-meaning the changes in values of economic assets and liabilities. Basu (1997) defines timeliness and conservatism as follows; timeliness is the explanatory power of a reverse regression of earnings on stock returns, and conservatism is the ratio of the slope coefficients on negative stock returns to the slope coefficients on positive stocks returns in a reverse regression of earnings on stock returns. In short, timeliness and conservatism are defined as the extent to which unexpected changes in stock price are reflected by accounting procedures.

Ball et al. (2000), for example, find that accounting income is less timely, particularly in incorporating economic losses in code law countries because its regulation, taxation, and litigation are different from those in common law countries. The authors examine the differences between code law countries and common law countries in resolving information asymmetry. Their study indicates that common law countries tend to select the shareholder's corporate governance model and resolve information asymmetry by public disclosure; thus common law countries place emphasis on timeliness and conservatism. In addition, they find that code law countries link accounting income to current payouts, so code law accounting income is less timely, particular in term of incorporating economic losses.

Ball et al. (2003) examine the quality of financial reporting in Southeast Asian countries, like Hong Kong, Malaysia, Singapore, and Thailand, and find the quality to be lower than that in code law countries, although they are common law

countries. In identifying a reason for this, the authors propose the incentives of managers and auditors are closely related to the accounting standards. Bushman and Piotroski (2006) examine the conditional conservatism (e.g., Basu 1997) around the world and find that a country's legal/judicial system, including securities law, political economy, and the tax regime, create incentives and influences the conditional conservatism.

2.2 Conceptual Underpinnings

Prior literature seems to be consistent with the asset and liability view and the concept of 'Income No.1' in Hicks (1946). Hicks (1946) defines Income No.1 as "the maximum amount which can be spent during [a period], if there is to be an expectation of maintaining intact the capital value of prospective receipts in money terms". FASB/IASB (2005) referred to Hicks' Income No.1 as a definition of income is grounded in a theory prevalent in economics: that an entity's income can be objectively determined from the change in its wealth plus what it consumed during a period. However, Bromwich et al. (2010) criticize the FASB/IASB joint project for its conceptual framework as cherry-picking parts of a theory. They point out that the concept of income is fully determinable and objective only in the presence of complete and perfect markets, although FASB/IASB (2005) quotes Hicks's observation that Income No.1 possesses "one supremely important property…[That kind of income] ex post is not a subjective affair, like other kinds of income; it is almost completely objective." When every resource and claim on future cash flows has been commoditized into fully exchangeable assets, and where everyone faces the same prices, including the discount rate (Beaver and Demski 1979), we can calculate incomes from the changes in values of resources and claims. In short, income is equal to the change in values of economic assets and liabilities in complete and perfect markets.

I assume that prior literature on the international comparisons of timeliness and conservatism tends to take an asset and liability view. They hold that stock markets evaluate the economic assets and liabilities of corporations efficiently; they define timeliness as the extent to which corporations reflect the change of stock price or returns in the previous term via accounting procedures and conservatism as the extent to which corporations reflect the negative changes in share price or returns more than positive changes in its financial statements as soon as possible.

Clearly, if markets are not complete and perfect, it is not appropriate for earnings to be equal to the change in value of assets and liabilities. Hicks (1946) explains that changes in the value of assets and liabilities may not reflect the maximum amount which can be spent during [a period], if the interest rate will change in the future ([ ] is added by the author). If the rate and other factors will change, we cannot spend the same amount as the changes in value of assets and liabilities. Hicks (1946) proposes that "Income No.2" is better under certain conditions. It explains that Income No.2 is the maximum amount that an individual can spend in the period and

still expect to be able to spend the same amount in each ensuing period. In short, if markets are incomplete and imperfect, it is necessary for us to posit the permanent income. If the revenue and expense view—incorporating ideas like accrual principles for costs, realization principles for revenue, and matching expenses with revenues principles—can contribute to establishing permanent incomes for investors, it may have an effective function in reporting useful information for them.

It seems that prior literature undertook international comparisons of earnings attributes under the Income No.1, that is, under the asset and liability view, presuming the market's completeness and perfection. As a result, it finds that common law countries and active minority investor protection countries are more transparent and timely than other countries.

However, to my knowledge, few studies attempt an international comparison of earnings attributes under the Income No.2, that is, under the revenue and expense view, given market incompleteness and imperfection. I examine the international comparison of matching expenses with revenues under these assumptions

2.3   The Effectiveness of Matching

There has been little attention to the concept of matching expenses with revenues over the last several decades. In the past, Paton and Littleton (1940) referred to matching as the "principal concern" and "fundamental problem" of accounting. However, major accounting standards setters, like the FASB or the IASB, have not gradually put more emphasis on the concept of matching. Why have they not focused on the concept of matching recently? I have two reasons. First, accounting studies place more emphasis on the usefulness of financial information to investors, based on market efficiency. Some accounting standards setters consider that matching makes earnings transparency decrease, because its process gives top executives some rooms to manage earnings. Therefore, accounting standards setters have not actively discussed about the matching or accrual process. Second, accounting standards setters have had more interests in the assets and liabilities view than the revenues and expenses view, because fair value accounting has been dramatically introduced into accounting standards with the development of financial engineering and the presence of flow information has been declined with the increase of loss-making firms. That is, financial reporting puts more emphasis on assets and liabilities view, not revenues and expenses view.

What consequences has the decline of the matching affected to investors and other stakeholders? As Dichev and Tang (2008) explained, accounting scholars are recently interested in the fundamental analysis, which is the study of whether and how our knowledge of accounting yields superior insights into firm performance and security valuation under market inefficiency. In particular, financial crisis in the U.S. and EU promotes investors deeply understanding in the importance of the fundamental analysis, because it has led to a loss of trust in the market efficiency

from investors. We need to reconfirm the roles of matching under market inefficiency, because investors and others need such type of studies.

Is matching effective for investors under market inefficiency? Su (2005) insists that proper matching of revenues and expenses has a smoothing effect on earnings, which improves the estimation of permanent incomes.

2.4   Research Agendas

Dichev and Tang (2008) examine the changing properties of matching expenses with revenues for 40 years in the U.S. They find that the degree of matching in U.S. companies has been decreasing for 40 years, leading to decreases in earnings persistence and increases in the volatility of earnings. They posit that decreases of matching are closely related to the chronological decreases of the value relevance of earnings. If this holds internationally, the degree of matching expenses with revenues would have decreased for several decades around the world. My first research theme is how the degree of matching has decreased over several decades worldwide. In addition, we analyze the differences in the degree of matching among countries or areas.

Second, I examine the relation between matching and the economic permanent income. If matching expenses with revenues is effective in estimating Income No.2, this accounting process is very important for financial information users. Matching expenses with revenues is the accounting process which defers the costs associated with future revenues (e.g. depreciation of plant, property, and equipment; amortization of deferred assets; or that of goodwill) and accrues expenses for making current revenues (e.g., allowance). Such an accruals process may stabilize financial performance. This research also examines the relationship between matching and the ratio of volatility of cash flows from operating activities divided by the volatility of earnings. If the ratio is larger, corporations can present economic permanent income by controlling the cash flows from operating activities.

Third, I examine the correlation between current changes in cash flows from operating activities and current changes in total accruals around the world. How can matching expenses with revenues contribute to presenting permanent incomes? The matching process comprises deferring the costs for making future revenues and accruing the expenses for making current revenues. We can assume that total accruals ($=$ earnings $-$ cash flows from operating activities) are the accounting number in which such an accrual process is reflected. This research focuses on the correlation between current changes of cash flows from operating activities and current changes of total accruals. If the correlation is significantly negative, deferred items and accrued items that are recognized through the matching process effectively makes earnings present permanent incomes.

Fourth, I examine the correlation between current changes of total accruals and next changes of cash flows from operating activities. How do managers use opportunities to smooth earnings? One way is to signal future financial performance

and another is for opportunistic earnings management. Although matching expenses with revenues can make earnings smooth and signal future performance, we can also insist that it plays an important role for the information user. At the same time, if managers actively do manage earnings in this way, the usefulness of financial information may worsen for information users. So, we examine the correlation between the current changes of total accruals and next changes of cash flows from operating activities.

3 Sample and Variables Definition

3.1 Data

The data for this research were obtained from Compustat Global Vantage and Compustat North America. Compustat Global Vantage contains up to 20 years of historical financial data from the annual reports of publicly-traded companies around the world; Compustat North America contains up to 40 years of historical financial data of public companies in North America. Banks and financial institutions are excluded from our dataset. We calculate whole world data, cultural area data, and country data from them.

The whole world data are calculated from listed firms worldwide, obtained from Compustat Global Vantage for fiscal years 1991–2010. However, I make four adjustments for this research. First, I remove samples whose sales or total assets are zero. Second, I replace the U.S. company data from Compustat Global Vantage with those data from Compustat North America, since not all U.S. company data is included in Compustat Global Vantage. Third, I remove data in the 2009 year because we cannot get data of all companies for that period. Fourth, there must be at least three consecutive years of each company's data. As a result, the final sample consists of 282,873 firm-year observations, across 100 countries and 30,537 non-financial firms, for the fiscal years 1991–2008.

The cultural areas data are classified according to the definition of cultural area from Djankov et al. (2008), who classify 49 countries into cultural areas. To be included in the sample, data for a cultural area must have at least 300 firm-year observations in each year for a number of accounting variables, including total assets, sales, net income, and operating income. The data is obtained from the world data mentioned above. As a result, the cultural areas data includes English-speaking, Western Europe, and the Far East areas.

This study also includes data, classified by country. To be included in the sample, country data must have at least 100 firm-year observations in each year for a number of accounting variables, including total assets, sales, net income, and operating income. The data is obtained from the world data, mentioned above, and sample country data includes Canada, China, France, Germany, India, Japan, Korea, the U.K., and the U.S.

Table 1 Descriptive statistics of sample firms, countries, and cultural areas

Countries, cultural areas, and world	Firms-years	Median sales	Median operating expenses	Median cash flows from operating activities	Median total accruals
Countries					
Canada	5,018	0.680	0.657	0.125	0.061
China	14,367	0.524	0.467	0.094	0.030
France	5,064	1.010	0.946	0.124	0.062
Germany	5,411	1.114	1.076	0.130	0.080
India	8,423	0.844	0.738	0.151	0.059
Japan	44,831	1.003	0.951	0.068	0.027
Korea	16,136	0.911	0.852	0.106	0.057
United Kingdom	9,572	1.054	1.003	0.131	0.062
United States	61,767	0.922	0.948	0.057	0.057
Areas					
English-speaking	86,470	0.890	0.909	0.071	0.057
Western Europe	26,084	0.985	0.930	0.129	0.069
Far East	109,970	0.863	0.806	0.088	0.037
World	282,873	0.872	0.836	0.094	0.051

The full sample consists of 282,873 firm-year observations for the fiscal years 1992–2007, across countries and non-financial firms. Financial accounting information was obtained as of March 2010. I included countries if their data contained at least 100 firm-year observations each year. As a result, I extracted country data for Canada, China, France, Germany, India, Japan, Korea, the United Kingdom, and the United States. I included cultural areas if their data contained at least 300 firm-year observations each year. As a result, I compiled data for English-Speaking, Western Europe, and the Far East areas. Data values are divided by total assets in the previous term. Total accruals are calculated as: (Δtotal current assets-Δcash) -(Δtotal current liabilities-Δshort-term debt-Δtaxes payables) -depreciation expense. Cash flows from operating activities are equal to operating income plus total accruals

Table 1 presents the number of firm-year observations per country, per cultural area, and for the whole world, as well as descriptive statistics for each data sample.

3.2 Measuring the Degree of Matching Expenses with Revenues

The first theme of this research is how different the degree of matching expenses with revenues is around the world and whether the degree of matching has decreased over several decades worldwide. I refer to the matching measures in Dichev and Tang (2008). They measure the degrees of matching as the β_2 based on Eq. (1):

$$Revenue_t = \alpha_0 + \beta_1 Expense_{t-1} + \beta_2 Expense_t + \beta_3 Expense_{t+1} + v_t \quad (1)$$

where Revenue$_t$ is the net revenues for the current period; Expense$_{t-1}$ is the Operating expenses for the previous period; Expense$_t$ is the Operating expenses for the current period; Expense$_{t+1}$ is the Operating expenses for the next period

Dichev and Tang (2008) hold that the degree of matching is reflected in the correlation between revenues and contemporaneous expenses. They expect that a higher correlation between revenues and non-contemporaneous expenses indicates poor matching and test this prediction by examining the temporal behavior of the coefficient in a regression of revenues on one-year-back, current, and one-year-forward expenses. They insist that the advantage of the multivariate specification is that it controls for the strong autocorrelation in expenses, which is especially important in examining the relation between revenues and non-contemporaneous expenses. In addition, they explain that, since past, current, and future expenses have about the same underlying variation, a comparison of the coefficients produces the same results as a comparison of the correlations between revenues and expenses. If the degrees of matching expenses with revenues are high, corporations can posit permanent income by deferring the costs for making future revenues and accruing expenses for making current revenues.

I examine two tests. First, I separate the time-series data into 1992–1999 data and 2000–2007 data, for the whole world, by area, and by country, and examine the differences between them using the Student's t-test and the Mann–Whitney's U-test. Second, I examine how the degrees of matching change in the data over 16years in each country, cultural area, and the whole world by using Eq. (2).

$$Matching_{c,t} = \phi_1 + \phi_2 year_{c,t} + \varepsilon \tag{2}$$

where Matching is the degree of matching at t fiscal year in each country (ϕ_2 based on the Eq. (1)).

3.3 Regression of Inverse Smoothness on the Degrees of Matching

The second question here is whether or not matching can contribute to the presentation of permanent incomes. This research draws on the smoothness measure in Leuz et al. (2003) and Francis et al. (2004) (Eq. (3)).

Smoothness refers to the firm-level standard deviation of operating incomes from t to $t + 4$ fiscal years divided by the firm-level standard deviation of cash flows from operations in the same period. Low values of these measures indicate that, ceteris paribus, insiders exercise accounting discretion to smooth reported earnings.

$$Smoothness = \sigma(OI_{t\sim t+4})/\sigma(OCF_{t\sim t+4}) \tag{3}$$

where $\sigma(OI_{t\sim t+4})$ is the Firm-level standard deviation of operating incomes from t to $t + 4$; $\sigma(OCF_{t\sim t+4})$ is the Firm-level standard deviation of cash flows from operating activities from t to $t + 4$.

However, I can give another perspective for smoothness, based on the revenue and expense view. Smoothness may play an important role in showing permanent incomes, because it reduces the volatility of earnings by altering the accounting components of earnings, that is, accruals. If the matching expenses with revenues can contribute to lowering the volatility of earnings and indicating permanent incomes, the degrees of matching are positively related to the stability of earnings, that is, φ_2 is significantly positive, based on Eq. (4). I adopt the independent variables as the inverse of smoothness, because smoothness indicates that low values of this measures exhibit large volatility of earnings. I examine how country-level matching is closely related to the smoothing or stability of earnings. To study this, I test the prediction by examining the temporal behavior of the coefficient in a regression of the inverse of smoothness on the degrees of matching.

$$Inverse\_Smoothness_{c,t} = \varphi_1 + \varphi_2 Matching_{c,t} + \varepsilon \qquad (4)$$

Inversepresents time-series changes in the degrees _Smoothness $= \sigma(OCF_{t\sim t+4})/\sigma(OI_{t\sim t+4})$.

3.4 The Correlation Between Current Changes in Total Accruals and Current Changes in Operating Cash Flows

The third theme of this research is to examine the process of matching. Accruals are made through the process of matching, and change, depending on the matching process, through which corporations can defer the costs for making future revenues and accrue expenses for making current revenues. If matching contributes to positing permanent incomes, accruals increase when cash flows from operating activities decrease and vice versa. I refer to the measure of earnings management in Leuz et al. (2003) to examine it. They propose the correlation between changes in accounting accruals and operating cash flow as the measures of earnings management. However, this study takes this measure as the extent of utilizing accruals for presenting permanent incomes. It is important to present the permanent income under the revenue and expense view, although earnings are subjective or sensitive to the managers' discretionary policy. I examine the differences of correlation between current changes in total accruals and current changes in operating cash flows in each country and each cultural area, and investigate the roles and functions of matching by examining them.

Table 2 Regression of revenues on previous, current, and future expenses. Model: $Revenue_t = \alpha_0 + \beta_1 Expense_{t-1} + \beta_2 Expense_t + \beta_3 Expense_{t+1} + \nu_t$

Year	Coefficient of past expenses(β_1)	Coefficient of current expenses(β_2)	Coefficient of future expenses(β_3)
1992	−0.077	1.046	0.03
1993	−0.003	0.874	0.12
1994	−0.076	1.022	0.057
1995	−0.093	1.047	0.042
1996	−0.021	0.976	0.044
1997	−0.018	0.95	0.065
1998	−0.005	0.903	0.099
1999	−0.042	1.004	0.036
2000	0.08	0.798	0.13
2001	0.01	0.799	0.172
2002	−0.027	0.836	0.16
2003	−0.076	0.947	0.096
2004	−0.074	0.985	0.063
2005	−0.048	0.95	0.074
2006	−0.04	0.925	0.091
2007	−0.046	0.906	0.115

Variables are deflated by the total assets in the previous period. $Expenses_t$ is the difference between revenue and operating income in the current period. $Expenses_{t-1}$ is the difference between revenue and operating income in the precious period. $Expenses_{t+1}$ is the difference between revenue and operating income in the next period. The regression was run on a cross-sectional basis each year. Our data are panel data and we adopts the ordinary least squares under the industry variables (SIC code) as the time-invariant regressor. The slope coefficients on past, current, and future expenses are reported in the table

3.5 The Correlation Between Current Changes in Total Accruals and Future Changes in Operating Cash Flows

The fourth theme of this research is to examine the signaling effects of accruals. As presented above, accruals are created through the process of matching. If accruals have the effect of signaling changes in future cash flows, changes in accruals are positively related to changes in future cash flows from operating activities. I examine the differences in the correlation between current changes in total accruals and next changes in operating cash flows in each country and each cultural area, and investigate the signaling effects of matching by examining them.

4 Results

4.1 Time-Series of Matching Around the World

First, I examine the changes in matching worldwide over 16 years. Table 2 and Fig. 1 present the expenses coefficients in each year. Figure 2 presents an international comparison of coefficients in regression of revenues on current expenses for
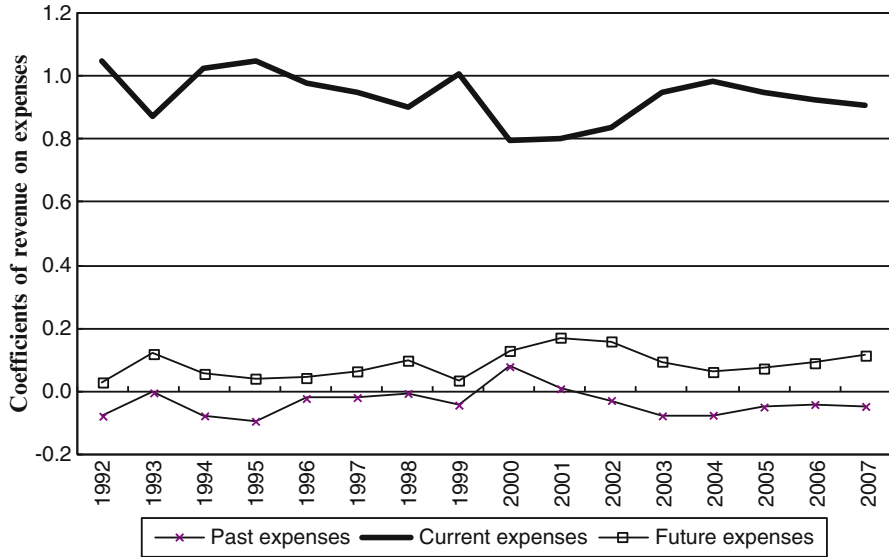
Fig. 1 Coefficients in regression of revenues on past, current, and future expenses, 1992–2007. This figure plots the slope of coefficients of regression of current revenues on past, current, and future expenses from year 1992 to year 2007 worldwide

1992–2007, that is, the degrees of matching over 16 years. These exhibits show that the coefficients seem to be decreasing during the period all over the world, especially in English-speaking areas like Canada, the United Kingdom, and the United States.

Table 3 shows the differences of coefficients on current expenses between 1992–1999 data and 2000–2007 data in each country, in each cultural area, and for the whole world.

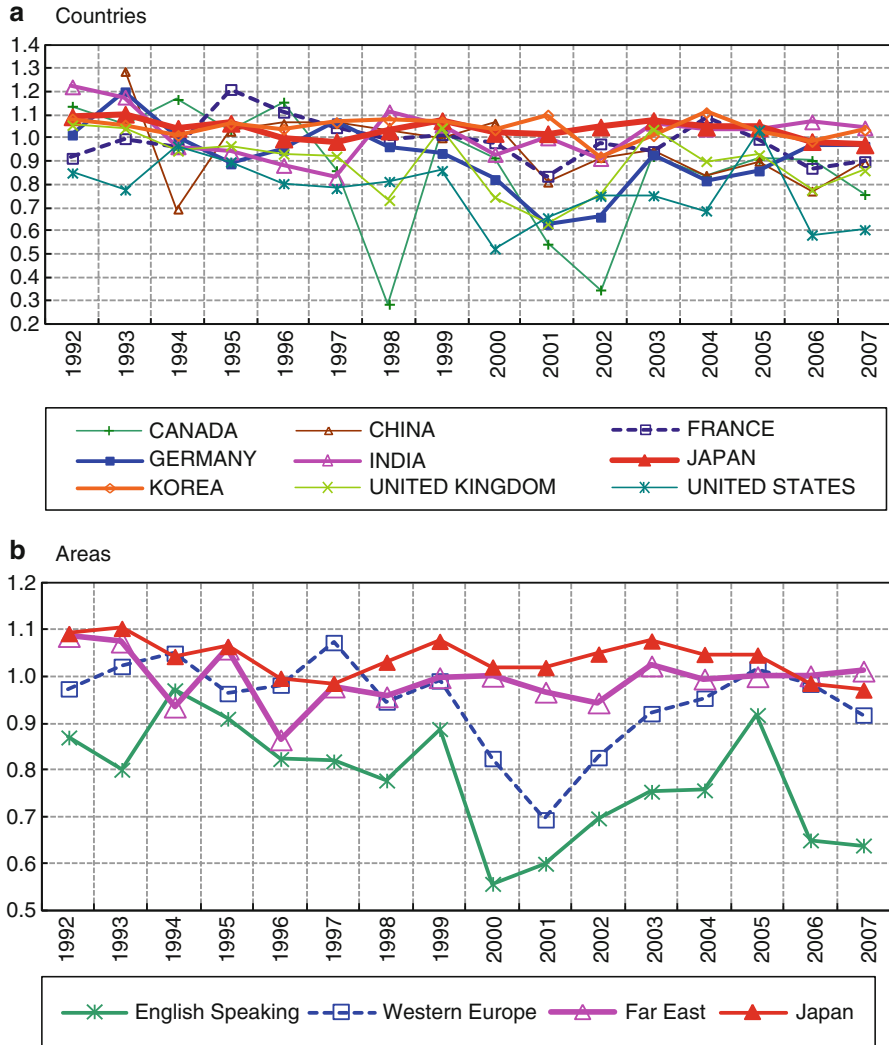The mean of coefficients on current expenses from 1992 to 1999 is 0.978 and that from 2000 to 2007 is 0.893 worldwide. The median of coefficients on that from 1992 to 1999 is 0.990 and that from 2000 to 2007 is 0.916 worldwide. The coefficients from 1992 to 1999 are more statistically significant than those from 2000 to 2007 worldwide, using the Student's t-test and the Mann–Whitney's U-test. These facts show that the correlation between revenues and non-contemporaneous expenses has increased, and so matching has become worse in the 2000s.

Is poor matching developing all over the world? For example, at the country-level, the 1992–1999 data for Germany, the United Kingdom, and the United States is more significant than their 2000–2007 data at the 5 % level statistically, and that of France and China at the 10 %. At the cultural area level, the 1992–1999 data for English-speaking and Western Europe areas is significantly higher than the 2000–2007 data at the 3 % level statistically, but of statistically insignificant difference in the Far East. These results indicate that poor matching is developing in English-speaking areas like the United Kingdom and the United States and Western

Fig. 2 International comparison of coefficients in regression of revenues on current expenses, 1992–2007. This figure shows the degree of matching by country and area. This research calculated the degree of matching as the coefficients in a regression of revenues on current expenses, based on Eq. (1). (**a**) Countries; (**b**) cultural areas

European area (Germany), but that matching is invariant in the Far East area, including India, Japan, and Korea.

Table 4 presents time-series changes in the degrees of worldwide matching, based on Eq. (2). The degree of matching is decreasing, but only statistically insignificantly. In addition, the degree of matching is decreasing statistically significantly in the English-speaking area, but insignificantly in Western Europe and the Far East areas.

Table 3 Differences between the coefficients of 1992–1999 data and 2000–2007 data around the world

	Countries									Cultural areas			
	Canada	China	France	Germany	India	Japan	Korea	United Kingdom	United States	English-speaking	Western Europe	Far East (excluding Japan)	World
Mean 1992–1999	0.965	1.025	1.030	1.003	1.023	1.049	1.058	0.955	0.845	0.858	1.000	0.994	0.978
Mean 2000–2007	0.768	0.894	0.949	0.832	1.013	1.027	1.028	0.830	0.700	0.697	0.893	0.993	0.893
Student t value	1.553	1.867	1.875	2.991	0.192	1.128	1.312	2.149	2.413	3.494	2.673	0.035	2.458
p value on difference	0.143	0.085	0.082	0.010	0.850	0.278	0.211	0.050	0.030	0.004	0.025	0.973	0.028
Median 1992–1999	1.048	1.031	1.007	0.983	1.010	1.054	1.064	0.957	0.833	0.847	0.987	0.988	0.990
Median 2000–2007	0.871	0.898	0.959	0.841	1.039	1.033	1.031	0.819	0.673	0.674	0.920	1.001	0.916
Mann–Whitney Z value	2.100	1.736	1.890	2.415	0.210	1.050	1.365	2.100	2.521	2.626	2.310	0.210	2.049
p value on difference	0.038	0.094	0.065	0.015	0.878	0.328	0.195	0.038	0.010	0.007	0.021	0.878	0.038

These tables show the results of using the differences between 1992–1999 data and 2000–2007 around the world. I use the student's t-test and Mann–Whitney's U test

Table 4 Regression of the degree of matching on year

	Countries									Cultural areas			
	Canada	China	France	Germany	India	Japan	Korea	United Kingdom	United States	English-speaking	Western Europe	Far East (excluding Japan)	World
Constant	1.065	1.102	1.047	1.032	1.032	1.072	1.067	0.991	0.880	0.894	1.001	1.005	0.986
Coefficients on year	−0.023	−0.016	−0.007	−0.014	−0.002	−0.004	−0.003	−0.012	−0.013	−0.014	−0.006	−0.001	−0.006
t value	−1.713	−2.073	−1.354	−1.923	−0.274	−2.020	−1.121	−1.749	−1.832	−2.383	−1.261	−0.450	−1.441
p value	0.109	0.059	0.197	.075	0.788	0.063	0.281	0.102	0.088	0.032	0.228	0.660	0.172
Adjusted R^2	0.114	0.191	0.053	0.152	−0.066	0.170	0.017	0.121	0.136	0.238	0.038	−0.056	0.067
Number of observations	16	15	16	16	16	16	16	16	16	16	16	16	16

This table presents coefficients, t values, and two-sided p values from regressing the degree of matching on year. The year variable used is the amounts, which year minus 1991

Table 5 Regression of the inverse of smoothness on the degree of matching

Constant	Matching	Adjusted R^2
−0.375	3.123	0.437
t-value = −1.169	t-value = 9.170	
p-value = 0.245	p-value = 0.000	

This table presents coefficients, t-values, and two-sided p-values from regression of the country-level inverse of smoothness as the dependent variable on the country-level degrees of matching. The inverse of smoothness is calculated as the firm-level standard deviation of cash flows from operating activities for 5 years ahead divided by the firm-level standard deviation of operating incomes for 5 years ahead. The degree of matching is the coefficient in a regression of revenues on current expenses, based on Eq. (1)

Comparing the 1990s with the 2000s, the degree of matching in the latter is lower than that in the former in English-speaking area, Western Europe area, and in the whole world, in short, poor matching is developing in the 2000s. Examining time-series analysis, the degree of matching has become weaker to a statistically significant degree only in English-speaking area over 16 years.

4.2 Can Matching Make Earnings Stable?

I also focus on the effects of matching on the stability of earnings. To examine it, I analyze the relation between the country-level inverse of smoothness and the country-level degrees of matching. Smoothness is calculated as the firm-level standard deviation of operating incomes for 5 years ahead divided the firm-level standard deviation of cash flows from operating activities for 5 years ahead. The country-level inverse of smoothness is the median of the firm-level standard deviation of cash flows from operating activities for 5 years ahead divided by the firm-level standard deviation of operating incomes for 5 years ahead in each country. The degree of matching is the coefficient in a regression of revenues on current expenses, based on Eq. (1).

The results are shown in Table 5. This table shows that the degrees of matching are positive related to the stability of earnings at a statistically significant level. The results indicate that matching makes the ratio of change in operating incomes to changes in cash flows from operating activities stable. In short, matching contributes to presentation of permanent incomes, controlling the volatility of earnings.

4.3 The Correlation Between the Current Changes in Cash Flows from Operating Activities and Total Accruals

Third, I focus on accruals, which are composed of deferred items and accrued items, as identified through the process of matching. Why are the degrees of matching in English-speaking areas like Canada, the United Kingdom, and the United States not

lower than in other areas? I think that total accruals, being made through the process of matching, are different in English-speaking area from that in other areas. To examine this, I analyze the correlation between current changes in cash flows from operating activities and total accruals; Fig. 3 presents the results. This figure indicates that the correlation in English-speaking area is negative, but is higher than in other areas. Negative values mean that total accruals have the function to control the volatility of earnings. Higher values mean that the ability to control the volatility of earnings is weaker. This figure shows that total accruals have less effectiveness in the English-speaking area than in other areas.

The reason for this result is that accounting standards setters in English-speaking area are actively introducing impairment accounting or fair value accounting, so that changes of earnings are indifferent to the changes in cash flows from operating activities. In addition, the countries in English-speaking area have the corporate taxes systems which are separate from financial accounting systems, so top managers have little incentive to smooth earnings.

4.4 The Correlation Between Next Changes in Cash Flows from Operating Activities and Current Changes in Total Accruals

I focus, fourth, on the signaling effects of accruals. Dechow (1994) and Barth et al. (2001) contend that accruals have the information contents to predict future cash flows. Meanwhile, Lev et al. (2009) and Yoder (2007) do not find the informational usefulness of accruals. How different are signaling effects around the world? To examine this, I calculate the correlation between next changes in cash flows from operating activities and current changes in total accruals around the world. Figure 4 presents the results. This figure indicates that the correlation in English-speaking area, like Canada, the United Kingdom, and the United States is lower than in other areas. Lower values indicate a weak ability to predict future cash flows from operating activities. This figure shows that total accruals, which are made through the matching process, have less predictive ability in English-speaking area than in other areas. These results indicate that matching in the Far East area has an important role in presenting permanent incomes and has less of a role in English-speaking area.

4.5 Additional Analysis: Payout Behavior

Why is matching important in the Far East area and less so in English-speaking area? This study investigates payout behavior around the world to tackle with the issues.
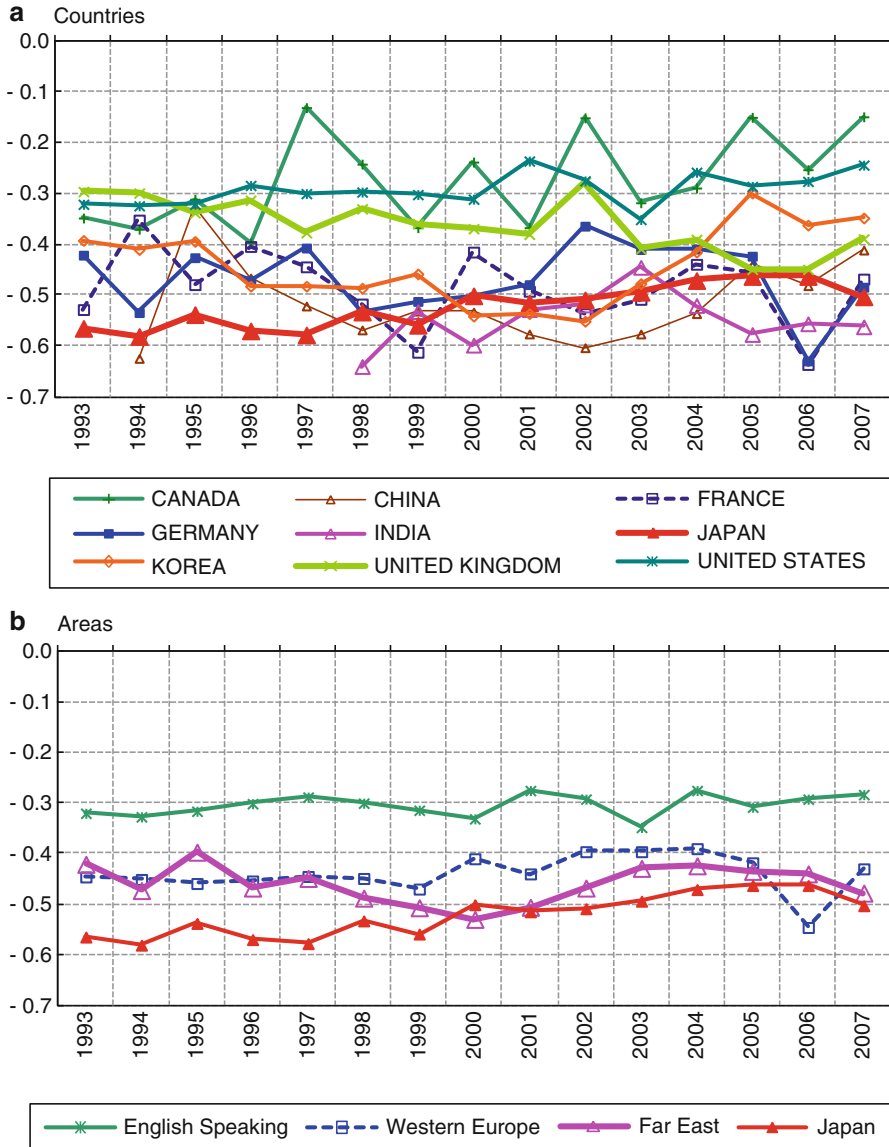
Fig. 3 The correlation between the current changes in total accruals and cash flows from operating activities, 1992–2007. These figures show the correlation between current changes in cash flows from operating activities and current changes in total accruals by country and area. Total accruals are calculated as: (Δtotal current assets-Δcash) -(Δtotal current liabilities-Δshort-term debt-Δtaxes payables) -depreciation expense. Cash flows from operating activities are equal to operating income plus total accruals. (**a**) Countries; (**b**) cultural areas

a Countries
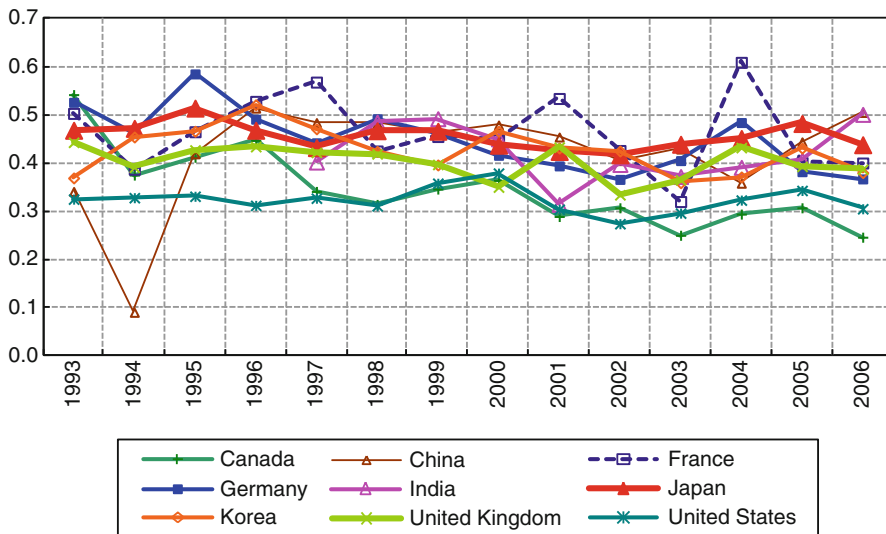
b Areas
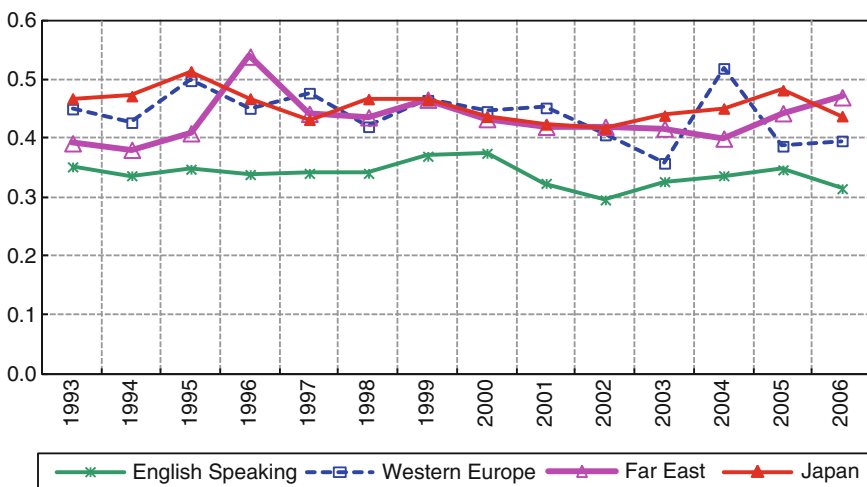
Fig. 4 The correlation between the current changes in total accruals and the next changes in cash flows from operating activities, 1993–2006. These figures show the correlation between next changes in cash flows from operating activities and current changes in total accruals by country and area. Total accruals are calculated as: (Δtotal current assets-Δcash) -(Δtotal current liabilities-Δshort-term debt-Δtaxes payables) -depreciation expense. Cash flows from operating activities are equal to operating income plus total accruals. (**a**) Countries; (**b**) cultural areas

Table 6 Profits sharing around the world

Countries and cultural areas	Dividends paid (%)		Stable dividends (%)		Tax paid (%)	
	1992–1999	2000–2007	1992–1999	2000–2007	1992–1999	2000–2007
Countries						
Canada	59.610	43.409	37.146	16.357	67.329	62.987
China	26.998	38.904	4.242	3.422	87.316	85.110
France	76.711	49.710	4.350	7.625	89.103	77.800
Germany	74.184	60.861	3.263	8.252	91.932	84.065
India	81.439	56.403	27.732	17.913	79.463	87.498
Japan	73.657	80.381	32.726	32.435	98.212	98.153
Korea	36.642	50.528	5.871	10.840	87.815	72.012
United Kingdom	83.066	58.647	7.546	6.210	83.643	62.209
United States	64.578	36.478	51.033	20.600	66.147	60.251
Areas						
English-speaking	64.897	40.092	44.608	15.890	68.127	57.581
Western Europe	75.576	60.335	6.148	10.246	89.852	81.334
Far East	62.283	62.960	21.161	17.151	91.867	86.811

This table indicates that corporations in the English-speaking area tend to pay no dividends and taxes, while those in the Far East area tend to pay dividends, stable dividends, and taxes. In particular, corporations in the Far East area, especially Japan, place more emphasis on non-zero taxes, dividends, and stable dividends than those in countries in English-speaking area, like the United Kingdom and the United States

Table 6 shows the proportion of companies that paid dividends, stable dividends, and taxes in the total samples by country and area. "Taxes paid" means the ratio of the companies, of which income taxes minus deferred taxes (income account) are positive, in the total samples. "Dividends paid" means the ratio of the companies, of which dividends per share are positive, in the total samples in each year. "Stable dividends" means the ratio of the companies, of which current dividends per share are equal to the previous one and current dividends per share are non-zero, in the total samples in each year.

5 Summary and Conclusions

This research investigates how the properties of matching expenses with revenues have changed over 16 years. In addition, I examine how different the roles and functions of the accruals, as made through the process of matching, are around the world.

First, I examine the changes in matching over 16 years worldwide, with reference to Dichev and Tang (2008). The results show that the degree of matching in the 2000s is lower than that in the 1990s, at a statistically significant level, if not uniformly all over the world. The matching worsens statistically significantly in English-speaking area, like Canada, the United Kingdom, and the United States, over 16 years, while it does not necessarily decrease in the Far East area, excluding

China. In Western Europe area, the degrees of matching in Germany decrease, but those in France do not necessarily decrease over the period.

Second, I investigate the relation between the stability of earnings and the degree of matching by using the country-based data. The results show that the degrees of matching are positively related to the stability of earnings at a statistically significant level. In short, matching contributes to positing permanent incomes, controlling the volatility of earnings.

Third, I focus on the roles and functions of accruals, which are made through the process of matching. I investigate the correlation between current changes in cash flows from operating activities and total accruals. The results indicate that the correlation in English-speaking area is negative, but is higher than in other areas. Negative values mean that total accruals have the function to control volatility of earnings; higher values indicate a weaker ability to control volatility of earnings. This result shows that total accruals have been less effective in English-speaking area than elsewhere. English-speaking countries have actively adopted fair value accounting. In addition, tax systems in English-speaking areas are separate from accounting systems, so managers have less incentive to smooth income.

Fourth, I focus on signaling effects of accruals. This study calculates the correlation between next changes in cash flows from operating activities and current changes in total accruals around the world. The results indicate that the correlation in English-speaking area is lower than in other areas. Lower values imply a weak ability to predict future cash flows from operating activities. This figure shows that total accruals have less predictive ability in English-speaking area than in other areas. These results indicate that matching in the Far East area has an important role in presenting permanent incomes, but less of a role in English-speaking area.

These facts indicate that there are different uses or evaluations of matching around the world. In particular, the roles and functions of matching in English-speaking area are different from those in the Far East area. The degree of matching has tended to decrease over 16 years, and the roles and functions of matching in smoothing income or presenting future income are relatively small in English-speaking area, while the degree of matching has not decreased and its roles and functions are relatively important in the Far East area, especially India, Japan, and Korea.

Why is matching in the Far East area important and not in English-speaking area? The key to figuring this out lies in payout behavior. This research shows that corporations in English-speaking area tend to pay no dividends or taxes, and that those in the Far East area tend to pay dividends, stable dividends, and taxes. That is, corporations in the Far East area, especially Japan, place more emphasis on the non-zero taxes, dividends, and stable dividends per share than those in English-speaking area.

To continue with their stable payout policy, corporations in the Far East area want permanent incomes. Corporations tend to think that they do not need to recognize temporal shocks or changes in current profits or losses, and corporations in the Far East area place special emphasis on the continuity of stable profit-sharing,

so matching or accruals of it play an important role in posting the permanent income. Such an earnings view fits with the Hicks's Income No.2, which seems to embody such distributability or stability of earnings.

Meanwhile, if corporations do not adhere to stable payouts, they permit changes in value of assets or liabilities to appear as earnings. Especially, corporations in English-speaking area actively execute M&A deals (e.g., Jackson and Miyajima 2007), and so are strongly interested in their own share price. This sanctions the earnings view, which reflects temporary shocks or changes in corporations as soon as possible because it promotes the development of a market for the company's stock or bond, or allows a corporation to make M&A transactions easily. Such an earnings view corresponds to Hicks's Income No.1, which highlights changes in value of economic assets and liabilities. Under this view, accruals are the lever of earnings management and the noises of information for investors because stock markets can see through the opportunistic behavior of managers.

Corporations in the Far East area tend to put emphasis on profit-making to continue their stable payouts. Meanwhile, corporations in English-speaking areas do not necessarily place emphasis on timely payouts, so they tend to permit loss-making. In fact, Fig. 5 shows that there are relatively many profit-making corporations in the Far East area and many loss-making corporations in the English-speaking area.

Itami (2008) explained that there are two types of corporate systems-organization-oriented corporate and market-oriented corporate systems. Itami (2008) defines organization mechanisms as "allocating resources and cooperating among them all through the coordination by the organizational hierarchy," and defined market mechanisms as "the pattern of transaction where individual economic units consider only their self-interest and decide which party to transact with and how much to transact at what price freely without command from some other party." On the basis of these definitions, it was pointed out that an organization-oriented corporate system is a corporate system that emphasizes an organization mechanism, and a market-oriented corporate system is one which emphasizes a market mechanism. Furthermore, an organization-oriented corporate system is good at learning and accumulation, while a market-oriented corporate system is good at utilization and experimentation.

The results of this study show that corporations in the Far East area fit the organization-oriented corporate system model and those in English-speaking area correspond to the market-oriented corporate system model. I think that corporations in the Far East area place emphasis on stable payouts to build stable relationships with their stakeholders, while those in English-speaking are place emphasis on timeliness and conservatism for the development of their stock market and utilize that market.

Table 7 summarizes the differences of accounting systems between English-speaking area and the Far East area. Accounting systems in each country or area have developed under a particular institutional system, which is composed of economic, law, and corporate systems. Each system is complementary with other systems and has path-dependence in itself. Naturally, accounting systems have been
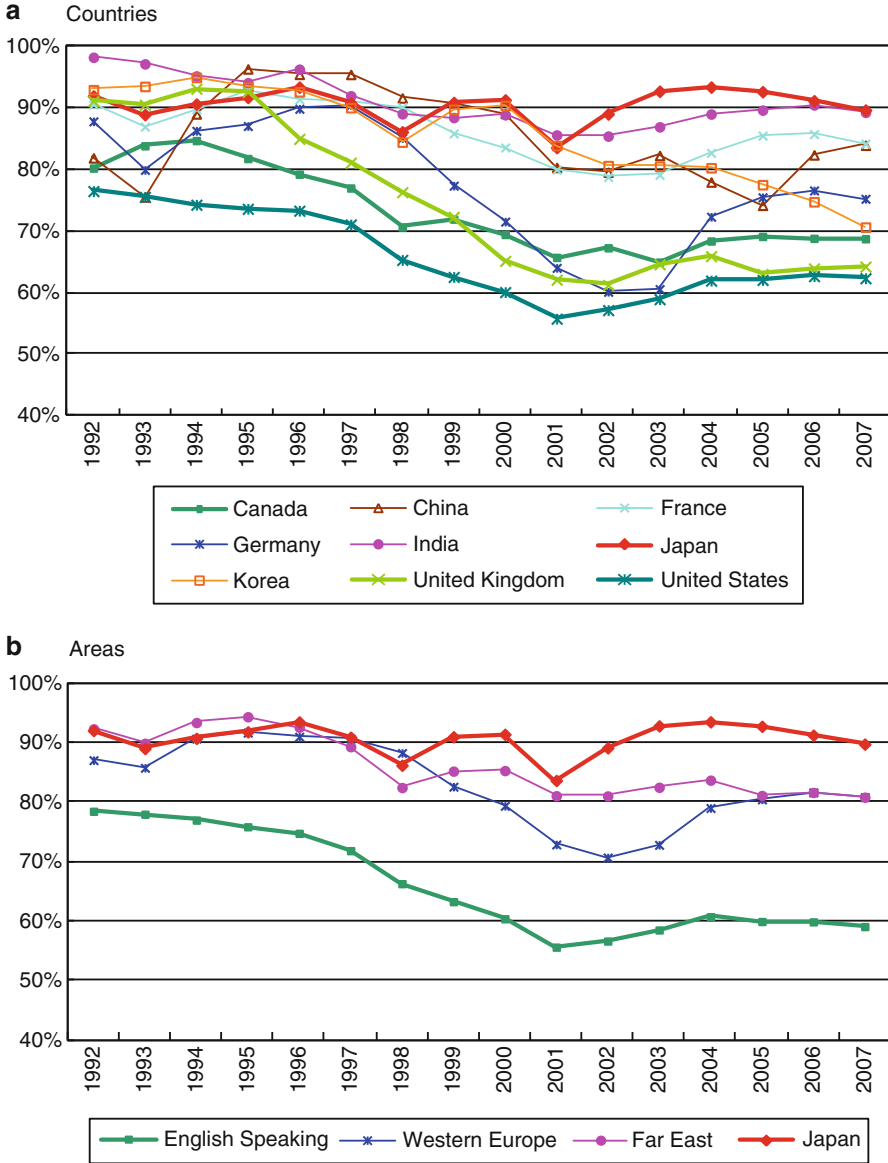
a   Countries

b   Areas

Fig. 5 International comparison of the profit-making companies in the total sample, 1992–2007 (operating income). These figures show the profit-making companies in total samples by country and area. (**a**) Countries; (**b**) cultural areas

influenced by the history of these and their related systems. In addition, accounting systems may be related to the competitiveness of nations and corporations. However, if we instinctively and uncritically accept the convergence toward or adoption of the IFRS, the results may include the disappearance of economic effects, which

Table 7 The differences between accounting systems of the English-speaking area and the Far East area

English-speaking	Areas	Far East
Income No.1	Hicks income	Income No.2
Completeness and perfectness	Assumptions of market	Incompleteness and imperfectness
Assets and liabilities view	Earnings concepts	Revenues and expenses view
Not logical	Matching	Important
Timeliness and transparency	Important earnings attributes	Stability and persistence
Opportunistic behavior	Perspective for accruals	Signaling the future cash flow
Timely	Payout	Stable
Market-oriented	Corporate system	Organization-oriented

occur under each accounting systems. As a result, there may be negative impacts on the competitiveness of nations and corporations.

If accounting standards setters put less emphasis on accounting concepts from the revenues and expenses view, like matching and accruals, the result may be substantial impacts on each economic, law, and corporate system, especially in the Far East area. We must examine the economic effects, roles, and functions of the revenues and expenses view and conduct further theoretical and empirical studies. The purpose of this study is to provide such evidence.

However, this study has some problems. First, the length of the research term is short, compared to Dichev and Tang (2008) due to the database that this research utilizes—data for the previous decade is not available from Compustat Global Vantage. Second, the study does not adequately examine differences in the accounting standards of each country or area. These problems will provide the focus of future research.

References

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics, 29*, 1–51.

Ball, R., Robin, A., & Wu, J. S. (2003). Incentive versus standards: properties of accounting income in four East Asian countries. *Journal of Accounting and Economics, 39*, 235–270.

Barth, M. E., Cram, D., & Nelson, K. (2001). Accruals and the prediction of future cash flows. *The Accounting Review, 76*(1), 27–58.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics, 24*(1), 3–37.

Beaver, W. H., & Demski, J. S. (1979). The nature of income measurement. *The Accounting Review, 54*(1), 38–46.

Bromwich, M., Macve, R., & Sunder, S. (2010). Hicksian income in the conceptual framework. Working Paper, London School of Economics, pp. 1–40.

Brown, S., Lo, K., & Lys, T. (1999). Use of R2 in accounting research: Measuring changes in value relevance over the last four decades. *Journal of Accounting and Economics, 28*(2), 83–115.

Bushman, R., & Piotroski, J. (2006). Financial reporting incentives for conservatism accounting: The influence of legal and political institutions. *Journal of Accounting and Economics, 42*(1–2), 107–148.

Christensen, H. B., Hail, L., & Leuz, C. (2012). Mandatory IFRS reporting and changes in enforcement. Working Paper, University of Chicago.

Collins, D., Maydew, E., & Weiss, I. (1997). Changes in the value-relevance of earnings and book values over past forty years. *Journal of Accounting and Economics, 24*(1), 39–67.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance. The role of accounting accruals. *Journal of Accounting and Economics, 18*(1), 3–42.

Dichev, I. D., & Tang, V. W. (2008). Matching and the changing properties of accounting earnings over the last 40 years. *The Accounting Review, 83*(6), 1425–1460.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics, 88*, 430–465.

Francis, J., Lafond, R., Olsson, P. M., & Schipper, K. (2004). Cost of equity and earnings attributes. *The Accounting Review, 79*(4), 967–1010.

Hail, L., Leuz, C., & Wysocki, P. D. (2010). Global accounting convergence and the potential adoption of IFRS by the U.S. (part. 1) conceptual underpinnings and economic analysis. *Accounting Horizon, 24*(3), 355–394.

Hicks, J. R. (1946). *Value and capital: An inquiry into some fundamental principles of economic theory*. Oxford: Clarendon.

Itami, H. (2008). Organization accumulates knowledge, market utilizes. *Hitotsubashi Business Review, 55*(4), 8–21.

Jackson, G., & Miyajima, H. (2007). Varieties of takeover markets: Comparing mergers and acquisitions in Japan with Europe and the USA., RIETI Discussion Paper.

Lev, B., Li, S., & Sougiannis, T. (2009). The usefulness of accounting estimates for predicting cash flows and earnings. *Review of Accounting Studies, 15*(4), 779–807.

Lev, B., & Zarowin, P. (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research, 37*(2), 353–388.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics, 69*, 505–527.

Paton, W. A., & Littleton, A. C. (1940). *An introduction to corporate accounting standards*. American Accounting Association, Chicago.

Su, S. Y. S. (2005). To match or not to match? *The British Accounting Review, 37*, 1–21.

Yoder, T. R. (2007). The incremental predictive ability of accrual models with respect to future cash flows. Working Paper, University of Nebraska at Omaha.

Does Comprehensive Income Influence Dividends? Empirical Evidence from Japan

Kunio Ito and Takuma Kochiyama

Abstract This study examines whether comprehensive income (CI) and other comprehensive income (OCI) influence dividends of Japanese companies. While CI is considered to be the new "bottom line" of income statements of companies, the impact on dividends has not been examined empirically. Lintner (1956. *The American Economic Review, 46,* 97–113) and subsequent studies predict that only earnings that are more persistent and less volatile are related to dividends. Contrary to this prediction, our findings suggest that both CI and OCI have positive coefficients with dividend changes. Moreover, we further find that negative OCI is more likely to result in lower dividends. We propose several explanations for our findings.

Keywords Comprehensive income • Dividend • Earnings persistence • Fair value accounting • Other comprehensive income

1 Introduction

Comprehensive income (CI) is now regarded as the new "bottom line" of income statements of companies. International Accounting Standards (IAS)/International Financial Reporting Standards (IFRS) and the US GAAP have made attempts to encourage companies to disclose CI in their income statements. Similarly, as a result of convergence of Japanese GAAP with IAS/IFRS, Japanese companies have also been mandated to disclose CI as of March 2011.

As this new concept of accounting income emerges, we question whether CI plays the same role as that played by traditional accounting income (e.g., net

K. Ito • T. Kochiyama (✉)
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: CD112001@g.hit-u.ac.jp

income (NI)) has played. Historically, accounting income has been considered to play two different roles from two fundamental perspectives: information (or equity valuation) and contracting perspectives. Under the information perspective, accounting income is presumed to provide useful information for equity valuation especially to external investors, while under the contracting perspective, it serves as a reference to economize transaction costs in contracts between companies and various outside stakeholders (e.g., Watts and Zimmerman 1986).

However, the economic role of CI has been explained mainly from the information perspective. The Accounting Standards Board of Japan (ASBJ) states that CI is introduced to provide useful information on a company's business for financial statement users such as investors (ASBJ Statement No.25, para. 21: Accounting Standards Board of Japan 2010). Also, the Financial Accounting Standards Board (1997) states that "the information provided by reporting CI should assist investors, creditors, and others in assessing an enterprise's activities and the timing and magnitude of an enterprise's future cash flows" (SFAS No.130, para.12).

On the basis of the intention of those setting the standard, a number of previous studies focus on the usefulness of CI from the information perspective (e.g., Biddle et al. 1995; Dhaliwal et al. 1999; O'Hanlon and Pope 1999; Cahan et al. 2000; Biddle and Choi 2006; Chambers et al. 2007; Wakabayashi and Yaekura 2008; Roberts and Wang 2009, etc.). For example, using a US sample, Dhaliwal et al. (1999) assess the value relevance of CI; O'Hanlon and Pope (1999), Cahan et al. (2000), and Wakabayashi and Yaekura (2008) conduct similar analyses using samples from the UK, New Zealand, and Japan, respectively; and Roberts and Wang (2009) compare the value relevance of CI among EU countries.

In light of these arguments, however, we take a different perspective on the role of CI and estimate that it provokes economic consequences in terms of contracts. Developing the concept of "economic consequences," Zeff (1978) emphasizes that reported accounting income influences not only external investors but also creditors and regulators. From managerial perspective, Prakash and Rappaport (1977) introduce the concept of "information inductance" and argue that disclosing accounting information alters managerial behaviors because managers preliminarily predict the consequences of the disclosure. Assuming that CI provides new information about a company's position relative to capital market fluctuations, it is likely that it increases managers' accountability and influences contracts as well as managerial behaviors (e.g., Bamber et al. 2010).

In this study, we focus our attention on dividends, as an implied contract between managers and shareholders. While some studies argue that dividends are becoming less important as a payout to shareholders (e.g., Fama and French 2001; Brav et al. 2005), Denis and Osobov (2008) find that dividends are still predominant and economically significant in developed countries. In particular, Kagaya (2011) shows that Japanese companies are more likely to pay dividends and prefer stable dividend policies compared with companies in other developed countries (e.g., Australia, France, Germany, Italy, Spain, the UK, and the US). Furthermore, Kagaya discusses how such dividends help Japanese managers build stable relationships with shareholders and enable a long-term management style of Japanese companies.

Therefore, it is economically important to investigate whether the changes in accounting income affects dividends, especially, in Japan.

However, the relationship between the new accounting income and dividends has not been examined at either a national or international level. Brüggemann et al. (2013) classify the impact of IFRS/fair value accounting on dividends as an "unintended" economic consequence and highlight the scarcity of studies. Similarly, Beatty (2007) states the limited availability of studies that investigate changes in managerial behaviors in response to accounting changes.

Motivated by the need for such research, we examine whether and how CI influences dividends. To assess the impact, we apply the framework proposed in Lintner (1956) to a Japanese setting, in which most companies regularly pay dividends (e.g., Denis and Osobov 2008) and the amount of OCI is considerably large (e.g., Ito 2011). The Lintner framework formalizes the link between dividends and earnings components, and predicts that companies prefer stable dividend development in relation to earnings. Thus, assuming that CI is volatile and temporal earnings stem from market fluctuations (e.g., Bamber et al. 2010), we predict that CI is irrelevant in terms of dividends.

We analyze this hypothesis in a sample of more than 29,000 firm-year observations of Japanese listed companies during 2003–2010. Our regression analyses using the full sample show that both CI and OCI have statistically significant positive correlations with dividends at the 1 % level. However, this result for CI presumably stems from the NI contained within CI because they are strongly and positively correlated. Furthermore, when we divide our sample on the basis of OCI, we find that while positive OCI has no significant coefficient, negative OCI is positively correlated with dividends at the 1 % level. Overall, our results imply that OCI results in lower dividends in Japan.

This study makes several contributions to the literature. First, to the best of our knowledge, this study is first to investigate the role of CI from a contracting perspective. Prior studies have examined mainly the value-relevance of CI, therefore leaving other aspects unexamined. Second, our findings contribute to the literature on economic consequences of fair value accounting. While prior studies argue the pros and cons of fair value accounting (e.g., Ball 2006; Laux and Leuz 2009; Kothari et al. 2010), empirical evidence on economic consequences is considered to be still in infancy. This is evident particularly in terms of the impacts other than capital market effects and accounting attributes (Beatty 2007; Biondi and Suzuki 2007; Brüggemann et al. 2013). Finally, our findings contribute to the literature on the legal capital regime. From the corporate law perspective, regulators and scholars have been concerned that the introduction of fair value accounting may trigger the distribution of unrealized profits (e.g., Pellens and Sellhorn 2006; KPMG 2008). However, we show that OCI, which is an unrealized accounting earnings component, results in lower dividends rather than the distribution of unrealized profits.

This study is structured as follows. The next section provides a theoretical background to explain the relationship between accounting income and dividends.

Section 3 describes our research design, sample, and variables. Section 4 discusses the results of our analyses and the interpretation of those results. Section 5 concludes.

2 Prior Studies and Hypothesis Development

2.1 Prior Studies on Accounting Income and Dividends

The importance of accounting income in determining dividends is well established in prior studies (e.g., Jensen and Meckling 1976; Watts 1977). The formal relationship between accounting income and dividends was developed in the seminal work of Lintner (1956). Based on 28 interviews with the US companies, Lintner finds that companies predetermine their current year dividends compared with that of the previous year, instead of determining dividends of each year independently on the basis of that year's earnings. The major implication of his findings is that companies prefer stable dividend development in relation to earnings, and thus dividends are determined on the basis of long-term rather than temporal earnings (Brav et al. 2005; Guttman et al. 2010).

On the basis of his findings and framework, a number of studies have shown that dividends are related to persistent earnings.[1] Edwards and Mayer (1985) show that the UK-based companies tend to reduce dividend payouts only when they face a persistent decline in earnings. Using the "persistent earnings" model, Kormendi and Zarowin (1996) find that dividend payouts are higher in firms with more persistent earnings, and Jagannathan et al. (2000) report that only the permanent component of accounting income significantly affects dividend changes. Replicating the survey in Brav et al. (2005) in a sample of Japanese companies, Hanaeda and Serita (2008) find that over 80 % of the managers consider long-term change rather than temporal change in NI as important in determining dividends. Finally, Skinner and Soltes (2011) and Aoki (2011) report that the earnings of companies paying dividends in the US and Japan, respectively, are more persistent than non-dividend paying companies.

2.2 Questionnaire Survey Investigation

Since the relationship between CI and dividends has never been addressed either theoretically or empirically, we conduct a survey investigation to examine how

---

[1] In contrast, several studies have found that temporal earnings also affect dividends (Goncharov and van Triest 2011; Kochiyama 2012). However, since they focus on the temporal earnings component contained within net income, it is controversial whether their implications are applicable to CI.

Table 1 Payout policies in Japanese companies (N = 208)

Pay dividends stably on the Basis of DPS (%)	Pay dividends stably on the Basis of unconsolidated payout ratio (%)	Pay dividends stably on the Basis of consolidated payout ratio (%)	Prefer stock repurchase (%)
58.2	9.1	29.8	2.9

Table 2 Dividend policy choice in specific situations (N = 208)

	Stable or increase (%)	Decrease or no dividends (%)	I do not know (%)
Q1. NIBEI and NI < 0	15.9	55.7	28.4
Q2. NIBEI > 0, NI < 0	43.8	27.4	28.8
Q3. NIBEI and NI > 0, CI < 0	51.4	10.1	38.5
Q4. NIBEI and NI < 0, CI > 0	26.9	23.6	49.5

NIBEI, net income before extraordinary items; NI, net income; CI, comprehensive income

Japanese companies perceive CI in terms of dividend determination. We use a structured postal questionnaire to assess senior officers in the investor relations (IR) divisions of all 3,700 Japanese listed companies. We obtained 208 valid responses (response rate of 5.62 %).[2]

Table 1 shows the results of the questionnaire on companies' dividend policies. While approximately 58 % of Japanese companies aim to keep dividend per share (DPS) stable, the rest of 39 % are likely to determine dividends on the basis of their current NIs. Moreover, Japanese companies prefer dividends to stock repurchases, and are more likely determine their dividends on the basis of consolidated NI. These results are highly consistent with the findings of Hanaeda and Serita (2008).

Table 2 shows the results of the questions on dividends choices for specific situations. To investigate perceptions of CI in the context of dividends, we specify four situations on the basis of three basic accounting incomes: NI before extraordinary items (NIBEI), NI, and CI. First, by comparing the results for Q1 and Q4, we obtain the "net effects" of positive CI. While the percentage of companies that chose "stable or increase" rose from 15.9 % (Q1) to 26.9 % (Q4), the companies that chose "decrease or no dividend" reduced from 55.7 % (Q1) to 23.6 % (Q4). However, at the same time, the answers for "I do not know" significantly increased from 28.4 % (Q1) to 49.5 % (Q4).

Second, on comparing the results of Q3 with Q4, the importance of NIBEI and NI is evident in determining dividends. Majority of the surveyed Japanese companies (51.4 %) chose "stable or increase" as long as their NIBEI and NI are positive (Q3), which is significantly higher than 26.9 % reported in Q4 (i.e., both NIBEI and NI are negative but CI is positive). Furthermore, considering that the "I do not

---

[2] The questionnaire was sent in January 2011 and collected in April of the year.

know" percentages for questions including CI are relatively high (38.5 % and 49.5 % for Q3 and Q4, respectively), Japanese companies may be unsure how to utilize CI in determining their dividends.

Overall, our survey data show that NIBEI and NI are key factors in determining dividends. Although we do not have decisive evidence on how CI affects dividends, some respondents do alter their dividends when information on CI is added.

2.3 Hypothesis Development

CI includes unrealized profit and loss on the following accounting items, referred to as OCI: (1) available-for-sale securities; (2) foreign currency translation adjustments; and (3) hedging and derivative activities. Since these items capture and reflect uncontrollable market trends and fluctuations at their fair values, both CI and OCI are expected to be volatile and temporal (e.g., Barth et al. 2001; Plantin et al. 2008; Goncharov and van Triest 2011). Indeed, Barth et al. (1995) and Bamber et al. (2010) show that CI is generally more volatile than NI for US companies. Similarly, Ito (2011) shows the same results for Japanese companies and reports that the variation coefficient for CI is significantly higher than that for accounting incomes.

As demonstrated by several prior studies, if dividends are determined on the basis of persistent earnings, then volatile CI will not affect dividends. We therefore hypothesize that both CI and OCI are not significantly correlated with dividends.

Note that this hypothesis has two underlying assumptions: both CI and OCI are temporal earnings, and managers assess the persistence of CI correctly. For the former, we check the persistence of each accounting income as a robustness check; however, for the latter, there is no conclusive evidence on how managers perceive the implications of CI at a specific moment. We return to this issue in Sect. 4.

3 Research Design and Sample Description

3.1 Research Design

We applied Lintner's partial adjustment model to evaluate the relationship between CI and dividends, which implies that dividend changes can be modeled as a function of current earnings and previous dividends (Lintner 1956). We begin with the model as modified by Fama and Babiak (1968), which shows that incorporating lagged NI enhances the explanatory power of the model. Equation (1) represents the original regression model:

$$\Delta DIV_{i,t} = \alpha_0 + \alpha_{1,i}NI_{i,t} + \alpha_{2,i}NI_{i,t-1} + \alpha_{3,i}DIV_{i,t-1} + \varepsilon_{i,t}, \tag{1}$$

where $\Delta DIV_{i,t}$ and $DIV_{i,t-1}$ are dividend changes from year $t-1$ to year t and lagged dividends, respectively, while $NI_{i,t}$ and $NI_{i,t-1}$ represent NIs for year t and $t-1$, respectively.

To incorporate CI into the model, we replace $NI_{i,t}$ with $CI_{i,t}$, which indicates CI for year t. The model after the replacement is as follows:

$$\Delta DIV_{i,t} = \beta_0 + \beta_{1,i}CI_{i,t} + \beta_{2,i}NI_{i,t-1} + \beta_{3,i}DIV_{i,t-1} + \theta_{i,t}. \tag{2}$$

Although Eq. (2) presumes that CI explains dividend changes, there is neither a theoretical nor a behavioral relationship between them. To address a different issue in the model specification, it is recommended to include both $NI_{i,t}$ and $CI_{i,t}$ within the same estimating model to see the "net effect" of CI. However, because we expect that the correlation between NI and CI is significantly high (i.e., a multi-collinearity problem would arise in estimation), we do not incorporate $NI_{i,t}$ and $CI_{i,t}$ simultaneously. Thus, Eq. (2) is naive.

Finally, to assess the impact of OCI on dividends, we decompose $CI_{i,t}$ into $NI_{i,t}$ and $OCI_{i,t}$, where $OCI_{i,t}$ indicates OCI for year t, represented by the following equation.

$$\Delta DIV_{i,t} = \gamma_i + \gamma_{1,i}NI_{i,t} + \gamma_{2,i}OCI_{i,t} + \gamma_{3,i}NI_{i,t-1} + \gamma_{4,i}DIV_{i,t-1} + \mu_{i,t}. \tag{3}$$

Equation (3) is clearly Eq. (2) that incorporates $OCI_{i,t}$, and thus, tests whether OCI affects dividends even after controlling for the level of NI. If OCI has no effect on dividends, in accordance with our hypothesis, then the coefficient of $OCI_{i,t}$, namely $\gamma_{2,i}$, is not expected to be statistically significant.

3.2 Sample and Variables

We analyze our hypothesis using a sample of publically listed Japanese companies. The financial data are obtained from the Nikkei Digital Media Inc. database NEEDS Financial-QUEST 2.0 for a sample period of 2003–2010, as we are able to obtain relevant data for OCI from 2002.[3] We use firm-year observations with the available annual consolidated accounting data, except for those in the banking, securities, and insurance sectors.[4] The final sample comprises 29,432 firm-year observations.

---

[3] Fair value measurements for financial instruments were mandated from April 2001 and accounting for foreign currency translations from April 2000. As we use lagged variables in our estimation, our sample period begins from 2003.

[4] When consolidated financial statements of a company are not available, we use individual account data for the sample.

The following variables are used in this study: $\Delta DIV_{i,t}$ denotes the total amount of dividend changes for firm i from year $t-1$ to year t; $NI_{i,t}$ ($NI_{i,t-1}$) denotes the NI for firm i in year t (year $t-1$); $DIV_{i,t-1}$ denotes the total amount of dividends for firm i in year $t-1$; $CI_{i,t}$ denotes the CI for firm i in year t; $OCI_{i,t}$ denotes the OCI for firm i in year t; $CASH_{i,t}$ denotes the amount of cash and equivalent for firm i in year t; $SIZE_{i,t}$ denotes the natural log of total assets for firm i in year t; $LEV_{i,t}$ denotes the total amount of debt for firm i in year t; $RETAIN_{i,t}$ denotes the total amount of distributable profit (i.e., retained earnings) for firm i in year t; $GROWTH_{i,t}$ denotes the average growth rate of sales for the past three years for firm i in year t; $YEARS$ denotes the year dummies from 2003 to 2010; and $INDUSTRIES$ denotes the industry dummies on the basis of the Nikkei Middle Industry Classification (33 industries).

$CASH$, $SIZE$, LEV, and $GROWTH$ are incorporated to control for cross-sectional variations in dividend policies.[5] $RETAIN$ controls for the size of firms' distributable profits, which we calculate separately for the Commercial Code period (2003–2005) and the Companies Act period (2006–2010). The Companies Act, which replaced the old Commercial Code as of May 2006, requires the deduction of fair value adjustments for available-for-sale securities from legal distributable profits when the amount is less than zero (The Ordinance of Company Accounting, Article 158). Therefore, we control for this legal change by incorporating $RETAIN_{i,t}$.[6] $YEARS$ and $INDUSTRIES$ are dummy variables that control for year and industry fixed effects, respectively (La Porta et al. 2000). Except for dummy variables, $SIZE$, and $GROWTH$, all variables are scaled by total assets in year t (Fama and French 2002; Goncharov and van Triest 2011). We apply alternative deflators to check the robustness of the results (see Sect. 4.3). Finally, to rule out the impact of outliers, we use data that had been winsorized at the bottom 1 % and top 99 % levels for each variable.

3.3 Sample Description and Descriptive Statistics

Table 3 reports dividend policies in Japanese companies. According to our survey (see Table 1), we identify four dividend policies on the basis of DPS: Increase, Stable, Decrease, and 0 to 0.

Table 3 reports that approximately 80 % of Japanese companies pay dividends each year. In particular, about 35 % of companies are consistently classified as "Stable" each year, implying "dividend stickiness" (Brav et al. 2005; Guttman et al. 2010). While the percentages of "Increase" are relatively high

---

[5] See: Ross (1977), Bhattacharya (1979), and Fama and French (1998) for the signaling hypothesis; Grossman and Hart (1980), Easterbrook (1984), and Jensen (1986) for the free cash flow hypothesis; and Grullon et al. (2002) and DeAngelo et al. (2006) for the life-cycle hypothesis. For a comprehensive explanation for these hypotheses, see Baker (2009), for example

[6] Japanese corporate law restricts a firm's distributable profit on the basis of unconsolidated accounts. We therefore calculate $RETAIN$ on the basis of unconsolidated data

Table 3 Dividend policies in Japanese companies

	2003	2004	2005	2006	2007	2008	2009	2010
Payer (%)	79.3	81.2	82.4	82.7	83.1	78.7	77.2	80.9
Increase (%)	33.6	39.2	38.8	39.7	35.2	17.8	18.7	33.9
Stable (%)	38.2	32.7	31.5	32.0	36.6	34.3	34.8	37.2
Decrease (%)	9.4	11.3	14.3	14.2	14.4	34.2	29.7	12.3
0 to 0 (%)	18.8	16.8	15.4	14.1	13.8	13.8	16.8	16.7
N	3,727	3,772	3,783	3,758	3,707	3,646	3,556	3,483

If a company increases (decreases) its DPS compared with the previous year, we classify the observation as "Increase" (Decrease). Similarly, if a company pays the same DPS as last year, we call the observation "Stable." If a company does not pay dividends for either the current year or the previous year, we name the observation "0 to 0"

Table 4 Other comprehensive incomes in Japanese companies

	2003	2004	2005	2006	2007	2008	2009	2010
$OCI_{i,t} > 0$ (%)	70.0	57.9	77.5	32.9	8.4	8.8	64.5	18.7
$OCI_{i,t} < 0$ (%)	14.1	26.7	8.9	53.6	78.6	77.2	20.0	65.8
$OCI_{i,t} = 0$ (%)	15.9	15.4	13.7	13.5	13.1	14.1	15.6	15.6
Nikkei 225 Index (%)	123.3	104.0	133.5	112.8	88.4	64.3	106.0	95.6
N	3,727	3,772	3,783	3,758	3,707	3,646	3,556	3,483

$OCI_{i,t}$ represents other comprehensive income of firm i in year t. Nikkei 225 Index indicates the rate of annual change over the previous year

from 2003 to 2007, when Japanese economy experienced growth stability, the percentages decreased in 2008 and 2009, when the financial crisis occurred. This indicates that dividend policies are, in part, dependent on the changes in the national economy and capital markets.

Table 4 shows OCI in Japanese companies. We classify our sample into three groups to examine their pro-cyclicality: "OCI > 0," "OCI < 0," and "OCI = 0."

As discussed in Sect. 2.3, OCI represents market trends or fluctuations. The percentage of companies that report positive OCI are high for periods of 2003–2006, when the Nikkei 225 Index depicts stable gains. However, the percentage of companies with negative OCI increases as the financial crisis occurs. These results are consistent with those in Ito (2011), which shows the pro-cyclicality of CI and OCI relative to the Nikkei 225 Index.

Table 5 shows the descriptive statistics. Focusing on dependent variable, $\Delta DIV_{i,t}$, the mean is close to zero and the median is zero. This is consistent with the implication in Lintner's model and also the findings in Table 3. For CI, over 75 % of Japanese companies report positive CI, since the first quartile of $CI_{i,t}$ is a positive value. This is purely due to the fact that most Japanese companies report positive NIs.

Table 6 shows the correlations between the testing variables. As predicted, the correlation between $NI_{i,t}$ and $CI_{i,t}$ is excessively high (more than 0.9). This is because NI is a predominant component of CI, and thus the covariance is high. We therefore maintain our estimating model (see Sect. 3.1).

Table 5 Descriptive statistics

	Mean	Std. dev.	Q1	Median	Q3
$\Delta DIV_{i,t}$	0.001	0.004	−0.000	0.000	0.001
$NI_{i,t}$	0.013	0.083	0.006	0.022	0.045
$NI_{i,t-1}$	0.014	0.079	0.005	0.021	0.044
$DIV_{i,t-1}$	0.008	0.008	0.002	0.006	0.010
$CI_{i,t}$	0.012	0.086	0.002	0.022	0.047
$OCI_{i,t}$	−0.001	0.015	−0.004	0.000	0.003
$CASH_{i,t}$	0.211	0.182	0.077	0.148	0.293
$SIZE_{i,t}$	10.294	1.706	9.158	10.162	11.283
$LEV_{i,t}$	0.524	0.218	0.355	0.532	0.693
$RET AIN_{i,t}$	0.181	0.261	0.073	0.180	0.322
$GROWTH_{i,t}$	1.077	0.227	0.975	1.026	1.099

Data sample represents 29,432 firm-year observations of Japanese publically listed companies. The variables are as follows: $\Delta DIV_{i,t}$ denotes the total amount of dividend changes for firm i from year $t-1$ to year t; $NI_{i,t}$ ($NI_{i,t-1}$) denotes the net income for firm i in year t (year $t-1$); $DIV_{i,t-1}$ denotes the total amount of dividend for firm i in year $t-1$; $CI_{i,t}$ denotes the comprehensive income for firm i in year t; $OCI_{i,t}$ denotes the other comprehensive income for firm i in year t; $CASH_{i,t}$ denotes the amount of cash and equivalent for firm i in year t; $SIZE_{i,t}$ denotes the natural log of total assets for firm i in year t; $LEV_{i,t}$ denotes the total amount of debt for firm i in year t; $RETAIN_{i,t}$ denotes the total amount of distributable profits for firm i in year t; $GROWTH_{i,t}$ denotes the average growth rate of sales for the past three years for firm i in year t.
All variables except $SIZE_{i,t}$ and $GROWTH_{i,t}$ are scaled by total assets in year t. Data at the 99th and 1st percentiles are used as the maximum and minimum, respectively, for each variable

4 Empirical Findings

4.1 Results for Full Sample Analysis

To analyze our hypothesis, we apply Eqs. (2) and (3) for CI and OCI, respectively. The results for Eqs. (1), (2), and (3) are reported in Table 7. Since we use a large panel data set, we apply heteroskedasticity-corrected standard errors, adjusted for clustering at both firm and year levels (Petersen 2009).

Columns (a) and (b) show the results of estimating the modified partial adjustment model (Fama and Babiak 1968). As predicted in Lintner (1956), current NI (lagged dividend) has a positive (negative) effect on dividend changes. Columns (c) and (d) report the results of Eq. (2), in which CI replaces NI. The coefficients for $CI_{i,t}$ are positive and statistically significant at the 1 % level. Although this implies that CI affects dividends, we infer that the result stems from NI rather than from CI itself, as explained in Sect. 3.1.[7] Therefore, the results must be interpreted carefully.

---

[7] When we incorporate $CI_{i,t}$ and $NI_{i,t}$ into Eq. (2) simultaneously, the variance inflation factors (VIFs) between them are larger than 20, which suggests that serious multi-collinearity problems occur.

Table 6 Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\Delta DIV_{i,t}$	(1)	0.48	0.21	−0.03	0.46	0.09	0.11	−0.02	−0.06	0.11	0.29
$NI_{i,t}$	(2) 0.34		0.62	0.36	0.92	0.04	0.06	0.02	−0.31	0.43	0.41
$NI_{i,t-1}$	(3) 0.13	0.51		0.51	0.55	−0.06	0.05	0.01	−0.33	0.45	0.41
$DIV_{i,t-1}$	(4) −0.02	0.28	0.39		0.31	−0.06	0.15	0.10	−0.48	0.60	−0.08
$CI_{i,t}$	(5) 0.35	0.98	0.49	0.26		0.32	0.06	0.02	−0.27	0.39	0.37
$OCI_{i,t}$	(6) 0.08	0.03	−0.03	−0.06	0.22		0.01	0.00	0.02	−0.03	−0.01
$CASH_{i,t}$	(7) 0.10	0.06	0.05	0.16	0.06	0.01		−0.39	−0.31	0.04	0.17
$SIZE_{i,t}$	(8) −0.03	0.11	0.11	0.01	0.10	−0.03	−0.39		0.16	0.04	−0.09
$LEV_{i,t}$	(9) −0.09	−0.19	−0.19	−0.43	−0.18	0.02	−0.31	0.18		−0.66	−0.03
$RETAIN_{i,t}$	(10) 0.11	0.57	0.59	0.43	0.55	−0.01	0.04	0.14	−0.49		−0.03
$GROWTH_{i,t}$	(11) 0.16	0.15	0.15	−0.04	0.14	0.10	0.15	−0.18	−0.00	−0.08	

Pearson correlations appear below the diagonal; Spearman correlations appear above the diagonal
The statistical significance of underlined values are at the 1 % levels

Table 7 Results across the entire sample

	Eq. (1) (a)	Eq. (1) (b)	Eq. (2) (c)	Eq. (2) (d)	Eq. (3) (e)	Eq. (3) (f)
Constant	−0.00 −3.02***	0.00 1.75*	−0.00 −3.42***	−0.00 −2.86***	−0.00 −3.23***	0.00 1.60
$CI_{i,t}$			0.02 35.33***	0.02 36.18***		
$NI_{i,t}$	0.02 34.97***	0.02 35.92***			0.02 34.99***	0.02 35.92***
$OCI_{i,t}$					0.01 5.04***	0.01 5.04***
$NI_{i,t-1}$	−0.00 −3.06***	0.00 0.83	−0.00 −2.24**	0.00 1.23	−0.00 −2.96***	0.00 0.88
$DIV_{i,t-1}$	−0.06 −10.06***	−0.06 −10.17***	−0.05 −9.92***	−0.06 −10.08***	−0.06 −10.07***	−0.06 −10.17***
$CASH_{i,t}$		0.00 8.14***		0.00 8.35***		0.00 8.20***
$SIZE_{i,t}$		0.00 4.69***		0.00 4.90***		0.00 4.79***
$LEV_{i,t}$		−0.00 −13.96***		−0.00 −13.63***		−0.00 −13.89***
$RETAIN_{i,t}$		−0.00 −12.28***		−0.00 −11.44***		−0.00 −12.21***
$GROWTH_{i,t}$		0.00 5.75***		0.00 6.33***		0.00 5.84***
YEARS	Yes	Yes	Yes	Yes	Yes	Yes
INDUSTRIES	Yes	Yes	Yes	Yes	Yes	Yes
N	29,432	29,432	29,432	29,432	29,432	29,432
Adj.R^2 (%)	17.1	18.9	16.9	18.7	17.2	19.1

***, **, and * indicate statistical significance at the 1 %, 5 %, and 10 % levels, respectively. All variables are defined as above. All *t*-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year level

Columns (e) and (f) of Table 5 show the results for Eq. (3), in which both NI and OCI are incorporated. The coefficient for $OCI_{i,t}$ is positive and statistically significant at the 1 % level. The results in column (f) confirm that OCI has a positive effect on dividends, even after including control variables. Consequently, contrary to our hypothesis, the results imply that OCI, and thus aggregated CI affects dividends.

4.2 Results for Separated Sample Analysis

To obtain more specific implications of OCI, we divide our sample on the basis of $OCI_{i,t}$ into positive and negative $OCI_{i,t}$ groups. While we observed that OCI is positively related to dividend changes, it is highlighted that dividends change

Table 8 Results for separated samples

	(a) $OCI_{i,t} > 0$	(b) $OCI_{i,t} \geq 0$	(c) $OCI_{i,t} < 0$	(d) $OCI_{i,t} \leq 0$	(e) Full sample
Constant	0.00	0.00	−0.00	0.00	−0.00
	0.50	1.41	−0.83	1.03	−1.77*
$NI_{i,t}$	0.02	0.02	0.02	0.02	0.02
	20.72***	27.00***	24.45***	29.11***	35.89***
$OCI_{i,t}$	−0.00	−0.00	0.01	0.02	
	−0.04	−1.19	3.43***	5.66***	
$OCI * OCI\_P\_D_{i,t}$					−0.00
					−0.36
$OCI * OCI\_M\_D_{i,t}$					0.00
					2.39**
$NI_{i,t-1}$	−0.00	0.00	0.00	0.00	0.00
	−0.47	0.85	0.47	1.35	0.78
$DIV_{i,t-1}$	−0.06	−0.04	−0.10	−0.07	−0.06
	−5.56***	−4.98***	−11.08***	−8.78***	−10.14***
$CASH_{i,t}$	0.00	0.00	0.00	0.00	0.00
	4.82***	6.36***	4.77***	6.42***	8.05***
$SIZE_{i,t}$	0.00	0.00	0.00	0.00	0.00
	0.74	3.33***	3.58***	5.42***	5.05***
$LEV_{i,t}$	−0.00	−0.00	−0.00	−0.00	−0.00
	−9.34***	−9.94***	−10.53***	−10.60***	−13.88***
$RET\ AIN_{i,t}$	−0.00	−0.00	−0.00	−0.00	−0.00
	−7.97***	−9.45***	−7.51***	−9.49***	−12.00***
$GROWTH_{i,t}$	0.00	0.00	0.00	0.00	0.00
	6.93***	2.61***	8.13***	2.83***	5.34***
YEARS	Yes	Yes	Yes	Yes	Yes
INDUSTRIES	Yes	Yes	Yes	Yes	Yes
N	12,530	16,821	12,611	16,902	29,432
Adj.R^2 (%)	20.5	17.1	23.3	18.9	19.0

***, **, and * indicate statistical significance at the 1 %, 5 %, and 10 % levels, respectively. $OCI\_P\_D_{i,t}$ ($OCI\_M\_D_{i,t}$) is a dummy variable equaling one if a company reports positive (negative) OCI in year t and otherwise zero. The other variables are defined as above. All t-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year level

asymmetrically in relation to earnings (e.g., Grullon et al. 2002; Brav et al. 2005; Michaely and Roberts 2006). Prior studies argue that companies are more reluctant to cut their dividends because managers have incentives to avoid signaling bad news to capital markets, and the reaction to dividend omissions are severe. Considering this "downward stickiness" of dividends, we expect that OCI affects dividends differently depending on whether it is positive or negative.

Table 8 reports the results of Eq. (3) using two separated sample groups. Columns (a) and (b) show results for the positive OCI sample. Results indicate that the coefficient on $OCI_{i,t}$ is negative but not statistically significant, which implies that positive OCI does not affect dividends. Column (b) also confirms that the way of sampling does not alter the results. Columns (c) and (d) show results for the negative OCI sample. In contrast, the coefficients on $OCI_{i,t}$ are positive and

Table 9 Earnings persistence analysis

	Constant	$NI_{i,t-1}$	$CI_{i,t-1}$	$OCI_{i,t-1}$	YEARS	INDUSTRIES	N	Adj. R^2(%)
$NI_{i,t}$	0.00	0.53			Yes	Yes	29,432	28.1
	1.37	13.09***						
$CI_{i,t}$	0.02		0.52		Yes	Yes	29,432	27.9
	2.97***		12.38***					
$OCI_{i,t}$	0.00			−0.00	Yes	Yes	29,432	26.1
	3.97***			−0.01				
$OCI_{i,t}$ $(OCI_{i,t} > 0)$	0.00			−0.06	Yes	Yes	12,530	16.8
	2.79***			−0.96				
$OCI_{i,t}$ $(OCI_{i,t} < 0)$	−0.01			0.06	Yes	Yes	12,611	17.2
	−4.90***			0.55				

*** indicates statistical significance at the 1 % level. All variables are defined as above. All t-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year level (Petersen 2009)

statistically significant at the 1 % level. Column (d) again confirms that the results are robust for our sampling method. Similarly, when we differentiate the impact of positive and negative OCI using dummy variables (i.e., $OCI * OCI\_P\_D_{i,t}$ and $OCI * OCI\_M\_D_{i,t}$ in column (e)), although the significance of the coefficient for $OCI * OCI\_M\_D_{i,t}$ is at the 5 % level, we obtain the same findings.

Considering these results together with those in Table 7, the results from our previous analyses (i.e., column (e) and (f) in Table 7) largely stem from the impact of negative OCI. Overall, from our analyses, we conclude that only negative OCI is likely to affect dividends.

4.3 Robustness Tests

We conduct a number of tests to evaluate the robustness of our empirical results. First, because our hypothesis assumes that CI and OCI are temporal earnings, we estimate the persistence of each accounting income. Prior studies had developed a measurement for persistence as an earnings quality, and defined it as a slope coefficient of lagged earnings regressed by current earnings (e.g., Francis et al. 2006). Using this measurement, we estimate persistence for each accounting income (i.e., NI, CI, and OCI), as shown in Table 9. The slopes for NI and CI are positive and statistically significant at the 1 % level. On the other hand, the slope for OCI is negative but not significant (t value = − 0.01). This is also true when we divide our sample on the basis of signs of OCIs. Therefore, as assumed in our hypothesis, OCI can be regarded as temporal earnings.

For model specification, we first estimated our models without lagged earnings, as applied in Brav et al. (2005) and Skinner (2008). Furthermore, we estimate our models by incorporating $CI_{i,t-1}$ and $OCI_{i,t-1}$ instead of $NI_{i,t-1}$. However, the results

are similar to those in Tables 7 and 8. Moreover, we test whether our choice of deflators influences the results using lagged total assets and average total assets as alternative deflators, and use an alternative $\Delta DIV_{i,t}$ defined as changes in adjusted DPS, to analyze whether changes in outstanding shares affect our results.[8] However, we find that the results are robust for every alternative.

Skinner (2008) highlights a different point in model specification, stating that the use of total payout (including stock repurchases) enhances the explanatory power of the partial adjustment model. In light of this, we further test whether OCI is related with total payout. When incorporating total payout in Eq. (3) following Skinner (2008), we find that R^2 decreases by approximately 5.2 %, and the coefficient of $OCI_{i,t}$ is positive but not statistically significant. This result is consistent with the findings in Hanaeda and Serita (2008), which report that dividends and stock repurchases are determined separately through very different mechanisms in Japan. Thus, we infer that Lintner's model does not work well in explaining total payout in Japanese companies.

Finally, we check whether our results are strongly influenced by the financial crisis. To do this, we run our estimating models using observations other than that of 2008, a period during which the impact of the financial crisis was most extensive. We again noted that this did not change the results.

4.4   Why the Negative Impact?

Our results indicate that negative OCI positively impacts dividends: it leads to lower dividends. This finding, therefore, does not support our hypothesis, but does raise the question of why managers reduce their dividends along with a decline in OCI?

We propose two possible explanations for this finding. First, managers may treat OCI conservatively when determining their dividends. Since positive OCI comprises unrealized profits, managers may be reluctant to pay dividends relying on such risky profits. On the other hand, managers may conservatively recognize their negative OCI as a "realized" loss, and thus reflect it in their current dividends. In particular, assuming that negative OCI does reflect a decline in the economy and capital markets, managers have the incentive to retain more cash against subsequent "rainy days" rather than paying it out.

Second, managers may opportunistically utilize negative OCI to justify their reduced dividends. This explanation follows Goncharov and van Triest (2011), who find a negative correlation between positive fair value adjustments and dividends. According to Pinkowitz et al. (2006), managers prefer retaining internal funds to sharing profits with outside shareholders because this results in them having more

---

[8] Easton (1998) and Easton and Sommers (2003) argue that scaling by the number of outstanding shares does not mitigate the scale bias

cash to their discretion. At the same time, however, managers also have an incentive to avoid damaging their reputations on stock markets because of their low-level dividends. To mitigate such damages, managers may enjoy information asymmetry between themselves and outside shareholders, referring to negative OCI for their lower dividends. However, we do not have sufficient data to test either of these hypotheses, thereby indicating the need for further investigation.

5 Conclusion

This study examines whether and how CI and OCI influence dividends. The role of CI has been largely explained from the information or equity valuation perspective. However, as long as CI is reported as an accounting income, it will affect contracting, and also provoke "information inductance" in terms of managerial behaviors. In light of these arguments, we focus on dividends and hypothesize that volatile CI and OCI do not affect dividends.

We analyze this hypothesis by applying the framework of Lintner (1956) to a sample of publically listed Japanese companies. From regression analyses, contrary to our prediction, we find that negative OCI can result in lower dividends. Our hypothesis and results are robust to a number of sensitivity checks, including earnings persistence tests, alternative deflators, and different model specifications. For our empirical findings, we briefly discuss both conservative and opportunistic managerial behaviors as possible explanations.

With regard to future research, first, there is a clear need for more information on managerial behavior in determining dividends in the IAS/IFRS era. While Lintner's framework, which was established more than 50 years ago, still has a certain explanatory power, it does not necessarily predict the relationship between new accounting components and dividends. Assuming that the nature of accounting income changes along with revisions in accounting standards, managers' perceptions of accounting income and dividends need to be reinvestigated. Also, it would be interesting to study companies based in different countries, for example, unlike Japan, US companies prefer stock repurchases to dividends and have a different relationship with their shareholders (Brav et al. 2005). Thus, it would be expected that the relationship between CI and payout policies can be different in the US.

This study contributes to the literature in several ways. First, to the best of our knowledge, this study is first to investigate the economic role of CI in the context of dividends. Given that the literature on the contractual consequences is considered to be still in infancy (e.g., Brüggemann et al. 2013), we propose a new finding which implies that CI affects dividends. Second, our findings suggest that changes in accounting provoke changes in managerial behaviors. Assuming that dividends play a role in fostering stable relationships with shareholders, which enable a long-term management style in Japan (Kagaya 2011), changes in accounting, especially the introduction of market-based fair value measurements, may distort such relationships and management styles. We thus emphasize on the evidence of

managerial changes in response to accounting changes. Finally, our findings contribute to the arguments of the legal capital regime. Rather than leading to the distribution of unrealized profits—a concern raised by regulators and scholars (e.g., KPMG 2008)—OCI results in lower, and thus conservative, dividends.

References

Accounting Standards Board of Japan. (2010). *Accounting Standard for Representation of Comprehensive Income* (ASBJ Statement No.25). June 2010.

Aoki, Y. (2011). Haitou no Jyouhou Kouka to Rieki Jizokusei, Rieki Chousei Koudou ni Kansuru Jisshou Bunseki. *Japan Journal of Finance, 31*(1), 35–55.

Baker, H. K. (2009). *Dividends and dividend policy*. Wiley, New Jersey.

Ball, R. (2006). International financial reporting standards (IFRS): Pros and cons for investors. *Accounting and Business Research*, *36*(Special Issue), 5–27.

Bamber, L. S., Jiang, J., Petroni, K. R., & Wang, I. Y. (2010). Comprehensive income: Who's afraid of performance reporting? *The Accounting Review, 85*(1), 97–126.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The relevance of the value relevance literature for financial accounting standards setting: another view. *Journal of Accounting and Economics, 31*(1–3), 77–104.

Barth, M. E., Landsman, W., & Wahlen, J. (1995). Fair value accounting: effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of Banking and Finance, 19*(3–4), 577–605.

Beatty, A. (2007). How does changing measurement change management behavior? A review of the evidence. *Accounting and Business Research*, *37*(Special Issue), 63–71.

Bhattacharya, S. (1979). Imperfect information, dividend policy, and the 'bird in the hand fallacy'. *Bell Journal of Economics, 10*(1), 259–270.

Biddle, G. C., & Choi, J. (2006). Is comprehensive income useful? *Journal of Contemporary Accounting and Economics, 2*(1), 1–32.

Biddle, G. C., Seow, G. S., & Siegel, A. F. (1995). Relative versus incremental information content. *Contemporary Accounting Research, 12*(1), 1–23.

Biondi, Y., & Suzuki, T. (2007). Socio-economic impacts of international accounting standards: An introduction. *Socio-Economic Review, 5*(4), 585–602.

Brav, A., Graham, J., Harvey, C., & Michaely, R. (2005). Payout policy in the 21st century. *Journal of Financial Economics, 77*(3), 483–527.

Brüggemann, U., Hitz, J., & Sellhorn, T. (2013). Intended and unintended consequences of mandatory IFRS adoption: A review of extant evidence and suggestions for future research. *European Accounting Review, 22*(1), 1–37.

Cahan, S. F., Courtenay, S. M., Gronewoller, P. L., & Upton, D. R. (2000). Value relevance of mandated comprehensive income disclosures. *Journal of Business and Finance and Accounting, 27*(9–10), 1273–1301.

Chambers, D., Linsmeier, T. J., Shakespeare, C., & Sougiannis, T. (2007). An evaluation of SFAS No.130 comprehensive income disclosures. *Review of Accounting Studies, 12*(4), 557–593.

DeAngelo, H., DeAngelo, L., & Stulz, R. (2006). Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory. *Journal of Financial Economics, 81*(2), 227–254.

Denis, D. J., & Osobov, I. (2008). Why do firms pay dividends? International evidences on the determinants of dividend policy. *Journal of Financial Economics, 89*(1), 62–82.

Dhaliwal, D., Subramanyam, K. R., & Trezevant, R. (1999). Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics, 26*(1–3), 43–67.

Easterbrook, F. H. (1984). Two agency cost explanations of dividends. *American Economic Review, 74*(4), 650–659.

Easton, P. D. (1998). Discussion of revalues financial, tangible, and intangible assets: Association with share prices and non-market-based value estimates. *Journal of Accounting Research, 36* (3), 235–247.

Easton, P. D., & Sommers, D. (2003). Scale and the scale effect in market-based accounting research. *Journal of Business Finance and Accounting, 30*(1–2), 25–55.

Edwards, J., & Mayer, C. (1985). *An investigation into the dividend and new equity issue practices of firms: Evidence from survey information*. London: Institute for Fiscal Studies.

Fama, E. F., & Babiak, H. (1968). Dividend policy: An empirical analysis. *Journal of the American Statistical Association, 63*(324), 1132–1161.

Fama, E. F., & French, K. R. (1998). Taxes, financing decisions, and firm value. *Journal of Finance, 53*(3), 819–843.

Fama, E. F., & French, K. R. (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics, 60*(1), 3–43.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies, 14*(1), 1–33.

Financial Accounting Standards Board. (1997). *Reporting Comprehensive Income* (Statement of Financial Accounting Standards No.130). June 1997.

Francis, J., Olsson, P., & Schipper, K. (2006). Earnings quality. *Foundation and Trends in Accounting, 1*(4), 1–75.

Goncharov, I., & van Triest, S. (2011). Do fair value adjustments influence dividend policy? *Accounting and Business Research, 41*(1), 51–68.

Grossman, S. J., & Hart, O. D. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *Bell Journal of Economics, 11*(1), 42–54.

Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are dividend changes a sign of firm maturity? *Journal of Business, 75*(3), 387–424.

Guttman, I., Kadan, O., & Kandel, E. (2010). Dividend stickiness and strategic pooling. *Review of Financial Studies, 23*(12), 4455–4495.

Hanaeda, H., & Serita, T. (2008). Nihon kigyou no haitou seisaku · jishakabu gai: Survey data niyoru kenshou. *Gendai Finance, 24*, 129–160.

Ito, K. (2011). The significance, impacts, and problems of comprehensive income (in Japanese). *Kigyou Kaikei, 63*(3), 18–28.

Jagannathan, M., Stephens, C. P., & Weisbach, M. S. (2000). Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics, 57*(3), 355–384.

Jensen, M. C. (1986). Agency cost of free cash flow, corporate finance, and the market for takeovers. *American Economic Review, 76*(2), 323–329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.

Kagaya, T. (2011). Economic consequences of mandatory IFRS adoption on corporate behavior in Japan (in Japanese). *Kokusai Kaikei Kenkyu Gakkai Nenpou* (Special Issue of 2010), 5–22.

Kochiyama, T. (2012). Economic consequences of fair value accounting and a change in the distribution rule. Working Paper, Hitotsubashi University.

Kormendi, R., & Zarowin, P. (1996). Dividend policy and performance of earnings. *Review of Accounting Studies, 1*(2), 141–160.

Kothari, S. P., Ramanna, K., & Skinner, D. J. (2010). Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics, 50*(2–3), 246–286.

KPMG. (2008). *Feasibility study on capital maintenance*: *Main report*. European Commission. January 2008.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Agency problems and dividend policy around the world. *Journal of Finance, 55*(1), 1–33.

Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society, 34*(6–7), 826–834.

Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *The American Economic Review, 46*(2), 97–113.

Michaely, R., & Roberts, M. R. (2006). Dividend smoothing, agency costs, and information asymmetry: Lessons from the dividend policies of private firms. Working Paper, Cornell University.

O'Hanlon, J. F., & Pope, P. F. (1999). The value-relevance of UK dirty surplus accounting flows. *The British Accounting Review, 31*(4), 459–482.

Pellens, B., & Sellhorn, T. (2006). Improving creditor protection through ifrs reporting and solvency tests. *European Company and Financial Law Review, 1*(Special Issue), 365–393.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: comparing approaches. *The Review of Financial Studies, 22*(1), 435–480.

Pinkowitz, L., Stulz, R., & Williamsom, R. (2006). Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. *Journal of Finance, 61*(6), 2725–2751.

Plantin, G., Sapra, H., & Shin, H. S. (2008). Marking-to-market: Panacea or pandora's box? *Journal of Accounting Research, 46*(2), 435–460.

Prakash, P., & Rappaport, A. (1977). Information inductance and its significance for accounting. *Accounting, Organizations and Society, 2*(1), 29–38.

Roberts, C., & Wang, Y. (2009). Accounting harmonization and the value-relevance of dirty surplus accounting flows. *Review of Accounting and Finance, 8*(4), 340–368.

Ross, S. A. (1977). The determination of financial structure: The incentive-signaling approach. *Bell Journal of Economics, 8*(1), 23–40.

Skinner, D. J. (2008). The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics, 87*(3), 582–609.

Skinner, D. J., & Soltes, E. (2011). What do dividends tell us about earnings quality? *Review of Accounting Studies, 16*(1), 1–28.

Wakabayashi, H., & Yaekura, T. (2008). A comparison of income measures as an input to residual income model (in Japanese). *Kaikei, 174*(5), 59–74.

Watts, R. L. (1977). Corporate financial statements: A product of the market and political processes. *Australian Journal of Management, 2*(1), 52–75.

Watts, R. L., & Zimmerman, J. L. (1986). *Positive accounting theory*. Englewood Cliffs: Prentice-Hall.

Zeff, S. A. (1978). The rise of economic consequences. *Journal of Accountancy, 146*(6), 56–63.

Accounting Policy Choice for Negative Goodwill

Yukari Takahashi

Abstract The purpose of this study is to reveal the determinants of the amortization period of negative goodwill in order to determine whether the choice of amortization period reflects the management's perception of the future outlook. The analysis results suggest that the management chooses a shorter amortization period when the case resulting in negative goodwill is relief-oriented and a longer amortization period when the transaction is under common control. This indicates that the choice of amortization period for negative goodwill may reflect the management's perception of the duration in which the business combination will incur costs or loss and that systematic amortization—which was a requirement before the Accounting Standard for Business Combinations in Japan was revised— might have offered useful information on the future outlook of the company.

Keywords Accounting policy • Amortization • Bargain purchase • Business combination • Negative goodwill

1 Introduction

There have been numerous discussions of accounting for negative goodwill. While there are some alternative accounting methods, there is the criticism of the systematic amortization of negative goodwill that discretionary amortization period is uninformative to users of financial statements and it "creates more questions than answers" (Hendriksen 1977, p. 441). In addition, from the perspectives of the anomalous nature of negative goodwill and the convergence of accounting standards, the current International Financial Reporting Standard No. 3 "Business

---

Y. Takahashi (✉)
Graduate School of Social Sciences, Tokyo Metropolitan University, 1-1 Minami-Osawa, Hachioji, Tokyo 192-0397, Japan
e-mail: yukari.takahashi58@gmail.com

Combinations" (IFRS 3), the Statement of Financial Accounting Standard No. 141 "Business Combinations" (SFAS 141), and the Accounting Standard for Business Combinations in Japan (hereinafter referred to as the new standard) require negative goodwill to be immediately recorded as a bargain purchase gain.

Meanwhile, the allocation of negative goodwill, especially systematic amortization, has been supported primarily from the standpoint that it is symmetric to the accounting procedure for positive goodwill. Until recently, the Japanese accounting standard had also required that negative goodwill be systematically amortized in a similar way to amortizing positive goodwill. Based on this requirement, is there some economic purpose for amortizing negative goodwill?

While there is the criticism of the systematic amortization of positive goodwill that forecasting the depreciation pattern objectively is difficult, a previous study (Henning and Shaw 2003) has demonstrated that the amortization period is predictive of the company's post-acquisition earnings levels. This study expands this previous discussion and examines whether the amortization period of negative goodwill reflects the perception of the management regarding the time period in which they will incur costs or loss. The results of this study demonstrate that a shorter amortization period is selected in a relief-oriented case and a longer amortization period is selected for a transaction under common control. This suggests that the choice of amortization period for negative goodwill may reflect the perception of the management. This may reflect a characteristic of Japanese companies that value long-term relationship between acquirer and target even though they conduct a market-oriented transaction.

The structure of this paper is as follows. In Sect. 2, I will summarize previous studies, institutional backgrounds, and the realities related to negative goodwill in Japan, and then outline the hypotheses that will be tested. Section 3 explains the research method, and Sect. 4 describes the analysis results. In Sect. 5, I will state the conclusion and future tasks based on the analysis results.

2 Background and Hypotheses

2.1 Previous Studies

Numerous studies have been conducted on the amortization of goodwill—assuming that it is positive goodwill—in the context of whether it can be treated as an asset and whether it should be systematically amortized or accounted as impairment. One of the major points of controversy is the arbitrariness in selecting an amortization period for goodwill. While new standard requires that goodwill be amortized over the period of time in which the goodwill remains effective (para. 32), Yamauchi (2010, p. 218) remarked that "because it is impossible to accurately determine the pattern of depreciation or the number of years it takes to depreciate, some criticize that the amortization inevitably becomes arbitrary."

In contrast, Kawamoto recognized the value of systematic amortization that allows us to compare the management's prior expectation and subsequent results, stating that "the management of the acquiring company must be forecasting the post-acquisition cash flow at the time of planning in order to estimate the maximum price for the acquisition" (Kawamoto 2011, pp. 62–63). Henning and Shaw (2003) also showed the relationship between the amortization period of positive goodwill and the future profit growth: they indicated the possibility that the amortization period of positive goodwill is strategically selected to reflect the perception of the management regarding the future outlook.

In addition to Henning and Shaw (2003), other previous studies have examined the determinants of the amortization period of positive goodwill from the perspective of the economic consequence of the accounting policy choice. For example, Hall (1993) examined the debt contract hypothesis, political cost hypothesis, and agency cost hypothesis regarding the selection of the amortization period of goodwill and demonstrated that larger companies are more likely to choose a shorter amortization period. Kobayashi (2009) examined Japanese companies and showed that larger companies with a small debt ratio and a high proportion accounted for by goodwill are more likely to choose to amortize the goodwill over a longer period of time.

On the other hand, many of the previous studies on negative goodwill made the connection between the cause of negative goodwill and the nature of accounting and presented the relationship between these factors and the accounting procedure (Cattlett and Olson 1968; Hendriksen 1977; Takeda 1982; Moville and Petrie 1989; Kurokawa 1998; Umehara 2000; Nishiumi 2006; Yamauchi 2010, etc.). For example, Yamauchi (2010, pp. 287–302) defined the following four perspectives as the cause of negative goodwill—error in measuring assets and liabilities, future costs and loss incurred due to organizational changes and the restructuring that is expected to be implemented after combining businesses, bargain purchase resulting from information asymmetry or distress sale, and the negative effects of synergy—and presented accounting procedures that corresponded to each cause.

As alternative accounting methods are being evaluated, the systematic amortization of negative goodwill has been criticized for being merely for smoothing and not providing any useful information for the users of financial statements (Hendriksen 1977, pp. 440–441). In contrast, Umehara (2000, pp. 165–171) presented a position in support of the method that allocates negative goodwill over a period of time based on the fact that matters, such as the restructuring plan, that became necessary in determining the purchase price could be reflected in the periodical accounting of profit and loss. However, the previous studies have not taken into account the realities of negative goodwill in their analyses and the determinants of the amortization period of negative goodwill have not been tested.

This paper, therefore, expands the discussion on the amortization period of positive goodwill and examines whether the amortization period of negative goodwill reflects the management's perception regarding the future outlook as is illustrated by, for example, the restructuring plan.

Table 1 Percentage of companies of all listed companies recorded goodwill, negative goodwill, and gain on negative goodwill

	Year					
	2006[a] (n = 3,392)	2007 (n = 3,448)	2008 (n = 3,464)	2009 (n = 3,471)	2010 (n = 3,485)	2011 (n = 3,495)
Goodwill (%)	32.9	34.7	32.5	32.1	33.6	32.9
Negative goodwill (%)	14.3	14.8	14.8	14.9	13.0	9.8
Gain on negative goodwill (%)	–	–	–	0.7	6.9	6.8

[a]Year T contains observations with a fiscal year ending between April T and March $T + 1$

2.2 Negative Goodwill in Japan

Looking at Japan's accounting standards, the Accounting Standard for Business Combinations that became effective in April 2006 (hereinafter referred to as the old standard) required negative goodwill—regardless of the business combination's legal format—to be systematically amortized symmetrically to positive goodwill over an appropriate period within 20 years. On the other hand, under the new standard that became mandatory effective in April 2010 (early application was permitted from April 2009), the negative goodwill that is generated even after reviewing the appropriateness of the purchase price allocation and the amount of identifiable assets and liabilities is required to be recorded as extraordinary gain in the fiscal year in which it was generated. However, the unamortized amount of negative goodwill generated under the old standard continues to be systematically amortized.

Given these institutional backgrounds, this study analyzed business combinations that were carried out between April 2006 and March 2010—when the old standard were effective—in order to analyze the choice of amortization period for negative goodwill. However, as described above, empirical studies that have focused on actual amortization periods for negative goodwill and the determinants of these periods do not exist to the best of my knowledge. Therefore, I will summarize the actual practices in Japan of recording negative goodwill and selecting an amortization period before I conduct the analysis.

First, the following is a summary of how negative goodwill is recorded in Japan. Of all publically traded companies with a fiscal year ending between April 2006 and March 2010 and with data available as of October 2012, a total of 20,755 firm-year observations having positive net assets and a fiscal year of 12 months were included in the tabulation. The necessary data were obtained from NEEDS-FinancialQUEST provided by Nikkei Digital Media, Inc.

Table 1 shows the percentage of all listed companies in each fiscal year that recorded goodwill (fixed assets), negative goodwill (fixed liabilities), and gain on negative goodwill (extraordinary gain). Here, goodwill or negative goodwill refers

to an unamortized amount and gain on negative goodwill refers to gain under the new standard.

Previous studies and accounting standards have regarded transactions that result in negative goodwill as anomalous. In fact, according to Comiskey et al. (2010), only 127 cases of the mergers and acquisitions (M&A) that took place in 8 years from 2000 to 2007 in the United States disclosed that they had resulted in negative goodwill. By contrast, while approximately 32–35 % of publically traded companies record goodwill in Japan, about 10–15 % record negative goodwill. Therefore, the percentage of companies that record negative goodwill is not necessarily small in Japan.

Table 2 shows the percentage of the companies that recorded such an entry by industries (classified by Tokyo Stock Exchange) in 2009. The result shows that percentage of companies recorded negative goodwill is higher than the average of all industries (14.9 %) in marine transportation, land transportation, glass and ceramics products, pulp and paper, other financing business, iron and steel, textile and apparels, rubber products, and oil and coal products industries.

Table 3 shows the average ratio of each entry divided by the company's net assets accounted among the companies that recorded such an entry. The fact that over 2 % of net assets are accounted by gain on negative goodwill indicates that the accounting procedure for negative goodwill could have a large impact on the profitability indicator, albeit it is not as large an impact as for positive goodwill.

Next, in order to summarize the realities of the amortization period of negative goodwill, I will tabulate the amortization period that was chosen in individual cases. Using the full-text search capability of EOL, a comprehensive corporate information database provided by Pronexus, Inc., the cases that generated negative goodwill were extracted from all business combinations that took place between April 2006 and March 2010. Specifically, 255 cases met all of the following five conditions according to the notes related to business combination found in financial statements.

The conditions included: (1) more than one million yen of negative goodwill is generated; (2) the amortization period of the negative goodwill in question can be specified; (3) the date the amortization began can be estimated based on the business combination date or the business performance period of the acquired company as included in the consolidated financial statements; (4) the accounting period was not changed during the period in which the business combination took place; and (5) if multiple cases are listed, the acquisition is not aggregated with other transactions under common control.[1]

---

[1] A transaction under common control refers to a business combination in which all combined companies (or businesses) are ultimately controlled by the same company before and after the business combination and the said control is not temporary (the old standards, Article 2, Paragraph 10). The so-called group reorganization often falls under the category of transactions under common control.

Table 2 Percentage of companies recorded positive goodwill and negative goodwill by industry in 2009

Industry	Goodwill (%)	Negative goodwill (%)
Marine transportation (n = 16)	25.0	25.0
Land transportation (n = 62)	32.3	24.2
Glass and ceramics products (n = 62)	22.6	21.0
Pulp and paper (n = 25)	32.0	20.0
Other financing business (n = 33)	36.4	18.2
Iron and steel (n = 50)	20.0	18.0
Textile and apparels (n = 56)	25.0	17.9
Rubber products (n = 18)	33.3	16.7
Oil and coal products (n = 13)	30.8	15.4
Mining (n = 8)	12.5	12.5
Securities and commodity futures (n = 40)	22.5	12.5
Banks (n = 91)	17.6	12.1
Warehousing and harbor transportation (n = 43)	23.3	11.6
Chemicals (n = 209)	34.9	11.0
Machinery (n = 230)	26.1	10.9
Wholesale trade (n = 350)	34.3	10.9
Transport equipment (n = 102)	31.4	10.8
Foods (n = 130)	29.2	10.8
Construction (n = 170)	9.4	10.6
Precision instruments (n = 49)	42.9	10.2
Retail trade (n = 339)	35.7	9.1
Fishery, agriculture and forestry (n = 11)	36.4	9.1
Insurance (n = 11)	54.5	9.1
Metal products (n = 93)	19.4	8.6
Other products (n = 107)	32.7	8.4
Nonferrous metals (n = 37)	29.7	8.1
Electric power and gas (n = 25)	28.0	8.0
Electric appliances (n = 273)	31.9	7.7
Information and communication (n = 333)	45.9	6.0
Services (n = 339)	41.3	5.3
Real estate (n = 108)	23.1	3.7
Pharmaceutical (n = 55)	30.9	3.6
Nonclassifiable (n = 1)	0.0	0.0
Air transportation (n = 6)	16.7	0.0

Table 3 Average ratio of each entry divided by the company's net assets

	Year					
	2006	2007	2008	2009	2010	2011
Goodwill (%)	7.30	8.20	9.30	9.20	8.60	15.30
Negative goodwill (%)	1.70	1.70	2.40	2.50	1.90	1.30
Gain on negative goodwill (%)	–	–	–	4.70	1.90	2.50

Table 4 Amortization period of negative goodwill (n = 255)

		Amortization period (year)											
	Gain (early application)	1	1.5	2	2.5	3	4	5	6	7	8	10	20
2006	–	8	0	0	0	0	0	36	0	0	0	2	7
2007	–	7	0	0	1	5	0	36	1	0	1	4	3
2008	–	2	1	1	0	7	0	27	0	0	0	3	3
2009	20	15	0	2	0	10	1	47	0	1	1	2	1
Total	20	32	1	3	1	22	1	146	1	1	2	11	14

It should be noted that I referred to the notes related to business combination rather than the notes under the basic key information and accounting policies for preparing the consolidated financial statements found in financial statements in order to identify the amortization period for the negative goodwill generated in each case. It is often not possible to specify the amortization period of individual negative goodwill from the latter notes because the disclosure is for the period of 5–20 years, for example.

Table 4 presents the tabulation results of the amortization periods chosen in 255 cases of business combinations that resulted in negative goodwill. It should be noted that the new standard requiring negative goodwill to be recognized as a gain during the term it was generated became available for early application in April 2009. The cases that recorded the gain when adopting the standard early were tabulated separately from the cases that amortized the negative goodwill in a lump sum because of their lesser monetary materiality in accordance with the old standard.

According to Table 4, many cases (146 cases in all) chose the period of 5 years as the amortization period for negative goodwill. This may be due to the existence of other numerical criteria. For example, the previous Commercial Code prescribed that goodwill should be amortized within 5 years of the acquisition (Article 33 of the Ordinance for Enforcement of the Commercial Code prior to its amendment). The Corporate Tax Law also stipulates that the amortization period for the asset adjustment accounting equivalent to goodwill is to be 60 months for tax purposes (Article 62–8, Section 4 of the Corporate Tax Law).

In addition, it used to be that the entire amount of the liability had to be written off within 5 years after the business combination if a cost or loss was expected shortly after the acquisition with the calculation of the acquisition price to be recognized as an individual liability reflecting this possibility (Article 3, Paragraph 2, Clause 3 of the old standard). Therefore, these types of numerical criteria seem to be influencing the choice of amortization period.

Furthermore, regarding whether to select an amortization period of 5 years, the cases such as mergers and business transfers that generate goodwill that is to be recorded on separate financial statements and to be subject to the tax law must be influenced by the tax law. In addition, all cases are probably influenced by the relationship with auditing firms from the standpoint of ease of explanation to other stakeholders.

Therefore, a chi-square test was performed on the 255 cases included in the tabulation to test the independence of the amortization period being 5 years from: (1) the case being a merger or business transfer that generated negative goodwill, which is to be recorded on separate financial statements and to be subject to the tax; and (2) the accounting auditor during the term in which the business combination took place being one of the so-called "Big Four" auditing firms. The null hypothesis "these two events are independent from each other" was not rejected in either test. Therefore, the cases that chose the amortization period of 5 years may have done so based on the management perception of the future outlook rather than merely making a choice based on these numerical criteria.

For instance, an amortization period of 5 years was chosen in the stock swap between Rengo Co., Ltd. and Nihon Matai Co., Ltd. announced in September 2009. The disclosure document that announced this business combination stated that they had formulated a five-year rehabilitation plan. In addition, since the numerical criteria mentioned here are common factors in all publically traded companies and there were companies that still chose a period other than 5 years, we can conclude that numerical criteria are only one of the determinants for choosing the amortization period of negative goodwill.

Looking at the cases that chose an amortization period other than 5 years, many chose 1 year. This choice was probably made based on the stipulation that "negative goodwill may be treated as an income in the business year when it was generated if the value is immaterial (Article 3, Paragraph 2, Clause 5 of the old standard)." Furthermore, although 20 years—the longest possible period—is chosen in many cases, the amortization period of negative goodwill tends to be shorter than that of positive goodwill as indicated by Kobayashi (2009) who examined the amortization period of positive goodwill and found that 18.3 % of all companies selected 20 years. This study examines whether the management perception of the future outlook is reflected in the amortization period chosen especially in companies that chose a period other than 5 years.

Although not shown on the table, there were 21 cases that were presumed to have started amortizing the negative goodwill in the following term due to reasons such as the business combination being carried out at the end of the accounting period. Because the new standard stipulate that negative goodwill is to be recorded as a gain in the term when it was generated, the income could change significantly depending on when—at the end of the term as opposed to the beginning of the following term—the business combination that will result in negative goodwill is carried out.

2.3 Formulation of Hypotheses

A previous study has shown the possibility that the amortization period of (positive) goodwill reflects the management perception of the future outlook (Henning and Shaw 2003). Section 2.2 has also shown that the amortization period of negative

goodwill varies widely between 1 year and 20 years, indicating that the management might also be choosing the amortization period of negative goodwill based on their perception of the future outlook rather than simply choosing the longest possible time that is allowed for smoothing.

This study focuses on the relationship between the business combinations that generated negative goodwill and their future outlook and the period in which costs or loss were incurred after the business combination. Many previous studies (e.g., Kurokawa 1998; Umehara 2000; Nishiumi 2006; Yamauchi 2010) mentioned the expectation of future costs or loss as one of the causes for negative goodwill. It has been explained that the reason for recording these types of restructuring costs as liabilities is "to correspond to the timing of the costs to be recorded as the restructuring plan progresses" (Umehara 2000, p. 170). In addition, there are studies (Inoue and Kato 2006, pp. 63–64; Arikawa and Miyajima 2007) that have shown that M&A in Japan in general are pursued to achieve improved management that can be obtained through the acquisition of a company with inefficient management.

The past analyses have not indicated that the future costs or loss cause negative goodwill. However, it is likely that some type of restructuring is implemented during the integration process of a business combination even if the combination was not explicitly relief-oriented. Therefore, regardless of the cause of negative goodwill, the management would probably anticipate some type of future costs or loss upon combining the businesses.

Considering the above points and based on the idea that the amortization period of negative goodwill is chosen to correspond to the period in which costs or loss will be incurred after the business combination, this study sets to verify the following hypotheses:

Hypothesis 1 When a relief-oriented business combination generated negative goodwill, a shorter amortization period is selected.

Hypothesis 2 When a business combination within a corporate group generated negative goodwill, a longer amortization period is selected.

In reference to Hypothesis 1, there are more business combinations that result in negative goodwill in Japan than in the United States as I have mentioned earlier. One of the characteristics of business combinations in Japan is that they are often carried out in order to save a company that can no longer survive by itself (Inoue and Kato 2006, p. 77).

In many cases, relief-oriented business combinations have a clear restructuring plan for the company being acquired. It seems that the management forecasts the costs or loss that will be incurred in the business combination within a relatively short period of time because each stakeholder could demand immediate restructuring after the business combination. Therefore, in the case of a relief-oriented business combination, we can expect the selection of a shorter amortization period.

Meanwhile, with respect to Hypothesis 2, another characteristic of business combinations in Japan can be highlighted: many are transactions within a group (Inoue and Kato 2006, p. 133; Miyajima 2007a, p. 31). In the case of a transaction

within a group, it is possible for the management to run the business on a long-term basis even while considering the relationship with each stakeholder because the acquirer does not intend to sell the acquired company in a short period of time.

In addition, "to formulate and execute management strategies from a long-term perspective without being caught in the situation of the short-term profitability" (excerpt from the "Notice of Opinion on the Tender Offer for Our Shares by the Majority Shareholder Uny Co., Ltd." dated February 16, 2012) can be pointed out as a reason for turning a subsidiary into one that is wholly-owned. Therefore, because the restructuring after the business combination could be implemented over a relatively long period of time, we can expect a longer amortization period to be selected in the case of a transaction within a group.

3 Research Method

3.1 Models

In order to test these two hypotheses, this study performed ordinal logistic regression analysis. The dependent variable is the amortization period of negative goodwill (YEAR). It is an ordinal variable that codes the amortization period "longer than 1 year but shorter than 5 years" as 1, "5 years" as 2, and "longer than 5 years" as 3. The previous studies that examined the determinants of the amortization period of positive goodwill turned the amortization period into a continuous variable (Hall 1993; Henning and Shaw 2003) or a dummy variable that distinguishes whether it is less than 5 years or not (Kobayashi 2009). However, as shown in Table 3, the amortization period of negative goodwill is most frequently 5 years and also tends to be shorter than the amortization period of positive goodwill. This study, therefore, has judged the length of amortization period using 5 years as a reference and has categorized the length of time into "less than 5 years," "5 years," and "more than 5 years."

As independent variables, two proxy variables related to the future period during which costs or loss is incurred. The first proxy variable is whether the case is relief-oriented (RELIEF). Because it is difficult to objectively distinguish whether the case is relief-oriented, the cases clearly stating that the purpose of the business combination is to support the rehabilitation or to save the acquired company are treated as relief-oriented in this study. Therefore, RELIEF is a dummy variable that is equal to 1 when the timely disclosure document or securities report states that supporting the rehabilitation or the management of the acquired company is the purpose of the business combination. According to Hypothesis 1, the coefficient of RELIEF is expected to be significantly negative.

The second proxy variable is whether the transaction is carried out under common control (COMMON). Here, in reference to the example of disclosure related to the purpose of turning a company into a wholly-owned subsidiary that

was described in the prior section, a dummy variable was set to be equal to 1 when the notes related to the business combination stated that it was a transaction under common control and there were no minority shareholders of the subsidiary at the end of the period in which the business combination was carried out. Otherwise, the dummy variable is equal to 0. According to Hypothesis 2, the coefficient of COMMON is expected to be significantly positive.

In addition, factors that may influence the choice of amortization period are incorporated as control variables. The first control variable is whether the ratio of foreign ownership is high (FOWN10), which is a dummy variable that is coded 1 when the foreign ownership exceeds 10 % at the end of the acquirer's term t where the term t is the fiscal year in which the business combination took place. Because negative goodwill under the U.S. standards and IFRS is considered a income in the period in which it was generated, it is possible that the explanation of the accounting procedure of negative goodwill is required by foreign investors. There is also a possibility that the explanation on the restructuring after the business combination is required due to the difference in understanding of M&A. These points could possibly influence the choice of accounting policy by the management. It should be noted that 10 % is used as a criterion to determine whether the foreign ownership ratio is high on the basis of the stipulation that Form F-4 must be filed with the U.S. Securities and Exchange Commission (SEC) when more than 10 % of the share values of the company being acquired are owned by U.S. residents.

The next control variable is a dummy variable that indicates whether the ordinary income of term t was negative (OILOSS); it is coded 1 if the ordinary income after reversing the estimated amortization amount[2] in the term t of the acquirer is negative. Because the amortization amount of negative goodwill is recorded as non-operating income, there may be an incentive for the management to manipulate earnings by using the amortization amount of negative goodwill when the ordinary income is in red.

Furthermore, in noting Kobayashi (2009), who examined the amortization period of positive goodwill among Japanese companies and demonstrated that the ending total assets, debt ratio, and the percentage of goodwill to total assets were variables that had a significant effect on the amortization period, the variables ASSET, LIABILITY, and NGW are included as control variables. The first variable, ASSET, is the total assets at the end of the term t (natural logarithm) and LIABILITY is the percentage of debt (after deducting the negative goodwill) to total assets at the end of the term t. The final variable, NGW, is the percentage of negative goodwill to total assets at the end of the term t.

---

[2] The amount of amortization in term t was estimated on the basis of the business period of the acquired company listed on the consolidated income statement (this period is the one listed on the securities report; if it is not listed, the period between the date of business combination and the end of the term is considered).

3.2   Samples and Descriptive Statistics

To test the hypotheses, the cases that met the following conditions were extracted as a sample population from the 255 cases included in the tabulation in Sect. 2.2: (1) the amortization period of negative goodwill is longer than 1 year; (2) the amortization period of negative goodwill listed in the notes under the basic key information or accounting policies for preparing the consolidated financial statements for the term $t-1$ does not match with the amortization period of negative goodwill of the case in question; (3) the case is not in the financial sector; and (4) the necessary data are available for analysis.

Condition (1) excluded the cases that used bullet amortization on negative goodwill because their amortization periods seem to be chosen based on the importance of the monetary amount rather than the actual conditions of the acquisition. In addition, the reason for excluding the cases that recorded negative goodwill as a lump-sum profit by adopting the new standard early is that they might have done so for other incentives rather than for the sake of choosing 1 year as the amortization period.

With respect to Condition (2), the reason for excluding the cases in which the new amortization period in the term t was the same as the amortization period of negative goodwill in the term $t-1$ was because it was possible that they chose the amortization period to allow easier explanation to parties such as auditors rather than as a reflection of the conditions of each business combination.

In addition, when the notes listed multiple business combinations announced on the same day, they were considered to be a series of one business combination and were aggregated as one sample case. Business combinations were also aggregated as one sample case when their acquisition prices were shown as the sum even if the announcement dates were unknown. The final number of sample cases was 124.

The data used for each variable were obtained from NEEDS-FinancialQUEST provided by Nikkei Digital Media Inc. and the disclosure documents and securities reports released by each company at the time of the business combination.

Table 5 shows the descriptive statistics and Table 6 shows the correlation coefficient of each variable. Because Table 6 indicates that the correlation coefficient between FOWN10 and ASSET is high, exceeding 0.6, the analysis will include a test using a model that excludes one of the variables.

4   Results

Ordinal logistic regression analysis was conducted to verify the determinants of the amortization period of negative goodwill. The results are shown in Table 7. It should be noted that the likelihood ratio test for the significance of the regression models indicated that both models were significant at the 1 % level.

Table 5 Descriptive statistics

| Variable | All observations (n = 124) | | | | | YEAR = 1 (n = 19) | YEAR = 3 (n = 18) | t-statistic for difference |
	Mean	Std dev.	Min	Median	Max	Mean	Mean	
YEAR	1.990	0.548	1.000	2.000	3.000	–	–	–
RELIEF	0.190	0.397	0.000	0.000	1.000	0.370	0.110	−1.880*
COMMON	0.210	0.409	0.000	0.000	1.000	0.000	0.330	2.915**
FOWN10	0.370	0.485	0.000	0.000	1.000	0.260	0.330	0.455
OILOSS	0.240	0.430	0.000	0.000	1.000	0.320	0.330	0.111
ASSET	10.787	1.631	7.151	10.496	14.987	10.370	11.143	1.427
LIABILITY	0.576	0.236	0.065	0.579	1.673	0.474	0.676	3.257***
NGW	0.019	0.031	0.000	0.007	0.221	0.029	0.020	−0.996

***, **, *indicate statistical significance at the 1 %, 5 %, and 10 % level

According to Table 7, the coefficient of RELIEF is significantly negative at the 5 % level in both models. Therefore, Hypothesis 1, which states that "shorter amortization periods are chosen in relief-oriented business combinations," is supported. It suggests that a shorter amortization period is chosen when the management anticipates a short-term cost or loss incurred for the integration.

The coefficient of COMMON is also positive and significant at the 5 % level.[3] Therefore, Hypothesis 2, which states that "longer amortization periods are chosen in transactions within a group," is supported. It suggests that a longer amortization period is chosen when the management anticipates a long-term cost or loss incurred for the integration. Based on these results, we can conclude that the selection of the amortization period of negative goodwill reflects the perception of the management as to the time period in which the cost or loss will be incurred for the business combination.[4]

Furthermore, looking at the control variables, the coefficient of LIABILITY is significantly positive at the 1 % level and the 5 % level, suggesting that companies with a higher debt ratio choose a longer amortization period of negative goodwill. I will leave the task of identifying the specific reasons for the future because it is beyond the scope of this study's analysis. However, for example, there may be an incentive for trying to stabilize the profitability for the future by amortizing

---

[3] COMMON was positive and significant at the 10 % and 5 % levels even when the same analysis was performed by defining the transactions under common control as COMMON = 1 without imposing the requirement of not having a minority shareholder of the subsidiary after the business combination. The analysis results, therefore, showed no significant difference either way.

[4] There were four sample cases where COMMON = 1 and RELIEF = 1. Because whether the restructuring after the business combination will be carried out from a short-term or long-term perspective was unclear for these four cases, an analysis was performed in the same way by excluding these samples. As a result, the coefficient of RELIEF was significantly negative at the 5 % level and the coefficient of COMMON was significantly positive at the 5 % level in both models, indicating that the results were similar to the results shown in Table 7.

Table 6 Correlation matrix

(n = 124)	YEAR	RELIEF	COMMON	FOWN10	OILOSS	ASSET	LIABILITY	NGW
YEAR		−0.180	0.228	0.042	0.008	0.122	0.255	−0.107
RELIEF	−0.180		−0.043	0.046	0.105	−0.008	0.026	0.073
COMMON	0.228	−0.043		0.238	−0.143	0.212	0.030	−0.215
FOWN10	0.042	0.046	0.238		−0.239	0.635	−0.059	−0.331
OILOSS	0.008	0.105	−0.143	−0.239		−0.297	0.078	0.091
ASSET	0.130	−0.001	0.211	0.638	−0.326		0.130	−0.331
LIABILITY	0.234	0.051	−0.003	−0.071	0.132	0.072		−0.198
NGW	−0.082	0.044	−0.193	−0.143	−0.016	−0.151	−0.089	

The Spearman (Pearson) correlation coefficients are above (below) the diagonal

Table 7 Regression analysis of amortization period

	Dependent variable: YEAR					
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
RELIEF	−1.130	0.027	−1.122	0.027	−1.146	0.024
COMMON	1.248	0.018	1.266	0.017	1.218	0.020
FOWN10	−0.254	0.641	0.104	0.812		
OILOSS	0.325	0.518	0.180	0.711	0.327	0.515
ASSET	0.179	0.281			0.132	0.320
LIABILITY	2.195	0.013	2.331	0.008	2.247	0.010
NGW	−0.596	0.927	−0.941	0.884	−0.464	0.944
n	124		124		124	
Pseudo R^2	0.184		0.174		0.182	

negative goodwill over a long period of time rather than taking an earnings-increasing measure of choosing a short amortization period when the financial difficulties have not reached the point where the company infringes the financial covenants even if the debt ratio is relatively high. As for the control variables other than LIABILITY, none of them had a significant impact on the amortization period of negative goodwill.

5 Conclusion

The purpose of this study was to demonstrate the determinants of the amortization period of negative goodwill and examine whether the choice of amortization period reflects the perception of the management regarding the future outlook at the time of business combination. The analysis results showed that a shorter amortization period is chosen under relief-oriented business combinations and a longer amortization period is chosen when the transaction is under common control, suggesting that the choice of amortization period of negative goodwill may reflect the perception of the management regarding the length of time over which they will incur costs or loss for the business combination. This may reflect a characteristic of Japanese companies that value long-term relationship between acquirer and target even though they conduct a market-oriented transaction.

The current accounting standards regard negative goodwill as something generated upon making a bargain purchase and require it to be recorded as a gain in the term in which it was generated. In addition, the analysis results of this study suggest that the allocation of negative goodwill, as required by the old standard, was rational in terms of "being able to reflect the actual condition of the acquisition in the calculation of profit and loss" (Umehara 2000, p. 171) and that such useful information is no longer available owing to the revision of the accounting standard due to the convergence.

In addition, the United States and other countries with financial reporting standards regard business combinations resulting in negative goodwill as irregular

transactions on the premise of gaining efficiency in the M&A market. By contrast, "an M&A market based on coordination and focusing on friendly acquisitions is being formed" (Miyajima 2007b, p. 347) in Japan. Therefore, we may see many business combinations in Japan that intend to subsequently carry out long-term restructuring. To reflect the actual conditions of the business combination in the accounting information, I believe that there is room to reconsider an accounting method that allows some discretion for allocating negative goodwill.

References

Arikawa, Y., & Miyajima, H. (2007). M&A wa naze zouka shitanoka. In H. Miyajima (Ed.), *Nihon no M&A* (pp. 45–79). Tokyo: Toyokeizaishinpo-sha.

Cattlett, G. R., & Olson, N. O. (1968). *Accounting for goodwill. Accounting Research Study No.10*. New York: American Institute of Certified Public Accountants.

Comiskey, E. E., Clarke, J. E., & Mulford, C. W. (2010). Is negative goodwill valued by investors? *Accounting Horizons, 24*(3), 333–353.

Hall, S. C. (1993). Determinants of goodwill amortization period. *Journal of Business Finance and Accounting, 20*(4), 613–621.

Hendriksen, E. S. (1977). *Accounting theory* (3rd ed.). Homewood: Richard D. Irwin.

Henning, S. L., & Shaw, W. H. (2003). Is the selection of the amortization period for goodwill a strategic choice? *Review of Quantitative Finance Accounting, 20*, 315–333.

Inoue, K., & Kato, H. (2006). *M&A to kabuka*. Tokyo: Toyokeizaishinpo-sha.

Kawamoto, J. (2011). Noren wo meguru giron ni kansuru ichikousatsu. *Sangyokeiri, 71*(1), 55–64.

Kobayashi, N. (2009). Noren no shoukyaku kikan ni kakaru keieisha no kaikeitetsuzuki sentaku ni kansuru jishobunseki. *Zeikeitsushin, 64*(3), 234–244.

Kurokawa, Y. (1998). *Renketsu kaikei*. Tokyo: Shinsei-sha.

Miyajima, H. (2007a). Zounka suru M&A wo ikani yomitokuka. In H. Miyajima (Ed.), *Nihon no M&A* (pp. 1–41). Tokyo: Toyokeizaishinpo-sha.

Miyajima, H. (2007b). Nihon no M&A no kokusaitekitokucho to keizaiteki kinou wa nanika. In H. Miyajima (Ed.), *Nihon no M&A* (pp. 331–379). Tokyo: Toyokeizaishinpo-sha.

Moville, W. D., & Petrie, A. G. (1989). Accounting for a bargain purchase in a business combination. *Accounting Horizons, 3*(3), 38–43.

Nishiumi, S. (2006). Fu no noren no hasseigennin ni kansuru ichikousatsu (Study on generating factors of negative goodwill). *Memoirs of Fukui University of Technology, 36*, 53–62.

Takeda, Y. (1982). *Kigyo ketsugo kaikei no kenkyu*. Tokyo: Hakuto Shobo.

Umehara, H. (2000). *Noren kaikei no riron to seido*. Tokyo: Hakuto Shobo.

Yamauchi, A. (2010). *Noren no kaikei*. Tokyo: Chuokeizai-sha.

Fair Value Accounting of Pension Liabilities and Discretionary Behavior

Shigeaki Sawada

Abstract Room for discretion is allowed in setting the period for amortizing prior service costs due to a reduction in projected benefit obligation (PBO). The aim of this chapter is to clarify the amount of discretion in management's choice and the factors influencing it. The situation is examined in which the amortization period for prior service costs is set shorter than that for actuarial gains and losses. The results are summarized as follows. (1) The amortization period for prior service costs due to a PBO decrease, in contrast to a PBO increase, tends not to be conservative. (2) Greater discretion is likely exercised in setting the length of the amortization period for prior service costs, compared with that for actuarial gains and losses. (3) These tendencies likely reflect a goal to reach target earnings quickly. (4) It is, however, possible that this behavior can be deterred through monitoring by foreign or institutional investors. The results imply that, with regard to setting the length of the amortization period for prior service costs due to a PBO decrease, there may be a trade-off between the benefit of reaching target earnings and the cost of greater accountability to shareholders.

Keywords Amortization period of prior service cost • Corporate governance • Earnings management • Retirement benefit

1 Introduction

Room for discretion is allowed in setting the length of the amortization period for prior service costs due to a decrease in projected benefit obligation (PBO). The aim of this chapter is to clarify the amount of discretionary in management's choice and the factors that influence it.

S. Sawada (✉)
Department of Law and Policy, Kagoshima University, 1-21-30 Korimoto,
Kagoshima 890-0065, Japan
e-mail: sawada@leh.kagoshima-u.ac.jp

Recent years have seen increased importance being placed on decreasing PBO.[1] In Japan, the time is ripe for reconsidering the ideal form of a sustainable retirement benefit system because, on the one hand, underfunding problems are becoming serious due to weak stock market performance, and, on the other hand, companies' business is declining. Against this backdrop, in September 2012 the Ministry of Health, Labor, and Welfare issued an ordinance for revising parts of the enforcement regulation for the Defined-Benefit Corporate Pension Act (2012 MHLW Ordinance, No. 13) in an effort to solve the underfunding problems and decided to make the relevant audit stricter in stages over a period of 5 years. Also, simplification of the procedure for a benefit reduction is considered in a July 2012 announcement regarding the partial revision of the enforcement regulation for the Defined-Benefit Corporate Pension Act, the relevant notice, and the notice on the employee pension funds.

The amortization of prior service costs can have a significant impact on a company's earnings. According to an investigation by the author, at about half of the companies with prior service costs, the existence of these costs has an impact of approximately 5 % on ordinary profit. Many companies are expected to reduce their PBO at some point in the future, so it is important to properly understand the relevant accounting process.

The accounting of prior service costs due to a PBO decrease may show "the future that has already happened" with respect to other accounting processes. Discussions have become active in recent years regarding kinds of accounting processes that can manage to produce large earnings by incorporating changes in liability estimates (e.g., fair value valuation of a liability) into profit/loss calculation.[2] Also, the amortization of prior service costs due to a PBO decrease can be treated as an accounting process in which a change in the estimated fair value of a liability is reflected in the accounting profit. In setting the length of the amortization period for prior service costs, questions of whether discretion allowed for management is utilized to eke out earnings and how such discretion can be limited may indicate "the future that has already happened" concerning such issues.

Despite the importance of the accounting of prior service costs due to a PBO decrease, there are few studies focusing on this topic. This chapter therefore

---

[1] In Japan, the case-law principle concerning abuse of the right to dismiss employees is well developed, and it is difficult to discharge employees. Also, a system of lifetime employment, which does not assume job changes of employees, has been developed. For these reasons, not many companies have a defined contribution (DC) program, which secures the portability of corporate pension benefits, while many companies have adopted a defined benefit (DB) program. The DC plans that started under the Defined Contribution Pension Act, which was implemented in October 2001, are subject to a limit on the contribution amount. Therefore, not many companies have fully shifted to a DC program, and many companies have a DB program.

[2] The exposure draft Fair Value Option for Financial Liabilities published in May 2010 by the International Accounting Standards Board proposes modifications to the accounting of liabilities with a concern that, contrary to intuition, the volatility of net profit/loss resulting from the variation in the credit risk of liabilities that companies chose to measure at fair value would not provide useful information to investors.

compares the intention of accounting standards and their actual implementation, analyzes the effect of the accounting of prior service costs on profit calculation, poses research questions and hypotheses, and examines them.

The following four findings are produced from this study's analysis. (1) The amortization period for prior service costs due to a PBO decrease, in contrast to a PBO increase, tends not to be conservative. (2) Greater discretion is likely exercised in setting the length of the amortization period for prior service costs, compared with that for actuarial gains and losses. (3) These tendencies likely reflect a goal to reach target earnings quickly. (4) It is, however, possible that this behavior can be deterred through monitoring by foreign or institutional investors.

The results imply that, in the case of incorporating a PBO decrease into an income statement, there may be a trade-off between the benefit of reaching target earnings and the cost of greater accountability to shareholders. By abolishing deferred recognition of prior service costs, revised IAS 19 removes the concept of discretion in setting the length of their amortization period.

This approach may restrict management's earnings management. On the other hand, sustainability of accounting earnings may become impaired. However, it may be possible to deter management's opportunistic behavior of eking out earnings, by supporting stockholder monitoring with, for example, greater disclosure of the rationale behind the setting of the amortization period.

The findings of this study are distinct from those of earlier studies in the following two respects. First, this chapter focuses on prior service costs. The existing studies on earnings management in the field of retirement benefit accounting put a primary focus on actuarial gains and losses. The results of the present study imply that management is very likely to use discretion allowed for the accounting of prior service costs in order to eke out earnings. Second, these results also imply that it is possible, through strengthened governance, to deter earnings management based on discretion allowed in the accounting of prior service costs. Earlier studies show the possibility of deterring earnings management in the field of retirement benefit accounting through strengthened internal control, and the present study's results add to that finding.

This chapter is organized as follows. Section 2 summarizes the background of this research, including the characteristics of the relevant standards and their actual application. Section 3 describes the research design. More specifically, the section begins with a summary of main arguments of earlier studies, sets up hypotheses, and presents characteristics of the data sample used for analysis. Section 4 presents the results of the analysis, and Sect. 5 discusses conclusions and issues for future studies.

2 Background

2.1 Characteristics of the Accounting of Prior Service Costs

2.1.1 Asymmetry Between a PBO Decrease and a PBO Increase

Prior service costs refer to an increase or decrease in PBO arising from, for example, a revision to the level of retirement benefits (Accounting Standards Related to Retirement Benefits, 1, 6). Incorporation of prior service costs into profit/loss calculation requires, in principle, division of their amount according to a specified number of years, which is within the average remaining years of service, and entry of the result as a cost in each period (Accounting Standards Related to Retirement Benefits, 3, 2, (4)). Also, for both prior service costs and actuarial gains and losses, it is necessary to continually use the number of years that is set within the average remaining years of service for the year of their occurrence (Practical Guideline, 29). Therefore, changing the once adopted number of years requires a rational reason (ibid).

Prior service costs result from an increase or decrease in PBO. The amortization of prior service costs that result from a PBO increase (decrease) is incorporated in profit/loss calculation as an increase (decrease) in retirement benefit costs. Therefore, in the case of a PBO increase, amortization over a shorter period (which is within the average remaining years of service) leads to earlier recognition of costs and thus to more conservative accounting; in the case of a PBO decrease, the setting of a longer amortization period leads to later recognition of earnings and thus also to more conservative accounting.[3] In terms of standards, however, the amortization period in both cases is described as a specified number of years within the average remaining years of service.

Therefore, the interpretation is that a discretionary move away from average remaining years of service, which is the most conservative length of the amortization period, toward early recognition of earnings is tolerated in the case of a PBO decrease. By setting a short amortization period for prior service costs, management can eke out earnings.

2.1.2 Actuarial Gains and Losses and Comparison Between Actuarial Gains and Losses upon Changing Accounting Standards and Setting the Amortization Period

In part 3.2.4 of the Accounting Standards Related to Retirement Benefits, which stipulates the amortization of prior service costs, the setting of the amortization

---

[3] Unless described otherwise, the term "conservative accounting" in this chapter refers to accounting with late recognition of earnings and early recognition of costs.

period for prior service costs and that for actuarial gains and losses are specified with the same statement. However, since prior service costs and actuarial gains and losses are different in terms of cause and frequency, the amortization period for either of them can be set separately (Practical Guideline, 26).

Although changing the previously adopted number of years requires a rational reason as in the case of setting the amortization period for prior service costs, a somewhat different interpretation is applied in the case of the amortization period for actuarial gains and losses. Actuarial gains and losses result from factors including a difference between the expected return on plan assets and the actual return, a difference between the estimates used in the actuarial calculation of PBO and the actual numbers, and changes in the estimates (ibid, 1, 6). Since actuarial gains and losses arise in each period regardless of management's intention, the amortization period for them is presumed to be set based on the length of amortization periods used in the past.

The setting of the amortization period for prior service costs is different from that for actuarial gains and losses because the events causing prior service costs are due to management decisions and because their frequency is low. Thus, room for exercising discretion is relatively large in the case of prior service costs.

A characteristic of actuarial gains and losses at the time of a change in accounting standards is that the frequency of their occurrence is low as in the case of prior service costs. However, since such gains and losses accompany newly created accounting standards, they should not greatly reflect management's intention. In contrast to setting the amortization period for actuarial gains and losses that arise at the time of a change in accounting standards, room for exercising discretion is large in setting the amortization period for prior service costs.

2.1.3 Comparison Between the Expected Rate of Return and the Discount Rate

Retirement benefit accounting is said to be peculiar in that factors such as estimation, prediction, and expectation of future values have a significant impact on the amount of liabilities and costs (Ito 1996). Discretion is also allowed in setting actuarial assumptions regarding these factors.

In many cases, actuarial assumptions are set based on the relevant track record. For example, the expected rate of return is reexamined based on the actual return on assets in the previous year and can be left as is unless the lack of modification is deemed to significantly affect the profit/loss for the current period (Practical Guideline, 19). Part 2 of the Third Partial Revision to the Accounting Standards Related to Retirement Benefits published in July 2008 by the Accounting Standards Board of Japan explicitly states that the interest on safe, long-term bonds, which forms the basis of the discount rate, refers to the interest rate on long-term government bonds, agency bonds, and high-grade corporate bonds.

There is thus a clear subjective reference point regarding the expected rate of return and the discount rate. For this reason, it is rare in Japan to see a case

Table 1 Discount rate of Japanese companies and the yield of AA-rated corporate bonds (with 20 or more years remaining to maturity) for 2010

Average discount rate of Japanese companies (%)	2.161
AA-rated corporate bond yield (end of Mar 2011) (%)	2.488
Number of companies with a discount rate below the AA-rated corporate bond yield (%)	1,058 (83.0)
Number of companies with a discount rate above the AA-rated corporate bond yield (%)	217 (17.0)

Table 2 Relationship between expected rate of return and discount rate

Year	N	ERR > DR (%)	ERR = DR (%)	ERR < DR (%)
2001	1,248	527 (42.2)	429 (34.4)	292 (23.4)
2002	1,242	635 (51.1)	296 (23.8)	311 (25.0)
2003	1,218	557 (45.7)	318 (26.1)	343 (28.2)
2004	1,182	425 (36.0)	377 (31.9)	380 (32.1)
2005	1,194	411 (34.4)	408 (34.2)	375 (31.4)
2006	1,204	440 (36.5)	407 (33.8)	357 (29.7)
2007	1,223	494 (40.4)	398 (32.5)	331 (27.1)
2008	1,224	531 (43.4)	394 (32.2)	299 (24.4)
2009	1,212	518 (42.7)	383 (31.6)	311 (25.7)
2010	1,175	463 (39.4)	370 (31.5)	342 (29.1)

DR discount rate, *ERR* expected rate of return, *N* number

where the discount rate or the expected rate of return significantly exceeds the reference point. Table 1 compares the discount rate of the companies in the sample used in this study and the yield of AA-rated corporate bonds with 20 or more years remaining to maturity for 2010.[4] The bond yield is the yield of AA-rated corporate bonds calculated by IIC Partners Co. Ltd., which offers consulting services regarding PBO calculation and design of retirement benefit systems.[5] As the table shows, the average discount rate of Japanese companies is below the AA-rated corporate bond yield and thus does not seem to be set in the same manner as the discount rate in the United States, which is excessively high.

Table 2 compares the expected rate of return (ERR) and the discount rate (DR) for each year. The discount rate is determined based on safe, long-term bonds; the expected rate of return is determined according to asset management strategy. Therefore, in the case of creating a retirement benefit system and

---

[4] The reason for using the 2010 data is that due to the Third Partial Revision to the Accounting Standards Related to Retirement Benefits, standards were revised so that, starting in the fiscal year that began on April 1, 2009, or later, companies could be asked to use the end-of-period yield regardless of changes in their discount rate over a certain period. For pre-2010 data, too, the average discount rate of the companies in the sample is below the AA-rated corporate bond yield.

[5] IIC Partners uses data published by the Japan Security Dealers Association and calculates the AA-rated corporate bond yield as a weighted average of yield data from multiple rating agencies, where the weights are the number of bonds included (http://www.iicp.co.jp/library/corporate_bond/).

managing its assets, it should be expected that the expected rate of return is generally higher than the discount rate. However, as the comparison in Table 2 reveals, it is not necessarily true that many companies set their expected rate of return higher than their discount rate.

In the column showing the number and proportion of the companies with their expected rate of return being higher than their discount rate (ERR > DR), even the highest proportion (2002) is 51.1 %, and the proportion for recent years is about 40 %. This means that about 60 % of the companies expect that the value of their plan assets will be flat or decline if time value is taken into account. This result can be interpreted to indicate that, with regard to the setting of the expected rate of return, Japanese companies in general make a conservative accounting choice.

As for the amortization period for prior service costs, the only stipulation is that it must be within the average remaining years of service. Considering the possibility of room for discretion being restricted by its track record, one can say that it is difficult to limit management's discretion regarding the setting of the amortization period for prior service costs, compared with the case of the expected rate of return and the discount rate.

2.2 Discretion Regarding Prior Service Costs and Its Exercise by Management

Can discretion regarding prior service costs be used to eke out earnings? To answer this question, this study uses the length of the amortization period for actuarial gains and losses as a reference point and analyzes management's discretionary accounting behavior involving the amortization period for prior service costs. There are three reasons for using the amortization period for actuarial gains and losses as a benchmark. First, in terms of accounting standards, the setting of the amortization period for prior service costs and that for actuarial gains and losses are specified with the same statement. Second, as discussed in Sect. 2.1.2, room for discretion in setting the amortization period for actuarial gains and losses is relatively small. Third, in practice, many companies use the same amortization period for both prior service costs and actuarial gains and losses.

Table 3 compares the amortization period for prior service costs and that for actuarial gains and losses. Row a (sample of companies incurring prior service costs) shows that the amortization period for prior service costs tends to be set shorter than that for actuarial gains and losses by an average of 1.54 years. The number of cases where the amortization period for prior service costs is longer is higher by 20.86 % points than the number of cases where it is shorter. However, for about 70 % of the observations, the amortization period for prior service costs is identical to that for actuarial gains and losses. As discussed in Sect. 2.1, the setting of the amortization period for prior service costs and that for actuarial gains and losses are specified with the same statement. They are also based on average

Table 3 Characteristics of the amortization period for prior service costs in relation to another amortization period

	Average amortization period for PSC (years)	Average amortization period for AGL (years)	AGL − PSC (years)	PSC < AGL (%)	PSC = AGL (%)	PSC > AGL (%)	(PSC < AGL) − (PSC > AGL) (%)
a: Sample of companies incurring PSC (N = 4,210)	9.13	10.67	1.54	26.39	68.17	5.53	20.86
b: Sample of companies with a PBO decrease (N = 2,404)	9.04	10.79	1.75	28.49	66.76	4.74	23.75
c: Sample of companies with a PBO increase (N = 1,806)	9.25	10.51	1.26	23.59	69.82	6.59	17.00

remaining years of service. It is considered that, for these reasons, many companies use the same amortization period for both. This tendency is observed in both the sample of companies with a PBO decrease (row b) and the sample of companies with a PBO increase (row c).

For the sample of companies with a PBO decrease (row b; amount of prior service costs incurred in the current period <0), the difference between the length of the amortization period for prior service costs and that for actuarial gains and losses is 1.75 years. The difference is 1.26 years for the sample of companies with a PBO increase (row c; amount of prior service costs incurred in the current period >0). These show opposite moves away from the average, reflecting asymmetry in the setting of the amortization period between the case of a PBO decrease and a PBO increase.

The comparison with the amortization period for actuarial gains and losses (columns 3–5) reveals consistently the tendency that the amortization period for prior service costs is set short at companies with a PBO decrease. For the sample of companies with a PBO decrease (row b), the difference between the proportion of the observations with the amortization period for prior service costs being shorter than that for actuarial gains and losses and the proportion of the observation with the former being longer than the latter is 23.75 % points, whereas the difference is 17.00 % points for the sample of companies with a PBO increase (row c).

Let us now examine whether the eking out of earnings based on the choice of the amortization period for prior service costs or the asymmetric setting of the amortization period is actually conducted to achieve target earnings. The amortized amount of prior service costs due to a PBO decrease is included, in principle, in operating profit/loss calculation as a decrease in retirement benefit costs.[6] Therefore, here, focus is put on the impact of the amortization of prior service costs on the ordinary profit.

Table 4 focuses on the sample of companies with a PBO decrease and shows how the rate of achieving target earnings differs depending on the length of the amortization period.[7] The case where the ordinary profit of the previous period is used as the benchmark and the case where the profit expected by management is

---

[6] The Guideline for Applying Corporate Accounting Standards (No. 1, "Accounting Procedures Regarding the Transition from One Retirement Benefit System to Another") states that PBO can decrease significantly due to a substantial reform of a retirement benefit system conducted as part of a large-scale business improvement plan, and that if other profits and losses caused by the implementation of the plan are recorded at once, the significant PBO decrease entered for the period of its occurrence may reflect the actual situation. It thus can be amortized at once as an extraordinary profit/loss. According to the author's investigation, in a sample of 2,027 company-year observations (containing companies with reduced retirement benefits), such amortization is identified in 392 observations (19.34 %). For more than a half of them (221 observations, 56.38 %), part of the amount of amortized prior service costs is entered as an extraordinary profit/loss, and the remainder is included in operating profit/loss calculation as a decrease in retirement benefit costs.

[7] The sample of companies with a PBO decrease used here is obtained from a sample collected based on the criteria described in Sect. 3.4.

Table 4 Rate of achieving target earnings for different relative lengths of the amortization period (sample of companies with a PBO decrease)

	PSC < AGL (%)	PSC = AGL (%)	PSC > AGL (%)
Percentage achieving the ordinary profit of the previous period	61.64	57.16	52.94
Percentage of achieving the ordinary profit expected at the begging of a period	53.46	52.54	48.53

AGL actuarial gains and losses, *PSC* prior service costs

used as the benchmark are considered. As seen in the table, in both cases, when the amortization period for prior service costs due to a PBO decrease is set shorter than that for actuarial gains and losses, the proportion of companies achieving their benchmark is high. There is thus a possibility that discretion allowed regarding the amortization period for prior service costs is exercised by management to eke out earnings.

3 Research Design

3.1 Previous Studies

In the field of retirement benefit accounting, there are many studies focusing on earnings management. Among them, many studies deal with earnings management based on discretion allowed regarding the setting of actuarial assumptions, such as ones for the expected rate of return and the discount rate. For example, Nosaka (2006, 2008) finds it highly possible that the setting of actuarial assumptions is not utilized for earnings management. Among the studies specifying relevant incentives is a study that finds evidence suggesting a possibility of earnings management through the setting of actuarial assumptions in situations where target earnings can be achieved (Yoshida 2009). Using data on U.S. corporations, Comprix and Muller (2010) find that by exercising discretion regarding actuarial assumptions management engages in downward earnings management in connection with the end of a retirement benefit system. They also pay attention to the fact that discretionary behavior is observed less frequently after the implementation of the Sarbanes-Oxley Act and point out the possibility of deterring the exercise of discretion allowed in retirement benefit accounting by thorough internal control.

As for research on the setting of amortization periods, there is a study by Ueno (2008). Regarding reasons for setting the amortization period for actuarial gains and losses that arise at the time of a change in accounting standards to be 5 years or less, the study not only considers major hypotheses on earnings management, such as the

debt contract hypothesis and the scale hypothesis, but also sets a hypothesis on system details. It then examines each of the hypotheses.

According to the summary in Sect. 2.1, prior service costs arise due to management's decision and are not necessarily a type of unrecognized obligation that occurs every period. It is thus considered that discretion involving them is different from the kind of discretion studied in earlier research. Discretionary behavior regarding the setting of actuarial assumptions could be dealt with to some extent by referring to the past track record. In addition, according to the finding of Comprix and Muller (2010), if such handling is thoroughly done through internal control, discretion regarding the setting of actuarial assumptions can be reduced.

A question then arises as to whether discretion allowed regarding the setting of the amortization period for prior service costs due to a PBO reduction can be used to eke out earnings. Another question is what kind of mechanism restricts the exercise of such discretion. To the author's knowledge, no study has examined these questions.

3.2 Hypotheses

According to the summary in Sect. 2.1, discretion regarding the amortization period for prior service costs due to a PBO decrease is allowed in the direction of non-conservative accounting. Section 2.2 identifies a tendency that the amortization period for prior service costs is set shorter than that for actuarial gains and losses, which potentially reflect such discretion. This leads to a question: why is the amortization period set short particularly at the time of a PBO decrease? As implied in Sect. 2.2, there is an increased possibility that target earnings can be achieved as a result of amortization.

With the above factors taken into account, there arises a possibility that management takes advantage of the setting of the amortization period for prior service costs in order to eke out short-term earnings. Therefore, this study sets the following hypotheses.

Hypothesis 1 Management sets a short amortization period for prior service costs due to a PBO decrease in order to achieve a profit benchmark for the current period.

According to the analysis in Sect. 2.2, prior service costs and actuarial gains and losses are amortized with the same amortization period in many cases. Even if, with a lot of room for discretion regarding the amortization period for prior service costs, management can use it to eke out earnings as stated in Hypothesis 1, management does not necessarily always exercise the discretion.

What are the factors that prevent the exercise of discretion allowed regarding the setting of the amortization period for prior service costs? One potential factor is accountability to external bodies. Since, due to its nature, the amortization period for actuarial gains and losses is recorded in every period, the auditor guarantees its rationality even if it is modified. In contrast, prior service costs are not a type of

unrecognized obligation that occurs every period. Therefore, when the amortization period for prior service costs differs from that for actuarial gains and losses (especially when non-conservative accounting is conducted with the former being set shorter than the latter), it is expected that the cost of providing explanations to stockholders and other external stakeholders becomes large.

If the amortization period is set to 5 years, it is interpreted to mean that the effect of a reform of the retirement benefit system undertaken in the current period on productivity and other things is expected to continue for 5 years. It is, however, difficult to observe from outside whether the effect ceases at the end of the 5 years or continues even after that. Management who presumably has internal information is considered to be responsible for explaining the rationale behind the relevant judgments or decisions. The following hypothesis is thus posed.

Hypothesis 2 At companies whose cost of providing explanations to external bodies is high, asymmetry in the setting of the amortization period is reduced.

3.3 Model Used for Analysis

To examine Hypothesis 1, logistic regression analysis is conducted with the following model.

$$
\begin{aligned}
\text{D\_PSC} < AGL = \ & \alpha + \beta 1 * \text{EMD} + \beta 2 * \text{ROA} + \beta 3 * \text{LEV} + \beta 4 * \text{FIRMSIZE} \\
& + \beta 5 * \text{PENSION\_SENSITIVITY} + \beta 6 * \text{PSCSIZE} \\
& + \Sigma \beta * \text{YEAR} + \Sigma \beta * \text{IND} + \varepsilon
\end{aligned} \tag{1}
$$

D_PSC<AGL: Asymmetric amortization period dummy (a dummy variable which equals 1 if the amortization period for prior service costs is shorter than that for actuarial gains and losses or equals 0 otherwise)

EMD: Dummy indicating achievement of the ordinary profit of the previous period (or an ordinary profit expected by management)

LEV: (Total liabilities – Accrued pension costs)/Total assets

ROA: (Pre-tax current-period net profit + Cost of amortizing prior service costs) / Total assets

FIRMSIZE: Natural logarithm of total assets

PENSION_SENSITIVITY: Retirement benefit costs / (Pre-tax current-period net profit + Retirement benefit costs)

PSCSIZE: (End-of-period prior service cost balance + Amount of amortized prior service costs)/PBO

YEAR: Settlement year dummy (2003–2010)

IND: Industry dummy (Nikkei middle-level classification)

The dependent variable is a dummy variable that equals 1 if the amortization period for prior service costs is shorter than that for actuarial gains and losses, or equals 0 otherwise (D_PSC<AGL). The variable captures the situation where the amortization period for prior service costs is set asymmetrically to that for actuarial gains and losses. If there is a statistically significant relation between such non-conservative setting of the amortization period and an incentive for earnings management, management's opportunistic discretionary behavior is strongly suggested.

The earnings management dummy (EMD) indicates whether it is possible to achieve target earnings when the prior service costs incurred in the current period are immediately recognized. The ordinary profit of the previous period and an ordinary profit expected by management at the beginning of a period are used as target earnings.

To control for other incentives for earnings management, variables are used that are frequently considered in research on earnings management (LEV, ROA, and FIRMSIZE). LEV is a debt ratio obtained by dividing total liabilities excluding accrued pension costs by total assets. It is known that when the debt ratio is high, profit-increasing accounting policy is adopted in order to avoid violation of financial restrictions. ROA stands for return on assets, which is obtained by dividing the sum of pre-tax current-period net earnings and the cost of amortizing prior service costs by total assets. Low-performing companies are presumed to have a great incentive to eke out earnings by setting a short amortization period for prior service costs. FIRMSIZE is the natural logarithm of total assets. Large-scale companies are considered to follow profit-reducing accounting policy as they have a strong incentive to avoid political costs.

To control for the magnitude of the effect of retirement benefit accounting, the impact of the retirement benefit system on business performance (PENSION_SENSITIVITY) and the size of prior service costs (PSCSIZE) are used. The size of retirement benefit costs relative to earnings and the degree of a PBO decrease are considered to act as proxies for the amount of earnings that can be eked out and the level of attention paid to prior service costs. Therefore, they need to be controlled for.

In examining Hypothesis 2, a governance variable is included in Eq. (1) as an independent variable. This study focuses on two governance variables. One is the ratio of the shares owned by foreign investors, and the other is the ratio of the shares owned by institutional investors. The cost of providing explanations is considered high when these ratios are high. These investors would try to direct management's behavior in line with their interests through monitoring mainly at shareholder meetings and financial results briefings or through their own purchasing or selling of shares (see, for example, Nakai 2010). If management is concerned about the possibility of being asked by these stakeholders to explain their choice of an accounting method, management may choose a conservative accounting procedure.

Table 5 Descriptive statistics

	Mean	Std. dev.	Maximum	Third quartile	Median	First quartile	Minimum
LEV	0.542	0.212	0.962	0.694	0.544	0.384	0.108
ROA	0.056	0.042	0.196	0.077	0.050	0.028	−0.035
FIRMSIZE	12.144	1.73	16.295	13.442	11.988	10.816	8.889
PENSION_SENSITIVITY	0.096	0.332	2.750	0.053	0.015	0.004	0.000
PSCSIZE	0.063	0.071	0.394	0.085	0.039	0.014	0.000
Ratio of shares owned by institutional investors	22.223	16.593	62.79	34.520	19.240	7.980	0.000
Ratio of shares owned by foreign investors	12.713	11.775	51.99	19.802	9.570	2.825	0.000

3.4 Criteria Used to Obtain the Sample and Its Characteristics

The financial data are obtained from NEEDS-FinancialQUEST. The governance data are from NEEDS-Cges. In obtaining the sample, the following three criteria are used. (1) The companies included are listed Japanese companies for the period from 2003 to 2010. (2) The amount of prior service costs incurred for a given period is negative. (3) It is possible to obtain data on all the variables used in the analysis. For each variable in the sample obtained with these criteria, the effect of outliers is mitigated by replacing the highest (lowest) 1 % of the values with the 99th (1st) percentile. The final sample size is 1,736.

Table 5 shows descriptive statistics for each variable; Table 6 shows correlations among the variables.

4 Results

Table 7 shows the results of estimating the coefficient of each variable included in the model used for analysis.[8] Hypothesis 1 can be examined with column (a). The coefficient of EMD is significant and positive. Therefore, when the ordinary profit of the previous period can be achieved the possibility is high that management set the amortization period for prior service costs shorter than that for actuarial gains and losses. The result supports Hypothesis 1.

---

[8] A similar result is obtained with regard to the relationship with the ordinary profit expected by management. Moreover, a similar result is obtained when only one of LEV, ROA, and FIRMSIZE, which are highly correlated with one another, is used or when one of them is excluded.

Table 6 Correlations among the variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
D_PSC < AGL	(1)		0.06	0.06	0.08	−0.09	0.05	0.19	−0.11	−0.08	−0.07
EMD (previous period)	(2)	0.06		0.52	−0.04	0.03	−0.09	0.05	0.27	−0.11	−0.11
EMD (expected)	(3)	0.06	0.52		−0.06	0.02	−0.09	0.08	0.25	−0.08	−0.09
LEV	(4)	0.08	−0.04	−0.06		−0.51	0.43	0.03	−0.03	−0.12	−0.15
ROA	(5)	−0.1	0.05	0.04	−0.53		−0.16	−0.19	−0.01	0.30	0.30
FIRMSIZE	(6)	0.04	−0.08	−0.08	0.39	−0.15		−0.07	−0.16	0.54	0.51
PENSION_SENSITIVITY	(7)	0.20	0.16	0.16	0.05	−0.27	−0.06		0.20	−0.11	−0.09
PSCSIZE	(8)	−0.10	0.30	0.28	−0.06	0.04	−0.14	0.43		−0.11	−0.11
Ratio of the shares owned by institutional investors	(9)	−0.08	−0.1	−0.07	−0.12	0.29	0.59	−0.18	−0.12		0.85
Ratio of the shares owned by foreign investors	(10)	−0.08	−0.12	−0.09	−0.15	0.30	0.57	−0.17	−0.12	0.90	

Table 7 Estimation results

	Eq. (1)	Ratio of shares owned by institutional investors	Ratio of shares owned by foreign investors
	(a)	(b)	(c)
EMD	0.653***	0.635***	0.626***
Governance variable	–	−0.020***	−0.024***
LEV	0.661	0.393	0.382
ROA	−2.300	−0.552	−0.938
FIRMSIZE	0.003	0.157	0.127
PENSION_SENSITIVITY	1.715***	1.718***	1.736**
PSCSIZE	−8.466***	−8.563***	−8.451***
Pseudo R^2 (%)	16.4	17.4	17.1

***Denotes significance at the 1 % level, **denotes significance at the 5 % level

As for Hypothesis 2, the results are shown in columns (b) and (c). The relevant coefficient is negative, suggesting the possibility that the higher the ratio of the shares owned by institutional investors or foreign investors, the more likely management hesitates to exercise discretion in setting the amortization period. The result supports Hypothesis 2.[9]

5 Conclusions and Topics for Future Studies

The aim of this study was to examine the exercise of discretion allowed regarding the setting of the amortization period for prior service costs due to a PBO decrease and to clarify factors that affect the exercise of such discretion by management. The following are the findings of this work. (1) The amortization period for prior service costs due to a PBO decrease, in contrast to a PBO increase, tends not to be conservative. (2) Greater discretion is likely exercised in setting the length of the amortization period for prior service costs, compared with that for actuarial gains and losses. (3) These tendencies likely reflect a goal to reach target earnings quickly. (4) It is, however, possible that this behavior can be deterred through monitoring by foreign or institutional investors.

The results imply that, in the case of incorporating a PBO decrease into an income statement, there may be a trade-off between the benefit of reaching target earnings and the cost of greater accountability to shareholders. By abolishing

---

[9] With regard to the control variables, the estimation results for both Hypotheses 1 and 2 show that the coefficients of PENSION_SENSITIVITY and PSCSIZE are significantly different from zero. This can be interpreted to mean that the amortization period tends to be set short when prior service costs are large relative to a profit level, but that the tendency weakens when the size of prior service costs is large. It is considered that when great attention is paid to the accounting of prior service costs the tendency to set the amortization period short weakens.

deferred recognition of prior service costs, revised IAS 19 removes the concept of discretion in setting the length of their amortization period.

This approach may restrict management's earnings management. On the other hand, sustainability of accounting earnings may become impaired. However, it may be possible to deter management's opportunistic act of eking out earnings, by supporting stockholder monitoring with, for example, greater disclosure of the rationale behind the setting of the amortization period.

The findings of this study are distinct from those of earlier studies in the following two respects. First, this study focuses on prior service costs. The existing studies on earnings management in the field of retirement benefit accounting focus primarily on actuarial gains and losses. The results of the present study imply that management is highly likely to use discretion allowed for the accounting of prior service costs in order to eke out earnings. Second, the result also implies that it is possible through strengthened governance to deter earnings management based on discretion allowed for the accounting of prior service costs. Earlier studies show the possibility of deterring earnings management in the field of retirement benefit accounting through strengthened internal control, and this study's results add to that finding.

There are some issues regarding this study's analysis. First, this study uses a restricted model focusing on a sample of companies with a PBO decrease. Since the model does not deal with a general situation involving the setting of the amortization period for prior service costs, the results of this study should be interpreted with caution. Second, the model used here may have overlooked some important variables. The coefficient of determination of the model is not necessarily high. It is possible that if important variables are missing, the model will not sufficiently explain the reason why the amortization period for prior service costs becomes shorter than that for actuarial gains and losses. These issues will be addressed in future work.

References

Business Accounting Council. (1998). Accounting Standards Related to Retirement Benefits (in Japanese).

Comprix, J., & Muller, K. A. (2010). Pension plan accounting estimates and the freezing of defined benefit pension plans. *Journal of Accounting and Economics, 51*(1–2), 115–133.

Ito, K. (1996). *The dynamism of accounting system*. Tokyo: Iwanamishoten (in Japanese).

Japasnese Institute of Certified Public Accountants. (2009). Practical Guideline of Accounting Standards Related to Retirement Benefits (in Japanese).

Kagaya, T. (2008). How does the choices in the discount rate of retirement employee affect the future performance? (in Japanese). Discussion Paper, No. 387, Project on Intergeneration Equity, Institute of Economic Research, Hitotsubashi University.

Kagaya, T. (2010). Presentation of retirement benefits expense: Evidence from Japan (in Japanese). Working Paper, Hitotubashi University.

Nakai, M. (2010). The impact of shareholder activism on target firm's governance structure. *Shitennoji University Bulletin, 51*, 383–393 (in Japanese).

Nosaka, K. (2006). Accounting policy selection behavior on discount rates in pension accounting: Discretionary behavior, herding behavior, and standardization behavior. *The Journal of Management Accounting, Japan, 15*(1), 57–70 (in Japanese).

Nosaka, K. (2008). Taisyokukyuuhukaikei ni okeru Kitaiunnyousyuue-kiritsu no Kaikeihousinn Senntakukoudou. *Kaikei Kansa Janaru, 20*(10), 107–115.

Ueno, T. (2008). *Changes of retirement benefit schemes and corpo-rate behavior*. Tokyo: Chuoukeizaisya (in Japanese).

Yoshida, K. (2009). Determinants of expected rate of return on pension asset in Japan. *Accounting, 175*(5), 52–66 (in Japanese).

The Influence of Informal Institutions on Impaired Asset Write-Offs: Securing Future and Current Pies for Payouts in Japan

Keishi Fujiyama

Abstract Comparative international research on earnings attributes suggests that financial reporting outcomes are partly determined by reporting incentives. Moreover, studies have argued that current-period accounting income tends to be viewed as the pie for stakeholder payouts in countries with stakeholder governance and that, because of the payout preferences of stakeholders, managers tend to reduce income volatility in these countries, either by using their discretion or through real activities. This study focuses on accounting for fixed asset impairment and indirectly investigates the influence of reporting incentives created by an economy's institutional structures on financial reporting outcomes. It examines whether Japanese firms use discretion and other accounting techniques when recording impaired asset write-offs. It also examines whether these accounting behaviors are different for stable and increased dividend firms and no dividend and decreased dividend firms. Unlike a study using data from US firms, it provides evidence on income-smoothing behaviors, focusing on Japanese firms, and suggests that reporting incentives in the United States and Japan affect write-offs. This study also finds that this is true for stable and increased dividend firms, but is not the case for no dividend and decreased dividend firms. This suggests that the importance of dividends among Japanese firms affects their behaviors.

Keywords Fair value • Impairment • Income smoothing • Reporting incentive • Stable dividend

K. Fujiyama (✉)
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: keishi_s301@yahoo.co.jp

1   Introduction

This study examines whether Japanese firms use discretion and other accounting techniques when recording impaired asset write-offs. It also examines whether these accounting behaviors are different for stable and increased dividend firms (SI firms) and no dividend and decreased dividend firms (ND firms). The study is designed to indirectly demonstrate the influence of an informal institution—the stable dividend payout convention in Japan—on financial reporting outcomes.

Previous studies have argued that financial reporting outcomes are determined partly by accounting standards and partly by reporting incentives (e.g., Schipper 2005; Holthausen 2009). Watts and Zimmerman (1978) hypothesize that accounting standards result from complex interaction involving numerous parties. Ball et al. (2000) argue that stakeholders demand more stable payouts in code-law countries than they do in common-law countries, and thus, accounting standards in the former permit managers greater discretion in deciding whether economic gains and losses are to be incorporated in accounting income. Therefore, accounting standards can vary around the world according to countries' institutional structures, which leads to international differences in financial reporting outcomes.

However, comparative international research on earnings attributes such as earnings management, timely loss recognition, and value relevance suggests that financial reporting outcomes are partly determined by reporting incentives. Countries' institutional structures may provide firms with reporting incentives. Therefore, previous studies examined the influence of legal origins (Ball et al. 2000, 2008; Leuz et al. 2003; Nabar and Boonlert-U-Thai 2007), legal investor protection (Hung 2001; Leuz et al. 2003; Bushman and Piotroski 2006; Nabar and Boonlert-U-Thai 2007), financial systems (Ali and Hwang 2000), and other reporting incentives (Ball et al. 2003; Bushman and Piotroski 2006). Ball et al. (2003) find that financial reporting quality is no higher in Asian countries with high-quality financial reporting standards, similar to those in the US, than in code-law countries, which suggests that financial reporting outcomes are partly determined by reporting incentives. Thus, these streams of research focused on formal institutions, such as origin of law and legal investor protection.

Formal institutions, however, may be proxies for informal institutions while not functioning as real sources of management decisions. North (1990) argues that formal rules underlie informal institutions, but that these are seldom the obvious and immediate source of choice in daily interactions. North (1994) also argues that informal institutions provide legitimacy to a set of formal rules. Ball et al. (2000) acknowledge that the common/code law categorization is a proxy for an underlying economic construct, that is, the extent to which accounting is determined by market supply and demand relative to political forces. This study explores the influence of an informal institution: the stable dividend payout convention in Japan.

To explore this topic, I focus on income-decreasing fair value estimates, accounting for fixed asset impairment. I do so for two reasons. First, fair value

estimates permit discretion to managers and directly affect net income, suggesting that explicit and implicit incentives may exist for managers to manipulate write-off amounts (Riedl 2004). To explain the low degree of timely loss recognition in code-law countries, Ball et al. (2000) argue that current-period accounting income tends to be viewed as the pie for stakeholder payouts in these countries. Moreover, because the preferences of stakeholders mean that volatility in payouts, and thus income, is penalized, managers tend to reduce income volatility either by using discretion or through real activities. As is consistent with Ball et al. (2000), Garcia Lara et al. (2005) argue that managers' incentives to manage earnings downwards are more pronounced in good news periods. Therefore, when they face income-decreasing fair value estimates, managers of Japanese firms may have incentives to exercise their discretion in a manner that is consistent with that found in prior research, such as that of Ball et al. (2000).

The second reason that I focus on accounting for fixed asset impairment is the similarity between the Japanese and US standards. If financial reporting outcomes are determined partly by standards and partly by reporting incentives, focusing on similar standards enables the investigation of the effect of reporting incentives. This study indirectly confirms the differences in reporting incentives by comparing its results with those of Riedl (2004).

In addition to income-decreasing fair value estimates, I focus on dividend policy, which reflects the conventions of Japanese firms. Denis and Osobov (2008), on investigating firms in the United States, the United Kingdom, Germany, France, and Japan, report that a larger proportion of firms pay dividends in Japan than in the other four countries. The Life Insurance Association of Japan (2011), on surveying institutional investors and firms regarding their dividend policies, reports that 74.2 % of Japanese firms prefer to keep stable dividends,[1] while 50 % of institutional investors prefer a performance-related dividend policy and only 36.7 % favor a stable dividend policy.[2] This survey demonstrates the dividend policy conflict between investors and managers (or other stakeholders) and suggests that managers adjust conflicts among stakeholders through dividend policy and thus through accounting income, which is the source of dividends. For these reasons, this study examines the influence of an informal institution on financial reporting outcomes by focusing on income-decreasing fair value estimates and dividend policy.

Since existing literature argues that distribution among stakeholders is emphasized in code-law countries, I expect Japanese firms to use discretion and other accounting techniques when recording impaired asset write-offs, and I offer evidence suggesting that this phenomenon exists. Riedl (2004) conducts a similar analysis using data from US firms and does not find such evidence. This suggests that reporting incentives in the United States and Japan affect write-offs. Moreover,

---

[1] Note that 66.2 % of Japanese firms preferred the stable dividend policy in 2008, that is, before the financial crisis, suggesting that this preference increased because of the crisis.

[2] Moreover, before the crisis, only 20.9 % of investors in Japan favored the stable dividend policy.

this study examines the differences in these behaviors between SI firms and ND firms and finds that SI firms exhibit these behaviors, while ND firms do not, and that the difference is statistically significant. Therefore, the importance of stable dividend payouts for Japanese firms, in terms of securing future and current pies for payouts, appears to lead to this association.

This study contributes to the comparative international research on earnings attributes. Existing research provides evidence of international variation in earnings attributes but, in most cases, does not separate reporting incentive effects and accounting standards effects.[3] This paper focuses on impairment accounting, in which the differences between the United States and Japan are relatively small, and obtains results consistent with the prior research on earnings attributes, suggesting the influence of reporting incentives.

This study also contributes to the literature on "new institutional accounting" (Leuz and Wysocki 2008; Wysocki 2011). It is important to understand factors that affect firms' reporting incentives, and although many studies show that formal institutions, such as legal investor protection, affect firms' reporting incentives, few focus on informal institutions. This study is designed to indirectly demonstrate the influence of an informal institution created by an economy's institutional structure on financial reporting outcomes by investigating how managers behave when they face fair value estimates that give them discretion and reduce earnings. In particular, this study shows the influence of the stable dividend payout convention on financial reporting outcomes.

Finally, the findings of this study have implications for standard setters, at least in Japan, where controversy exists regarding the adoption of International Financial Reporting Standards (IFRS). From the 1990s through the 2000s, Japanese accounting standards have been converging with US GAAP and IFRS, but differences remain, for example, in goodwill accounting. IFRS and US GAAP require only an impairment test of goodwill, while Japanese standards require both an amortization method and an impairment test. This combined usage may reduce income volatility. Given the complementarities between accounting and non-accounting institutions, accounting standards may have limited effectiveness in case these fail to consider other economic and institutional factors that affect firms' reporting incentives (Wysocki 2011). In addition, if accounting standards are set without understanding these economic and institutional factors, changes in standards may worsen a country's overall economy, even if the proposed changes may, in isolation, seem to improve corporate financial reporting quality. Therefore, standard setters should consider the behaviors of reporting entities and consider potential feedback effects in setting useful standards for users, including debt and equity investors, employees, suppliers, and customers (Ball et al. 2000). Although this study does not directly investigate the costs that accounting standards impose on stakeholders, it addresses the cost aspects of a "high quality" accounting standard for outside

---

[3] As some of the few exceptions, Ball et al. (2003) and Burgstahler et al. (2006) provide evidence on the influence of reporting incentives.

capital providers and implies that, given that managers are rational, implementing the standard as required is costly for them.[4]

2 Background

2.1 Importance of Accounting Income as a Pie for Payouts in Japan

In this section, the role of accounting income as a pie for payouts and the importance of dividend payouts are discussed. The case of Nippon Steel Co. (NSC, currently the "Nippon Steel & Sumitomo Metal Corporation"), a representative Japanese company, is addressed, and its unconsolidated income statements since 1982 are examined.[5] One of the limitations of this study is the existence of other possible explanations for observed results. Morck and Yeung (2011) argue that historical case investigations are useful for reinforcing the plausibility of hypotheses (also see Wysocki 2011). Therefore, this study also employs a case method to reinforce the plausibility of its hypotheses.

Until 1989, NSC's special profits and special losses were recorded as cancelling each other out (see Fig. 1). In 1987, however, NSC recorded net losses and was compelled to reduce dividends per share owing to a rise in the value of the yen.

After 1988, the favorable turn in the economy led to net income increases for NSC as well as dividends-per-share levels that exceeded those reached before the Plaza Accord in 1985, which caused the rise of yen. Conversely, NSC also recorded many special losses in and after 1988. This string of special losses included write-offs of development expenses, losses on fixed asset retirements in 1988, and restructuring charges in 1989. Special losses in 1990 and 1991 resulted from pension plan reform and restructuring charges based on the company's midterm management plan. NSC disposed its properties, plants, and equipment and dispatched a greater numbers of employees to affiliated companies (see Fig. 2) during the recovery period. The restructuring carried out during this period implies that NSC was able to reform its businesses when it recorded net profits.

The midterm management plan was continued in 1992, but the company's ordinary income fell to half the level in 1990. Although NSC maintained its dividend level, it had to pay dividends exceeding the amount of net income without

---

[4] I do not argue that accounting standards with timely loss recognition are not necessary but, rather, that the costs of such accounting standards must be recognized. Even in Japan, the increasing participation of shareholders in corporate governance may spark a demand for timely loss recognition.

[5] Most Japanese firms emphasized the use of unconsolidated income statements until the late 1990s because they were used to calculating distributable profits. Japanese firms are now permitted to calculate the profits based on their consolidated income statements.
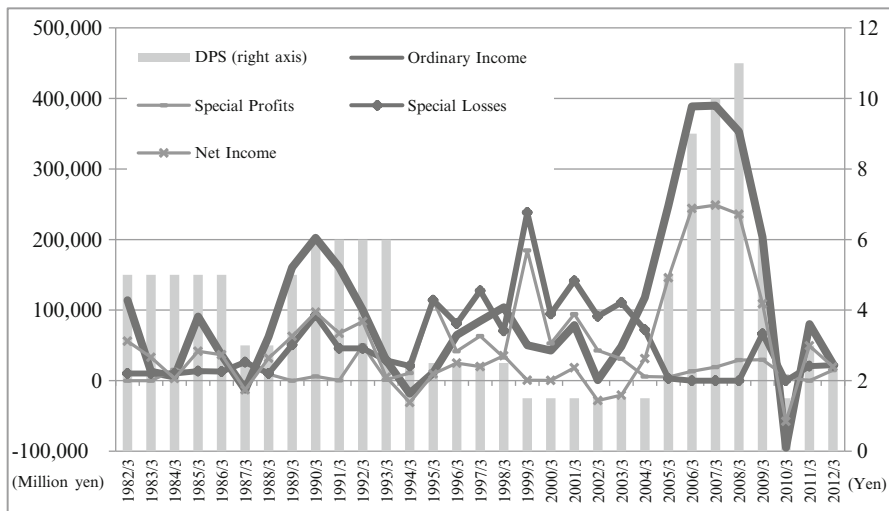
Fig. 1 Various income measures and dividends per share. *Source*: NEEDS Financial-QUEST and NSC's annual reports. *Note*: The NSC's fiscal year-end is March 31
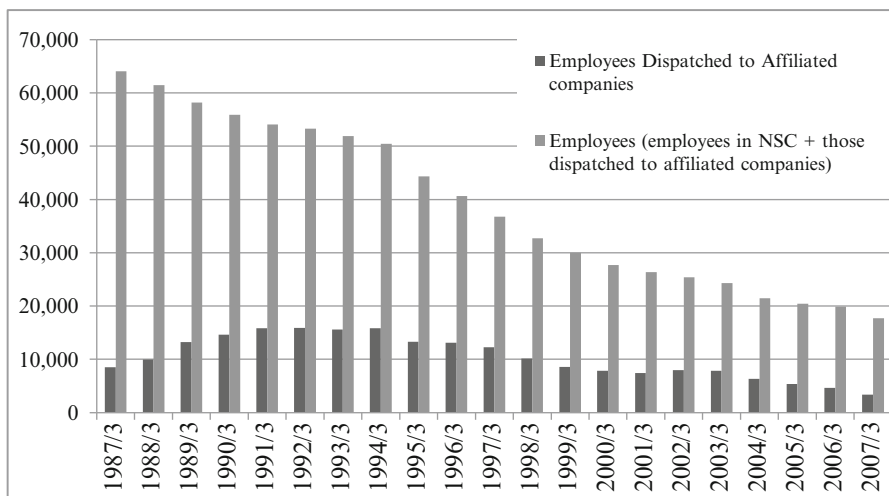
Fig. 2 Time series variation in the number of NSC's employees and that of employees dispatched to other affiliated companies. *Source*: NEEDS Financial-QUEST and NSC annual reports. *Note*: Data on the number of employees dispatched to affiliated companies is disclosed during this period

special profits.[6] These special profits were composed mainly of gains from fixed asset sales to one or more affiliated companies. In other words, NSC generated profits by selling its fixed assets while maintaining its influence over them.

NSC's dividend payouts exceeded its net income in 1993, and it recorded net losses and reduced dividend payouts in 1994. Considering its competitors' decision not to pay dividends, NSC's payment of dividends indicated its desire to maintain its status as a representative Japanese company. The Nikkei[7] (1994) described this decision in the following text:

"We made a painful choice," the vice president explained . . . "There is no prospect that the business environment will improve in the next year. NSC's retained earnings dissaving exceeded fifty billion yen and reduced its funds. [NSC] should prevent the outflow of funds to promote personnel reduction."

Large steel companies are the representatives of Japanese companies that follow the "stable dividend principle" and pay stable dividends in both good and bad years. They kept paying dividends at the time of the shock of the appreciation of the yen instead of not increasing dividend payouts in favorable economic conditions . . . [NSC] has leeway in its balance sheet, but, the leeway is not the only reason to avoid not paying dividends. "Aside from a problem of whether [paying dividends] is good or not good," an executive of the Industrial Bank of Japan said, "it decided to pay dividends as a leader of Japanese industries." There is a concern that, if NSC does not pay dividends, this practice will spread among other industries.

In 1995, NSC started engaging in drastic personnel reductions. Although the company had been reducing its personnel since the late 1980s (see Fig. 2), previous reductions occurred through attrition and temporary transfers. Although in the late 1980s and early 1990s, it had downsized while also protecting jobs, NSC changed this practice in 1995, cutting employment substantively and recording dismissal allowance charges of 103.7 billion yen. It also recorded gains in securities sales and bottom-line profits. Therefore, it generated the cash necessary to reduce its personnel and avoid recording losses by selling securities carried at historical costs.

The personnel reduction continued until 2002; however, NSC never failed to pay dividends.[8] Gains in securities and fixed assets sales enabled it to make these payments. During the 5 years between 1995 and 1999, NSC not only recorded dismissal allowance charges of 307.5 billion yen, but also gains in securities sales and fixed asset gains of 374.3 billion yen, exceeding charges.

The case of NSC has two implications. First, concerning the payment of dividends, it shows that restructuring is relatively easier to implement when Japanese firms perform well. In other words, Japanese firms can avoid recording write-offs in bad periods and record them in good periods. Second, it indicates that Japanese

---

[6] Note that tax payment is not considered here.

[7] One of the most widely read economic newspapers in Japan.

[8] NSC reduced its dividend payouts owing to massive restructuring and the downturn in the East Asian economy in 1999.

firms may manage earnings upward through accounting accruals and real activities so that they can pay dividends. Stated differently, Japanese firms adjust earnings downward and upward to secure future and current pies for payouts.

However, these tendencies of Japanese firms may be changing. Two changes can be observed in the case of NSC. First, it promoted substantial personnel reductions from 1995 to 2002.[9] Yoshimori (1995) has asked firms in the United States, the United Kingdom, France, Germany, and Japan whether they would choose job security or dividends if the CEO had to decide whether to maintain dividends or lay off employees. He reports that 97.1 % of Japanese firms support job security. Although this is consistent with NSC's behavior in the 1980s and early 1990s and the fact that it took eight years to reduce its personnel, the firm's substantive employee reduction is a sign of change.[10]

The second change is the fact that, although NSC experienced favorable economic conditions from 2005 to 2008, it did not record any special losses.[11] One reason for this may be changes in accounting standards. Accounting standards with timelier loss/gain recognition, such as mark-to-market accounting for securities, were introduced in Japan in 2000, possibly making it difficult to record losses as special losses during a favorable economic period and to record special profits during an unfavorable economic period.

It has been observed that code-law countries are approaching shareholder governance. Whitley (1999, pp. 182–208) provides evidence of changes in business systems in East Asian capitalist countries including Japan. Similarly, Schilling (2001) indicates that shareholder interests play a major role in Germany, and Stoney and Winstanley (2001) observe that Germany is moving towards a more market-based approach. By contrast, as mentioned above, Japanese firms still emphasize stable dividend payouts (The Life Insurance Association of Japan 2011). Moreover, as the OECD (2004) reports, dismissal is still very difficult in Japan, at least for regular employees, and thus, managers of Japanese firms must proceed with an awareness of that difficulty. Jackson (2007), on investigating the distribution of adjusted gross value added from 1980 to 2005, finds that the distribution to labor has not changed.[12] Therefore, although the importance of shareholders is increasing, employees continue to be important stakeholders in Japan, and thus, I still expect net income to be viewed as a pie for stakeholder payouts in the country.

---

[9] The NSC group promoted this reduction until 2004.

[10] Ahmadjian and Robinson (2001) argue that downsizing in the 1990s effectively deinstitutionalized permanent employment.

[11] NSC adopted accounting for fixed asset impairment in 2004, and its write-offs are all related to real estate.

[12] Rather, the distribution to labor increased during Japan's "lost decade."

2.2 Fixed Asset Impairment and Earnings Management

Riedl (2004) find that managers of US firms record write-offs on impaired long-lived assets to take "big baths" and that changes in management lead to these write-offs, although he finds no evidence of income smoothing.

Studies on Japan examine whether managers managed earnings during the early adoption period of the Japanese standard for fixed asset impairment and find evidence of income smoothing during the early adoption period but not during the mandatory adoption period (Yamamoto 2005; Enomoto 2007, 2008; Kimura 2007). Yamamoto (2005) argues that this behavior by Japanese firms is due to the importance of debt financing (i.e., the main bank system). However, the evidence on "big baths" is mixed (Enomoto 2007, 2008). In addition, existing studies find no significant relationship between changes in management and write-offs (Yamamoto 2005; Enomoto 2007, 2008).

Hu and Kurumado (2012) use data from Japanese firms listed in section one of the Tokyo Stock Exchange, after the first year of mandatory adoption of the Japanese standard for fixed asset impairment, and examine income-smoothing practices. They provide naive evidence of income smoothing behavior by Japanese firms.[13]

Existing research on fixed asset impairment in Japan provides evidence of the income smoothing behavior of Japanese firms, unlike in the case of the United States. However, except for Yamamoto (2005), no study explains this phenomenon. Moreover, Yamamoto (2005) does not examine the reasons for his results. I outline the explanations for this phenomenon and examine one of them, dividend payout convention, in detail.

In addition, except for Hu and Kurumado (2012), other studies that use data from Japanese firms cover only the early adoption period and the first year of mandatory standard adoption. During this period, Japanese firms recorded real estate write-offs because of the prior collapse of the bubble economy of the 1990s.[14] Therefore, these write-offs may not reflect the impairments that occurred during the research period.

---

[13] Riedl (2004) uses a variable equal to the change in a firm i's pre-write-off earnings from period $t - 1$ to t, divided by total assets at the end of $t - 1$ when above the median of nonzero positive values of this variable, and equal to 0 otherwise. Hu and Kurumado (2012) use an indicator variable equal to 1 when the change in a firm i's pre-write-off earnings from period $t - 1$ to t, divided by total assets at the end of $t - 1$, is above the median of nonzero positive values of this variable, and equal to 0 otherwise. Riedl (2004) indicates that a coefficient from a Tobit regression includes two components: the write-off amount and the write-off decision. Therefore, I use a variable that captures the amounts of write-offs to consider these amounts and compare the results of this study to those of Riedl (2004).

[14] The reasons for introducing this standard in Japan are (1) to ensure convergence in Japanese and US accounting standards and the IFRS and (2) to resolve the problem of overstating carrying amounts of fixed assets.

3 Hypothesis Development

3.1 Impaired Asset Write-Offs and Income-Smoothing Practices in Japan

Riedl (2004) proposes two reasons for smoothing high increases in earnings[15]: to provide private information about the true value of a firm and as a form of opportunistic managerial behavior (e.g., maximizing long-term bonus payments, potential stock-related compensation, or shareholder value). However, incentives to smooth earnings vary according to countries' institutions and culture (Bao and Bao 2004; Garcia Lara et al. 2005; Gassen et al. 2006). Ball et al. (2000) argue that accounting income is viewed as a pie to be divided among stakeholders. As a result, while incentives to reduce volatility in accounting income exist in common-law countries, code-law governance amplifies them, resulting in reduced earnings in good years and increased earnings in bad years. I argue that Japanese firms report more smoothed earnings through these accounting practices.

Garcia Lara et al. (2005) provide the following explanations of why managers of continental European firms engage in income-decreasing strategies, especially in good years: (1) the link between dividends and earnings, (2) the pecking order theory, (3) the link between earnings and taxation, (4) reduced incentives to manage earnings upwards, and (5) the existence of strong labor unions.[16] Assuming that managers of Japanese firms face an institutional environment similar to that of continental Europe, all or some of the explanations that Garcia Lara et al. (2005) propose suggest that Japanese managers have strong incentives to smooth earnings. As the case of NSC suggests, Japanese firms are also expected to restructure their businesses during favorable economic conditions, resulting in income smoothing. Therefore, these explanations and the case of NSC support Ball et al.'s (2000) argument. Thus, I now propose my first hypothesis.

---

[15] Riedl (2004) may view income smoothing as downward earnings management at the time of increased earnings, as he states that managers manage earnings because the reduction in positive earnings surprise leads to greater inferred perception of the reported earnings construct. This study also considers the phenomenon of managers managing earnings upward at the time of recording impaired asset write-offs. Therefore, the terms "income smoothing" and "smoothing earnings" are used *here* to indicate the phenomenon whereby managers record impaired asset write-offs to *decrease* high increases in earnings.

[16] For Japanese firms, the difficulty of dismissal may be a more appropriate explanation for income-smoothing strategies than the existence of strong labor unions. Strong labor unions can affect income-smoothing practices, but despite the fear of strengthening the negotiating positions of labor unions (Garcia Lara et al. 2005), Japanese firms face greater difficulties in dismissal owing to the doctrine of the abuse of rights of dismissal, as established by case law. Moreover, impaired asset write-offs are not strongly linked with taxation in Japan, as the calculation of taxes excludes the account of impaired asset write-offs. Therefore, managers in Japan may have fewer incentives to reduce earnings for tax purposes than managers in countries with strong links between write-offs and taxation.

Hypothesis 1 Managers of Japanese firms use discretion and time impaired asset write-offs, and manage earnings upward through various accounting techniques when recording write-offs.

3.2   The Influence of Dividend Payout on Impaired Asset Write-Offs in Japan

The case of NSC and Denis and Osobov (2008) show the importance of dividend payouts in Japan. Suda and Hanaeda (2008), on surveying the financial reporting strategies of Japanese firms and the effects of income smoothing,[17] find that most respondents endorse using income smoothing to maintain stable dividends. Thus, in Japan, firms paying dividends have incentives to adjust earnings downward and upward, which secures future and current pies for payouts. In addition, the tax explanation does not apply in this situation (see note 16), even though Garcia Lara et al. (2005) propose its application to the smoothing of earnings in code-law countries. Therefore, this study examines the dividend payout explanation as a key driver.[18]

I expect firms with stable and increased dividend payouts (SI firms) to have incentives to adjust earnings downward and upward. In addition to stable dividend firms, I also expect firms with increased dividends to have such incentives because they seek to avoid excess dividends in the current year and maintain payment levels in subsequent periods (Aoki 2011).

Conversely, I expect firms with no dividend and reduced dividend payouts (ND firms) to have no incentives to adjust earnings downward or to seek to leave write-offs unrecorded. ND firms can be classified into two categories—growing firms and distressed firms. Growing firms tend not to pay dividends (Fama and French 2001; DeAngelo and DeAngelo 2006; DeAngelo et al. 2006) because they demand funds that exceed internally generated cash.

Non-payers with a history of paying dividends have low earnings and few investments (Fama and French 2001). Thus, increased earnings signal their improvement in performance or result from their upward earnings management to avoid bankruptcy. In addition, decreased dividend firms still pay dividends, and thus, accounting income continues to be important for them as a source of dividends. Therefore, these firms have incentives to avoid recording impaired asset write-offs that reduce earnings.

---

[17] Suda and Hanaeda (2008) define income smoothing as managing earnings downward when earnings increase and upward when earnings decrease. The definition of income smoothing by Suda and Hanaeda (2008) is thus different from that of Riedl (2004).

[18] I do not argue that the dividend payout explanation is only a single driving factor of the phenomenon, but that investigating Japanese firms highlights the effects of dividend payout convention.

Moreover, financially distressed firms that are compelled to record impaired asset write-offs may have no or few "cookie jar" reserves. If so, these firms cannot manage earnings upward when recording a write-off. These lead to Hypothesis 2.

Hypothesis 2 Japanese managers of SI firms use discretion and time impaired asset write-offs, and manage earnings upward by using various accounting techniques when (see hypothesis 1) record write-offs. This is not the case for managers of ND firms.

4 Research Design

4.1 Model Development

To test Hypothesis 1, this study uses the following Tobit regression, similar to Riedl (2004), Enomoto (2007, 2008), and Hu and Kurumado (2012)[19]:

$$
\begin{aligned}
Impairment_{it} = \ & \alpha_0 + \alpha_1 \Delta GDP_{it} + \alpha_2 \Delta SALES_{it} + \alpha_3 \Delta OI_{it} + \alpha_4 \Delta OCF_{it} \\
& + \alpha_5 SeqLoss_{it} + \alpha_6 SMOOTH_{it} + \alpha_7 BATH_{it} + \alpha_8 \Delta MGT\_in_{it} \\
& + \alpha_9 \Delta MGT\_out_{it} + \alpha_{10} NumSeg_{it} + \alpha_{11} Size_{it} + \alpha_{12} TarAssets_{it} + \varepsilon_{it}
\end{aligned}
$$

$$(1)$$

The dependent variable, $Impairment_{it}$, equals impaired asset write-offs, deflated by total assets at the end of $t - 1$. The independent variable of interest, $SMOOTH_{it}$, is equal to the change in net income before taxes and impaired asset write-offs from $t - 1$ to t, deflated by total assets at the end of $t - 1$, when this change is above the median of nonzero positive values within a year, and is equal to 0 otherwise. Riedl (2004) defines this variable as unexpectedly high increases in earnings before impaired asset write-offs relative to the prior year. I use $SMOOTH_{it}$ to capture two accounting practices: the recording of impaired asset write-offs when earnings increase unexpectedly and the upward earnings management when write-offs are recorded. $SMOOTH_{it}$ is expected to be positively correlated with $Impairment_{it}$.

The model includes economic factors, firm-specific reporting incentives other than income smoothing, and other control variables related to impaired asset write-offs. It includes the following variables as economic factors: ΔGDP_{it}, $\Delta SALES_{it}$,

---

[19] Riedl (2004) also examines the debt-covenant hypothesis. However, the cost of violating debt covenants is low (Nakamura 2011), and thus this study does not include the covenant variable. In addition, in accordance with Yamamoto (2005), who argues that income-smoothing behavior is due to the main-bank system, this study also conducts an analysis that includes a debt-to-equity ratio variable. The coefficient of the variable is not statistically significant, and does not affect the results for other variables.

ΔOI_{it}, ΔOCF_{it}, and $SeqLoss_{it}$.[20] ΔGDP_{it} is the percentage change in Japanese gross domestic product from year $t-1$ to t. Negative changes in GDP are indicative of overall economic decline, suggesting that firm assets may suffer concurrent reductions in value. Thus, I expect the variable to be negatively correlated with $Impairment_{it}$.

To capture firm-specific effects, the models include $\Delta SALES_{it}$, ΔOI_{it}, and ΔOCF_{it}, representing changes in firms' financial performance. $\Delta SALES_{it}$ is defined as the percentage change in a firm's sales from year $t-1$ to t; ΔOI_{it} and ΔOCF_{it} are defined as the changes in a firm's operating income and operating cash flows, respectively, from year $t-1$ to t, divided by total assets at the beginning of the period. Although Riedl (2004) uses the change in pre-write-off earnings instead of ΔOI, I use the change in operating income because that change captures firm-specific economic factors according to the accounting standard. As with other economic factors, I expect these factors to be negatively correlated with $Impairment_{it}$.

$SeqLoss_{it}$ is included to represent a firm's record of sequential losses. In Japan, the standard for fixed asset impairment requires firms to test whether their assets are impaired when they record sequential operating losses at the asset or asset group level. Operationally, an asset or asset group is defined as a business segment disclosed in the firm's annual report because this segment is the largest asset group permitted by the standard; if a firm does not disclose segment information, I define the segment as the entire firm. Therefore, $SeqLoss_{it}$ is equal to 1 when a firm's segment records sequential losses and 0 otherwise. If the largest asset group (i.e., a business segment) records sequential losses, the firm must test whether the group's assets are impaired, and the firm is more likely to record write-offs. Thus, $SeqLoss_{it}$ is expected to be positively correlated with $Impairment_{it}$.

Following Riedl (2004) and Hu and Kurumado (2012), I also include three firm-specific reporting incentives: "big bath" reporting, changes in management within a firm, and changes in management outside a firm. $BATH_{it}$, representing "big bath" behavior, is equal to the change in net income before taxes and write-offs from $t-1$ to t, deflated by total assets at the end of $t-1$, when this change is below the median of nonzero negative values within a year, and is equal to 0 otherwise. As is consistent with the "big bath" hypothesis, $BATH_{it}$ is expected to be negatively correlated with $Impairment_{it}$. ΔMGT_in_{it} and ΔMGT_out_{it} represent changes in management inside and outside a firm, respectively. Although most studies in Japan find no association between write-offs and changes in management, Hu and Kurumado (2012) find a weak association between write-offs and changes in management within firms. They argue that a new manager within a firm possesses a relatively high degree of knowledge about a firm's fixed assets, and that he or she will attribute charges to the preceding management team in the hope of improving

---

[20] Riedl (2004), Enomoto (2007, 2008), and Hu and Kurumado (2012) include changes in industry ROA. I report the results of the models that exclude this variable to avoid multicollinearity. I also conduct the same analyses that incorporate it, and obtain results with similar inferences.

the firm's financial performance. To control for this effect, the models in this study include ΔMGT_in_{it} and ΔMGT_out_{it}.

I control for the other three factors that affect the incidence and amount of write-offs: diversification, size, and amount of a firm's target assets. The more diversified a firm, the greater the likelihood that it has businesses in mature or declining industries. According to the product life-cycle hypothesis, at the mature stage, as the market for a product reaches saturation, its sales tends to slow down, and price competition becomes stronger. In the declining stage, sales in the market decrease substantially, overcapacity of production occurs, and mergers and acquisitions or bankruptcies increase. Therefore, firms with businesses in these markets are likely to record write-offs. In this study, the extent of business diversification, $NumSeg_{it}$, is defined as the number of segments of a firm, and the variable is expected to be positively correlated with $Impairment_{it}$.

A large firm typically records smaller write-offs than a small firm because write-offs are recognized at the smallest asset group or even as single assets. To capture this effect, the models in this study include $Size_{it}$, which is the logarithm of total assets at the end of year $t-1$. $Size_{it}$ also captures other effects of firm size (e.g., political costs). Thus, I do not predict the sign of the coefficient of the variable.

Finally, the model controls for the portion of assets to which the standard applies. $TarAssets_{it}$ is defined as fixed assets minus investment securities, shares, and paid-in capital in affiliates, prepaid pension expenses, deferred tax assets, and revaluation amounts of deferred tax assets. The higher the portion, the higher the likelihood that a firm will record write-offs and the larger the write-offs. Thus, $TarAssets_{it}$ is expected to be positively correlated with $impairment_{it}$.

To test Hypothesis 2, this study uses the following Tobit regression:

$$
\begin{aligned}
Impairment_{it} \; = \; & \beta_0 + ND* \begin{bmatrix} \beta_1 \Delta GDP_{it} + \beta_2 \Delta SALES_{it} + \beta_3 \Delta OI_{it} + \beta_4 \Delta OCF_{it} \\ + \beta_5 SeqLoss_{it} + \beta_6 SMOOTH_{it} + \beta_7 BATH_{it} \\ + \beta_8 \Delta MGT\_in_{it} + \beta_9 \Delta MGT\_out_{it} + \beta_{10} NumSeg_{it} \\ + \beta_{11} Size_{it} + \beta_{12} TarAssets_{it} \end{bmatrix} \\
& SI* \begin{bmatrix} \gamma_0 + \gamma_1 \Delta GDP_{it} + \gamma_2 \Delta SALES_{it} + \gamma_3 \Delta OI_{it} + \gamma_4 \Delta OCF_{it} \\ + \gamma_5 SeqLoss_{it} + \gamma_6 SMOOTH_{it} + \gamma_7 BATH_{it} \\ + \gamma_8 \Delta MGT\_in_{it} + \gamma_9 \Delta MGT\_out_{it} + \gamma_{10} NumSeg_{it} \\ + \gamma_{11} Size_{it} + \gamma_{12} TarAssets_{it} \end{bmatrix} + \varepsilon_{it}
\end{aligned}
$$

$$(2)$$

Equation (2) represents the stacking of two regressions. In the first, the observations are from ND firms, while in the second, the observations are from SI firms. ND is an indicator variable equal to 1 for observations with no dividends and decreased dividends for year t, and the coefficient β measures associations between write-off amounts and the variables in the model for observations from ND firms. SI is an indicator variable equal to 1 for observations with stable and

increased dividends for year t, and the coefficient γ measures the same association for observations from SI firms. The stacking of the equations enables statistical tests of differences between SI firms and ND firms in coefficient estimates.

4.2   Data and Sample Selection

I obtain a sample of firm-year observations from NEEDS-FinancialQuest for March 2007–March 2011 (the period after the first year of the mandatory adoption of the accounting standard for fixed asset impairment). Observations in banking, securities, insurance, other financial institutions, and those whose fiscal year end is not March are deleted.[21]

Riedl ([2004](#)) uses only one randomly selected write-off observation per firm to reduce potential autocorrelation between write-off observations. Thus, observations that record write-offs in year $t - 1$ are excluded, in order to reduce the potential autocorrelation. Although Riedl ([2004](#)) includes all of the non-write-off observations, this study excludes observations that record write-offs in year $t - 1$ to reduce the potential for autocorrelation, because Riedl ([2004](#)) does not use all of the firm-year observations available from the database, and instead randomly selects approximately 25 % of them, thereby reducing the potential for autocorrelation. This study also deletes observations for which management data is not available from NEEDS-Cges. Finally, this study excludes the top and bottom 0.5 % of observations for each variable as outliers, except for $Impairment_{it}$, for which only the top 0.5 % are deleted. These procedures result in a sample of 5,592 firm-year observations, comprising 1,264 write-off observations.

Among the write-off observations, I exclude observations recording "immaterial" write-offs and replace their $impairment_{it}$ with 0. An immaterial write-off is operationally defined as one with an $impairment_{it}$ value of less than 0.005.

Immaterial write-off observations are replaced and excluded for two reasons. First, although the US standard (Statement of Financial Accounting Standards No. 121, Accounting for the Impairment of Long-Lived Assets and for Long-lived Assets to be Disposed of) requires firms to not record write-offs when they are immaterial, the Japanese standard does not. Therefore, Japanese firms record relatively small write-offs. Studies indicate that small write-offs (e.g., less than 0.5 % relative to total assets, which is a criteria regarded as arbitrary[22]) are "immaterial" (Rees et al. [1996](#)). When a firm records such immaterial write-offs, management does not consider managing earnings, because the impact of the write-offs on earnings is small.

---

[21] The fiscal year-end of most Japanese firms (approximately 80 %) is in March.

[22] Elliot and Shaw ([1988](#)) and Elliot and Hanna ([1996](#)) define large special items as those in excess of 1 % of total assets.

Second, one of the purposes of this study is to investigate whether managers' use of discretion differs across countries, by indirectly comparing its results with those of Riedl (2004). In the sample before replacing and excluding immaterial write-off observations, the average *Impairment* for write-off observations is 0.007 (not tabulated), and the median value is 0.002, whereas in Riedl's (2004) sample, the average is 0.028 and the median 0.014. These differences show that there is a substantial difference between the sample in Riedl (2004) and that used in the present study. In the sample for the present study, after replacing and excluding immaterial write-off observations, the average *Impairment* is 0.019 and the median value is 0.014 (see Table 1). This average value is much smaller than that of Riedl (2004). This difference in the average values may result from the study's treatment of outliers. However, the median value of this study is slightly larger than that in Riedl (2004). Thus, replacing and excluding observations with *Impairment* values of less than 0.005 enables this study to examine whether managers use discretion with observations that are more likely to consider managing earnings, and to compare the results with those of Riedl (2004).[23]

5 Results

5.1 *Descriptive Statistics*

Summary statistics are reported in Table 1. As noted above, 394 firms record "material" impaired asset write-offs. These firms account for 7.1 % of the total observations, or 8.3 % when immaterial write-off observations are excluded. This proportion is lower than that in Riedl (2004). Although the median of ΔOI is positive (0.000), the first quartile of BATH is −0.017 and the third quartile of SMOOTH is 0; thus, half of the observations record increases in operating income, but more than half of them record decreases in net income before taxes and impaired asset write-offs. In other words, many firms record special losses other than the write-offs. The average of SeqLoss is 0.136, meaning that firms recording sequential losses for a certain business segment do not necessarily record write-offs. The average of NumSeg is 2.765 and the median of the variable is 3. Thus, more than half of the observations involve several business segments.

Table 2 presents Pearson's correlations. ΔOI is highly correlated with ΔSALES (0.562), SMOOTH (0.603), and BATH (0.624). However, Riedl (2004) argues that

---

[23] I also conduct analyses based on the samples that replace and exclude observations whose *Impairment*$_{it}$ is less than 0.001 and 0.003. The same inferences are obtained from those two analyses.

Table 1 Descriptive statistics

	Impairment	ΔGDP	ΔSALES	ΔOI	ΔOCF	SeqLoss	SMOOTH	BATH	ΔMGT_in	ΔMGT_out	NumSeg	Size	TarAssets
n	394	5,592	5,592	5,592	5,592	5,592	5,592	5,592	5,592	5,592	5,592	5,592	5,592
Mean	0.019	−0.012	0.008	−0.003	0.001	0.136	0.012	−0.015	0.086	0.041	2.765	10.496	0.338
SD	0.017	0.024	0.162	0.040	0.072	0.343	0.027	0.033	0.281	0.198	1.810	0.670	0.178
1Q	0.008	−0.032	−0.077	−0.019	−0.035	0	0	−0.017	0	0	1	10.047	0.211
Median	0.012	0.007	0.008	0.000	0.001	0	0	0	0	0	3	10.422	0.317
3Q	0.025	0.008	0.081	0.016	0.036	0	0	0	0	0	4	10.833	0.438

Note: Impairment includes only the write-off observations

Table 2 Pearson correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Impairment												
(2) ΔGDP	**−0.058**											
(3) ΔSALES	**−0.068**	**0.406**										
(4) ΔOI	**−0.059**	**0.324**	**0.562**									
(5) ΔOCF	−0.020	−0.015	**0.113**	**0.271**								
(6) SeqLoss	**0.106**	**−0.049**	−0.087	−0.022	−0.024							
(7) SMOOTH	0.017	**0.121**	**0.304**	**0.603**	**0.207**	0.018						
(8) BATH	**−0.091**	**0.155**	**0.359**	**0.624**	**0.195**	−0.026	**0.301**					
(9) ΔMGT_in	0.003	−0.004	−0.009	0.002	0.016	0.012	0.019	0.010				
(10) ΔMGT_out	−0.015	0.011	−0.005	0.024	0.006	0.002	**0.031**	0.014	**−0.063**			
(11) NumSeg	**0.040**	**0.063**	0.012	0.015	−0.016	**0.261**	**−0.030**	**0.046**	**0.035**	−0.023		
(12) Size	**−0.042**	−0.026	−0.006	0.011	0.008	−0.022	**−0.089**	**0.078**	**0.065**	−0.009	**0.300**	
(13) TarAssets	**0.059**	−0.005	0.005	0.014	**0.026**	**0.039**	−0.010	**0.041**	−0.002	0.008	**0.095**	**0.059**

Note: Bold denotes significance at the 5 % level for two tailed tests

Table 3 Results for Hypotheses 1

		Test 1		Test 2	
		Replaced		Excluded	
	Expected sign	Coef.	t-value	Coef.	t-value
Cons.		−0.013	(−0.76)	−0.023	(−1.35)
ΔGDP	(−)	−0.114**	(−2.36)	−0.141***	(−2.92)
ΔSALES	(−)	−0.008	(−0.92)	−0.008	(−0.96)
ΔOI	(−)	0.014	(0.3)	0.017	(0.35)
ΔOCF	(−)	−0.010	(−0.71)	−0.009	(−0.65)
SeqLoss	(+)	0.015***	(5.22)	0.016***	(5.38)
SMOOTH	(+)	0.115**	(2.58)	0.113**	(2.51)
BATH	(−)	−0.214***	(−5.27)	−0.210***	(−5.2)
ΔMGT_in	(+/−)	0.000	(0)	0.001	(0.15)
ΔMGT_out	(+/−)	−0.007	(−1.24)	−0.007	(−1.15)
NumSeg	(+)	0.001**	(2.1)	0.002**	(2.54)
Size	(+/−)	−0.007***	(−3.93)	−0.006***	(−3.27)
TarAssets	(+)	0.034***	(5.45)	0.035***	(5.55)
Pseudo R^2		0.343		0.476	
F-test		11.91***		12.44***	
Log likelihood		−173.36		−102.10	
Number of Observations		5,592		4,722	

Note: *** and ** are statistically significant at the 1 % and 5 % levels, respectively. *t*-values are the results of White's (1980) robust estimate. I also estimate the Tobit regression without using White's correction. For the replaced and excluded samples, the models are statistically significant at the 1 % level (LR χ^2 = 181.15 and 185.16). The coefficients of *SMOOTH* are statistically significant at the 1 % and 5 % levels for the replaced and excluded samples, respectively (t = 2.6 and 2.53)

BATH and SMOOTH will capture any incremental effect of ΔOI.[24] Moreover, multicollinearity does not appear to be significant as the highest variance-inflation factor is less than 5. Therefore, this study includes all of the four variables.

5.2   Tests of Income-Smoothing Practices in Japan

Table 3 presents the results of the analysis of the association between impaired asset write-offs and increases in earnings. For test 1 (test 2), the coefficient of *SMOOTH* is positive and statistically significant at the 5 % level (t = 2.58 [t = 2.51]). This result suggests that, on average, Japanese firms with high increases in earnings tend to record impaired asset write-offs.

---

[24] Note that Riedl (2004) uses the change in pre-write-off earnings instead of ΔOI, the change in operating income.

For the economic factors, the coefficients of *SeqLoss* ($t = 5.22$ for test 1 and 5.38 for test 2) and *ΔGDP* ($t = -2.36$ for test 1 and 2.92 for test 2) are statistically significant. For other economic factors, the coefficients of *ΔSALES* ($t = -0.92$ [$t = -0.96$]), *ΔOI* ($t = 0.3$ [$t = 0.35$]), and *ΔOCF* ($t = -0.71$ [$t = -0.65$]) are insignificant. These results suggest that macro-economic effects affect write-offs and that, on average, firm-specific factors, in terms of the whole of a firm, do not systematically affect write-offs.

For other firm-specific reporting incentives, the coefficients of *BATH* are significantly negative ($t = -5.27$ for test 1 and $t = -5.2$ for test 2), suggesting that managers record write-offs to take "big baths." The coefficients of both *ΔMGT_in* and *ΔMGT_out* are statistically insignificant.[25]

For other control variables, the coefficients of *NumSeg* ($t = 2.1$ for test 1 [$t = 2.54$ for test 2]), *Size* ($t = -3.93$ [$t = -3.27$]), and *TarAssets* ($t = 5.45$ [$t = 5.55$]) are all statistically significant. The coefficient of *NumSeg* is positive, suggesting that the more diversified a firm, the greater the likelihood that it has businesses in mature or declining industries. The coefficient of *Size* is negative. This analysis examines not only write-off decisions but also write-off amounts. Thus, this result reflects the fact that large firms record smaller write-offs or do not record material write-offs. The coefficient of *TarAssets* is positive, suggesting that the larger the portion of assets to which the standard applies, the greater the likelihood that the firms record write-offs, and the larger the write-offs in question.

5.3 Differences Between SI Firms and ND Firms

Table 4 presents the results of the differences between SI firms and ND firms. For ND firms, the coefficients of *SMOOTH* are negative and insignificant ($t = -0.34$ for test 3 [$t = -0.52$ for test 4]). For SI firms, the coefficients of *SMOOTH* are positive and statistically significant ($t = 2.65$ [2.58]). The differences in these coefficients are negative and statistically significant ($t = -1.97$ [-2.01]), indicating that although SI firms record impaired asset write-offs when earnings increase and manage earnings upward when recording the write-offs, ND firms do not.

For ND firms, the coefficients of *ΔGDP* are significant ($t = -1.74$ [-2.23]), while for SI firms, the coefficients are insignificant ($t = -0.52$ [-0.91]). The differences in the coefficients are statistically insignificant. For ND firms, the coefficients of *ΔSALES* are significantly positive, which is an unexpected result suggesting that ND firms seek to manage earnings upward but cannot do so when recording write-offs. For SI firms, the coefficients of *ΔSALES* are negative and

---

[25] Hu and Kurumado (2012) find that the coefficient of *ΔMGT_in* is statistically significant at the 10 % level. However, they include "immaterial" impaired asset write-offs and focus on large and established firms listed in Tokyo Stock Exchange Section One. I exclude immaterial write-offs and include only material write-offs, which affect firms' performance. I also include small and non-established firms listed on stock exchanges other than the TSE Section One.

Table 4 Differences between SI firms and ND firms

	Expected sign	ND firms		SI firms		Test of difference	
		Coef.	t-value	Coef.	t-value	Difference	t-value
(A) Test 3 (Result for the replaced sample)							
Cons.		0.006	(0.21)	-0.055	(-1.58)		
ΔGDP	(-)	-0.130*	(-1.74)	-0.033	(-0.52)	-0.097	(-1.00)
ΔSALES	(-)	0.024**	(2.52)	-0.058***	(-4.74)	0.082***	(5.23)
ΔOI	(-)	-0.012	(-0.20)	0.138*	(1.96)	-0.149	(-1.62)
ΔOCF	(-)	-0.008	(-0.42)	-0.012	(-0.58)	0.004	(0.13)
SeqLoss	(+)	0.017***	(4.37)	0.008**	(2.00)	0.009	(1.55)
SMOOTH	(+)	-0.023	(-0.34)	0.149***	(2.65)	-0.173**	(-1.97)
BATH	(-)	-0.173***	(-3.51)	-0.157**	(-2.06)	-0.016	(-0.17)
ΔMGT_in	(+/-)	0.001	(0.27)	-0.001	(-0.17)	0.002	(0.31)
ΔMGT_out	(+/-)	-0.003	(-0.38)	-0.013	(-1.47)	0.010	(0.83)
NumSeg	(+)	0.002**	(1.97)	0.001	(0.90)	0.001	(0.81)
Size	(+/-)	-0.008***	(-2.91)	-0.003	(-1.57)	-0.004	(-1.29)
TarAssets	(+)	0.030***	(3.20)	0.037***	(4.69)	-0.007	(-0.60)
Pseudo R²						0.448	
F-test						7.07***	
Log likelihood						-145.65	
Number of observations						5,592	

(continued)

Table 4 (continued)

(B) Test 4 (Result for the excluded sample)

	Expected sign	ND firms		SI firms		Test of difference	
		Coef.	t-value	Coef.	t-value	Difference	t-value
Cons.		−0.004	(−0.14)	−0.054	(−1.60)		
ΔGDP	(−)	−0.167**	(−2.23)	−0.056	(−0.91)	−0.110	(−1.14)
ΔSALES	(−)	0.025***	(2.70)	−0.061***	(−4.94)	0.086***	(5.51)
ΔOI	(−)	−0.008	(−0.13)	0.152**	(2.18)	−0.160*	(−1.75)
ΔOCF	(−)	−0.008	(−0.42)	−0.011	(−0.54)	0.003	(0.10)
SeqLoss	(+)	0.018***	(4.60)	0.008*	(1.93)	0.010*	(1.75)
SMOOTH	(+)	−0.037	(−0.52)	0.142**	(2.58)	−0.179**	(−2.01)
BATH	(−)	−0.173***	(−3.48)	−0.147*	(−1.96)	−0.026	(−0.29)
ΔMGT_in	(+/−)	0.001	(0.28)	0.000	(−0.08)	0.002	(0.26)
ΔMGT_out	(+/−)	−0.001	(−0.08)	−0.014	(−1.55)	0.013	(1.08)
NumSeg	(+)	0.002**	(2.34)	0.001	(1.18)	0.001	(0.90)
Size	(+/−)	−0.007**	(−2.49)	−0.002	(−1.00)	−0.005	(−1.34)
TarAssets	(+)	0.031***	(3.35)	0.037***	(4.75)	−0.006	(−0.50)
Pseudo R^2						0.632	
F-test						7.47***	
Log likelihood						−71.69	
Number of observations						4,722	

Note: ***, **, * are statistically significant at the 1 %, 5 %, and 10 % levels, respectively. *t*-values are the results of White's (1980) robust estimate. I also estimate the Tobit regression without using White's correction. For the replaced and excluded samples, the models are statistically significant at the 1 % level (LR^2 = 236.58 and 245.99). The coefficients of *SMOOTH* for SI firms are statistically significant at the 5 % level for the replaced and excluded samples (*t* = 2.6 and 2.53). The coefficients of *SMOOTH* for ND firms are insignificant for the replaced and excluded samples (*t* = −0.32 and −0.49). The differences between the coefficients of ND firms and SI firms are negative and statistically significant at the 10 % level for the replaced and excluded samples (*t* = −1.85 and −1.91).

statistically significant ($t = -4.74$ [-4.94]), and the differences in the coefficient between ND firms and SI firms are significantly positive ($t = 5.23$ [5.51]). For SI firms, the coefficients of ΔOI are positive and statistically significant, which is an unexpected result suggesting that SI firms record write-offs using their discretion when their operating incomes increase or that, given the negative coefficients of $\Delta SALES$, SI firms recording write-offs experience operating income reductions that are smaller than those of non-write-off SI firms. The coefficients of $SeqLoss$ are significantly positive ($t = 4.37$ [-4.60] for ND firms and $t = 2.00$ [1.93] for SI firms). The difference is statistically significant at the 10 % level only for test 4, which is weak evidence that ND firms have businesses in serious conditions.

The coefficients of $BATH$ for both SI and ND firms are negative and statistically significant ($t = -3.51$ [3.48] for ND firms and $t = -2.06$ [-1.96] for SI firms). The differences between the coefficients of BATH for ND firms and SI firms are insignificant. As for changes in management, all of the coefficients are insignificant.

6 Conclusion

This study examined whether Japanese firms used discretion and other accounting techniques when recording impaired asset write-offs. It also examined whether these accounting behaviors were different for SI firms and ND firms.

Based on the argument that distribution among stakeholders is emphasized in code-law countries, which is common in existing literature, I find evidence suggesting that Japanese firms engage in income-smoothing behaviors. Riedl (2004) conducted a similar analysis, but did not find evidence of those behaviors. This study suggests that reporting incentives in Japan and the United States affect write-offs. Moreover, on examining the difference in the behavior between SI firms and ND firms, this study finds that although SI firms engage in income-smoothing behaviors, ND firms do not. It also finds that the difference between write-offs in SI firms and ND firms is statistically significant. These findings suggest that the importance of stable dividend payouts for Japanese firms, in terms of securing future and current pies for payouts, leads to this behavior.

There are at least two limitations of this study, both of which are essentially related to the same problem: institutional complementarity. First, this study does not resolve the plausibility problem. Previous studies argued that institutions are complementary to each other (e.g., Wysocki 2011 in the accounting literature), and that the dividend payout explanation may therefore be a "successful" instrumental variable. Historical case studies present a means of reinforcing the plausibility of such hypotheses (Morck and Yeung 2011). The present study focused on a country in which dividend payout is emphasized, and it used the case of Nippon Steel Co. to reinforce the plausibility of the dividend payout explanation; however, competing hypotheses are not completely ruled out.

Second, this study focused only on the Japanese setting. The strength of using the Japanese setting is that one can observe the influence of dividend payouts

because Japan is in an extreme situation where dividend payout is highly empha-sized. However, given institutional complementarity, other institutions or concepts could be key drivers of the observed results in prior research on other code-law countries, such as that of Ball et al. (2000) and Leuz et al. (2003). Concepts that are common across countries are thus in need of further research.

References

Ahmadjian, C. L., & Robinson, P. (2001). Safety in numbers: Downsizing and the deinstitution-alization of permanent employment in Japan. *Administrative Science Quarterly, 46*(4), 622–654.

Ali, A., & Hwang, L. (2000). Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research, 38*(1), 1–21.

Aoki, H. (2011). Income-smoothing behavior of firms with increases in earnings and dividends. *Accounting [Kigyokaikei], 63*(2), 337–344.

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics, 29*(1), 1–51.

Ball, R., Robin, A., & Sadka, G. (2008). Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies, 13*(2–3), 168–205.

Ball, R., Robin, A., & Wu, J. S. (2003). Incentives versus standards: properties of accounting income in four East Asian countries. *Journal of Accounting and Economics, 36*(1–3), 235–270.

Bao, H., & Bao, D. (2004). Income smoothing, earnings quality and firm valuation. *Journal of Business Finance and Accounting, 31*(9–10), 1525–1557.

Burgstahler, D. C., Hail, L., & Leuz, C. (2006). The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review, 81*(5), 983–1016.

Bushman, R. M., & Piotroski, J. D. (2006). Financial reporting incentives for conservative accounting: The influence of legal and political institutions. *Journal of Accounting and Economics, 42*(1–2), 107–148.

DeAngelo, H., & DeAngelo, L. (2006). The irrelevance of the MM dividend irrelevance theorem. *Journal of Financial Economics, 79*(2), 293–315.

DeAngelo, H., DeAngelo, L., & Stulz, R. M. (2006). Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics, 81*(2), 227–254.

Denis, D., & Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy. *Journal of Financial Economics, 89*(1), 62–82.

Elliot, J. A., & Hanna, J. D. (1996). Repeated accounting write-offs and the information content of earnings. *Journal of Accounting Research, 34*(Supplement), 135–155.

Elliot, J. A., & Shaw, W. H. (1988). Write-offs as accounting procedures to manage perceptions. *Journal of Accounting Research, 26*(Supplement), 91–119.

Enomoto, M. (2007). Earnings management by early adopters of accounting standards for impair-ment of fixed assets. *Journal of Management Accounting, 15*(2), 41–56 (in Japanese).

Enomoto, M. (2008). Selection of the adoption year of accounting standards for impairment of fixed assets and accounting behavior. *JAA Accounting Progress, 9*, 23–38 (in Japanese).

Fama, E. F., & French, K. R. (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics, 60*(1), 3–43.

Garcia Lara, J. M., Garcia Osma, B., & Mora, A. (2005). The effect of earnings management on the asymmetric timeliness of earnings. *Journal of Business Finance and Accounting, 32*(3–4), 691–726.

Gassen, J., Fulbier, R. U., & Sellhorn, T. (2006). International differences in conditional conservatism—the role of unconditional conservatism and income smoothing. *European Accounting Review, 15*(4), 527–564.

Holthausen, R. W. (2009). Accounting standards, financial reporting outcomes, and enforcement. *Journal of Accounting Research, 47*(2), 447–458.

Hu, D., & Kurumado, Y. (2012). An examination of impairment of assets: Evidence from Japan. *JAA Accounting Progress, 13*, 43–58 (in Japanese).

Hung, M. (2001). Accounting standards and value relevance of financial statements: An international analysis. *Journal of Accounting and Economics, 30*(3), 401–420.

Jackson, G. (2007). Employment adjustment and distributional conflict in Japanese firms. In M. Aoki, G. Jackson, & H. Miyajima (Eds.), *Corporate governance in Japan: Institutional change and organizational diversity*. New York: Oxford University Press.

Kimura, A. (2007). Earnings management using early adoption of accounting for impairment of fixed assets. *Sangyokeiri, 67*(2), 122–129 (in Japanese).

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics, 69*(3), 505–527.

Leuz, C., & Wysocki, P. (2008). Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research. Working Paper.

Morck, R., & Yeung, B. (2011). Economics, history, and causation. *Business History Review, 85*(1), 39–63.

Nabar, S., & Boonlert-U-Thai, K. K. (2007). Earnings management, investor protection, and national culture. *Journal of International Accounting Research, 6*(2), 35–54.

Nakamura, R. (2011). The accounting behavior of firms violating financial covenants in loan agreements. *Accounting (Kaikei), 179*(4), 567–579 (in Japanese).

North, D. C. (1990). *Institutions, institutional changes and economic performance*. New York: Cambridge University Press.

North, D. C. (1994). Economic performance through time. *The American Economic Review, 84*(3), 359–368.

Organisation for Economic Co-operation and Development (OECD). (2004). OECD Employment Outlook 2004.

Rees, L., Gill, S., & Gore, R. (1996). An investigation of assets write-downs and concurrent abnormal accruals. *Journal of Accounting Research, 34*(2), 157–169.

Riedl, E. J. (2004). An examination of long-lived asset impairments. *The Accounting Review, 79*(3), 823–852.

Schilling, F. (2001). Corporate governance in Germany: The move to shareholder value. *Corporate Governance: An International Review, 9*(3), 148–151.

Schipper, K. (2005). The introduction of international accounting standards in Europe: Implication for international convergence. *European Accounting Review, 14*(1), 101–126.

Stoney, C., & Winstanley, D. (2001). Stakeholding: Confusion or utopia? Mapping the conceptual terrain. *Journal of Management Studies, 38*(5), 603–626.

Suda, K., & Hanaeda, H. (2008). Corporate financial reporting strategy: Survey evidence from Japanese firms. *Security Analyst Journal, 46*(5), 51–69 (in Japanese).

The Life Insurance Association of Japan. (2011). Towards improvement in equity value (Kabushiki kachi kojo ni mukete). Available from http://www.seiho.or.jp/info/news/2010/PDF/20110318_2.pdf (in Japanese).

The Nikkei. (1994 March 9). Towards resumption of dividends, stricter reduction in personnel (Fukuhai he jin'in sakugen ichidanto). (in Japanese).

Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review, 53*(1), 112–134.

White, H. (1980). A Heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica, 48*(4), 817–838.

Whitley, R. (1999). *Divergent capitalisms—the social structuring and change if business systems.* Oxford: Oxford University Press.

Wysocki, P. (2011). New institutional accounting and IFRS. *Accounting and Business Research, 41*(3), 309–328.

Yamamoto, S. (2005). Discretional behavior of adopters during an early adoption period of accounting for impairment of fixed assets. *The real estate research (Fudosankenkyu), 47*(3), 33–43 (in Japanese).

Yoshimori, M. (1995). Whose company is it? The concept of the corporation in Japan and the west. *Long Range Planning, 28*(4), 33–44.

Part II
Disclosure and Enforcement

Ex-post Information Value of Risk Disclosure

Kunio Ito, Tetsuyuki Kagaya, and Hyonok Kim

Abstract The purpose of this paper is to examine the effects of information security initiatives on corporate value and demonstrate the significance of establishing information security governance. In order to achieve this goal, we conducted three analyses. First, we focus on companies that disclosed information security risks in the "Business Risk etc." section in their financial statements and examine how differently stock markets evaluate such companies as compared to those which do not when an information security incident occurred. We find that stock price of companies that disclosed information security risks fall by a smaller margin than those which did not. Secondly, according to a questionnaire survey of corporate users who utilized IT-related equipment, we find that companies those who properly disclosed their information security initiatives enjoy higher evaluations than those which did not. Finally, we also find that information security initiatives have positive effects on user preference and satisfaction in business dealings. Based on the results, it is considered that it is economically beneficial for companies to carry out information security initiatives. The results of this paper also imply that business risk disclosure has not only ex-ante information value but also ex-post information value.

Keywords Corporate brand value • Information security • Information security incidents • Risk disclosure

---

K. Ito • T. Kagaya
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan

H. Kim (✉)
Business Administration, Tokyo Keizai University, 1-7-34 Minami-cho,
Kokubunji, Tokyo 185-8502, Japan
e-mail: hokim@tku.ac.jp

1   Growing Interest in Information Security

The purpose of this paper is to examine the effects of initiatives on information security on corporate value and demonstrate the significance of establishing information security governance so that these effects can permeate into business corporations.

Interest in information security is growing rapidly. Figure 1, for example, shows the number of search results for "information security," "information leak," "system failure," and other keywords published in four Nikkei newspapers. This figure confirms that the number of cases in which these keywords were written about in these newspapers rose sharply after the twenty-first century began. In particular, the number of search results grew dramatically in 2005 and thereafter. It is presumed that the three factors affected this dramatic growth.

One factor is that the numbers of malicious programs and unauthorized accesses is on the increase. Figure 2 indicates the results of surveys conducted by Kaspersky Lab. According to these results, the number of malicious programs increased from less than 10,000 in 2001 to over 200,000 in 2007. In addition, Fig. 3 shows the number of cases in which the damage caused by unauthorized access was reported to the Information-Technology Promotion Agency, Japan. It is noticeable that the number of cases in which unauthorized access caused damage, which had continued to decline from 2001 to 2004, grew again in 2005 and thereafter. Formerly, unauthorized access was often perpetrated by people who took pleasure in confusing a large number of people, but in recent years, an increasing number of unauthorized accesses have been perpetrated out of avarice and have become criminally vicious.
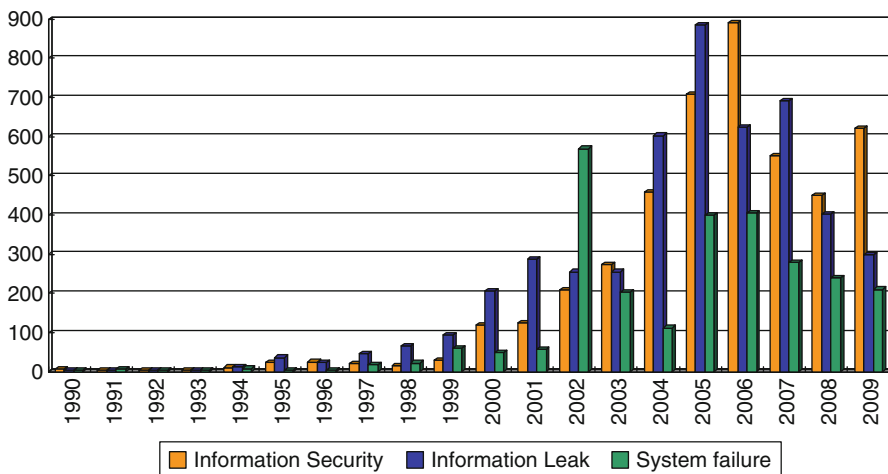

Fig. 1 Number of keyword search results related to information security in four Nikkei newspapers

Fig. 2 Increase in the number of malicious programs. (*Source*) Created based on "Malware evolution: 2005, part 2" (Kaspersky Lab, April 2006) and "Kaspersky Security Bulletin 2007: Malware evolution in 2007" (A. Gostev, February 2008)
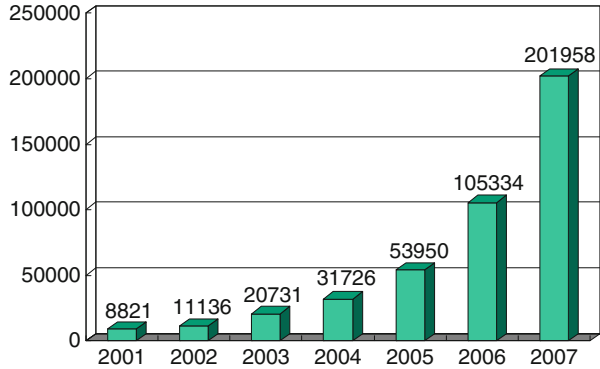
Fig. 3 Damage caused by unauthorized access. (*Source*) Information-Technology Promotion Agency, Japan
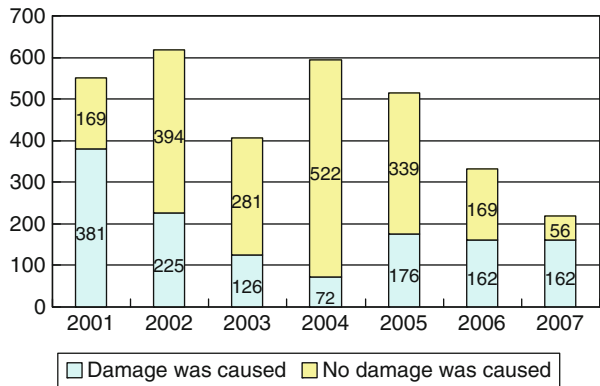
Another factor is that information incidents such as leaks of customer information, leaks of confidential information, and system failures are occurring frequently. Recent years have witnessed the frequent occurrence of incidents that have affected even ordinary consumers, including leaks of large corporations' customer information and failures of financial or transport systems due to trouble with information systems. These incidents are highly likely to cause the companies involved to lose the trust that customers and consumers have in them, and to cause their corporate image to be injured. There are also an increasing number of cases in which Japanese companies are losing their sources of competitiveness due to an outflow of technological information to overseas competitors. As described above, interest in initiatives on information security is growing with the frequent occurrence of information incidents that seriously affect corporate value.

A third factor is that laws and regulations related to information security have been put in place. The Act on the Protection of Personal Information, the Companies Act, and the Financial Instruments and Exchange Act came into force in 2005, 2006, and 2008, respectively. The Act on the Protection of Personal Information

requires holders of personal information to manage it properly and prevent its leakage. Under the Companies Act, which came into force in 2006, corporate directors must take responsibility for establishing internal control systems. They are required to make efforts to ensure information security and put in place related systems, including those related to the possession and management of information, regulations and systems for the management of losses and other risks, and systems aimed at ensuring that employees comply with laws and regulations as well as articles of association when performing their duties.

Meanwhile, the Financial Instruments and Exchange Act, which came into force in 2008, aims to improve the reliability of financial reports and requires companies to put in place internal control systems to achieve this goal. In particular, the Act stresses the importance of the role IT plays in internal control systems. If information security plays the role of supporting continuous utilization of IT for internal control systems, information security can be viewed as an issue closely related to improvement of the reliability of financial reports.

2 The Reality of Information Security Governance in Japan

2.1 Japanese Companies' Initiatives on Information Security

As described above, there is growing interest in initiatives on information security, but are Japanese companies making progress in their initiatives to ensure information security? Do such ongoing initiatives help reduce the amount of damage caused by incidents related to information security?

This section bases its discussions on the Information Security Incident Survey Report, which is published by the Japan Network Security Association annually. The Report confirms that the number of people who experienced leakage of their personal information and the estimated total value of damages paid both increased from 2002 to 2007 (see Fig. 4).

Next, this section discusses the survey carried out by Ito at Hitotsubashi University in January2007. This survey aimed to clarify the actual condition of information systems established at listed companies in Japan by asking their chief information officers (CIOs) or those in similar positions about them. Figure 5 identifies information security tasks to be addressed by those companies. In this figure, an overwhelming number of companies cited "strengthening information security" as a task they should address urgently.

As indicated in the figure, it appears that Japanese companies have not yet made sufficient progress in their initiatives on information security.
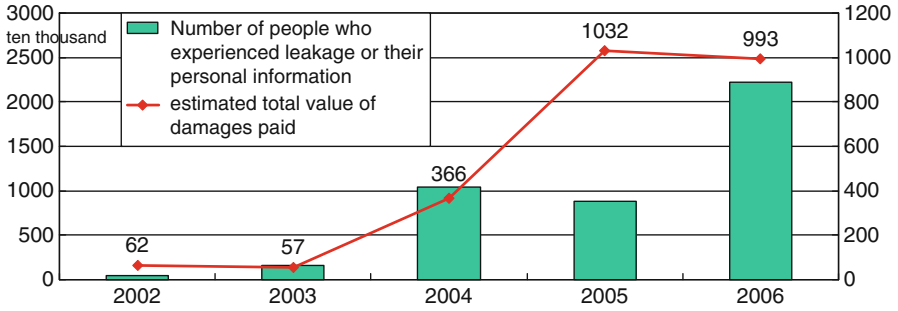
Fig. 4 Magnitude of effects of information incidents, which are becoming common occurrences. (*Source*) Japan Network Security Association, "Fiscal 2008 information security incident survey report"
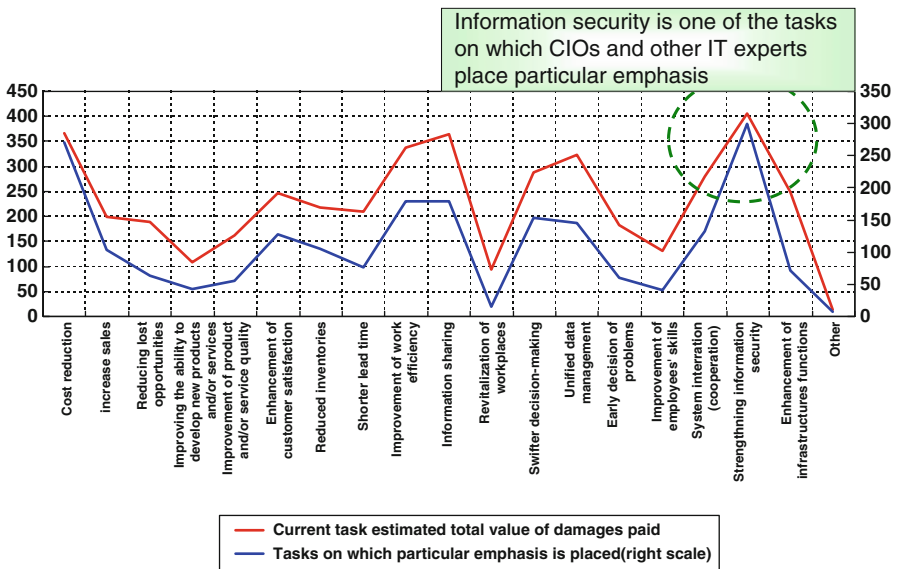
Fig. 5 What are the tasks to be addressed for making effective use of information systems? (*Source*) "Questionnaire survey concerning utilization of information systems" (K. Ito and his research team, Hitotsubashi University, January 2007)

2.2 *What is Information Security Governance?*

What are companies required to do in order to advance their initiatives on information security? One of the effective methods of achieving this goal is information security governance.

What is information security governance? The research group of METI on the information governance defined information security governance as "establishing

Does information security governance not work sufficiently well as a system for ensuring thorough information security?

Corporate Governance

System for ensuring well-disciplined corporate management in the light of corporate objectives

Internal Controls

System for enabling corporate managers to achieve management strategy and business objectives in a systematic way

Governance through market mechanism

Governance through organizational mechanism

Are companies given a low evaluation in the product/service, labor, and stock markets if they do not ensure thorough information technology?

How do companies establish a system that requires managers to take responsibility for information security initiatives? How do they create a corporate climate or system in which none of their members to perform improper acts with regard to information security?

Fig. 6 Framework for information security governance

and applying corporate governance, and the internal control systems that represent the mechanism supporting it, within a company looking from the viewpoint of ensuring information security" in the research report in March 2005. In order to encourage establishment and application of the information security needed in light of corporate objectives, it is essential to motivate managers to advance these undertakings, whether on their own initiative or otherwise, and establish internal control systems to make the intentions of managers known to all levels of the organization.

What is the ideal form of information security governance? In particular, we believe that there are two major types of information security governance which provide systems for motivating managers to make efforts on information security, whether on their own initiative or otherwise (see Fig. 6).

One type of information security governance adopts the approach of maintaining the discipline of companies through market mechanisms. This approach, for instance, involves establishing systems and devices that encourage information security initiatives to produce positive effects in the product/service market, thus inducing companies to make all-out efforts toward information security. One example is governments including information security initiatives in the requirements for suppliers to take part in the bidding when they procure products and services. This approach is not limited to the product/service market. The capital market can also urge companies to make all-out efforts toward information security by placing information security initiatives as a requirement for the provision of finance.

Market mechanisms may use two approaches to the screening of companies: negative screening and positive screening. While the negative screening approach restricts transactions with companies that fail to meet certain requirements, the positive screening approach gives priority to dealings with companies that carry out outstanding information security initiatives. Whichever of the two approaches is taken, it becomes possible to advance information security initiatives by establishing systems and devices that take information security initiatives into account in market transactions.

The other type of information security governance takes the approach of maintaining the discipline of companies through organizational mechanisms. Like global warming and other environmental problems, information incidents caused by companies sometimes have grave effects on other companies and ordinary consumers in the community in which they operate. However, since external stakeholders of a company cannot ascertain how active the company is in advancing its information security initiatives, there is a strong possibility that the company will not be very willing to make investments in those initiatives. For this reason, it is necessary to accelerate the progress of information security initiatives by requiring companies to take direct responsibility for them through legislation, systems, and other measures.

As mentioned above, a series of legal systems relating to companies have been put in place in Japan in recent years, and many of them require corporate managers to establish systems and devices that ensure thorough implementation of information security initiatives at all levels of the organization. They urge corporate organizations to have built-in systems (climate) in which none of their members performs, and which allow none of their members to perform, improper acts regarding information security by requiring their managers to take responsibility for establishing these systems.

2.3 Relationships Between Companies' Information Security Initiatives and Their Competitiveness

In Japan, too, systems and devices that urge companies to make all-out efforts toward information security through market mechanisms and organizational mechanisms are being gradually established. Why, then, are Japanese companies' information security initiatives not always sufficient?

Figure 7 indicates the results of a questionnaire survey of listed companies which was conducted by NRI Secure Technologies, Ltd. in November 2007 to clarify the condition of information security measures. The results confirm that all companies surveyed are working to take information security measures in terms of equipment, including physical security, PC security, and network security. On the other hand, it can also be seen that many companies have not yet taken adequate information security measures in terms of intangibles such as "training of
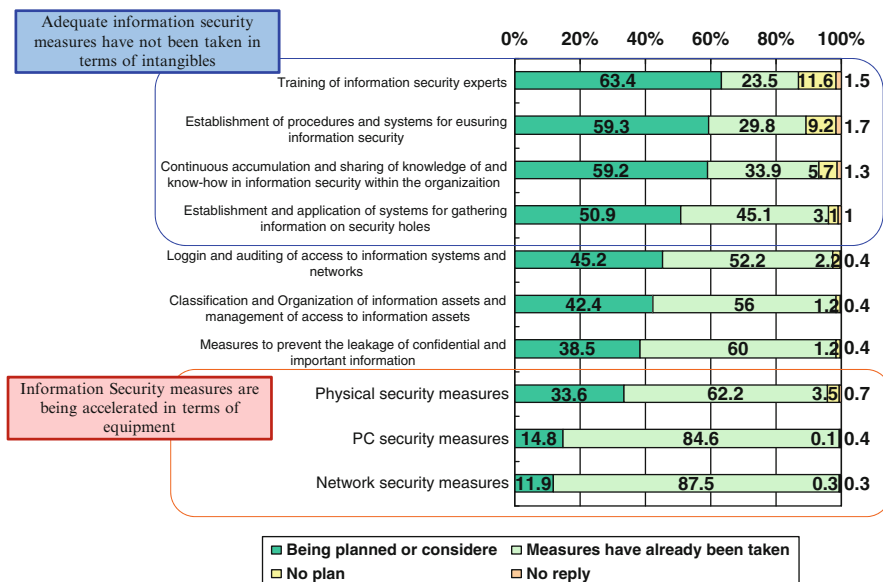
Fig. 7 Progress in taking information security measures. (*Source*) Survey concerning the actual condition of corporate information security" (NRI Secure Technologies, November 2007)

information security experts," "establishment of procedures and systems for ensuring information security," "continuous accumulation and sharing of knowledge of, and know-how in, information security within the organization," and "establishment and application of systems for gathering information on security holes."

Why, then, are Japanese companies sometimes not making progress in their information security initiatives in terms of intangibles? One of the major reasons for this is that corporate managers do not really feel that their information security initiatives lead to enhancement of their companies' competitiveness and value.

For example, as shown in Fig. 8, according to the "Survey concerning the Actual Condition of Countermeasures against Unauthorized Access etc." conducted by the Metropolitan Police Department in Tokyo, corporate employees have an increasingly keen awareness of information security as typified by high evaluations for effects of information security measures such as: "greater awareness of information security among employees," "better understanding and recognition of the importance of risk management," and "recognition of information security as corporate social responsibility." However, lower evaluations are given to the five items related to the enhancement of corporate competitiveness: "higher evaluations by business partners and customers," "greater operational efficiency and productivity," "improvement of products and services provided," "lower total security management costs," and "enhanced competitive power, including the winning of orders."

Why, then, do corporate managers not really feel that their information security initiatives lead to enhancement of their company's competitiveness and value? Probably, one reason for this is that only a few companies quantitatively measure
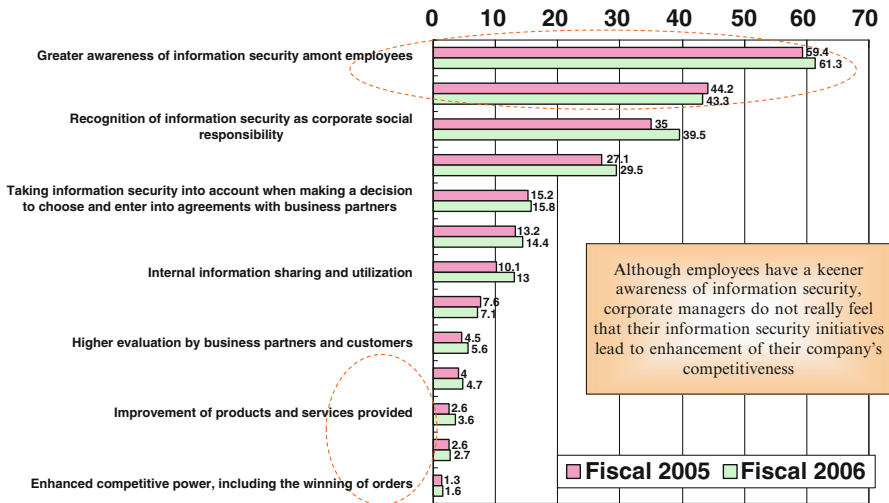
Fig. 8 Effects of information security measures. (*Source*) Created based on the "Survey concerning the Actual Condition of Countermeasures against Unauthorized Access etc." conducted by the Metropolitan Police Department

and evaluate the progress they have made in their information security initiatives, so they cannot ascertain the effects of their investments in information security initiatives.

The Metropolitan Police Department's survey shows, for example, that more than half of respondents cited issues related to the effects of investments—"cost-effectiveness is invisible," "too much cost is incurred," and "there are no guidelines regarding how far we should go"—as issues to be addressed in taking information security measures. To begin with, unless the effects of information security initiatives are made visible, it is difficult for corporate managers to realize that such initiatives lead to enhancement of their company's competitiveness and value (see Fig. 9).

Furthermore, only a few companies actively disclose their information security initiatives to external stakeholders, making it difficult for external stakeholders to recognize differences in information security initiatives between companies, and this also probably affected the results of the survey. Unless such differences are made clear, it is difficult for stock markets to evaluate the information security initiatives of listed companies.

Do then information security measures and initiatives actually contribute to creation of corporate value? In order to answer this question, we first examine what effects incidents involving information security have on corporate value. If such incidents have serious effects on corporate value, there is a strong likelihood that efforts to prevent them have positive effects on corporate value.
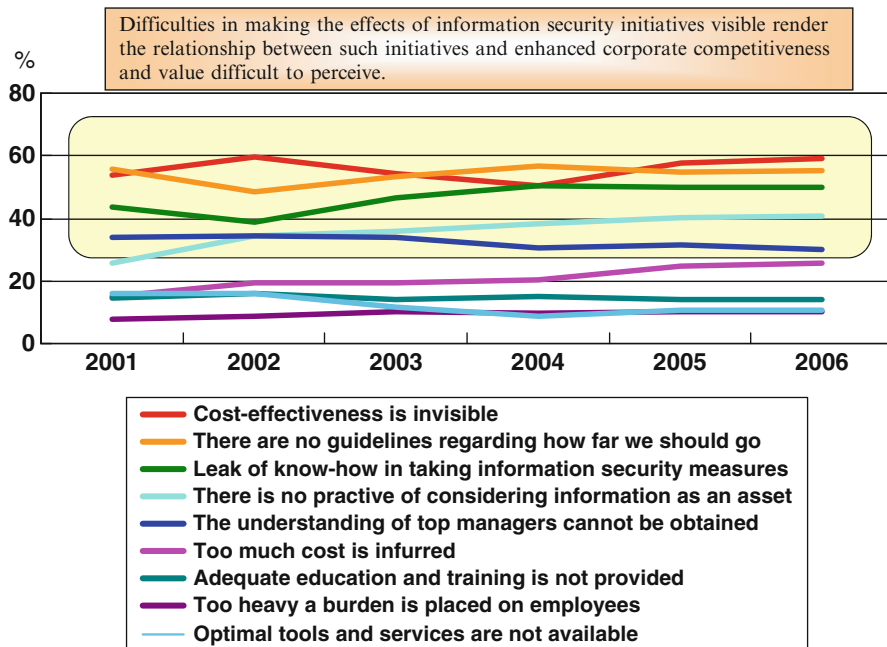
Fig. 9 Problematic points with information security measures. (*Source*) Created based on the "Survey concerning the actual condition of countermeasures against unauthorized access etc." conducted by the Metropolitan Police Department

3   Effects of Information Security Incidents on Evaluations by Stock Markets

How should the effects of information security incidents on corporate value be examined? One possible approach is to examine evaluations by stock markets of information security incidents. In this section, we follow the steps listed below to examine evaluations by stock markets of information security incidents and initiatives for preventing such incidents.

Step 1: Summary of preceding studies

Step 2: Sampling of incidents involving information leaks or system failures

Step 3: Calculation of cumulative abnormal return on equity investment before and after the day of the event

3.1 Summary of Preceding Studies

Campbell et al. (2003) used 43 information leak incidents[1] involving American companies during the period from January 1995 to December 2000 to analyze the effects of such incidents on stock prices. As a result of the analysis, the researchers reported that incidents involving the leakage of confidential information had pushed down stock prices. Cavusoglu et al. (2004) used information leak incidents[2] involving American companies during the period from January 1, 1996 to December 31, 2001 to analyze the relationships between such incidents and stock prices. As a result, they found that stock prices had fallen 2.1 % 2 days after the information leaks were reported.

In Japan, meanwhile, InterRisk Research Institute & Consulting (2005), Ishiguro et al. (2006), and Ito and Kagaya (2006) studied the effects of revealed risks on stock prices. Researchers at InterRisk Research Institute & Consulting (2005) used 238 cases of revealed risks, which were reported by The Nihon Keizai Shimbun during the year from April 1, 2004 to March 31, 2005 to analyze the effects of such risks on stock prices. As a result, they reported that approximately 30 % of the companies surveyed had seen their stock price drop ten days after the information security risks became clear. They also found that in most cases, the stock price had fallen about 8 %, and that approximately 5 % of the companies had witnessed their stock price plunge more than 15 %. Ishiguro et al. (2006) used 70 information leak incidents extracted from four Nikkei newspapers during the period from September 2002 to August 2005 using keyword searches[3] to analyze the effects of such incidents on stock prices. As a result, they reported that ten days after the information leaks were reported, the stock prices had fallen 2.25 % for incidents involving the leakage of confidential information and 3.18 % for those involving unauthorized access.

Ito and Kagaya (2006) chose 14 companies covered by four Nikkei newspapers and The Asahi Shimbun between 1998 and 2002 because they caused a scandal (defective product or service quality, soil contamination or other environmental problems, breach of laws or ordinances, etc.) and examined how the price of their stocks fluctuated before and after the scandal was reported. As a result, they reported that the stock prices had plummeted immediately after the scandal was exposed, and that during the subsequent week, the extent of fall in the stock prices

---

[1] The researchers extracted these incidents from articles published in The Wall Street Journal, The New York Times, The Washington Post, The Financial Times, and USA Today using keyword (information security breach, computer system security, hacker, cyber attack, computer attack, computer break-in, and computer virus) searches.

[2] The researchers extracted these incidents from websites and newspapers using keyword (attack, breach, and break-in) searches.

[3] The keywords used were "information" and ("leak") and ("damage" or "accident" or "incident") or ("unauthorized access" or "virus") and ("damage" or "accident" or "incident").

reached nearly 15 %. Moreover, they revealed that the stock prices had not yet recovered even 30 days after the scandal was uncovered.

As described above, analyses of evaluations by stock markets of information security incidents confirm that these incidents generally result in a fall in stock prices.

3.2 Sample Selection

Prior to analysis, it is necessary to sample information security incidents and accidents. In this study, we focus on two categories of incidents and accidents: information leaks and system failures.

In sampling information security incidents and accidents, we searched articles published in four Nikkei newspapers during the period from January 2000 to December 2007, which included one of the three keywords: "information leak," "system failure," and "software trouble."[4] Since this study aimed to analyze fluctuations in stock price, companies that announced their financial results or merged with or acquired another company during the period analyzed surrounding the day of the event were excluded from the sampling. As a result, 45 cases were sampled using the keyword "information leak," and 34 cases were sampled using the keywords "system failure" and "software trouble."

3.3 Calculation of Cumulative Abnormal Return on Equity Investment

Next, the Nikkei NEEDS-Financial QUEST database was used to obtain the ex-right and ex-dividend price of stocks in each of the companies sampled above in order to calculate daily return on equity investment. Then, based on market models, cumulative abnormal return (CAR) was calculated using the day when the information incident was reported as the day of the event.

$$R_{it} = \alpha + \beta \times R_{mt} \tag{1}$$

$$\varepsilon_{it} = R_{it} - \left(\hat{\alpha} + \hat{\beta} \times R_{mt}\right) \tag{2}$$

R_{mt}: Ex-right and ex-dividend monthly TOPIX return
R_{it}: Ex-right and ex-dividend monthly return for Company i

---

[4] The Nikkei Financial Daily, one of the four Nikkei newspapers mentioned above, discontinued publication on January 31, 2008.
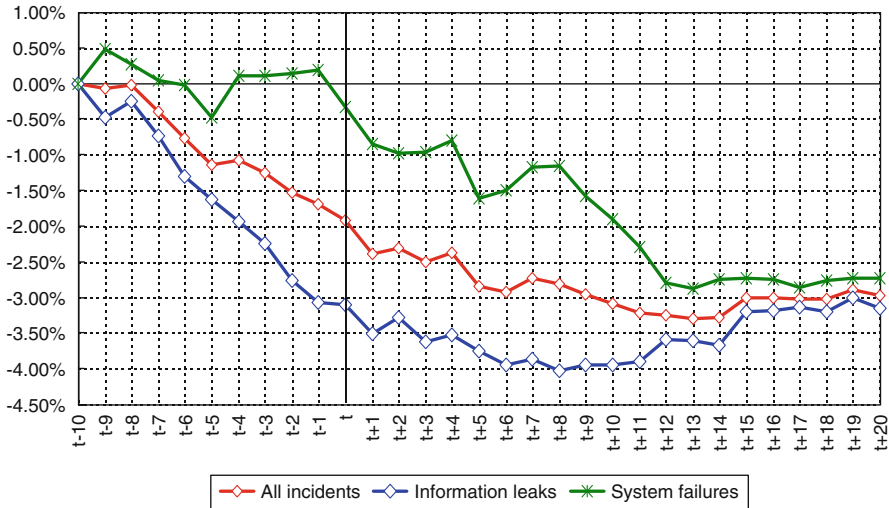
Fig. 10 Studies of events on the day when information security incidents were reported in newspapers

3.4   Evaluations by Stock Markets of Information Security Incidents

How, then, do stock markets evaluate information security incidents? First, the CARs for all of the information security incidents (79 cases), information leak incidents (45 cases), and system failure incidents (34 cases) respectively were calculated.

Figure 10 indicates the CAR for each category of incidents. In this figure, it can be confirmed that stock markets negatively evaluated information security incidents whether divided into information leaks and system failures or looked at as a whole. While information leaks began to push down stock prices even before the day when they were reported in newspapers, system failures started to lower stock prices immediately after the day when newspaper reports appeared.

While information leaks allow companies to choose the timing for announcing them publicly at their own discretion, system failures are often made public immediately after they occur. Whether or not companies can choose the timing for announcing information security incidents publicly at their own discretion may affect evaluations by stock markets of such incidents.

Statistical examinations confirm that the CAR over the entire sample was significantly negative, at the 5 % level, from 5 days prior to the day when the information security incidents were reported in newspapers onward; that for information leaks the same negative level was observed 6 days prior onward; and that for system failures this was from one day after in Table 1. From the results of these

Table 1 Evaluations by stock market of information security incidents

	Entire sample (n = 79)			Information leaks (n = 79)			System failures (n = 79)		
	Average	t-value	p-value	Average	t-value	p-value	Average	t-value	p-value
t − 10	0.000	0.150	0.441	−0.002	−0.575	0.284	0.003	1.063	0.148
t − 9	0.001	0.186	0.426	−0.003	−0.636	0.264	0.005	1.334	0.096
t − 8	0.001	0.495	0.311	0.000	0.052	0.479	0.003	0.757	0.227
t − 7	−0.002	−0.743	0.230	−0.005	−1.005	0.160	0.001	0.152	0.440
t − 6	−0.006	−1.525	0.066	−0.011	−2.017	0.025	0.001	0.225	0.412
t − 5	−0.008	−2.160	0.017	−0.012	−2.016	0.025	−0.004	−0.853	0.200
t − 4	−0.007	−1.830	0.036	−0.014	−2.457	0.009	0.002	0.313	0.378
t − 3	−0.009	−2.319	0.012	−0.015	−2.907	0.003	−0.001	−0.110	0.456
t − 2	−0.013	−3.154	0.001	−0.021	−3.702	0.000	−0.002	−0.392	0.349
t − 1	−0.015	−3.039	0.002	−0.024	−3.701	0.000	−0.002	−0.339	0.368
t	−0.016	−3.235	0.001	−0.023	−3.789	0.000	−0.007	−0.819	0.209
t + 1	−0.022	−4.172	0.000	−0.027	−4.059	0.000	−0.015	−1.794	0.041
t + 2	−0.021	−3.756	0.000	−0.025	−3.668	0.000	−0.017	−1.714	0.048
t + 3	−0.024	−3.810	0.000	−0.028	−3.762	0.000	−0.018	−1.686	0.051
t + 4	−0.022	−3.556	0.000	−0.028	−3.489	0.001	−0.015	−1.492	0.073
t + 5	−0.027	−4.275	0.000	−0.030	−3.779	0.000	−0.023	−2.232	0.016
t + 6	−0.028	−4.215	0.000	−0.032	−3.723	0.000	−0.023	−2.169	0.019
t + 7	−0.027	−3.757	0.000	−0.031	−3.539	0.000	−0.021	−1.764	0.043
t + 8	−0.029	−4.257	0.000	−0.033	−3.852	0.000	−0.023	−2.102	0.022
t + 9	−0.029	−4.042	0.000	−0.032	−3.461	0.001	−0.024	−2.172	0.019
t + 10	−0.031	−4.297	0.000	−0.032	−3.511	0.001	−0.028	−2.496	0.009
t + 11	−0.032	−4.650	0.000	−0.033	−3.723	0.000	−0.032	−2.798	0.004
t + 12	−0.032	−4.516	0.000	−0.028	−3.124	0.002	−0.037	−3.240	0.001
t + 13	−0.033	−4.341	0.000	−0.029	−3.010	0.002	−0.038	−3.107	0.002
t + 14	−0.034	−4.156	0.000	−0.032	−2.988	0.002	−0.036	−2.855	0.004
t + 15	−0.031	−3.975	0.000	−0.027	−2.641	0.006	−0.036	−2.982	0.003
t + 16	−0.031	−4.020	0.000	−0.026	−2.658	0.005	−0.037	−3.022	0.002
t + 17	−0.031	−3.977	0.000	−0.027	−2.491	0.008	−0.038	−3.186	0.002
t + 18	−0.031	−3.877	0.000	−0.027	−2.523	0.008	−0.037	−2.970	0.003
t + 19	−0.030	−3.587	0.000	−0.025	−2.149	0.019	−0.037	−3.027	0.002
t + 20	−0.031	−3.688	0.000	−0.027	−2.283	0.014	−0.037	−3.027	0.002

examinations, it can be confirmed that information security incidents are negatively evaluated by stock markets.

What sampled incidents, then, were particularly severely evaluated by stock markets? This section examines stock market evaluations by industry.

Examinations of the banking, IT, and communications industries, from which two or more sample information leak incidents were obtained (eight, three and ten cases respectively),indicate that while the incidents had practically no impact on stock prices in the communications industry, they substantially pushed down stock prices in the banking and IT industries (see Fig. 11).
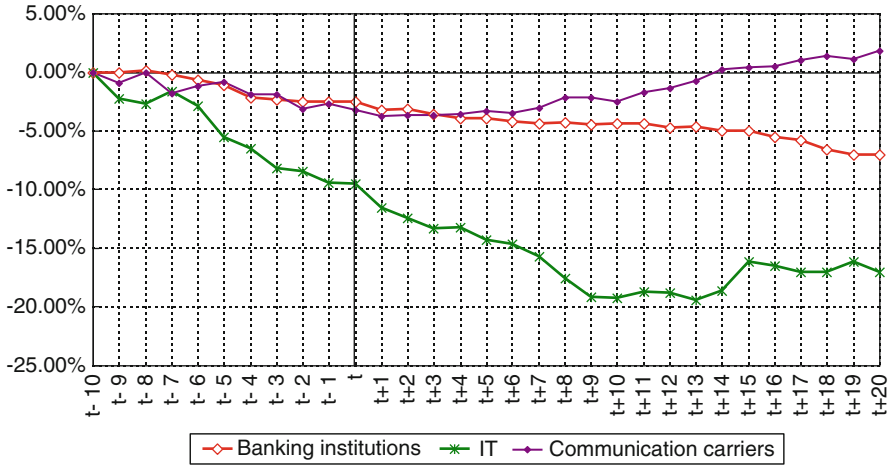
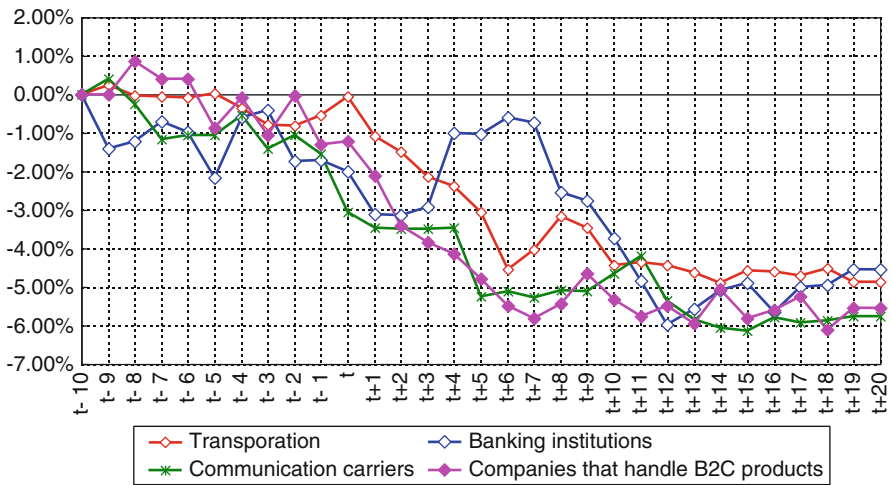**Fig. 11** Stock markets' reaction to information leaks by industry

Fig. 12 Evaluations by stock markets of system failures and software trouble by industry

A look at transport facilities (six cases), banking institutions (++eleven cases), communications carriers (nine cases), and companies that handle B2C products (five cases)—from each of which two or more sample system failures or software trouble incidents were obtained—shows that stock prices fell sharply irrespective of industry type (see Fig. 12).

4 Effects of Information Security Disclosure on Evaluations by Stock Markets

4.1 Relationship Between Information Security Initiatives and Disclosure

If information security incidents have grave effects on evaluations by stock markets of the companies involved and on the value of their corporate brand, it is necessary to properly establish systems and devices for ensuring information security.

Unfortunately, however, it is difficult for external stakeholders to obtain information on companies' information security initiatives. The reason for this is that it is hard to confirm the actual state of such initiatives unless the companies disclose information on them.

How many companies, then, disclose information on their information security initiatives? In order to clarify this, Ito conducted a survey of information disclosure officers at 3,931 listed companies in Japan in October 2008. A total of 339 replies were received.

In addition to asking the information disclosure officers how their company disclosed information on its risk management initiatives, including information security, the survey looked at how they apprehend and disclose information on risk management. The following are the results of the survey.

Figure 13 indicates how companies disclose information on corporate risk and its management, including information security. According to this figure, it can be seen that many companies disclose such information in the form of financial statements and corporate governance reports, which stock exchanges require them to present.

How serious an effect do information disclosure officers think information security risks have on corporate management? In Fig. 14, information disclosure officers were asked about the effects of information security risks on corporate management. This figure confirms that many information disclosure officers think that risks involving compliance, information leaks, and defective IT systems have serious effects on corporate management.

How far have companies established systems to manage risks that they think will have serious effects on their management? Also, how far do they disclose information on such systems? Figure 15 indicates how far companies replying that risks would have serious effects on their management have established risk management systems[5] and their disclosure of information on the risks involved. This figure illustrates that while around 95 % of companies have established systems to manage risks involving compliance and information leaks, only around 60 % of them disclose information on such systems.

---

[5] In this context, that risk management systems have been established means meeting three requirements: (1) where responsibilities lie is clearly defined; (2) methods for responding to risks in a systematic way when they are revealed have been established; and (3) employee education and training are provided.
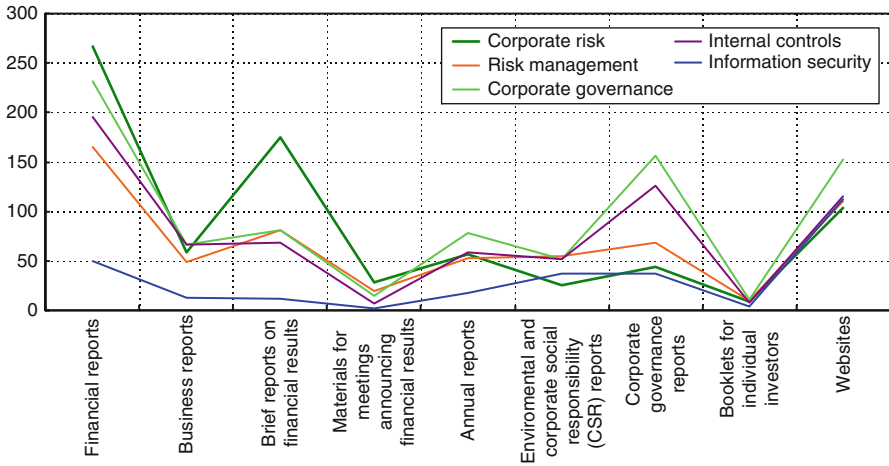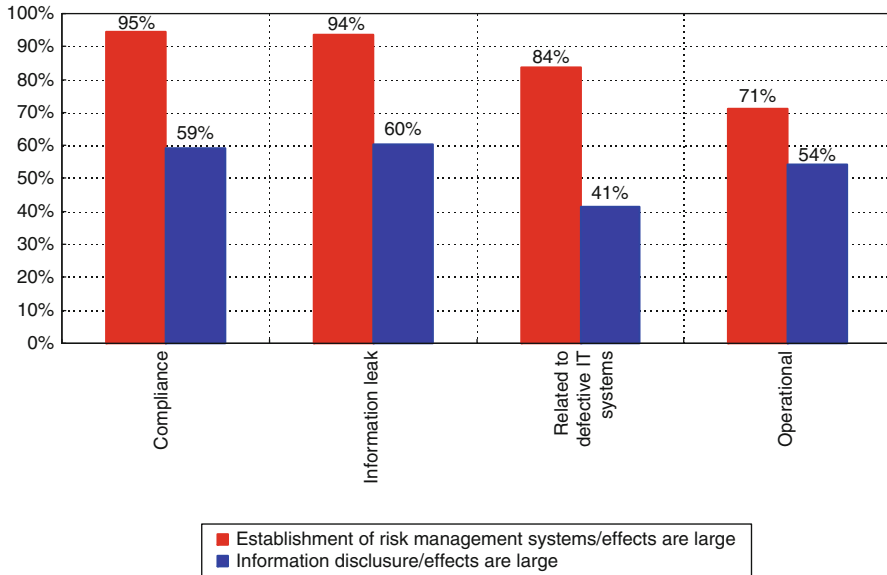
Fig. 13 Media by which information is disclosed. (*Source*) "Questionnaire survey concerning utilization of information systems" (K. Ito and his research team, Hitotsubashi University, October 2008). ©2008 Kunio Ito All Rights Reserved
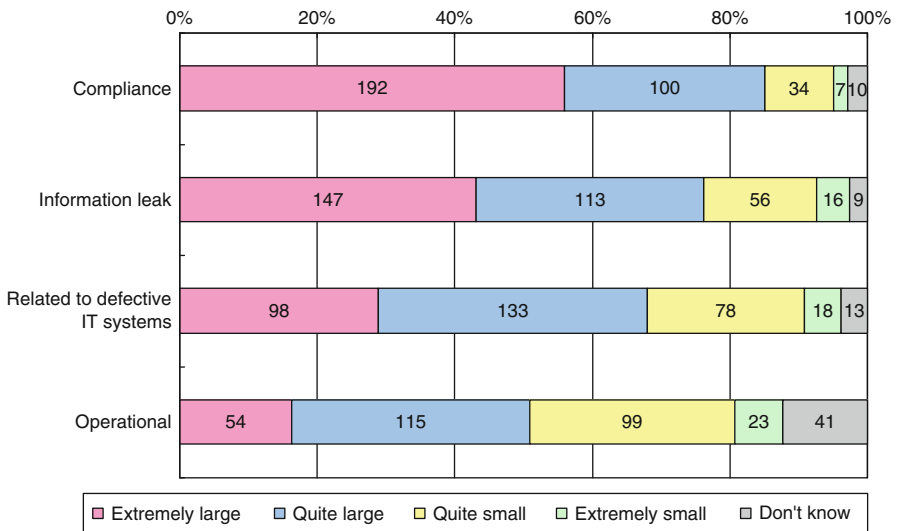
Fig. 14 Effects of revealed risks on the management of your company. (*Source*) "Questionnaire survey concerning utilization of information systems" (K. Ito and his research team, Hitotsubashi University, October 2008). ©2008 Kunio Ito All Rights Reserved

With respect to risks involved in defective IT systems, although 85 % have established risk management systems, only around 45 % disclose information on these systems. It can be seen that even though systems are established to manage information security risks, the incentive for disclosing information on these systems

Fig. 15 Awareness survey of corporate information disclosure officers. (*Source*) "Questionnaire survey concerning utilization of information systems" (K. Ito and his research team, Hitotsubashi University, October 2008). ©2008 Kunio Ito All Rights Reserved

is small. Conversely, if, despite the small incentive, companies disclose information on the information security risks that face them and the systems in which they have to manage these risks, it may mean that they are more enthusiastic about these initiatives, and their managers have a better understanding of these initiatives than those of companies that do not.

4.2 Building a Hypothesis

If investors view the disclosure of risk information as a sign of active efforts to establish and improve risk management systems, it can be assumed that they expect that companies disclosing risk information in advance will take appropriate action after an information security incident occurs.

On the other hand, if investors view the non-disclosure of risk information as a sign of the inability to perceive the risk involved, the absence of risk management systems even if the risk is perceived, or the unwillingness to establish such systems in the future, it can be assumed that they do not expect that companies which do not disclose risk information in advance will take appropriate action after an information security incident occurs. Therefore, it is supposed that when a risk is revealed, the extent of the fall in the price of stocks in companies that disclose information on risk is smaller than that for companies that do not. Based on this, the following hypothesis is given.

Table 2 Number of sample information leak incidents by industry

Industry	Obs.	Industry	Obs.	Industry	Obs.
Air transportation	2	Retail trade	1	Electric appliances	4
Services	5	Securities and commodity futures	1	Real estate	3
Wholesale trade	1	Information and communication	14	Insurance	3
Banks	22	Foods	2	Transportation equipment	3
Construction	1	Electric power and gas	3	Land transportation	2

Hypothesis Other things being equal, when a risk is revealed, the extent of the decrease in the price of stocks in companies that disclose risk information in advance is smaller than that for companies that do not.

4.3   Sample and Databases

In this section, we performed online searches in four Nikkei newspapers published during the period from April 2004 to December 2006 using the keywords listed below to extract incidents involving the leakage of personal information.

Keyword: "Personal information" and ("leak" or "loss")

Among the cases identified through keyword searches, only those which met the following three requirements were used in the sample: (1) the companies that caused the incident were then listed on the First Section of the Tokyo Stock Exchange and have been listed there to the present day; (2) they did not merge with another listed company during the period analyzed; and (3) information on stock prices required for analysis is obtainable.[6] The reason the sampling was limited to companies listed on the First Section of the Tokyo Stock Exchange is that we attempted to identify the effects of incidents involving the leakage of personal information on stock prices by making other factors that might affect stock transactions as uniform as possible. If two or more risks were revealed at the same company within 1 month, the second and subsequent risks are excluded from the sampling. The reason for this is that the first incident might have continued to affect stock prices. As a result, 67 cases[7] were used in the sample.

Table 2 indicates the distribution of industries sampled. This table shows that the Information and Communication and Banks industries are more highly represented than others. According to the results of the survey of personal information leak

---

[6] The authors tried to minimize the effects of the trading environment and other external factors by using only TOPIX data as indicators to estimate rates of cumulative abnormal return.

[7] Incidents were sampled manually, however. Therefore, there is a possibility that not all incidents involving the leakage of personal information were sampled.

incidents conducted by the Japan Network Security Association, incidents in the Banks industry account for 13.7 % of the total, ranking first among all industries, and those in the Information and Communication industry represent 11.2 %, ranking second. This corresponds to the distribution of industries sampled in the present study. For this reason, we do not believe that the manner in which incidents were sampled seriously affected the results of this analysis.

We then confirmed whether, in these 67 cases, financial statements submitted before the day when the information leak was reported in newspapers included descriptions of information leak risks in the section of "Business Risk, etc." The result was that in 44 cases, information leak risks had been disclosed before the information leak was reported, and that in 23 cases, such risks had not been disclosed. We call the former "companies that disclose information leak risks in advance" and the latter "companies that do not disclose information leak risks in advance."

4.4 Approach to Verification

In order to examine these information security initiatives, this section studies evaluations by stock markets of information on information security initiatives. This study involves using the day when information leak incidents were reported in four Nikkei newspapers as the day of the event and examining whether or not stock prices fluctuated differently between companies that disclose information leak risks in advance (prior-disclosure companies) and companies that do not disclose information leak risks in advance (non-prior-disclosure companies).[8] The cumulative abnormal return (CAR), calculated based on market models,[9] is used for verification.

CAR is calculated according to the following procedures:

First, the parameters, $\hat{\alpha}_i$ and $\hat{\beta}_i$, are estimated using formula (3).

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{3}$$

$R_{i,t}$ represents the CAR for Company i on Day t, and $R_{m,t}$ represents the CAR rate for the whole market[10] on Day t. As in the studies by Campbell et al. (2003),

---

[8] However, the day of the event for cases reported in the evening edition is the day following the day when they were reported. If stock markets were closed on the day when cases were reported, the day of the event is the next day when the stock markets opened.

[9] In this study, the authors performed analysis using market-adjusted models and found that the results of this analysis were largely the same as those obtained by analysis using market models.

[10] TOPIX was used to calculate the CAR rate for the whole market. The reason for this is that the companies analyzed are limited to those listed on the First Section of the Tokyo Stock Exchange (TSE). Analysis of the CAR rate for the whole market using TSE's stock price index by industry obtained similar results.

Cavusoglu et al. (2004), and Ishiguro et al. (2006), the estimation period is 120 days prior to the day when the information leak incident was reported.

Next, based on formula (4), abnormal return (AR) on equity investment is calculated using the parameters estimated from formula (3).

$$AR_{i,t} = R_{i,t} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{m,t} \right) \tag{4}$$

The sum of AR rates is divided by the number in the sample to calculate average abnormal return (AAR) on equity investments (5).

$$AAR_t = \frac{1}{N} \sum_1^N AR_{i,t} \tag{5}$$

Finally, all AAR rates are added up to give the CAR (6).

$$CAR_t = \frac{1}{N} \sum_{-1}^T AAR_t \tag{6}$$

The stock price data required for analysis were obtained from the Nikkei NEEDS-FinancialQUEST system.

4.5 Evaluations by Stock Markets of Information Leak Incident Reports-1: Examinations Using CAR

Figure 16 shows changes in CAR rate during the period from 1 day prior to the day when the information leak incident was reported to 15 days after.

Figure 16[11] shows that following the report of information leak incidents, the price of stocks in both companies that disclose information leak risks in advance and those which do not fell. While prior-disclosure companies saw their stock price begin to rise 5 days after the incident was reported and after 7 days had recovered the fall experienced in the first 5 days, non-prior-disclosure companies saw their stock price continue to fall and failed to recover the pre-incident stock price level even after 15 days had passed. Fifteen days after the incident was reported, while the stock price for prior-disclosure companies had risen about 0.1 % that for non-prior-disclosure companies had fallen about 3.0 %. From these trends, it can be seen that after the information leak incident, the stock price for prior-disclosure

---

[11] The results of analysis of changes in CAR rate in the banking and information/communications industries indicate that the CAR rate for prior-disclosure companies and that for non-prior-disclosure ones showed the same trends as in Fig. 16. The changes in CAR rate are largely similar to those for the entirety of the sample. Banking and information/communications are the only industries that included both prior-disclosure companies and non-prior-disclosure companies and for which the number of cases in the sample was sufficient for analysis.
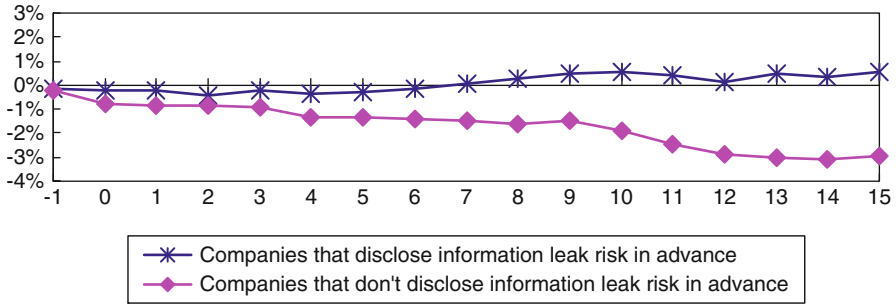
Fig. 16 Changes in CAR rates ($t = -1$–15)

companies fluctuated differently from that for non-prior-disclosure companies. This means that prior-disclosure companies were more positively assessed by markets than non-prior-disclosure ones. The following paragraphs explain the reasons why the differences in stock price fluctuation described above between prior-disclosure and non-prior-disclosure companies occur.

Investors might have decided that companies disclosing risk information in advance had solid risk management systems and expected that they would swiftly take appropriate action even if risks became tangible. Wakasugi (1999) pointed out that information disclosure exerts motivational control over corporate activities. If this argument is invoked, it can be claimed that investors might have decided that the ability of companies to disclose risk information in advance meant that they perceived the risks involved and had systems to manage them. In fact, in an awareness survey of information disclosure officers, 95 % of companies disclosing information leak risks replied that they had put in place systems to manage such risks.

On the other hand, investors might have decided that companies that did not disclose risk information in advance did not perceive the risks involved or had not put risk management systems in place even if they perceived them. Therefore, the investors made a different decision when they considered investing in companies that did not disclose risk information in advance and those which did.

These differences in the fluctuation of stock prices need to be verified at statistically significant levels. Therefore, tests of average differences in CAR rate between prior-disclosure companies and non-prior-disclosure companies were performed. Table 3 lists the results of t tests.

Table 3 shows that differences in the fluctuation of stock prices can be verified at statistically significant levels 8 days after the information leak incident was reported. In the study by Ishiguro et al. (2006), statistically significant results of stock price fluctuations were obtained ten days after the information leak incident was reported. It can be said that the results of the present study are generally consistent with those of the study by Ishiguro and his colleagues.

Table 3 Testing of average differences in CAR between prior-disclosure companies and non-prior-disclosure companies

CAR	Prior-disclosure companies	Non-prior-disclosure companies	*t* value
t	−0.002	−0.008	1.019
t + 1	−0.002	−0.009	0.953
t + 2	−0.004	−0.008	0.522
t + 3	−0.002	−0.009	0.697
t + 4	−0.004	−0.013	1.004
t + 5	−0.003	−0.013	1.235
t + 6	−0.002	−0.014	1.252
t + 7	0.001	−0.015	1.538
t + 8	0.003	−0.016	1.935*
t + 9	0.005	−0.015	1.764*
t + 10	0.006	−0.019	2.059**
t + 11	0.004	−0.025	2.286**
t + 12	0.001	−0.029	2.258**
t + 13	0.005	−0.030	2.593**
t + 14	0.003	−0.031	2.344**
t + 15	0.006	−0.030	2.480**

** significant at the 5 % level
* significant at the 10 % level

With regard to the reason that there is a delay in investors responding to information leak incidents, Ishiguro et al. (2006) explain that immediately after the occurrence of the incidents, investors cannot accurately grasp the amount of loss caused, and that only after exposure to various reports following the incidents can they obtain a clear understanding of the scale of loss. In the present study, we performed analysis from the viewpoint of risk information disclosure, and from this standpoint, it can be inferred that investors collect information in various ways immediately after the occurrence of information leak incidents, and that this collected information includes risk information. Having confirmed this risk information after the incident, they may make different investment decisions with respect to prior-disclosure companies and non-prior-disclosure companies.

Therefore, it can be pointed out that there is a possibility that investors gradually incorporate information on whether companies disclose risk information or not into their investment decisions. In other words, immediately after the occurrence of information leak incidents, investors do not know whether companies disclose risk information or not, but later, through information gathering, they distinguish companies that disclose risk information in advance from those which do not. By doing so, they realize in hindsight that prior-disclosure companies have appropriate risk management systems. This might have had favorable effects on stock prices, helping them to start rising. On the other hand, investors decide that non-prior-disclosure companies do not have adequate risk management systems, and this might have caused stock prices to continue falling.

4.6 Evaluations by Stock Markets of Information Leak Incident Reports-2: Examinations Using Multivariate Analysis

The previous analysis suggests the possibility that risk information affects stock prices. This section analyzes whether risk information affects stock prices even if factors that may affect CAR are controlled.

4.6.1 Approach to Verification

Several existing studies have made it clear that when information leak incidents occur, the scale of business, the price-to-book value ratio (PBR), and the type of industry affect CAR. Cavusoglu et al. (2004) reported the positive relationship between CAR and business scale, arguing that companies with a larger scale of business can absorb negative shocks. Ishiguro et al. (2006) reported the negative relationship between CAR and PBR. If PBR is considered as an index for valuing intangible assets, companies with a higher PBR are those whose intangible assets are highly rated by investors. If information security investments are regarded as intangible assets, the value of such assets is impaired when information leak incidents occur. Therefore, it is assumed that when information leak incidents occur, companies with a high PBR see their stock price fall more substantially than those with a low PBR. Meanwhile, Cavusoglu et al. (2004) and Ishiguro et al. (2006) presented results showing that information leak incidents have different effects on CAR rates depending on the industries involved.

This section examines the three above-mentioned factors and the scale of the incident as factors that affect CAR when information leak incidents occur. This is because it is assumed that companies that cause a larger information leak incident see their stock price fall more substantially than those which minimize the scale of the incident they cause.

As in the study by Ishiguro et al. (2006), the index (Size) based on the natural logarithm of sales[12] for the settlement term immediately before the information leak incident was reported is used as an indicator of business scale. PBR for one day prior to the day when the information leak incident was reported is used. The number of pieces of personal information leaked (Numbers) is used as a variable that indicates the scale of incident. Since discrepancies exist in the numbers of pieces of personal information leaked, however, the index based on the natural logarithm of the numbers is used. As is shown in Table 4, since there is a possibility that information leak incidents are closely related to industry characteristics, an industry dummy variable is incorporated into the multiple regression model.

---

[12] Even in cases in which the total market value was used for the business scale index as in the study by Cavusoglu et al. (2004), largely similar results were obtained.

Table 4 Descriptive statistics

	Mean	Std. dev.	Min	1Q	Median	3Q	Max	Obs.
Size	12.514	1.658	9.239	11.097	12.498	13.804	16.037	64
PBR	2.035	1.289	0.735	1.190	1.737	2.385	7.499	64
Numbers	8.160	2.889	3.526	5.570	8.499	10.092	15.498	64
DiscDummy	0.641	0.484	0.000	0.000	1.000	1.000	1.000	64

Table 5 Pearson correlation coefficients

	Size	*PBR*	*Numbers*	*DiscDummy*
Size		0.144	−0.028	−0.066
PBR	0.232		−0.18	0.066
Numbers	−0.038	−0.095		−0.049
DiscDummy	−0.089	0.101	−0.009	

The lower left triangular matrix represents Spearman correlation coefficients, and the upper right triangular matrix represents Pearson correlation coefficients

An information leak risk information disclosure dummy variable (DiscDummy) is incorporated into the multiple regression model with the variables mentioned above as its explanatory variables and the CAR as its explained (dependent) variable (5). For the DiscDummy variable, one (1) is given to companies that disclose information leak risks in advance and zero (0) to those which do not. This model analyzes whether risk information affects stock prices or not even if other factors that affect CAR are taken into account.

$$CAR_{i,t} = \alpha_0 + \alpha_1 Sales_{i,t} + \alpha_2 PBR_{i,t} + \alpha_3 Numbers_{i,t} + \alpha_4 DiscDummy_{i,t} + \varepsilon_{i,t}$$

$Sales$ = Sales for the settlement term just before the information leak incident was reported (natural logarithm)
PBR = PBR for one day prior to the day when the incident was reported
$Numbers$ = Number of pieces of personal information leaked (natural logarithm)
$DiscDummy$ = Information leak risk information disclosure dummy (1 forprior-disclosure companies and 0 for non-prior-disclosure companies)
ε = Error term

The number of cases used in the sample was 64 after three cases were excluded in which information on PBR and the number of pieces of personal information leaked was not obtained. The stock price data and financial information required for analysis were obtained from the Nikkei NEEDS-Financial QUEST database.

Tables 4 and 5 show descriptive statistics for explanatory variables and correlation coefficients between variables, respectively.

Descriptive statistics in Table 4 indicate that there is no particularly abnormal value, suggesting that there is no sampling bias. Pearson correlation coefficients in Table 5 show that all correlation coefficients between explanatory variables are

within ±0.180, and it is presumed that problems of multicollinearity do not need to be taken into consideration.[13] The multiple regression model is estimated using CAR ($t = 1$ to $t = 15$) for explained variables.

4.6.2 Results

The results of the analysis are shown in Table 6. According to Table 6, all coefficients for Size are positive in all periods except t = 8. But in no period are they statistically significant. Coefficients for PBR are all negative and statistically significant until the fifth day (significant at the 1% level on all days except $t = 1$). From 6 days after the incident was reported onward, however, they are not statistically significant. Coefficients for Numbers are negative after the incident was reported and statistically significant until the fifth day (significant at the 1 % level for $t = 2$ to 4 and at the 5 % level for $t = 1$ and $t = 5$). As for PBR, however, the values are not statistically significant from the sixth day onward. Coefficients for Type are also statistically significant though they are not listed in the table.

Finally, a look at coefficients for DiscDummy indicates that they are positive in all periods. It is not until eight days after the incident was reported, however, that they become statistically significant (significant at the 10 % level for $t = 8$ and $t = 9$ and significant at the 5 % level for $t = 10$–15). If the results for PBR and Numbers are taken into account, it can be seen that there is a possibility that following the reported incident, investors made investment decisions in accordance with PBR and incident scale for some time, but that after a certain length of time passed, whether or not the companies involved disclosed risk information in advance affected their decisions.

Why, then, do companies that disclose information security risks not see their stock price fall substantially? Why do those which do not disclose them see their stock price fall substantially?

One convincing hypothesis indicates the possibility that there are investors who study the financial statements of the companies involved again when reconsidering their investment decisions after the occurrence of information leak incidents. Companies that disclose information security risks in their financial statements are likely to be keener on information security initiatives and establish risk management systems in a more solid manner than those which do not. It is inferred that the investors confirm these points and reflect them in their investment decisions.

---

[13] The variance inflation factor (VIF) for each variable is estimated at 3.205 for Size, 1.367 for PBR, 1.439 for Numbers, and 1.719 for DiscDummy. In general, multicollinearity can be suspected if VIF is estimated at ten or more, but the values shown above are much smaller than ten. Therefore, it is assumed that there is no problem of multicollinearity among explanatory variables.

Table 6 Results of multiple regression analysis

CAR	Size		PBR		Numbers		DiscDummy		Adj.R²	Obs.
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value		
t + 1	0.002	0.687	−0.006	−2.568**	−0.002	−2.225**	0.010	1.423	0.364	64
t + 2	0.005	1.604	−0.008	−3.108***	−0.004	−3.228***	0.004	0.581	0.357	64
t + 3	0.007	1.886	−0.010	−2.960***	−0.005	−3.516***	0.002	0.242	0.332	64
t + 4	0.004	1.235	−0.009	−3.092***	−0.004	−3.050***	0.007	0.832	0.450	64
t + 5	0.006	1.712	−0.010	−3.532***	−0.003	−2.131**	0.005	0.633	0.464	64
t + 6	0.004	0.999	−0.006	−1.534	−0.002	−1.312	0.007	0.642	0.262	64
t + 7	0.002	0.557	−0.003	−0.719	−0.001	−0.68	0.013	1.244	0.251	64
t + 8	−0.001	−0.332	−0.002	−0.484	−0.001	−0.711	0.019	1.756*	0.260	64
t + 9	0.000	0.043	−0.005	−1.253	−0.001	−0.774	0.020	1.823*	0.293	64
t + 10	0.000	0.052	−0.006	−1.497	0.000	−0.123	0.027	2.282**	0.366	64
t + 11	0.000	0.099	−0.005	−1.274	0.000	−0.075	0.032	2.615**	0.373	64
t + 12	0.003	0.538	−0.004	−0.989	0.001	0.533	0.033	2.521**	0.401	64
t + 13	0.006	1.128	−0.005	−1.063	−0.001	−0.366	0.034	2.399**	0.350	64
t + 14	0.008	1.327	−0.008	−1.524	−0.001	−0.259	0.035	2.315**	0.288	64
t + 15	0.009	1.545	−0.008	−1.657	−0.001	−0.244	0.032	2.123**	0.311	64

*** significant at the 1 % level
** significant at the 5 % level
* significant at the 10 % level

5 Effects of Information Security Governance on Corporate Brand Value

Information security initiatives not only prevent information security incidents from pushing down stock prices but may also have positive effects on corporate brand value. The reason for this is that information security initiatives are highly likely to help gain the greater trust of external stakeholders and enhance customer preference and satisfaction in business transactions. Another reason is that the greater trust of employees in information security increases their trust in information systems, encouraging them to utilize information systems in a more strategic way.

In order to verify this hypothesis, however, it is necessary to be able to confirm companies' information security initiatives in a comprehensive way and clarify what effects these initiatives have on the customers, employees, stockholders, and other stakeholders of the companies. This section estimates the effects of information security initiatives on corporate brand value using the results of surveys of corporate users who utilize IT equipment and the results of surveys of administrators of information processing systems, both of which were designed by Ito at Hitotsubashi University.

5.1 Evaluations of Information Security in Corporate User Surveys

Ito conducted questionnaire surveys of corporate users of certain pieces of IT equipment between 2004 and 2007. These surveys involved examining how closely evaluations of IT-related products and services were related to the preference and satisfaction of users when they dealt with the supplier of these products and services. This section presents several interesting results obtained regarding information security, although details of the surveys are omitted.

Figure 17 shows how corporate users evaluated the companies' information security initiatives. According to this figure, the percentage of corporate users who highly rated Company B's and Company C's information security increased in 2005, 2006, and 2007.

In Japan, since 2005, the Ministry of Economy, Trade and Industry has taken a leading role in establishing various systems and devices to encourage Japanese businesses to disclose information security initiatives more actively. In line with this trend, Companies B and C made a clear commitment to their stance of communicating their information security initiatives to stakeholders inside and outside the companies, mainly through full information security disclosure. The figure confirms that these initiatives have had a steady influence on corporate users.

How, then, do high or low evaluations of companies' information security affect user preference when users purchase products and services from the companies?
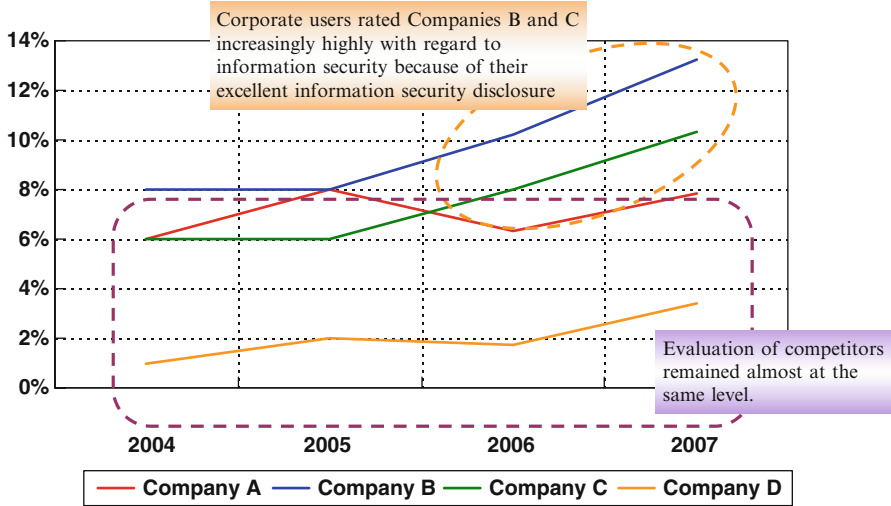
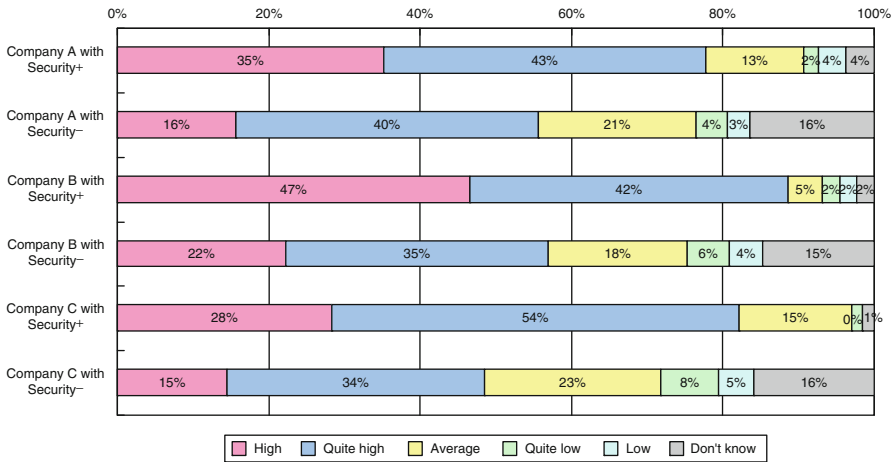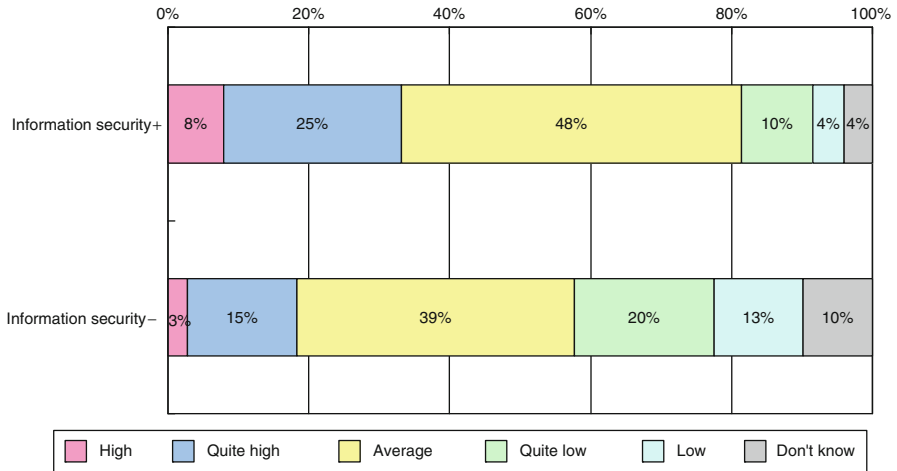**Fig. 17** Information security evaluations by corporate users

Fig. 18 Effects of information security initiatives on evaluations by corporate users

In order to answer this question, we divided the corporate users into those which highly rated the companies' information security and those which did not and presented user evaluations when they dealt with the companies (see Fig. 18).

According to Fig. 18, it can be seen that the corporate users tended to prefer dealing with companies that excelled in information security initiatives. Similar results were derived in terms of overall user satisfaction, although details are omitted.

The results of the foregoing analysis confirm that information security initiatives led to high customer preference and satisfaction in business transactions.

Fig. 19 Relationship between active information security initiatives and overall internal evaluations of information systems. (*Source*) "Questionnaire survey concerning utilization of information systems" (K. Ito and his research team, Hitotsubashi University, January 2007)

5.2 Surveys of Administrators of Information Processing Systems

How, on the other hand, do a company's information security initiatives alter the awareness of employees who work for the company?

In order to answer this question, this section uses questions asked in a survey aimed at measuring the effects of investment in information processing systems, which was carried out by Ito at Hitotsubashi University on administrators of corporate information processing systems or personnel in similar positions in January 2007, to present the relationship between the information security awareness of companies and the awareness of employees working for those companies. The survey covered 3,950 listed companies and collected a sample of 495 responses.

In the survey, respondents were asked whether their company was working hard to bolster information security or how their company's information processing systems were evaluated by internal stakeholders. The survey used a combination of these questions to examine what effects the presence or absence of efforts to strengthen information security had on evaluations by internal stakeholders of information processing systems (see Fig. 19).

This figure confirms that companies that were active in information security initiatives enjoyed higher evaluations by their employees of their information processing systems than those which were not. The greater trust of employees in information processing systems will encourage them to utilize these systems in a

strategic way, and if these efforts are successful, the employees will be motivated to work harder, and they will have a greater awareness of, and take greater pride in, their company's corporate brand.

As described above, it can be seen that information security initiatives are closely related to evaluations by customers and employees of the corporate brand of the companies concerned.

6 Information Security Governance Tasks and Outlook

The aim of this paper is to examine the effects of information security initiatives on corporate value and demonstrate the significance of establishing information security governance so that the effects permeate into business firms.

In order to achieve this goal, this paper first examined the effects of information security incidents on evaluations by stock markets and on corporate brand value. It then showed the possibility of information security incidents leading to significantly lower evaluations by stock markets, and of them substantially damaging corporate brand value by lowering the level of the corporate image.

Do, then, information security initiatives bring economic effects? In order to answer this question, we performed the three analyses described below. One was to focus on companies that disclosed information security risks in the "Business Risk etc." column in their financial statements and examine how differently stock markets evaluated such companies as compared to those which did not when an information security incident occurred. As a result, it was confirmed that companies that disclosed information security risks saw their stock price fall by a smaller margin than those which did not.

Secondly, according to a questionnaire survey of corporate users who utilized IT-related equipment, it could be seen that companies that properly disclosed their information security initiatives enjoyed higher evaluations of those initiatives than those which did not. Furthermore, it was confirmed that information security initiatives had positive effects on user preference and satisfaction in business dealings.

Moreover, the questionnaire survey of administrators of information processing systems confirmed that companies that were active in strengthening information security tended to receive higher evaluations of their information processing systems from internal stakeholders.

Based on the results described above, it is considered that it is economically beneficial in two ways to have internal and external stakeholders recognize that companies are carrying out information security initiatives.

One benefit is that by explaining that they are carrying out information security initiatives as expected by external stakeholders, companies can state that they are fulfilling their corporate social responsibility, thus minimizing the concerns and distrust of external stakeholders.

Like global warming and other environmental problems, information security incidents, once they occur, can have grave effects on companies and ordinary consumers in the community in which the companies involved operate. Nonetheless, external stakeholders cannot ascertain how active and enthusiastic the relevant companies are with regard to information security initiatives. This may bring about underinvestment, viewed from the standpoint of social welfare. In order to minimize the concerns and distrust of external stakeholders, companies are urged to disclose information security initiatives as part of their corporate social responsibility.

Formerly, information security incidents did not occur as often as today. Also, there was a "happy misunderstanding" that companies—which in fact were not intent on ensuring information security—might be working hard to ensure information security even if they did not disclose their information security initiatives. In recent years, however, many information security incidents have occurred. In the light of these incidents, unless companies disclose information security initiatives, external stakeholders cannot identify these initiatives even if the companies are actively implementing them, and may consider the companies to be subject to information incident risks in the same way that others are. In order to avoid such negative evaluations and minimize the groundless concerns and distrust of external stakeholders, companies have been urged to disclose their information security initiatives.

The other benefit lies in the aim of explaining about information security initiatives from the viewpoint of raising future cash flow levels. If information security initiatives increase the trust of business partners and customers, resulting in the establishment of stable relationships with them, as well as in strategic management of customer loyalty, premiums, and information assets, future cash flow levels can be raised or stabilized. This economic benefit, however, would rarely lead to favorable evaluations by stockholders and other stakeholders of companies unless information security initiatives are disclosed voluntarily. The results of the analysis in this paper suggest that strengthening information security initiatives and disclosing them to external stakeholders are effective in bringing these two benefits.

As shown in this paper, however, there are still comparatively few managers of Japanese companies who believe that information security initiatives lead directly to enhanced corporate competitiveness. For this reason, it is extremely important to have corporate managers understand the importance of information security initiatives and engage themselves in these initiatives more actively. In this sense, it is essential to establish and apply information security governance, which is defined as "establishing and applying corporate governance, and the internal control systems that represent the mechanism supporting it, within a company looking from the viewpoint of ensuring information security."

It is no easy matter to establish and apply information security governance. This is because, in order to establish it, it is essential to establish systems to make information security governance visible so that progress in information security initiatives can be properly managed from the viewpoint of corporate managers and

to establish risk communication systems to make information security governance visible to external stakeholders. At present, however, it is no easy matter to do this.

Why, then, is it not easy to establish systems to make information security governance visible and to establish risk communication systems? One of the major reasons for this is the absence of information security databases.

Lack of such databases makes it difficult to render the economic effects of information security initiatives and those of investment in such initiatives tangible. For this reason, it is difficult to make the aim of information security initiatives and the progress made with such initiatives visible from the perspective of corporate managers. Corporate managers would not want to actively communicate information to external stakeholders that does not allow them to confirm the progress of these initiatives.

As shown in this paper, even among the companies that have established information security risk management systems, only a few disclose them. It can be inferred that this is because many of the corporate managers are afraid that actively disclosing risk information may in turn lead stock markets to evaluate their company negatively.

The results of the analysis in this paper suggest that information security initiatives and their disclosure are highly likely to bring positive economic effects.

Nonetheless, this paper does not give full consideration to what type of information security governance brings positive economic effects to business firms or to other aspects of information security governance. We regard these as issues that they should address in the future.

References

Campbell, K., Gordon, L. A., Loeb, M. P., & Zhou, L. (2003). The economic cost of publicly announced information security breaches: Empirical evidence from the stock market. *Journal of Computer Security, 11*(3), 431–448.

Cavusoglu, H., Mishra, B., & Raghunathan, S. (2004). The effect of internet security breach announcements on market value: Capital market reactions for breached firms and internet security developers. *International Journal of Electronic Commerce, 9*(1), 69–104.

InterRisk Research Institute & Consulting. (2005). *An analysis of revealed risks in fiscal 2004*. Tokyo: InterRisk Research Institute & Consulting.

Ishiguro, M., Tanaka, H., Matsuura, K., & Murase, I. (2006). The effect of internet security incidents on corporate value in the Japanese stock market. In *Proceedings of the 2006 Workshop on the Economics of Securing the Information Infrastructure*.

Ito, K. (2000). *Koporeto burando keiei [Corporate brand management]*. Tokyo: Nikkei Publishing Inc.

Ito, K. (2003). New phases of corporate brand management. *Hitotsubashi Business Review, 51*(3), 6–23.

Ito, K. (2004). Corporate brand management for higher reputation. *Risk Management Business, 19*(9), 4–7.

Ito, K. (2007). *Zeminaru kigyokachi hyoka [Seminar Valuation of corporate value]*. Tokyo: Nikkei Publishing Inc.

Ito, K., & Kagaya, T. (2006). Brand risk management and corporate value. *Hitotsubashi Business Review, 54*(3), 6–25.

Japan Network Security Association. (2002–2007). *Information security incident survey report*. Tokyo: Japan Network Security Association.

Kim, H. (2007). The effects of the advance disclosure of risk factors on stock returns when there are information security incidents. *Hitotsubashi Review of Commerce and Management, 2*(2), 102–113.

Metropolitan Police Department. (1999–2004). *Survey concerning the actual condition of countermeasures against unauthorized access etc*. Tokyo: Metropolitan Police Department.

Ministry of Economy, Trade and Industry. (2005, March). *Research group on corporate information security governance*. Tokyo: Ministry of Economy, Trade and Industry.

NRI SecureTechnologies. (2007, November). *A questionnaire survey concerning the condition of information security measures*. Tokyo: NRI SecureTechnologies.

Wakasugi, A. (1999). *Kaikei disukurozya to kigyo rinri [Accounting Disclosure and Corporate Ethics]*. Tokyo: Zeimukeiri Kyokai.

The Effects of Risk Disclosure on Evaluation of Management Forecast Revisions

Hyonok Kim

Abstract In this paper, I empirically examine the effects of narrative risk disclosure on the evaluation of management forecast revisions. A unique feature of this study is direct investigation of the role of narrative disclosure in valuation using textual risk disclosure. I find that the management forecast revision of firms with a high business risk disclosure level is discounted by the market because of their higher risk. However, a market reaction is not found when a firm issues a downward revision because the higher level of business risk disclosure has the effect of mitigating a market shock. Finally, the market only discounts a management forecast revision when the common risk is disclosed. The results indicate that narrative disclosure provides useful information to aid understanding of financial information. In addition, the results also imply that business risk disclosure has ex-post information value.

Keywords Management forecast • Narrative disclosure • Non-financial information • Risk disclosure • Textual analysis • Voluntary disclosure

1 Introduction

An important, though empirically unanswered, question is how to understand the role of non-financial information in evaluating a firm's value. As Li (2010b) points out, it is important to understand textual information in corporate disclosure in financial accounting research. While research in this area is growing internationally, few studies have been conducted to date in a Japanese context. I focus on non-financial information in business risk disclosure and its effects on the evaluation of management forecast revisions.

H. Kim (✉)
Business Administration, Tokyo Keizai University, 1-7-34 Minami-cho,
Kokubunji, Tokyo 185-8502, Japan
e-mail: hokim@tku.ac.jp

According to the revision of the *Cabinet Office Ordinance on Disclosure of Corporate Affairs*, since the fiscal year ending March 2004 Japanese public listed companies have been required to disclose information on business risk in the "Business Risk, etc" section of their annual reports. The new disclosure regime, which is narrative in nature, provides additional information for the Japanese stock market. Business risk disclosure is intended to enable investors to assess a firm's business risk (FSA 2003). An important topic for business risk disclosure is the usefulness of narrative information.

Competing arguments on textual information in financial statements focus on the degree to which it is informative. Critics point out that it is manually written and boilerplate and that it has no information that is relevant to investors (Johnson 2010). Because business risk disclosure provides selective information on unfavorable risks and uncertainties associated with the firm, managers have an incentive not to disclose certain meaningful information (Campbell et al. 2012).

In contrast, regulations mandate to disclose meaningful information because it is useful for investor decision making. Many prior studies have found examples of textual disclosure information. For example, Brown and Tucker (2011) found that firms with large economic changes modify their level of disclosure information in management discussions and analysis of financial condition and operational results (so-called MD&A). The modification score is positively associated with stock price responses to the 10-K filings. Feldman et al. (2010) found that a short window market reaction time around the filing is significantly associated with a tone change of the MD&A. Li (2010a) showed that the average tone of forward looking statements is positively associated with future earnings. With regard to business risk disclosure, Kravet and Muslu (2013) found that annual increases in risk disclosures are associated with increased stock return volatility and trading volume around and after the filings. Campbell et al. (2012) found that managers provide risk factor disclosures that meaningfully reflect the risks they face, and that information conveyed by risk factor disclosures is reflected in changes in investor risk assessments.

While these prior studies have found that narrative information to be useful, few studies have discussed such information from the perspective of linkages with other information. As shown in Li (2010a), the tone in MD&As mitigates the mispricing of accruals, and there are some linkages between textual disclosure and other information. The present study highlights the linkage between nonfinancial and financial information by investigating how markets incorporate business risk disclosure in evaluating the revision of management forecasts.

In this study, I find that the revision of management forecast is discounted when companies have a higher business risk disclosure level. Firms with high risk disclosure carry greater business risks (Campbell et al. 2012; Kim and Fukukawa 2013), and the market discounts their associated revision number because of the higher risk level.

Additionally, the revision of a management forecast is not discounted by the market when companies issue their previous forecast downward. Because business risk disclosure has a role in reducing market shock when risk factors are realized

(Kim 2007), a higher level of business risk disclosure has the effect of mitigating market reaction.

Finally, the market only discounts a management forecast revision when the general/common risk (e.g. market risk or regulation) is disclosed. The general/common risk is generally thought to be non-diversifiable, but risks related to firm-specific or firm-internal factors are not recognized as a future risk because the market is able to minimize those risks when the information is disclosed by diversification or hedging. Overall, the results imply that narrative risk disclosure provides helpful information for evaluating financial information. In addition, the results also imply that business risk disclosure has ex-post information value in the sense that investors use business risk disclosure not only at the time of filing but also after the filing.

The remainder of this paper is organized as follows. Section 2 discusses relevant institutional background and develops testable hypotheses. Section 3 explains key variables used in the study, and the research methodology and sample selection procedure. Section 4 presents the empirical results and Sect. 5 provides concluding remarks.

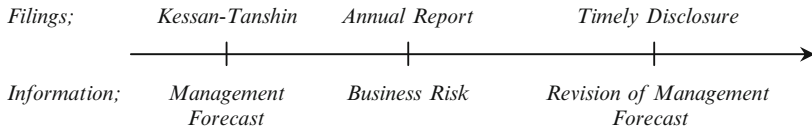## 2 Prior Literature and Hypotheses Development

2.1 Institutional Background

In Japan, disclosure of business risk factors has been required since the fiscal year ending March 2004 (FAS 2003), after revision of the *Cabinet Office Ordinance on Disclosure of Corporate Affairs*. Note the regulation of business risk disclosure stated in Form 2—precautions for recording No. 33. The information is disclosed under the "Business Risk, etc" section of the annual report.

Information on business risk disclosure has three unique characteristics, which distinguish it from other information. First, business risk disclosure is narrative in nature, i.e. textual information. As stated by Li (2010b), it is very important to analyze the textual information because it provides insight into understanding the financial data. In addition, it includes useful information for understanding manager incentives and relevant private information, enabling the reader to understand corporate decisions and behavior.

Second, disclosure regulation only requires disclosure of risks by the firm; specific information that should be disclosed is not prescribed. Therefore, while the disclosure of business risk is mandated, managers have discretion over exactly what information to disclose. As Kravet and Muslu (2013) point out, the quality of business risk disclosure information remains largely voluntary.

Finally, business risk disclosure is about unfavorable/negative information about a firm's value. Thus, determinants of business risk disclosure are somewhat different from those of other information. Kim and Fukukawa (2013) investigated what

Filings;	Kessan-Tanshin	Annual Report	Timely Disclosure

Information;	Management Forecast	Business Risk	Revision of Management Forecast

Fig. 1 Schedule of management forecasts, revisions and business risk disclosure

determines the level of business risk disclosure of Japanese companies. They found that large firms with higher market risk (market beta) and growth prospects ("market to book" ratio), have a higher level of business risk disclosure. Furthermore, the results showed that higher foreign sales (ratio of foreign sales to total sales) and research and development expenditure (ratio of research and development expenditure to total sales) have a positive relationship with the level of business risk disclosure. From the results, they concluded that firms with higher risk disclose carry greater business risk.

Some prior studies have focused on narrative risk disclosure. For example, Li (2006) calculated the risk sentiment of annual reports by counting the frequency of words related to risk or uncertainty in the 10-K filings, and found that firms with a large risk sentiment have a high level of negative changes in earnings, and experience significant negative returns. Abraham and Cox (2007) found that risk disclosure is negatively associated with long-term institutional ownership. Nelson and Pritchard (2007) showed that firms with high levels of litigation risk disclose use more cautionary language than those firms with lower levels. Deumes (2008) analyzed the content of risk section prospectuses and found that the measure of risk successfully predicts the volatility of a company's future stock price. Kravet and Muslu (2013) found that annual increases in risk disclosure are associated with increased stock return volatility and trading volume after filings. Campbell et al. (2012) found that managers provide risk factor disclosures that meaningfully reflect the risks they face, and the information conveyed by risk factor disclosures is reflected in changes in investor risk assessments. In conclusion, findings from prior research provide evidence on the usefulness of narrative risk disclosure.

2.2 Hypotheses Development

Figure 1 shows a schedule of management forecast announcements, their revisions and business risk disclosure. As shown in Fig. 1, publicly listed companies on the Japanese stock market are required to disclose their management earnings forecast for the next period in the *Kessan-Tanshin*, prior to filing an annual report. Managers are also required to revise their forecast if there are any changes to it during the fiscal period. Business risk disclosure is included in the section in the annual report on "Business Risk, etc", after the *Kessan-Tanshin*. If business risk disclosure has any links to the management forecast evaluation, the disclosure level

and information on business risk in the annual report is incorporated into the revision of the management forecast during the fiscal period.

As prior studies have found, if firms with higher risk disclose more business risk, then the market will under-evaluate the management forecast revision because of higher uncertainties. Based on this argument, my first hypothesis is as follows:

Hypothesis 1 Revisions of management forecasts for firms with high business risk disclosure are under-valued.

As discussed above, business risk disclosure conveys unfavorable information. Based on this discussion, the revision of a management forecast is under-valued when it is a upward revision. This leads to my second hypothesis, as follows:

Hypothesis 2 Upward revisions of management forecasts for firms with high business risk disclosure are under-valued.

Because firms face various types of business risk, disclosed business risk information includes a lot of content. If the market response not only the level of business risk disclosure, but also its contents, then the market response will differ according to that content. Hence, my third hypothesis is as follows:

Hypothesis 3 The content of business risk disclosure information has an effect on evaluation of the management forecast revision.

This study examines the above hypotheses using narrative risk disclosure data and revisions of management forecasts.

3 Research Design

This section describes the key variables, sample selection procedure and specifications used in the analyses for the study.

3.1 Key Variables

3.1.1 Business Risk Disclosure

As pointed out in Sect. 2.1, business risk disclosure information is qualitative. Thus, it is necessary to convert it to quantitative information for empirical research. Prior studies using textual information have calculated the number of words, keywords, sentences or their conjugated form as proxies for qualitative information. For example, Li et al. (2013) used the proportion of net number of occurrences of competition words to the total number of words in the 10-K as a proxy for the level of competition based on management's disclosures in their 10-K filings. Li (2008), You and Zhang (2008), and Miller (2010) calculated the total number of words in annual reports as a measure of complexity or readability.

With respect to risk disclosure, Li (2006), and Nelson and Pritchard (2007) counted the number of risk related keywords in the 10-K filings, Abraham and Cox (2007) calculated both the number of risk related keywords and sentences in annual reports. Kravet and Muslu (2013) also counted the sentences including at least one risk-related keyword in the 10-K filings. Campbell et al. (2012) counted the number of words and keywords in the "Risk Factor" section in the 10-K.

In this study, I use the number of risk items disclosed in the "Business Risk, etc" section of the annual report as a proxy for the level of business risk disclosure because it is important to consider a managers' risk perception. The number of risk items enables me to analyze the managers' understanding of how much risk the firm faces.

With regard to categories, many prior studies adopt a so-called dictionary approach, which is a mapping algorithm based on a keyword list (Loughran and McDonald 2011; Feldman et al. 2010; Kothari et al. 2009; Tetlock et al. 2008).

However, Li (2010b) points out limitations of the dictionary approach. First, there is no readily available dictionary for the setting of corporate filings. In addition, the dictionary-based approach does not take into consideration the context of a sentence. While some studies overcome the first problem by developing their own unique word list for corporate filings (Loughran and McDonald 2011; Campbell et al. 2012), the other problem remains unsolved. To cope with the limitation of the dictionary approach, Li (2010a) used the Naïve Bayesian Algorithm, which is a statistical approach that typically provides a way of validating classification efficiency using training data.

In this study, I make a keyword list of 24 risk categories based on the disclosure regulations and guidelines (FSA 2003). I also make category rules, which enable categorization including necessary keywords, whilst excluding unnecessary keywords. Keywords are sometimes used in discussions about completely unrelated business risks. Using the category rules, I mitigate the above problem of keyword-based categorization.

Additionally, I re-categorize the 24 risk categories into two larger risk categories: firm-specific and general risks. Risks relating to purchase of raw materials, strategy, organizational structure, quality of goods and services, relationships with critical suppliers, financial condition, information security, R&D investment, operations, intellectual property, litigation, human resources, environmental issues, consolidated companies, brand value, relationships with other companies, related parties, and going concern are categorized as firm-specific risk. Risks relating to economic conditions, business environment, regulations, accounting standards, natural disasters, and geopolitical conditions are categorized as general risks.

Table 1 shows the risk categories used in the study. The "Disclosure rate" indicates the ratio of the number of companies that disclose the corresponding risk item to the total sample size (i.e. 7,906) as described in Sect. 3.3.

Based on Table 1, the risk relating to economic conditions is the most disclosed risk item out of the sampled companies with a disclosure rate of 62.6 %, followed by risks relating to the business environment and regulations (58.9 % and 48.2 %, respectively). In contrast, the disclosure rates of business risks relating to

Table 1 Categories of business risk disclosure

Risk contents	Risk items	Disclosure rate (%)
Frim-specific risk	Purchase of raw materials	47.3
	Quality of goods and services	44.0
	Strategy	35.3
	Organizational structure	34.6
	Relationship with critical suppliers	29.6
	Financial condition	28.3
	Information security	27.1
	R&D investment	24.0
	Operation	21.8
	Intellectual property	21.6
	Litigation	18.1
	Human resources	13.8
	Environmental issues	13.4
	Consolidated companies	5.1
	Brand value	3.9
	Relationship with other companies	3.2
	Related parties	2.3
	Going concern	0.3
General risk	Economic conditions	62.6
	Business environment	58.9
	Regulations	48.2
	Natural disasters	46.4
	Geopolitical situation	47.1
	Accounting standards	37.7

consolidated companies, brand value, relationships with other companies, related parties, and going concern are under 10 %. The results show that firms are recognizing and disclosing general risks more than they are recognizing firm-specific risks.

3.1.2 Management Forecast Revision

Publically listed Japanese companies are required to provide management forecasts for the next accounting period's sales and earnings in the *Kessan-Tanshin*, which is a filing requested by the rules of the stock exchange. This forecast is generally called an *initial* management forecast (Kato et al. 2009). The disclosure originated in 1965 from the *Kabuto-club*, which is a club of newspapermen from the Tokyo Stock Exchange (Kato et al. 2009) was incorporated into the TSE disclosure rules in 1974 (Ota 2012).

In addition, the disclosure rule also requires provision of information when companies recognize any significant change in previously published forecasts (± 10 % of sales forecasts, ± 30 % of earnings forecasts). This is the management

forecast revision. In prior studies (Kato et al. 2009; Ota 2012), the management forecast revision was calculated according to the following equation:

$$MFRevision = \frac{Current\,MF - Previous\,MF}{Total\,assets\,at\,the\,beginning\,of\,the\,fiscal\,year}, \quad (1)$$

where *MF* in Eq. (1) is the management forecast.

I focus on the management forecast of business income (defined as operating income plus financial revenue minus financial expenses).

3.2 Specification

To examine hypotheses 1 and 2, I apply the following specification Eq. (2) to the data set:

$$
\begin{aligned}
CAR_{i,t} =\ & \alpha + \beta_1 Revise\_busi_{i,t} + \beta_2 Risk_{i,t-1} + \beta_3 Revise\_busi_{i,t} * Risk_{i,t-1} \\
& + \beta_4 Revise\_sales_{i,t} + \beta_5 Revise\_net_{i,t} + \beta_6 Size_{i,t-1} + \beta_7 MB_{i,t-1} \quad (2) \\
& + \beta_8 Leverage_{i,t-1} + \beta_9 ROA_{i,t-1} + \varepsilon_{i,t},
\end{aligned}
$$

where *CAR* is the cumulative abnormal return within a 3-day period around the announcement date of the management forecast revision. I calculated the cumulative abnormal return based on the market model estimated over the period beginning at 120 days and ending 2 days prior to the announcement date.

Revise_busi is the magnitude of the management forecast revision of business income calculated according to Eq. (1). If the revision is informative, the coefficient of *Revise_busi* is expected to be positive and statistically significant.

Risk is the natural log of the number of business risk items disclosed in the annual report, indicating the level of risk disclosure. I also include the interaction of *Revise_busi* and *Risk* in the specification to directly investigate how the market evaluates the revisions according to the level of narrative risk disclosure. To avoid multi-collinearity, I use *Revise_busi* and *Risk* after subtracting their mean values from the original values (i.e. mean-centering). If the revision of management forecast of firms with higher business risk disclosure is under-valued, the coefficient of *Revise_busi*Risk* is expected to be negatively significant.

One of the unique features of the management forecast in Japan is that business income revisions and revisions of sales or net income are announced at the same time. Therefore, other revisions in the specification need to be controlled. *Revise_sales* and *Revise_net* are the magnitudes of the revision of total sales and net income, respectively. These coefficients are also expected to be positive and statistically significant.

I use *Size*, *MB*, *Leverage*, and *ROA* as additional control variables. *Size* is the natural log of total assets. *MB* is the "market to book" defined as the market value of equity deflated by the book value of equity. *Leverage* is the total assets deflated by the book value of equity. Finally, *ROA* is calculated as the ratio of business income (defined as operating income plus financial revenue minus financial expenses) to total assets. As shown in prior studies, if firms with higher business risk disclose carry greater risk the *MB* and *Leverage* coefficients are expected to be positive and the *Size* and *ROA* coefficients are expected to be negative. To investigate Hypothesis 3, I apply the following Eq. (3):

$$
\begin{aligned}
CAR_{i,t} = {}& \alpha + \beta_1 Revise\_busi_{i,t} + \beta_2 Risk_{i,t-1} + \beta_3 Revise\_busi_{i,t} * Firm\_Risk_{i,t-1} \\
& + \beta_4 Revise\_busi_{i,t} * Gen\_Risk_{i,t-1} + \beta_5 Revise\_sales_{i,t} + \beta_6 Revise\_net_{i,t} \\
& + \beta_7 Size_{i,t-1} + \beta_8 MB_{i,t-1} + \beta_9 Leverage_{i,t-1} + \beta_{10} ROA_{i,t-1} + \varepsilon_{i,t},
\end{aligned}
\tag{3}
$$

where *Firm_Risk* and *Gen_Risk* are the two categories used for the information on business risk. *Firm_Risk* and *Gen_Risk* are the number of firm specific related risk items and general or common risk items disclosed in the annual report, respectively. The classifications are based on those shown in Table 1. If the contents of business risk disclosure have an effect on the evaluation of the management forecast revision then the *Firm_Risk* and *Gen_Risk* coefficients will be different.

Table 2 shows a complete list of variables and their definitions.

3.3 Sample Selection and Data Collection

The sample period used in the study starts from the fiscal year beginning 2003, when narrative business risk disclosure was made mandatory in Japan. The sample period extends to the 2009 fiscal year, which was 1 year before the East-Japan Disaster affected company disclosure practice. The sample is from the first section of the Tokyo Stock Exchange. I restrict my sample to firms with fiscal years ending at the end of March. This was to eliminate any possible effects of differences in the stock market and year-end. I also exclude financial institutions from my analysis because their risk factors and risk disclosure are very different from those of non-financial institutions.

The study focuses on the revision of the management forecast, and I exclude forecasts released at the *Kessan-Tanshin* (initial forecasts). I also exclude forecast revisions announced before releasing annual reports because the study intends to examine the effects of business risk disclosure on the evaluation of management forecast revisions. The final sample size is 24,762 management forecast revisions as released by 7,069 firms.

Table 2 Variables and their definitions

Variables	Descriptions	Data sources
CAR	Cumulative abnormal return during 3 days around announcement date of management forecast revision	NEEDS-FQ
Management forecast measures		
Revise_busi	Magnitude of management forecast revision of business income	NEEDS-FQ
Revise_sales	Magnitude of management forecast revision of sales	NEEDS-FQ
Revise_net	Magnitude of management forecast revision of net income	NEEDS-FQ
Business risk measures		
Risk	Number of risk items disclosed in the "Business Risk etc." section	Hand collected
Gen_Risk	Number of general risk items disclosed in the "Business Risk etc." section	Hand collected
Firm_Risk	Number of firm-specific risk items disclosed in the "Business Risk etc." section	Hand collected
Control variables		
Size	Natural log of the total assets	NEEDS-FQ
MB	Total value of market value of equity and book value of debt/the total assets	NEEDS-FQ
Leverage	Total assets/the book value of equity	NEEDS-FQ
ROA	Business income/the total assets (%)	NEEDS-FQ

Table 3 Descriptive statistics

	Mean	S.D.	Min.	1Q	Median	3Q	Max	Obs.
CAR	0.000	0.056	−0.333	−0.027	−0.002	0.025	0.972	24,762
Revise_busi	−0.001	0.013	−0.233	0.000	0.000	0.000	0.168	24,762
Revise_sales	−0.003	0.056	−1.333	0.000	0.000	0.000	2.646	24,762
Revise_net	−0.002	0.014	−0.343	0.000	0.000	0.000	0.145	24,762
Risk	1.863	0.560	1.609	0.000	1.946	2.197	4.304	24,762
Gen_Risk	1.374	0.562	0.000	1.099	1.386	1.792	3.367	24,762
Firm_Risk	1.171	0.623	0.000	0.693	1.099	1.609	4.205	24,762
Size	11.738	1.387	7.670	10.763	11.502	12.508	17.299	24,762
MB	1.146	0.720	0.256	0.891	1.024	1.226	29.358	24,762
Leverage	3.152	17.487	−2.444	1.671	2.262	3.364	1365.533	24,762
ROA	5.385	4.983	−40.290	2.640	4.630	7.630	57.270	24,762

For the business risk disclosure variable, I hand-collected textual information from the "Business Risk, etc." section of annual reports, as stated above. For the other variables, I use data from the NEEDS Financial QUEST (NEEDS-FQ) database, which is a standard database used in empirical studies of Japanese firms. Tables 3 and 4 reports the summary statistics.

Table 4 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11
CAR		0.325	0.164	0.276	0.006	0.002	−0.006	−0.001	0.005	0.002	0.013
Revise_busi	0.378		0.475	0.730	0.026	0.017	0.004	−0.037	−0.018	−0.002	−0.008
Revise_sales	0.225	0.583		0.330	0.021	0.034	0.002	−0.010	−0.019	−0.015	−0.014
Revise_net	0.372	0.804	0.525		0.029	0.034	0.002	0.009	−0.024	−0.003	−0.009
Risk	0.011	0.005	−0.016	0.002		0.323	0.084	0.140	−0.007	0.744	0.685
Gen_Risk	0.009	0.014	0.000	0.008	0.368		0.050	0.198	−0.037	0.758	0.302
Firm_Risk	0.014	0.013	−0.014	0.011	0.134	0.057		0.038	0.026	0.676	0.308
Size	0.028	0.042	0.029	0.033	−0.046	0.020	−0.006		0.354	0.383	0.169
MB	0.019	0.024	0.073	0.054	0.143	0.025	0.494	0.106		0.027	0.103
Leverage	−0.008	0.016	0.024	0.019	0.249	0.064	−0.049	−0.005	0.009		−0.007
ROA	0.013	−0.009	0.018	0.009	0.029	0.537	−0.335	0.005	−0.026	0.042	

4 Results

4.1 Descriptive Statistics of Key Variables

4.1.1 Business Risk Disclosure

Table 5 shows the descriptive statistics of the number of risk items. The sample size is 7,069 from the fiscal year period from 2003 to 2009. The sample selection procedure is described in Sect. 3.3.

As seen in Table 5, the companies disclosed 7.535 business risk items on average during the sample period. Table 5 also indicates that the number of business risk disclosures increases during this period. Furthermore, while the minimum number of risk items is 1, the maximum is 74. This reflects the unique characteristics of business risk disclosures in the sense that they are somewhat voluntary.

Table 6 shows the industrial composition of the sample and descriptive statistics of business risk disclosure by industry. Based on Table 6, firms in Information & Communication, Air Transportation, and Electric Appliances disclose, on average, 10.186, 9.357, and 9.290 risk items, respectively. In contrast, firms in Fishery, Agriculture & Forestry and Mining disclose, on average, 5.789 and 4.000 risk items, respectively. In addition, the data for the highest disclosed item and disclose rate indicate that business risk items disclosed vary among industries, and that some of them reflect industry-specific characteristics. For example, all of the sampled firms in Pharmaceutical, which is a highly regulated industry, disclose the regulation risk.

4.1.2 Management Forecast Revision

Tables 7, 8, and 9 shows descriptive statistics for the management forecast revisions. Panels A, B, and C of Tables 7, 8, and 9 respectively, report the number of subsequent revisions for each month, the mean forecast management subsequent revisions and the mean forecast management subsequent revisions in each month, respectively.

Table 5 Description of the number of risk items

Fiscal year	Mean	S.D.	Min.	Median	Max.	Obs.
2003	6.016	3.965	1	5	32	896
2004	6.849	4.192	1	6	38	976
2005	7.284	4.278	1	6	37	1,003
2006	7.577	4.356	1	7	37	1,035
2007	7.868	4.449	1	7	40	1,060
2008	8.315	5.053	1	7	74	1,055
2009	8.555	4.745	1	8	43	1,044
Total	7.535	4.529	1	7	74	7,069

Table 6 Description of business risk disclosure by industry

Industry	Obs.	Average item	Highest disclosed item	Disclosure rate (%)
Glass and ceramics products	144	7.069	Purchase of raw materials	72.2
Rubber products	63	6.667	Purchase of raw materials	82.5
Services	273	8.172	Regulations	70.3
Other products	225	7.440	Economic conditions	69.8
Pulp and paper	63	7.683	Economic conditions	98.4
Pharmaceutical	177	8.000	Regulations	100
Wholesale trade	630	7.087	Economic conditions	66.3
Chemicals	657	7.297	Purchase of raw materials	73.8
Marine transportation	63	7.127	Economic conditions	100
Machinery	665	6.453	Economic conditions	73.2
Metal products	160	6.150	Purchase of raw materials	76.3
Air transportation	14	9.357	Regulations	100
Construction	542	6.716	Purchase of raw materials	63.7
Mining	14	4.000	Financial condition	92.9
Retail trade	281	7.260	Regulations	74
Information and communication	317	10.186	Strategy	72.2
Foods	271	7.483	Quality of goods and services	74.2
Fishery, agriculture and forestry	19	5.789	Quality of goods and services	100
Precision instruments	141	7.220	Economic conditions	73
Oil and coal products	31	8.387	Purchase of raw materials	87.1
Textiles and apparels	167	6.904	Economic conditions	73.1
Warehousing and harbor transportation services	113	7.265	Natural disasters	74.3
Iron and steel	206	6.578	Purchase of raw materials	86.4
Electric power and gas	111	8.631	Purchase of raw materials	99.1
Electric appliances	827	9.290	Economic conditions	76.8
Nonferrous metals	131	7.603	Economic conditions	90.1
Real estate	168	6.560	Regulations	70.8
Transportation equipment	383	7.423	Economic conditions	75.5
Land transportation	213	7.592	Regulations	90.6

As shown in the "1st_Revision" line of Table 7, 6,955 companies from the 7,069 sample provided management forecast revisions. This implies 98.4 % of *initial* management forecasts disclosed in the *Kessan-Tanshin* are revised at least once. Furthermore, the numbers for the "2nd_Revision" and "3rd_Revision" lines indicate that over 90 % of the sampled companies revised their forecasts three times. The percentage of companies that revised their forecasts four or more times was much lower.

Table 7 Descriptions of management forecast revisions. Month of subsequent revisions

	July	August	September	October	November	December	January	February	March	April	May	Total
1st_Revision	2,707	3,436	57	248	497	–	5	4	–	1	–	6,955
2nd_Revision	62	153	214	2,303	3,727	7	99	175	33	43	35	6,851
3rd_Revision	4	7	10	435	1,215	62	1,627	2,936	34	73	43	6,446
4th_Revision	–	–	1	18	80	23	538	1,185	254	794	402	3,295
5th_Revision	–	–	–	1	8	3	52	137	132	424	264	1,021
6th_Revision	–	–	–	–	1	–	3	24	16	68	55	167
7th_Revision	–	–	–	–	–	–	–	1	1	10	12	24
8th_Revision	–	–	–	–	–	–	–	1	–	–	–	1
9th_Revision	–	–	–	–	–	–	–	–	1	–	–	1
10th_Revision	–	–	–	–	–	–	–	–	–	–	1	1
Total	2,773	3,596	282	3,005	5,528	95	2,324	4,463	471	1,413	812	24,762

Table 8 Descriptions of management forecast revisions. Mean of subsequent revisions

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total
Revise_busi	0.000	−0.001	−0.002	−0.002	0.000	0.000	−0.003	0.000	0.000	−0.004	−0.001
Revise_sales	0.004	−0.002	−0.008	−0.007	−0.002	−0.004	−0.006	0.000	0.000	−0.029	−0.003
Revise_net	0.000	−0.002	−0.003	−0.004	−0.004	−0.005	−0.007	0.000	−0.062	−0.006	−0.002

Table 9 Descriptions of management forecast revisions. Mean of subsequent revisions in each month

	July	August	September	October	November	December	January	February	March	April	May	Total
Revise_busi	0.001	0.001	−0.002	−0.002	−0.001	−0.019	−0.003	−0.003	−0.005	0.001	0.001	−0.001
Revise_sales	0.003	0.002	0.009	−0.004	0.000	−0.044	−0.012	−0.009	−0.016	0.001	0.001	−0.003
Revise_net	0.000	0.000	−0.003	−0.002	−0.001	−0.016	−0.004	−0.003	−0.011	−0.004	−0.003	−0.002

Based on the columns in Table 7, 2,773 or 11.2 % management forecast revisions were issued in July out of all 24,762 revision cases. Sixty two and four companies also provided second and third revisions in July, respectively. Most revisions were provided in July, August (14.5 %), October (12.1 %), November (22.3 %), January (9.4 %) and February (18.0 %); i.e. 87.6 % for these months combined). The number of cases of revisions announced in September and December were only 282 and 95, respectively. The proportion of revisions announced after March (10.9 %) indicates that revisions are rushed through prior to financial reporting in Japanese firms.

The cross-analysis in Table 7 shows that most companies announced their first revision in July (2,707 of 6,955 companies, 38.9 %) and August (3,436 of 6,955 companies, 49.4 %). In addition, almost all companies provided their second and third revisions in October/November (6,030 of 6,851 companies, 88 %) and January/February (4,563 of 6,446 companies, 70.8 %), respectively. Japanese listed companies are required to submit the *interim Kessan-Tanshin* no later than 45 days after the end of the interim period. Because my sample is composed of companies with fiscal years ending at the end of March, the above revisions may be cases from the *interim Kessan-Tanshin*. Because other information is also released in the *interim Kessan-Tanshin*, it is important to distinguish these revisions from timely disclosed revisions (i.e. those not released with the quarterly earnings announcement).

Tables 8 and 9 are the means for each of the subsequent revisions and the revisions in each month, respectively. The results show that the mean of first revision, which is mainly provided in July and August, is positive. However, from the second revision, their values are negative. These results suggest that Japanese firms gradually revise their initial forecast downward during the fiscal period, consistent with Kato et al. (2009).

4.2   OLS Results

Table 10 shows the results for Eq. (2). Columns (1) and (2) provide the results using the pooled sample (*Pooled sample*). Columns (3) and (4) are the results from when I exclude those cases from the sample where the business income revision is zero (*Business income revise sample*). In addition, columns (5) and (6), and columns (7) and (8) show the results using the cases where the business income revision is upward (*Business income GN revise sample*) or downward (*Business income BN revise sample*).

Based on Table 10, the coefficient for *Revise_busi* is positive and statistically significant at the 1 % level in all models. These results indicate that upward revisions of business income are positively evaluated in stock markets.

While the coefficient for *Risk* in columns (1), (2), (5), (7) and (8) is not statistically significant, in columns (3), (4), and (6) it is positive and statistically significantly. More importantly, *Revise_busi*Risk* is negative and statistically

Table 10 Results for the full management forecast revision sample

	Pooled sample		Business income revise sample		Business income GN revise sample		Business income BN revise sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Revise_busi	1.169	1.168	1.132	1.135	0.654	0.671	0.503	0.507
	(28.177)***	(28.148)***	(22.535)***	(22.588)***	(7.135)***	(7.363)***	(6.848)***	(6.924)***
Risk	0.001	0.001	0.003	0.002	0.001	0.005	0.002	0.000
	(1.505)	(1.534)	(2.211)**	(1.962)*	(0.867)	(2.853)***	(0.929)	(0.124)
Revise_busi*Risk	−0.228		−0.225		−0.367		−0.053	
	(−4.880)***		(−4.188)***		(−2.857)***		(−0.622)	
Revise_busi*Gen_Risk		−0.337		−0.346		−0.579		−0.156
		(−5.934)***		(−5.276)***		(−4.662)***		(−1.817)*
Revise_busi*Firm_Risk		0.006		0.007		0.006		0.011
		(0.124)		(0.127)		(0.056)		(0.151)
Revise_sales	0.024	0.024	0.031	0.031	0.003	0.003	0.002	0.002
	(3.411)***	(3.466)***	(3.702)***	(3.735)***	(0.249)	(0.248)	(0.127)	(0.163)
Revise_net	0.382	0.380	0.402	0.400	0.960	0.968	0.207	0.206
	(10.517)***	(10.468)***	(8.772)***	(8.740)***	(11.506)***	(11.609)***	(3.799)***	(3.776)***
Size	0.000	0.000	−0.002	−0.002	−0.004	−0.004	0.001	0.000
	(−1.358)	(−1.388)	(−3.784)***	(−3.884)***	(−6.967)***	(−6.316)***	(0.820)	(0.603)
MB	0.000	0.000	−0.001	−0.001	−0.002	−0.002	−0.001	−0.001
	(−0.351)	(−0.333)	(−1.068)	(−1.023)	(−1.441)	(−1.578)	(−0.728)	(−0.619)
Leverage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(−0.912)	(−0.908)	(−0.157)	(−0.155)	(−0.436)	(−0.413)	(−0.619)	(−0.614)
ROA	0.000	0.000	0.000	0.000	−0.001	−0.001	0.000	0.000
	(0.450)	(0.394)	(0.762)	(0.707)	(−5.702)***	(−5.727)	(1.411)	(1.375)
Const	0.004	0.005	0.021	0.024	0.061	0.048	−0.022	−0.016
	(1.312)	(1.428)	(3.620)***	(3.991)***	(8.103)***	(6.004)***	(−2.462)**	(−1.745)*
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(continued)

Table 10 (continued)

	Pooled sample		Business income revise sample		Business income GN revise sample		Business income BN revise sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AdjustedR²	0.116	0.117	0.191	0.192	0.107	0.109	0.071	0.072
F-value	149.246	143.645	114.452	110.302	31.173	30.513	18.497	17.829
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Obs.	24,762	24,762	10,563	10,563	5,537	5,537	5,026	5,026

Columns (1) and (2), and columns (3) and (4) provide results using the pooled sample (*Pooled sample*), excluding cases from the sample where the business income revision is zero (*Business income revise sample*). Columns (5) and (6), and columns (7) and (8) show the results using cases where the business income revision is upward (*Business income GN revise sample*) and downward (*Business income BN revise sample*), respectively. The dependent variable in all models is *CAR*. *CAR* is the cumulative abnormal return (based on the market model estimated over the period beginning 120 days prior to the announcement date), within 3 days around the announcement date of the management forecast revision. *Revise_busi* is the magnitude of the management forecast revision of business income. *Revise_sales* and *Revise_net* are the magnitudes of the revision of total sales and net income, respectively. *Risk* is the number of business risk items disclosed in the annual report indicating the level of risk disclosure. *Firm_Risk* and *Gen_Risk* are the number of firm-specific related risk items and general/common risk items. *Size* is the natural log of total assets. *MB* is the "market to book" defined as the market value of equity deflated by the book value of equity. *Leverage* is the total assets deflated by the book value of equity. *ROA* is calculated as the ratio of business income to total assets

***Significant at the 1 % level
**Significant at the 5 % level
*Significant at the 10 % level

significant at the 1 % level in columns (1), (3) and (5). These results imply that revision of the management forecast is under-evaluated when a company has a high business risk disclosure level, which supports Hypothesis 1. According to prior studies, firms with a high risk disclose carry more business risk (Campbell et al. 2012; Kim & Fukukawa 2013) and the market discounts the revision number of such firms because of this.

Interestingly, the coefficient for *Revise_busi*Risk* in column (7) is not significant, meaning that revision of the management forecast is not discounted by the market when companies revise their previous forecast downward. As discussed in "Ex-post Information Value of Risk Disclosure" (pp 189–222 in this volume), business risk disclosure has a role in reducing the market reaction when the risk factors are realized. When unfavorable news from lowering the forecast number is issued, a higher level of business risk disclosure has the effect of mitigating the market shock. The results also support Hypothesis 2.

With regard to the business risk information, the coefficients for *Revise_busi*Gen_Risk* in columns (2), (4), and (6) are negative and statistically significant at the 1 % level. These coefficients are also negative in column (8) and the significant level is 10 %. In contrast, the coefficient for *Revise_busi*Firm_Risk* is not significant in all of the models. The results imply that the market only discounts a management forecast revision when the common risk (e.g. market risk or regulation, systematic risk), which is generally discussed as being non-diversifiable, is disclosed. Risks related to firm-specific risk (idiosyncratic risk) are not recognized as a future risk because the market is able to minimize those risks when it is disclosed by diversification or hedging. These results provide evidence in support of Hypothesis 3.

As discussed before, Japanese listed companies are required to provide an interim *Kessan-Tanshin* at the end of interim period and the revisions are issued in the interim report. I conduct analyses using the cases disclosed on a timely basis to control the effects of other information conveyed through the interim *Kessan-Tanshin*. Table 11 shows the results.

Columns (1) and (2), and columns (3) and (4) in Table 11 provide results using the cases of timely disclosure (*Timely revision sample*), sample excluding those cases where the business income revision is zero in from samples for columns (1) and (2) (*Timely revision and business income revise sample*), respectively. In addition, columns (5) and (6), and columns (7) and (8) show the results using those cases where the business income revision is upward (*Timely revision and business income GN revise sample*) and downward (*Timely revision and business income BN revise sample*) in samples for columns (1) and (2), respectively.

The coefficient for *Revise_busi*Risk* is negative and statistically significant in columns (3) and (5). In addition, *Revise_busi*Gen_Risk* is negative and statistically significant in columns (2), (4), and (6), though it is not significant in column (7). In contrast, the coefficient for *Revise_busi*Firm_Risk* is not significant in all models. These results are consistent with those in Table 10.

The findings of this study are summarized as follows. First, the results indicate that the management forecast revision of firms with a high business risk disclosure

Table 11 Results of the timely disclosure ruled sample

	Timely revision sample		Timely revision and business income revise sample		Timely revision and business income GN revise sample		Timely revision and business income BN revise sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Revise_busi	1.116	1.099	1.103	1.084	0.875	0.865	0.504	0.494
	(17.235)***	(16.922)***	(16.359)***	(16.026)***	(6.611)***	(6.485)***	(5.055)***	(4.962)***
Risk	0.005	0.005	0.003	0.003	0.004	0.011	0.001	0.001
	(2.853)***	(2.785)***	(1.843)*	(1.755)*	(1.758)*	(3.733)***	(0.272)	(0.202)
Revise_busi*Risk	−0.124		−0.137		−0.923		−0.004	
	(−1.629)		(−1.796)*		(−4.250)***		(−0.034)	
Revise_busi*Gen_Risk		−0.294		−0.301		−0.652		−0.193
		(−3.156)***		(−3.219)***		(−3.403)***		(−1.581)
Revise_busi*Firm_Risk		0.086		0.078		−0.247		0.126
		(1.169)		(1.054)		(−1.543)		(1.296)
Revise_sales	0.036	0.036	0.037	0.038	0.011	0.011	0.009	0.009
	(2.728)***	(2.760)***	(2.715)***	(2.750)***	(0.567)	(0.579)	(0.444)	(0.471)
Revise_net	0.505	0.507	0.492	0.495	0.852	0.855	0.291	0.294
	(9.927)***	(9.968)***	(8.870)***	(8.914)***	(9.357)***	(9.369)***	(4.181)***	(4.218)***
Size	−0.003	−0.003	−0.003	−0.003	−0.004	−0.003	−0.002	−0.002
	(−4.514)***	(−4.545)***	(−4.356)***	(−4.397)***	(−4.134)***	(−3.531)***	(−1.817)*	(−2.033)**
MB	0.000	−0.001	−0.002	−0.002	−0.001	−0.002	−0.001	−0.001
	(−0.351)	(−0.430)	(−1.193)	(−1.277)	(−0.785)	(−1.170)	(−0.625)	(−0.601)
Leverage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(−0.258)	(−0.245)	(−0.474)	(−0.460)	(−0.639)	(−0.623)	(−0.416)	(−0.391)
ROA	0.000	0.000	0.000	0.000	−0.001	−0.001	0.000	0.000
	(−1.706)	(−1.733)*	(−1.339)	(−1.366)	(−4.419)***	(−4.268)***	(−0.936)	(−0.977)
Const	0.034	0.035	0.038	0.040	0.049	0.029	0.014	0.020
	(4.024)***	(4.215)***	(4.170)***	(4.391)***	(4.254)***	(2.334)**	(1.046)	(1.399)

Table 11 (continued)

	Timely revision sample		Timely revision and business income revise sample		Timely revision and business income GN revise sample		Timely revision and business income BN revise sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AdjustedR^2	0.209	0.210	0.230	0.231	0.142	0.140	0.072	0.073
F-value	62.616	60.286	61.370	59.097	18.460	17.647	8.409	8.200
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Obs.	5,128	5,128	4,457	4,457	2,348	2,348	2,109	2,109

Columns (1) and (2), and columns (3) and (4) provide the results using the cases in timely disclosure (*Timely revision sample*) excluding those cases where the business income revision is zero from samples in columns (1) and (2) (*Timely revision and business income revise sample*), respectively. In addition, columns (5) and (6), and columns (7) and (8) show the results using cases where the business income revision is upward (*Timely revision and business income GN revise sample*) and downward (*Timely revision and business income BN revise sample*) for samples in columns (1) and (2), respectively. The dependent variable in all models is *CAR*. *CAR* is the cumulative abnormal return (based on the market model estimated over the period beginning 120 days and ending 2 days prior to the announcement date) within 3 days around the announcement date of the management forecast revision. *Revise_busi* is the magnitude of the management forecast revision of business income. *Revise_sales* and *Revise_net* are the magnitudes of the revision of total sales and net income, respectively. *Risk* is the number of business risk items disclosed in the annual report, indicating the level of risk disclosure. *Firm_Risk* and *Gen_Risk* are the number of firm-specific related risk items and general/common risk items. *Size* is the natural log of total assets. *MB* is the "market to book" defined as the market value of equity deflated by the book value of equity. *Leverage* is the total assets deflated by the book value of equity. *ROA* is calculated as the ratio of business income to total assets

***Significant at the 1 % level

**Significant at the 5 % level

*Significant at the 10 % level

level is discounted by the market because of their higher risk. However, a market reaction is not found when a firm issues a downward revision because the higher level of business risk disclosure has the effect of mitigating a market shock. Finally, the market only discounts a management forecast revision when the common risk is disclosed.

Overall, these results imply that narrative risk disclosure provides useful information for evaluating the financial information.

5 Concluding Remarks

The purpose of this study is to examine the effects of narrative risk disclosure on the evaluation of management forecast revisions. I find that the revision of the management forecast is discounted when a company has a high level of business risk disclosure.

In addition, I find that the revision of the management forecast is not discounted by the market when companies issue a previous downward forecast. Because business risk disclosure has a role in reducing a market shock when risk factors are realized, a higher level of business risk disclosure has the effect of mitigating a market reaction.

Finally, I find that the market only discounts a management forecast revision when the general/common risk (e.g. market risk or regulation) is disclosed. The common risk is generally discussed as being non-diversifiable, but risks related to firm-specific or firm-internal risk are not recognized as future risks because the market is able to minimize them when they are disclosed by diversification or hedging. The results imply that narrative risk disclosure provides helpful information for evaluating the financial information. Overall, the results provide evidence that business risk disclosure provides useful content and information for evaluating the financial information.

Li (2010b) pointed out some of the challenges reported in the literature on large-sample textual analysis of corporate disclosures. First, because they devote a significant amount of effort to developing methodologies, the hypotheses discussed are often not well developed. Second, as with empirical research, textual analyses need to consider endogeneity. A similar limitation applies to my study and future studies should give specific attention to this problem.

References

Abraham, S., & Cox, P. (2007). Analysing the determinants of narrative risk information in UK FTSE 100 annual reports. *The British Accounting Review, 39*, 227–248.

Brown, S. V., & Tucker, J. W. (2011). Large-sample evidence on firms' year-over-year MD&A modifications. *Journal of Accounting Research, 49*(2), 309–346.

Campbell, J. L., Chen, H., Dhaliwal, D. S., Lu, H., & Steele, L. B. (2012). The information content of mandatory risk factor disclosure in corporate filings. Working Paper, University in Arizona.

Deumes, R. (2008). Corporate risk reporting: A content analysis of narrative risk disclosures in prospectuses. *Journal of Business Communication, 45*(2), 120–157.

Feldman, R., Govindaraj, S., Livnat, J., & Segal, B. (2010). Management's tone change, post earnings announcement drift and accruals. *Review of Accounting Studies, 15*(4), 915–953.

Financial Service Agency (FSA). (2003). Cabinet Office Ordinance on Disclosure of Corporate Affairs, etc. (Kigyo Naiyou Tou no Kaiji ni Kansuru Naikakufurei). FSA (in Japanese).

Johnson, S. (2010). SEC pushes companies for more risk information. *CFO Magazine*, August 2, 2010.

Kato, K., Skinner, D., & Kunimura, M. (2009). Management forecasts in Japan: An empirical study of forecasts that are effectively mandated. *The Accounting Review, 84*(5), 1575–1606.

Kim, H. (2007). The effects of the advance disclosure of risk factors on stock returns when there are information security incidents. *Hitotusbashi Review of Commerce and Management, 2*(2), 102–113 (in Japanese).

Kim, H., & Fukukawa, H. (2013). Japan's Big 3 firms' response to clients' business risk: Greater audit effort or higher audit fees? *International Journal of Auditing, 17*(2), 190–212.

Kothari, S. P., Li, X., & Short, J. E. (2009). The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. *The Accounting Review, 84*(5), 1639–1670.

Kravet, T., & Muslu, V. (2013). Textual risk disclosures and investors' risk perceptions. *Review of Accounting Studies*. doi:10.1007/s11142-013-9228-9.

Li, F. (2006). Do stock market investors understand the risk sentiment of corporate annual reports. Working Paper, University of Michigan.

Li, F. (2008). Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics, 45*(2–3), 221–247.

Li, F. (2010a). The information content of forward-looking statements in corporate filings: A Naïve Bayesian machine leaning approach. *Journal of Accounting Research, 48*(5), 1049–1102.

Li, F. (2010b). Textual analysis of corporate disclosures: a survey of the literature. *Journal of Accounting Literature, 29*, 143–165.

Li, F., Lundholm, R., & Minnis, M. (2013). A measure of competition based on 10-K filings. *Journal of Accounting Research, 51*(2), 399–436.

Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance, LXVI*(1), 35–65.

Miller, B. P. (2010). The effects of reporting complexity on small and large investor trading. *The Accounting Review, 85*(6), 2107–2143.

Nelson, K. K., & Pritchard, A. C. (2007). Litigation risk and voluntary disclosure: The use of meaningful cautionary language. Working Paper, Rice University.

Ota, K. (2012). Information content of analysts' stock ratings and earnings forecasts in the presence of management earnings forecasts. *The Japanese Accounting Review, 2*, 87–116.

Tetlock, P. C., Saar-Tsechansky, M., & Macskassy, S. (2008). More than words: Quantifying language to measure firms' fundamentals. *The Journal of Finance, LXIII*(3), 1437–1467.

You, H., & Zhang, X. (2008). Financial reporting complexity and investor underreaction to 10-K information. *Review of Accounting Studies, 14*(4), 559–586.

The Effect of Continuous Disclosure of Environmental Report

Yuki Tanaka

Abstract This paper investigates the economic consequences of corporate environmental disclosure in the Japanese context. Our focus is continuity of environmental reporting. We investigate the relationship between continuous voluntary environmental disclosure and a firm's cost of capital. Our sample is consisted of non-financial companies listed on the Tokyo Stock Exchange for the period 2003–2009. As a result, we show a negative relation between the issuance of a voluntary environmental report and firm's cost of capital. Therefore, long-term issuance of environmental disclosure is associated with a lower cost of capital. Overall, our results are consistent with some of prior evidences that capital market participants appear to value the existence and availability of voluntary corporate environmental information and add new evidences to environmental disclosure literature.

Keywords Cost of capital • Environmental disclosure • Multiple estimation

1 Introduction

This paper investigates the relationship between environmental disclosure and costs of capital. The aim is to investigate the economic consequence of corporate environmental disclosure. Especially, we focus on continuous disclosure of standalone environmental report.

Japanese companies began to disclose their environmental impacts and countermeasures in 1990s. In Japan, some harmful pollution issues happened in a row in 1970s. Societal concerns in Japan have sharply increased during the 1970s as several pollution incidents occurred at that time (and continue to exist), leading to both a demand from stakeholders and a quasi-obligation from corporations

Y. Tanaka (✉)
Faculty of Economics, Hosei University, 4342 Aihara, Machida, Tokyo 194-0298, Japan
e-mail: y.tanaka@hosei.ac.jp

to provide accounts and information on their environmental impacts. After pollution incidents, some bills relating to the environment becomes law. But until now, there is no regulation which requires all company to disclose environmental report in public. In other words, Japanese environmental reporting practice has been made progress as voluntary activities.

According to the survey by the Ministry of the Environment, 579 number companies (386 listed companies, 193 non-listed companies) issued their environmental reports in 2000. In 2006, 1,049 companies (590 listed companies, 459 non-listed companies) issued and it is more than 1,000 companies. Thereafter the rate of increase slowed but it is clear that a lot of companies continue to disclosure environmental reports voluntarily.

In addition, KPMG International Survey of Corporate Social Responsibility Reporting indicating that almost all of Japan's largest companies report on corporate responsibility, including environmental issues (KPMG 2008, 2011). KPMG's survey (2008, 2011) reported that Japan's disclosure is one of the top levels in the world. Percentage of disclosure companies within the surveyed Japanese companies is almost 99 %. This is greater than the countries which have no legal disclosure system. In contrast to most developed countries, Japan does not have any formal and comprehensive environmental disclosure regulation and environmental reporting is thus still considered a voluntary corporate activity. Japanese corporate environmental disclosure is not legal disclosure. There is only guideline such as "Environmental Reporting Guidelines" announced by Ministry of the Environment. In this context, it is possible to consider that there is some of discipline to promote disclosure of environmental reports Japanese companies. In this context, it is possible to consider that there is some of discipline to promote disclosure of environmental reports Japanese companies.

This study is firstly motivated by this specific situation. The aim to investigate is whether the voluntary disclosure system is enough or not from view point information usefulness for investors. If there is incremental usefulness, voluntary environmental disclosure is effective measure for companies to communicate to capital market.

This study is also motivated by the ongoing debate revolving about whether and how capital market participants capture and value the disclosure of environmental information. As for disclosure realities of environmental information, many surveys have already been done. However, studies which could reveal empirically the effect of that disclosure are not necessarily more. This study's subject is the economic effects of environmental disclosure. To be more specific, whether capital market participants capture and value the disclosure of environmental information.

This question has been investigated in various contexts using different empirical approaches (Barth and McNichols 1994; Chan and Milne 1999; Guidry and Patten 2010; Ingram 1978; Murray et al. 2006). However, their findings seem to suggest that there is no overall consensus.

Of course, there are many study using market evaluation models and huge sample to investigate the relationship between capital market and environmental disclosure (e.g., Barth and McNichols 1994; Clarkson et al. 2004; Hughes 2000).

Market model methods help investigate the impact of released environmental information in stock market reactions and returns (e.g., Anderson and Frankle 1980; Freedman and Jaggi 1986; Ingram 1978).

But most of these studies have examined market valuations and reactions to environmental disclosure from a cross-sectional perspective. This means that their findings about the impact of such disclosure on a given year or period. Indeed this measure, design and analysis provide some insights to how environmental information is perceived by financial market stakeholders and participants, but it does not take into consideration accumulation of information possessed by market stakeholders and improvement of environmental disclosure itself over time.

Therefore, this study investigates whether continuity in environmental reporting practices translates into greater consistency, or at least into higher perceived reliability of the information provided, which would in turn lead to a positive valuation or reaction from the market.

In this study, we examine the economic consequences (and potential benefits) of corporate environmental disclosure commitment and environmental performance efforts in the specific context of Japan. Based on a sample of non-financial companies listed on the Tokyo Stock Exchange for the period 2003–2009, we first report a negative relation between the issuance of a voluntary environmental report and firm cost of capital. This result is consistent with several previous studies.

This study also finds a negative relation between the number of times the company has made a disclosure in the past and capital market. This result indicates that long-term environmental disclosure is associated with a lower cost of capital. Overall, our results support the argument that, consistent with evidence found in some of the prior literature (Anderson and Frankle 1980; Guidry and Patten 2010), capital market participants appear to value the existence and availability of voluntary corporate environmental information.

The remainder of the paper is organized as follows. The next section provides a review of prior research and develops hypotheses to be tested in the study. Section 3 explains the methods used to conduct the analysis and is followed by the presentation of the results. Discussion, limitations and conclusions are provided in the last section.

2 Literature Review

2.1 Environmental Reporting and Cost of Capital

Much of prior and current empirical financial accounting research closely examines at the relationship between financial disclosure and the cost of capital (Core 2001; Healy and Palepu 2001; Leuz and Verrecchia 2000; Leuz and Wysocki 2008; Leuz and Schrand 2011). In general, this literature presents evidence of a negative association between the quantity/quality of financial disclosure and the cost of capital. This body of research is primarily based on the argument that corporate disclosure mitigates the adverse selection problem by reducing both the probability

of trading with a better-informed counterpart (information asymmetry) and the advantage of better-informed investors (uncertainty) (Leuz and Wysocki 2008). Moreover, disclosure improves the investor base (Merton 1987), which in turn improves risk-sharing and decreases the cost of capital. More recently, analytical models show that the quality of disclosure has an effect on the estimation risk because it decreases the covariance of a firm's cash flow with the cash flows of other firms (Hughes et al. 2007; Lambert et al. 2007).

Parallel to financial disclosure studies, a relatively large number of investigations examining the market valuations and reactions to the disclosure of corporate non-financial information have been conducted as early as in the 1970s but generated mixed findings. While found a positive market reaction for a sample of 50 pollution control disclosing firms vs. a control group of non-disclosing counterparts, Ingram (1978) found none when using a larger sample and differentiated disclosure across social and environmental areas. Anderson and Frankle (1980) also examine the market reactions at the time of annual report issuance and, after controlling for differences in firm-specific market risk, report significant positive market reactions for companies disclosing CSR information vis-à-vis non-disclosers, but primarily only for the month preceding annual report releases. In contrast, Freedman and Jaggi (1986) report no significant differences in market reaction across companies when using a monthly return model for a sample of firms operating in four environmentally sensitive industries (chemicals, steel, pulp and paper, and oil). More recently, Guidry and Patten (2010) investigate whether a market reaction was triggered at the time of press releases announcing the first-time issuance of stand-alone CSR reports. Results indicate positive market reactions over a three-day event period centered on the press release date, but only for firms with more extensive disclosure.

Focusing more on differences in firm valuation (as opposed to one-time market effects), prior studies provide evidence indicating that financial markets seem to capture information about environmental performance made available through non-company sources and negatively value the exposures to potential future costs (Barth and McNichols 1994; Clarkson et al. 2004; Hughes 2000). In addition, two studies—Murray et al. (2006) and Jones et al. (2007), explore whether differences in social and environmental disclosure have longer-term effects. Based on a sample of firms from the United Kingdom, Murray et al. (2006) report no significant short-term associations between CSR disclosure and market valuation, but find that over a nine-year period, higher levels of disclosure appear to be associated with higher market valuation. On the other hand, Jones et al. (2007) document that CSR disclosure from their sample of Australian companies appears to be negatively, but only weakly associated with longer-term market valuation effects.

Therefore, we believe more empirical research about the economic consequences of environmental disclosure is needed.

Prior disclosure research findings generally indicate a negative correlation between the level of disclosure and the cost of capital. There are several possible explanations for expecting a negative association between environmental disclosure and cost of capital. First, investors gather information about corporate environmental risk—a company that provides information on its environmental programs and

policies as well as its environmental impacts will also have the ability to respond quickly to potential environmental regulation, thus lowering its risk associated to future compliance. Information provided by the company should lower the uncertainty of the information environment for the disclosing company. Moreover, environmental disclosure may serve as useful source of information when an investor estimates the role of environmental issues in driving competitive advantage, thus reducing uncertainty and leading to a decrease in the cost of capital.

However, previous evidence on this association is mixed. Richardson and Welker (2001) test the relation between financial and social disclosure and the cost of capital for a sample of Canadian firms. While they report a negative relation between the quantity and quality of financial disclosure and the cost of capital for firms with low analyst followings, they find that social disclosure and cost of capital are significantly and positively related. They note that this positive association is mitigated among firms with better financial performance and suggest that their findings might be explained by either potential biases in social disclosure or benefits on organizational stakeholders other than equity investors. Plumlee et al. (2010) examine how the quality of a firm's voluntary environmental disclosures is related to firm value by exploring the association between the components of firm value (cost of capital and future expected cash flows) and voluntary environmental disclosure quality. They find a positive association between environmental disclosure and firm value after controlling for environmental performance. Clarkson et al. (2010) investigate 119 U.S. firms with environmental reports belonging to five environmentally sensitive industries (paper and pulp business, chemistry business, oil and gas business, steel industry, electric power and gas business). Their results indicate that voluntary environmental disclosure is incrementally informative for investors over current environmental performance. However, they do not find evidence that voluntary environmental disclosures affect firm's cost of capital.

Hypothesis 1 Firm cost of capital is negatively associated with environmental reporting.

2.2 Continuity and Cost of Capital

While extant research focused on whether a company issued an environmental report or not, we argue that one aspect of corporate environmental reporting that need to be explored is continuity of environmental disclosure. One concern with Dhaliwal et al.'s (2011) findings is that their measure of CSR disclosure (initial issuance of a stand-alone CSR report) can be reversed and thus might not necessarily represent a commitment to disclosure in the future (Leuz and Verrecchia 2000). A continuous commitment to environmental disclosure instead captures whether the firm decides what it will disclose before it knows the content of the information (i.e., ex ante) rather than after it observes the content and any potential consequences (i.e., ex post). Indeed, while there is an increase in the number of companies that issue environmental reports, little is known about the effect that

continuous and long-lasting disclosure have on the cost of capital. The number of years of environmental reporting might be relevant because long-lasting commitment to disclosure might increase the perception of reliability over the information provided, thus inducing an additional decrease in the cost of capital because only a commitment to disclosure requires that information be disclosed regardless its content (e.g. Diamond and Verrecchia 1991). Therefore, we formally state the following hypothesis as:

Hypothesis 2 Firm cost of capital is negatively associated with the number of times a firm has issued environmental reports in the past.

3 Research Methods

3.1 Sample Selection

We focus our analysis on firms listed on the Tokyo Stock Exchange for the period 2003–2009. More specifically, to be included in the study, sample firms had to meet the following criteria:

1. They had to be listed on the First Section of the Tokyo Stock Exchange with a fiscal year-end of March 31, 2003 to 2009.
2. They had to operate in a non-financial industry.
3. They had to have data available to compute the implied cost of capital (from the "Tokyo Keizai Shinpo-Sha" database) and other financial information (from NEEDS-FinancialQUEST).
4. They had to have an environmental report and the announcement date available.

In addition, two additional criteria were set to generate our sub-sample of firms to test the association between firm cost of capital and commitment to environmental reporting (hypothesis 2).

Figure 1 shows the number of Japanese companies issuing environmental reports during the period 1999–2009.

3.2 Measurement of Variables

3.2.1 Implied Cost of Capital

We measure the implied cost of capital (ICC) for each firm as the internal rate of return that equates the present value of expected future cash flows to current stock price, as in Gebhardt et al. (2001). We estimate ICC using the residual income valuation model by Ohlson (1995). It is equivalent to a divided-discount model that assumes a clean surplus relation. The share price can be written as in formula (1).
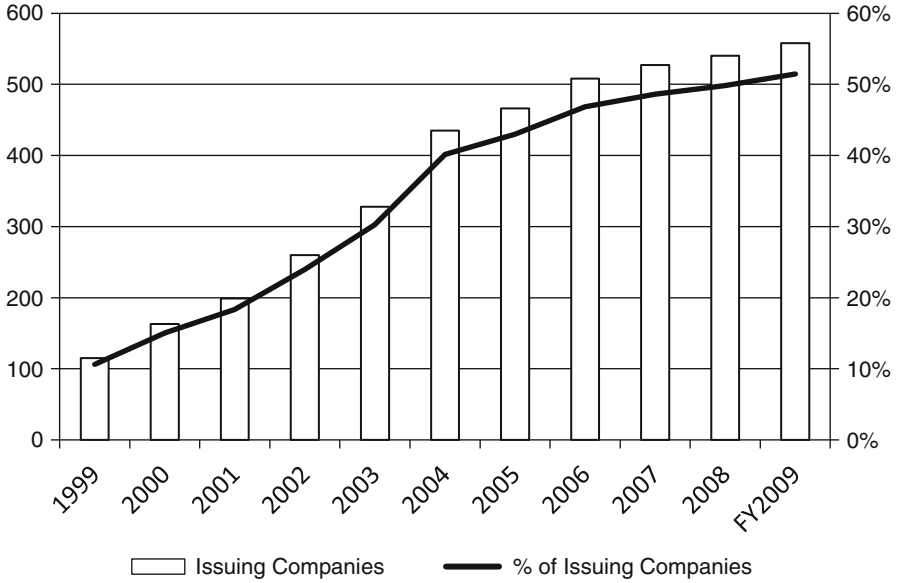
Fig. 1 Number of Japanese companies issuing environmental reports during 1999–2009. Data from Ministry of the Environment (2005), "Edition 2004 behavioral survey environmentally friendly company," Ministry of the Environment (2010), "Edition 2009 behavioral survey environmentally friendly company"

$$P_t = PBS_t + \sum_{\tau=1}^{\infty} \frac{E_t(EPS_{t+\tau} - r \times BPS_{t+\tau-1})}{(1+r)^{\tau}}; \qquad (1)$$

where Pt is the share price, BPSt is the book value of equity per share, EPSt is the earnings per share, r is the cost of capital and represents the abnormal earnings per share (residual income). Thus, price at t is described as the reported book value of equity per share and an infinite sum of future abnormal earnings per share (discounted residual income).

In order to estimate ICC from (1), we first estimate the future BPSt (FBPSt) from formula (2).

$$FBPS_{t+\tau} = BPS_{t+\tau-1} \times (1 - k_{t+\tau}) \times EPS_{t+\tau}, \qquad (2)$$

where kt is the payout ratio and the other variables are defined as above. Because Japanese companies are likely to set a constant dividend per share, we transform (2) by DOEt (equity dividend rate) to estimate FBPSt as follows:

$$FBPS_{t+\tau} = BPS_{t+\tau-1} \times (1 - DOE_{t+\tau}/ROE_{t+\tau}) \times EPS_{t+\tau}$$
$$= (1 + ROE_{t+\tau} - DOE_{t+\tau}) \times BPS_{t+\tau-1} \qquad (3)$$

$$EPS_{t+\tau} \quad \text{is} \quad BPS_{t+\tau-1} \times RPE_{t+\tau}.$$

Next, we estimate future in order to estimate future earnings per share. Following Gebhardt et al. (2001), we assume that ROE converges to the industry median in the long term, thus we calculate the median ROE for each industry, using data from the past 8 years of profitable companies in each industry.

$$FROE_{t+\tau} = ROE_{t+\tau} \pm \frac{(ROE_{t+\tau} - medianINDROE_{t+\tau-2})}{10} \tag{4}$$

$$P_t = BPS_t + \frac{FROE_{t+1} - r}{(1+r)} \times BPS_t + \frac{FROE_{t+2} - r}{(1+r)^2} \times BPS_{t+1} + TV \tag{5}$$

TV is terminal value.

$$TV = \sum_{\tau=3}^{12} \frac{FROE_{t+\tau} - r}{(1+r)^\tau} \times FBPS_{t+\tau-1} + \frac{FROE_{t+12} - r}{r(1+r)^{11}} \times FBPS_{t+11} \tag{6}$$

In order to reconcile the differences between years, instead of directly used to satisfy the Eq. (5), we use r after deducting the risk-free rate as a cost of equity. We use the 10-year government bond as a risk-free rate. In addition, we use analyst forecast earnings per share (one period ahead and two periods ahead of the current fiscal year) from the database "Toyo Keizai Shinpo-sha."

3.2.2   Environmental Reporting and Commitment

Similar to Dhaliwal et al. (2011), we employ a dummy variable equal to 1 if the company issues an environmental report, 0 otherwise. This data was hand-collected mainly from the Ministry of Economy, Trade and Industry and the companies' website. For environmental reporting commitment, we take the natural log of the number of times environmental reports are issued.

3.3   Models

We use multiple regressions to identify the relation between cost of capital and environmental reporting and commitment to environmental reporting. Our models to estimate are stated as:

$$\begin{aligned}
ICC - Rf_{i,t} = {} & \alpha_0 + \alpha_1 \ln(ME)_{i,t} + \alpha_2 BM_{i,t} + \alpha_3 \beta_{i,t} + \alpha_3 EREPORT_{i,t} \\
& + \sum_{i=2003}^{2008} \gamma_i year_i + IND + \varepsilon_{i,t}
\end{aligned} \tag{7}$$

$$ICC - Rf_{i,t} = \alpha_0 + \alpha_1 \ln(ME)_{i,t} + \alpha_2 BM_{i,t} + \alpha_3 \beta_{i,t} + \alpha_3 \ln(TIMES)_{i,t}$$

$$+ \sum_{i=2003}^{2008} \gamma_i year_i + IND + \varepsilon_{i,t} \tag{8}$$

ICC-Rf = Cost of Capital
Rf = Risk free rate, the interest rate of 10-year Japanese government bond
ln(ME) = Natural log of Market Equity
BM = Book-Market Ratio
β = Historical beta (with TOPIX, for 60 months)
EREPORT = One if a voluntary environmental report is issues, zero otherwise
ln(TIMES) = Natural log of number of times of disclosing

Following Fama and French (1993, 1997), we adopt ln(ME), BM and β as control variables. According to hypotheses 1 and 2, we expect both α3 and α4 to be significant and negative.

4   Regression Results

Table 1 of Panel A shows the sampling procedure and the total number of firm-year observations (5,915). Approximately 50 % of the firms for which we are able to obtain data on the ICC also provide an environmental report. Table 2 of Panel B shows the distribution of observations over the time period analyzed.

Table 1 Sample selection and sample size for hypotheses 1 and 2. Panel A: Sample selection

	2003	2004	2005	2006	2007	2008	2009	Total
Listed on the first section of Tokyo Stock Exchange	1,452	1,470	1,529	1,586	1,631	1,654	1,702	7,870
Except the finance business and business year ending in March	1,285	1,288	1,297	1,300	1,309	1,318	1,183	6,512
Data available for ICC	798	831	832	861	869	841	883	5,915
Disclosing of environmental report	319	380	400	434	463	459	502	2,957

Table 2 Sample selection and sample size for hypotheses 1 and 2. Panel B: Sample size classified by fiscal year

Fiscal year	Full sample	Disclosing companies (%)	Non-disclosing companies (%)
2003	798	319 (40.0)	479 (60.0)
2004	831	380 (45.7)	451 (54.3)
2005	832	400 (48.1)	432 (51.9)
2006	861	434 (50.4)	427 (49.6)
2007	869	463 (53.3)	406 (46.7)
2008	841	459 (54.6)	382 (45.4)
2009	883	502 (56.9)	381 (43.1)

Table 3 Descriptive statistics for hypotheses 1 and 2. Panel A: Descriptive statistics

	Mean	SD	Min	1Q	Median	3Q	Max	N
ICC-Rf	4.286	2.150	0.304	2.824	3.976	5.370	13.691	5,915
ln(ME)	25.012	1.572	22.116	23.790	24.754	26.054	29.359	5,915
BM	1.655	1.065	0.175	0.885	1.364	2.161	5.613	5,915
B	0.963	0.486	−0.055	0.621	0.916	1.282	2.593	5,915
EREPORT	0.500	0.500	0.000	0.000	0.000	1.000	1.000	5,915
ln(TIME)	0.679	0.867	0.000	0.000	0.000	1.609	2.890	5,915

Table 4 Descriptive statistics for hypotheses 1 and 2. Panel B: Correlation between variables

	ICC	ln(ME)	BM	β	EREPORT	ln(TIME)
ICC	1.000	−0.262	0.136	0.002	−0.168	−0.119
ln(ME)	−0.262	1.000	−0.294	−0.004	0.480	0.487
BM	0.136	−0.294	1.000	−0.148	−0.151	−0.219
B	0.002	−0.004	−0.148	1.000	−0.026	−0.018
EREPORT	−0.168	0.480	−0.151	−0.026	1.000	0.781
ln(TIME)	−0.119	0.487	−0.219	−0.018	0.781	1.000

Table 5 Test results for hypotheses 1 and 2

		Three factors model		Equation (7)		Equation (8)	
		Full sample (N = 5,915)		Full sample (N = 5,915)		Disclosing-companies only (N = 2,957)	
		Coef.	t-value	Coef.	t-value	Coef.	t-value
	?	5.762	12.254	3.393	6.624	3.239	5.506
ln(ME)	(−)	−0.170	−10.103	−0.068	−3.566	−0.016	−0.738
BM	(+)	0.661	20.953	0.687	21.940	0.685	15.820
β	(+)	0.162	3.170	0.155	3.066	0.101	1.677
EREPORT	(+)			−0.613	−11.067		
ln(TIME)	(−)					−0.173	−3.907
IND		Yes		Yes		Yes	
Year		Yes		Yes		Yes	
adj.R^2		0.255		0.270		0.253	

Descriptive statistics are provided in Table 3 of Panel A. The mean (median) implied cost of capital (net of the risk free rate) is 4.3 % (3.98 %) and the standard deviation is 2.1 %. The mean (median) book to market ratio is 1.7 (1.4) and the mean (median) beta is equal to 0.96 (0.91). On average, companies have been disclosing an environmental report for about two years although the maximum period is almost 18 years. Table 4 of Panel B shows the correlation coefficients.

Table 5 reports the results of for our analysis on the relationship between environmental reporting and cost of capital, and commitment to environmental reporting and cost of capital. The first three columns report the regression results (coefficient, t-test and p-value) for the Fama-French three factors model.

The results are in line with the predictions and all coefficients are significant at 1 % level. This suggests that our measure for the implied cost of capital is valid.

For Eq. (7), the coefficient for EREPORT is significant and negative at the 1 % level, which is consistent with our expectations. This finding implies that companies providing an environmental report present a lower cost of capital than those not providing one.

For Eq. (8) we find a significant and negative relationship between ln(TIME) and ICC. The evidence supports our hypothesis as it indicates a negative association between commitment to disclosure and the cost of capital.

Overall, the findings are in line with previous evidence in the literature of a negative relationship between CSR-related stand-alone reports and the cost of capital. Moreover, commitment to environmental reporting, measured in terms of number of years of continuous reporting, seem to induce an additional decrease in the cost of capital. This negative relation could be interpreted as a superior reliability of the information provided for firms that continue to report on environmental performance. While the issuance of an environmental report per se may reflect self-serving choices, the continuous and long-lasting commitment to reporting implies that managers cannot condition their disclosure choice on its realization, i.e., whether it is good or bad news.

5 Discussions and Conclusion

This paper investigates the economic consequences of corporate environmental disclosure in the Japanese context. Our focus is continuity of environmental reporting. We investigate the relationship between continuous voluntary environmental disclosure and a firm's cost of capital. Our sample is consisted of non-financial companies listed on the Tokyo Stock Exchange for the period 2003–2009. As a result, we show a negative relation between the issuance of a voluntary environmental report and firm's cost of capital. Therefore, long-term issuance of environmental disclosure is associated with a lower cost of capital.

Overall, our results are consistent with some of prior evidences that capital market participants appear to value the existence and availability of voluntary corporate environmental information. Also, this paper can add new evidences to environmental disclosure literature by focusing the viewpoint of continuity.

In addition to this, we also succeeded in explaining the special circumstances in Japan. According to KPMG's survey (2008, 2011), almost all of the companies surveyed disclose environmental information but there is no legal force about it. From this paper, it is implied that evaluation from the stock market plays a role of some disclosure discipline which motivates Japanese companies to disclose environmental information.

Like all studies, our investigation has some limitations. We examine the economic consequences (and potential benefits) of corporate environmental disclosure commitment and environmental performance efforts for firms listed on the First

Section of the Tokyo Stock Exchange, hence only for large and publicly traded companies and as such, we cannot generalize findings to organizations of different type or size. Similarly, we focus only on companies in Japan. Interest in CSR and environmental reporting is argued to vary across regions (see, e.g., Simnett et al. 2009; Dhaliwal et al. 2012) and as such, the reported relations may not hold in other countries. Finally, our environmental performance metrics (improvement in emissions and targets) are self-reported and limited by the availability of firm-specific information provided in the reports. Richer and better measures may indicate some other patterns that we are not able to capture. Future research along any of these lines, therefore, would appear to be warranted.

References

Anderson, J. C., & Frankle, A. W. (1980). Voluntary social reporting: An iso-beta portfolio analysis. *The Accounting Review, 55*(3), 467–479.

Barth, M. E., & McNichols, M. F. (1994). Estimation and market valuation of environmental liabilities relating to superfund sites. *Journal of Accounting Research, 32*(3), 177–209.

Chan, C. C. C., & Milne, M. J. (1999). Investor reactions to corporate environmental saints and sinners: An experimental analysis. *Accounting and Business Research, 29*(4), 265–279.

Clarkson, P., Fang, X., Li, Y., & Richardson, G. D. (2010). The relevance of environmental disclosures for investors and other stakeholder groups: Are such disclosures incrementally informative? Working Paper, Rotman School of Management, Toronto. http://ssrn.com/abstract=1687475. Accessed 31 Aug 2013.

Clarkson, P., Li, Y., & Richardson, G. D. (2004). The market valuation of environmental capital expenditures by pulp and paper companies. *The Accounting Review, 79*(2), 329–353.

Core, J. E. (2001). A review of the disclosure literature. *Journal of Accounting & Economics, 31*(1–3), 441–456.

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review, 87*(3), 723–759.

Dhaliwal, D. S., Zhen, L. O., Tsang, A., & Yong, G. Y. (2011). Voluntary nonfinancial disclosure and the cost of capital: The initiation of corporate social responsibility reporting. *The Accounting Review, 86*(1), 59–100.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity and the cost of capital. *Journal of Finance, 46*(4), 1325–1359.

Fama, E., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33*(1), 3–56.

Fama, E., & French, K. R. (1997). Industry costs of equity. *Journal of Financial Economics, 43*(2), 153–193.

Freedman, M., & Jaggi, B. (1986). An analysis of the impact of corporate pollution disclosures included in annual financial statements on investors' decisions. *Advances in Public Interest Accounting, 1*, 193–212.

Gebhardt, W. R., Lee, C. M. C., & Swaminathan, B. (2001). Toward and implied cost of capital. *Journal of Accounting Research, 39*(1), 135–176.

Guidry, R. P., & Patten, D. M. (2010). Market reactions to the first-time issuance of corporate sustainability reports: Evidence that quality matters. *Sustainability Accounting, Management and Policy Journal, 1*(1), 33–50.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics, 31*(1–3), 405–440.

Hughes, K. E., II. (2000). The value relevance of nonfinancial measures of air pollution in the electric utility industry. *The Accounting Review, 75*(2), 209–228.

Hughes, J. S., Liu, J., & Liu, J. (2007). Information asymmetry, diversification and cost of capital. *The Accounting Review, 82*(3), 705–729.

Ingram, R. W. (1978). An investigation of the information content of (certain) social responsibility disclosures. *Journal of Accounting Research, 16*(2), 270–285.

Jones, S., Frost, G., Loftus, J., & Laan, S. V. D. (2007). An empirical investigation of the market returns and financial performance of entities engaged in sustainability reporting. *Australian Accounting Review, 17*(1), 78–87.

KPMG. (2008). International Survey of Corporate Responsibility Reporting, KPMG. http://www.kpmg.com/lu/en/issuesandinsights/articlespublications/pages/kpmginternationalsurveyoncorporateresponsibilityreporting2008.aspx. Accessed 31 Aug 2013.

KPMG. (2011). International Survey of Corporate Responsibility Reporting, KPMG. http://www.kpmg.com/global/en/issuesandinsights/articlespublications/corporate-responsibility/pages/2011-survey.aspx. Accessed 31 Aug 2013.

Lambert, R., Leuz, C., & Verrecchia, R. F. (2007). Accounting information, disclosure and the cost of capital. *Journal of Accounting Research, 45*, 385–420.

Leuz, C., & Schrand, C. M. (2011). Disclosure and the cost of capital: Evidence from firms' response to the enron shock. Working Paper, University of Chicago Booth School of Business, Chicago, Research Paper No. 08–26. http://papers.ssrn.com/, abstract_id = 1319646. Accessed 31 Aug 2013.

Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research, 38*(Supplement 2000), 91–124.

Leuz, C., & Wysocki, P. D. (2008). Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research. Working Paper. http://papers.ssrn.com/abstract_id=1105398. Accessed 31 Aug 2013.

Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *Journal of Finance, 42*(3), 483–510.

Murray, A., Sinclair, D., Power, D., & Gray, R. (2006). Do financial markets care about social and environmental disclosure? Further evidence and exploration from the UK. *Accounting, Auditing and Accountability Journal, 19*(2), 228–255.

Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, *11*, 2.

Plumlee, M., Brown, D., & Marshall, S. (2010). Voluntary environmental disclosure quality and firm value: Further evidence. Working Paper, University of Utah, Salt Lake City. http://ssrn.com/abstract=1517153. Accessed 31 Aug 2013.

Richardson, A. J., & Welker, M. (2001). Social disclosure, financial disclosure and the cost of capital. *Accounting Organizations and Society, 26*(7), 597–616.

Simnett, R., Vanstraelen, A., & Chua, W. F. (2009). Assurance on sustainability reports: An international comparison. *The Accounting Review, 84*(3), 937–967.

Analyst Herding Around Management Forecasts

Mikiharu Noma

Abstract This paper examines the effect of management forecasts on analyst forecasts in Japan. Almost all listed firms in Japan provide management forecasts. Thus, it is possible to investigate the relationship between management and analyst forecasts for Japanese firms without any special consideration of reasons behind the issuance of management forecasts. We first show that management forecasts provided by managers at the time of release of the prior year's annual and current semi-annual financial results are slightly higher than analyst forecasts. The results suggest that managers have incentives to provide forecasts that exceed analyst forecasts. We then analyze the daily differences between management and analyst forecasts to investigate any convergence between the two forecasts upon the release of management forecasts. We conclude that analysts herd around management forecasts in Japan and tend to trust management forecasts because they believe that managers in Japanese firms are highly disciplined.

Keywords Analyst forecast • Expectation management • Herding • Management forecast

1 Introduction

This paper examines whether and how management forecasts influence analyst forecasts in Japan. We first examine whether managers release management forecasts that slightly exceed consensus analyst forecasts from the perspective of expectations management. As there is a market premium for firms whose earnings

M. Noma (✉)
Graduate School of International Corporate Strategy, Hitotsubashi University,
2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo 101-8439, Japan
e-mail: mnoma@ics.hit-u.ac.jp

exceed the consensus analyst forecasts, managers have incentives to manage analysts' earnings expectations downwards in order to achieve beatable targets, i.e. expectation management[1] (Bartov et al. 2002; Kasznik and McNichols 2002).

A number of studies provide empirical evidence related to expectation management. Matsumoto (2002) shows that firms manage earnings upward and guide analyst forecasts to avoid negative earnings surprises. Richardson et al. (2004) also provide evidence that is consistent with the opportunistic behavior of managers around the time of earnings announcements to guide analysts' expectations to facilitate favorable insider trades once earnings are announced. Cotter et al. (2006) show that management guidance is more likely when analysts' initial forecasts are optimistic, and that analysts are more likely to react quickly and issue final meetable or beatable earnings targets, when management provides public guidance. They conclude that public management guidance plays an important role in leading analysts toward achievable earnings targets. In addition, Das et al. (2011) investigate the relationship between earnings management and expectation management to study the combined use of these two instruments by managers and to examine the changes in this relationship with the change in each instrument's constraining factors. The results suggest that managers use earnings management and expectation management complementarily when their ability to use earnings management is less restricted. In a study based on the U.K. market, Athanasakou et al. (2011) analyze the market response to firms that achieve analyst expectations and changes in response toward firms that manage expectations or earnings. They find that the U.K. market does not reward expectation management favorably.

Thus, it can be seen that from the perspective of expectations management, managers have an incentive to release conservative management forecasts. Simultaneously, managers also have the incentive to provide forecasts that are higher than consensus analyst forecasts in order to avoid negative surprises that occur when management forecasts are lesser than consensus analyst forecasts at the time. These incentives drive managers to provide forecasts that are higher than consensus analyst forecasts prevailing in the market. Hence, in this study, we compare the initial management forecasts provided by the managers during the release of prior year's financial results with the analyst forecasts given at the end of previous fiscal year to evaluate the influence of expectations management.

In addition, we investigate herding of analysts on management forecasts, by analyzing the daily differences between management and analyst forecasts after the release of management forecasts. Some existing studies identify herding among analysts in the U.S. Graham (1999) finds that a newsletter analyst is likely to herd around Value Line's (an esteemed investment research organization) recommendation if her reputation is high or her ability is low. Welch (2000) reveals that the buy or sell recommendations of security analysts have a significant positive

---

[1] Vesano and Trueman (2013) analytically define expectations management as effective if the manager's forecast disclosure affects the end-of-period price by means of the analyst's reported forecast.

influence on the recommendations of the next two analysts. Trueman (1994) shows that analysts release forecasts that are similar to those previously announced by other analysts. He suggests that as analysts care about their career, a lack of ability and experience can make them imitate others' decisions. Hong et al. (2000) find that inexperienced analysts deviate less from consensus forecasts. Additionally, they provide evidence that inexperienced analysts are less likely to issue timely forecasts, and they revise their forecasts more frequently. Further, Stickel (1990) shows that past changes in earnings consensus estimates and deviation of analysts' standing recommendation from the consensus are good predictors of revisions in analyst forecasts.

The literature on herding behavior also shows that in the U.S. analysts herd around analyst consensus forecasts. In contrast, in the Japanese capital market, management forecasts play a more important role, which might be because of two reasons. First, almost all listed firms provide management forecasts in Japan, as stock exchanges strongly recommend that firms release management forecasts. Second, Japanese managers consider management forecasts as important benchmarks. Suda and Hanaeda (2008) enquire about the financial reporting of Japanese firms through a comprehensive survey of Japanese CFOs.[2] They find that Japanese managers consider the following performance benchmarks for their financial decisions as listed in the order of importance: (1) management forecasts; (2) previous year's performance; (3) reporting of profits; (4) competitor's performance; and (5) analyst consensus estimates. Thus, these economic settings can influence analysts to herd around management forecasts.

Moreover, managers voluntarily issue management forecasts in the U.S. As a result, the ratio of firms issuing management forecast is relatively smaller in comparison to Japan. Thus, in the U.S., analyst forecasts play a key role in the capital market, managers voluntarily issue management forecasts, and thus, analysts mainly herd around other analysts' forecasts. Whereas, in Japan, more than 95 % of listed firms issue management forecasts because of stock exchange recommendations. Thus, it makes it more possible to investigate the herding of analysts around management forecasts in Japan.

Some studies also address the reactions of analysts to management forecasts in the U.S. Hassell and Jennings (1986) find that management forecasts issued subsequently up to four weeks prior to analyst forecasts are more accurate than analyst forecasts. Moreover, Hassell et al. (1988) find that forecasting errors in analyst forecasts decrease more rapidly for firms that provide management forecasts than the ones that do not provide management forecasts. They also show that the consensus analyst forecasts are more accurate from the ninth week after the release of management forecasts. Baginski and Hassell (1990) provide evidence on the usefulness of security price reactions to management forecasts in predicting

---

[2] Suda and Hanaeda (2008) administered survey to 600 CFOs. The perspectives of Suda and Hanaeda (2008) are similar to those of Graham et al. (2005),who surveyed and interviewed more than 400 U.S. executives.

revisions in analyst forecasts. In addition, Williams (1996) indicates that prior management forecasts result in revisions to analyst forecasts following a subsequent managerial forecast. Feng and McVay (2010) show that analysts who wish to please the firms they follow, overweigh management earnings guidance while revisiting their short-term earnings forecasts. Thus, these findings suggest that analysts may use management forecasts for their own forecasts. Ota (2010) that more than 90 % of changes in analysts' forecasts are explained by management forecasts alone in Japan by using the regression model.

In summary, there are two major contributions of this study to the existing literature. First, this is the first study to show that managers release forecasts that are slightly higher than analyst forecasts. Prior studies on expectation management suggest that managers use management forecasts to avoid negative surprises at the time of actual earnings' announcements. It implies that managers release forecasts to guide analyst forecasts downwards. This paper differs from prior literature in suggesting that managers have two incentives. First, managers have an incentive to issue conservative management forecasts to lead consensus analyst forecasts downwards. In other words, managers would like to avoid future negative surprises at the time of actual earnings' announcement. Second, managers have an incentive to release management forecasts that are higher than analysts' consensus at the time to avoid negative surprises upon the comparison of management forecasts with the prevailing analyst forecasts.

Second, our evidence that analysts herd around management forecasts helps to provide a more complete picture of analysts' herding behavior. Prior studies generally investigate analyst herding in the U.S., where only a few firms release management forecasts. Thus, they mostly conclude that analysts herd around other analysts' estimates. This paper differs from existing studies in establishing the impact of management forecasts on analyst forecasts by focusing on the Japanese capital market, where almost all listed firms issue management forecasts.

The results of our study are also relevant to securities regulators, who believe in the role of management forecasts in capital market. In 2012, the disclosure rule for management forecasts were relaxed in Japan. Thus, evidence on the effect of management forecasts on analyst forecasts can help regulators understand the role of management forecasts.

The remainder of the paper is organized as follows. Section 2 describes the institutional setting related to management forecasts in Japan. Section 3 details the sample and research design used for analysis. Section 4 lists and discusses the results on both expectation management and the impact of management forecasts on analyst forecasts. Section 5 ends the study with a brief conclusion.

2   Institutional Background

2.1   *Management Forecasts in Japan*

In Japan, the rules developed by the stock exchange recommend listed firms to provide management forecasts.[3] Tokyo Stock Exchange, the largest stock exchange in Japan, strongly recommends listed firms to disclose management forecasts.[4] Before fiscal year 2012, when the rules for management forecasts were relaxed, they had five features.[5]

First, Tokyo Stock Exchange recommended that firms provide management forecasts in "Kessan-Tanshin" in a timely manner to the stock exchange before submitting the detailed financial results in "Yukashoken-Hokokusho." Firms were required to submit "Kessan-Tanshin" within 45 days of the previous fiscal period's end. These recommendations made Japanese firms announce the previous year's financial results and current year's management forecast, simultaneously.

Second, firms were suggested to disclose annual, instead of quarterly, management forecasts of sales, earnings before extraordinary items and taxes (EBET), and net income.

Third, firms were recommended to provide management forecasts based on point forecasts of annual earnings rather than range forecasts.

Fourth, firms had to release management forecasts along with financial results. When firms release previous year's financial results, they disclose initial management forecasts for the current fiscal year. Thus, firms were also required to provide management forecasts at the time they released quarterly and semi-annual financial results.

Fifth, if significant changes were observed in management forecasts upon comparison with previous management forecasts, firms had to revise their forecasts. For sales, stock exchanges define significant change as a change of 10 % or more in sales estimates. In case of EBET and net income, a difference of 30 % or more in earnings estimates is considered a significant change. Though the listing rules of

---

[3] In addition to the studies already cited in the text, management forecasts in Japan have been investigated extensively by several other researchers. Darrough and Harris (1991) study the information content of management forecasts using Japanese firms' management forecasts. Conroy et al. (1998) find that stock prices respond more dramatically to management earnings forecasts compared to actual earnings. In the same manner, Conroy et al. (2000) show that reactions to share prices are significantly affected by management forecasts of next year's earnings. Kato et al. (2009) provide evidence that management forecasts tend to be optimistic and that information content of management forecasts is related to proxies for whether market participants view the forecasts as credible. Ota (2006) finds that information on systematic errors in management earnings forecasts may not be fully incorporated into share prices.

[4] Other Japanese stock exchanges follow similar rules on management forecast as the Tokyo Stock Exchange.

[5] Fiscal year usually ends on March 31st for many Japanese firms. Thus, fiscal year 2012 means that the year ended on 31st March, 2013.

Table 1 Descriptive statistics for firms providing management forecasts and firms followed by analysts

	All	2000	2001	2002	2003	2005	2006	2007
Firms providing management forecasts (%)	98.3	98.8	98.3	97.7	98.8	99.0	99.1	99.1
Firms followed by analyst (%)		39.1	44.3	39.1	45.5	49.4	45.3	43.7	44.2

Firms providing management forecasts is the ratio of firms that provide management forecasts to listed firms. Firms followed by analyst is the ratio of firms followed by analysts to listed firms. The sample does not include financial institutions. The row in all shows the overall ratio from fiscal year 2000–2006. Fiscal year usually ends in March for Japanese firms; thus, year 2000 denotes that the year ended on 31st March, 2001

stock exchanges required managers to release management forecasts and financial results at the same time, management forecast revisions were mandated under the Stock Exchange Act.

2.2 Management Forecasts and Analyst Forecasts

Table 1 shows the proportion of listed non-financial firms that provided management forecasts and were followed by analysts from 2000 to 2006. On average, from 2000 to 2006, 98.8 % of listed firms provided management forecasts. The number is slightly higher than that calculated by Kato et al. (2009).[6] Given that the rules on management forecasts do not require firms to provide management forecasts, the number of firms providing management forecasts is quite high.

Though, it might be favorable for firms to not provide management forecasts to save associated costs, they still released management forecasts as otherwise they would have to explain the reasons for not providing management forecasts to the stock exchanges.[7]

The high proportion of firms providing management forecasts means that the disclosure rules on management forecasts are substantially mandated in Japan. However, stock exchanges do not require, but strongly recommend that firms provide management forecasts. In other words, the disclosure rules on management forecasts are not mandatory. Nonetheless, as almost all listed firms provide management forecasts, the disclosure of management forecasts no longer seems to be voluntary.

Table 1 reveals that the proportion of firms followed by analysts to listed non-financial firms is relatively smaller when compared to the proportion of firms providing management forecasts. On average from 2000 to 2006, 44.3 % of listed

---

[6] Kato et al. (2009) include financial institutions in the sample. In contrast, we do not include financial institutions in the sample.

[7] After the relaxation of management forecast rules in March 2012, firms are not required to explain the reason for not providing management forecasts for stock exchanges.

Table 2 Distribution of number of analysts

0	1	2–5	6–10	11–15	16–20	21–30
55.7 %	17.0 %	15.2 %	6.3 %	3.5 %	1.8 %	0.5 %

The sample does not include financial institutions

firms were followed by analysts. The ratio increased gradually from 2000 to 2002 and steadily declined after 2003.

Anilowski et al. (2007) report that the number of firms that provide management forecasts increased substantially over the 1994–2003 sample period, with a concurrent increase in the proportion of firms issuing guidance, compared to less than 10 % in the U.S. It means that management forecasts may play a more important role in Japanese capital market than in the U.S.

Table 2 provides the distribution of the number of analysts that followed at least one firm from 2000 to 2006. In this period, 17 % of Japanese firms were followed by a single analyst. Only 5.8 % of the firms were followed by more than 11 analysts.

3 Sample Selection and Research Design

3.1 Sample Selection

Our sample includes annual periods of Japanese firms as listed on Tokyo Stock Exchange (first and second sections). We use management and analyst forecasts from fiscal year 2000–2006. The sample is limited to Japanese firms whose fiscal year ends in March because for most Japanese firms the fiscal year-end is the end of March. We also limit the sample to the firms that have data for 12 fiscal months. Financial institutions, that is, banks, securities, and insurance companies, are excluded.

We use daily analyst consensus data provided by QUICK, also called as QUICK CONSENSUS, for analyst forecasts. We only include firms that are followed by more than one analyst. Our source of information is AMSUS (Active Management Support System) offered by Quick Corp (a subsidiary of Nikkei financial newsgroup).[8] We analyze management and analyst forecasts for sale, earnings before extraordinary items, and net income. To minimize the effect of outliers, we remove firm-years when variables are at 0.1 % and 99.9 % percentiles. We then eliminate the observations for firm-years if the required data on forecasts and market value of equity at the end of prior year is missing. Our final sample consists of 4,847 firm-year observations from 2000 to 2006.

---

[8] The underlying accounting data of AMSUS is the same as that provided by Nikkei NEEDS, which has been used extensively in Japanese financial and accounting research.

3.2 Research Design

3.2.1 Expectation Management

This paper focuses on management forecasts, issued by firms at the time of announcing previous fiscal year's financial results or semi-annual financial results, to investigate whether firms release forecasts that are slightly higher than consensus analyst forecasts. In Japan, the fiscal year ends in March for many firms. Moreover, stock exchanges require firms to announce financial results within 45 days after the end of the fiscal year. It means that many Japanese firms announce the previous year's financial results by mid-May. Then, firms release semi-annual financial results by the middle of October as half a year ends in September based on this calculation.

We define the difference between management forecasts and consensus analyst forecasts (DMAF) as follows:

$$DMAF = (\text{Management Forecast} - \text{Consensus Analyst Forecast})/\text{Market Value of Equity at the end of previous fiscal year}$$

We compare consensus analyst forecasts at the end of March with management forecasts that are released simultaneously with the announcement of previous years' financial results. Then, we compare consensus analyst forecasts at the end of September with management forecasts that are released when managers announce semi-annual financial results. We scale the difference between management and analyst forecasts by considering market value of equity at the end of previous fiscal year. To examine whether managers provide management forecasts that are slightly higher than consensus analyst forecasts, we measure DMAF for sales, EBET, and net income.

We employ an often used research methodology developed by Burgstahler and Dichev (1997) for our investigation. We first use histograms of DMAF to analyze management forecasts with respect to analyst forecasts. If managers issue management forecasts that are slightly higher than consensus analyst forecasts, the distribution will not be smooth around zero.

Then, to test expectation management, we develop the null hypothesis that in case of no expectation management, the cross-sectional distribution of DMAF is relatively smooth. Following Burgstahler and Dichev (1997), we test the null hypothesis that the distribution is smooth by using the difference between actual number of observations and the expected number of observations in the interval, scaled by the estimated standard deviation of the difference. If managers do not issue management forecasts that are slightly higher than consensus analyst forecasts, the standardized difference will be normally distributed, approximately, with mean 0 and standard deviation 1. In contrast, a significant standardized difference rejects the null hypothesis and indicates that the distribution of DMAF is not smooth at the point.

3.2.2 Analyst Herding Around Management Forecasts

To examine the effect of management forecasts on analyst forecasts, we focus on forecasts of net income. First, we identify the day when management forecasts are issued. However, we do not exclude the management forecasts that are same as the ones previously issued by managers from the sample.

Second, we calculate the daily difference between management and consensus analyst forecasts (DMAF) scaled by market value of equity at the end of previous fiscal year end for 25 days after the release of management forecasts. If analysts herd around management forecasts, DMAF will gradually approach zero.

Third, DMAF is sorted into some portfolios. First, we divide DMAF into positive and negative DMAF. Then, we divide positive (negative) DMAF based on the days when the management forecasts are issued; (1) management forecasts that are released when managers simultaneously announce previous fiscal year's financial results, and (2) management forecasts that are released when managers simultaneously announce semi-annual financial results.

Finally, after constructing five portfolios based on market value of equity at the end of the previous fiscal year, we show DMAF of the smallest and largest portfolios whose management forecasts are issued when managers announce previous year's financial statements. Five portfolios are constructed for each year and all firms are ranked on the basis of most recent fiscal year-end market capitalization. Then we merge the five portfolios over the entire period.

4 Empirical Results

4.1 Expectation Management

Table 3 shows the descriptive statistics for DMAF of sales, EBET, and net income for firms which issued management forecasts with the announcement of previous year's financial statements. The mean and median DMAF of sales are positive. It means that on average, management forecasts for sales, released along with previous fiscal year's financial statements, are higher than consensus analyst forecasts at the end of previous fiscal year. In contrast, the mean and median DMAF of EBET and net income are negative. It suggests that management forecasts for EBET and net income are smaller than consensus analyst forecasts at the end of the fiscal year.

Table 4 reports the descriptive statistics for DMAF of sales, EBET, and net income for firms which issued management forecasts along with the announcement of semi-annual financial statements. The mean and median DMAF of sale, EBET, and net income are negative. It indicates that management forecasts released by firms at the end of September along with their semi-annual financial statements are conservative, when compared to consensus analyst forecasts.

Table 3 Difference between management and analyst forecasts at the time of release of previous year's financial statements

	Average	Median	Standard deviation	Proportions of positive (%)
Sale	0.0064	0.0058	0.2202	57.0
EBET	−0.0020	−0.0012	0.0339	46.1
Net income	−0.0032	−0.0011	0.0279	44.4

Difference between management and analyst forecasts: management forecasts that managers provide initially at the beginning of the fiscal year minus consensus analyst forecasts at the end of March. All variables are scaled by market value of equity at the end of previous fiscal year

Table 4 Difference between management and analyst forecasts at the time of release of semi-annual financial statements

	Average	Median	Standard deviation	Proportions of positive (%)
Sale	−0.0206	−0.0007	0.1740	48.9
EBET	−0.0089	−0.0014	0.0372	43.0
Net income	−0.0092	−0.0012	0.0385	40.7

Difference between management and analyst forecasts: management forecasts that managers provide when they release semi-annual financial statements minus consensus analyst forecasts at the end of September. All variables are scaled by market value of equity at the end of the previous fiscal year

Figures 1, 2, and 3 are the histograms for DMAF of sale, EBET, and net income, respectively, wherein management forecasts issued along with the announcement of previous fiscal year's financial statements are compared with consensus analyst forecasts at the end of March. In Fig. 1, interval width is 0.002. In Figs. 2 and 3, the interval width is 0.001. These figures show an irregularity near zero. A slightly less than zero value of DMAF occurs less frequently than would be expected, given the smoothness of the remainder of the distribution. Also, a slightly higher than zero DMAF value occurs more frequently than would be expected.

Table 5 reports the standard differences of DMAF. The statistical tests confirm the significance of irregularity near zero. For sales, EBET, and net income, the standardized differences for the intervals immediately to the left (right) of zero are −2.917 (4.048), −2.173 (2.965), and −2.440 (2.875), respectively. Thus, the null hypothesis that the distribution is smooth is rejected. These results suggest that management forecasts issued when the previous year's financial statements are announced are slightly higher than consensus analyst forecasts at the end of March.

Figures 4, 5, and 6 are the histograms for DMAF of sale, EBET, and net income, respectively, wherein management forecasts issued along with the announcement of semi-annual financial statements are compared with consensus analyst forecasts at the end of September. Similar to Fig. 1, the interval width is 0.002 in Fig. 4. In Figs. 5 and 6, the interval width is 0.001. These figures show an irregularity near zero. A slightly less than zero DMAF occurs less frequently than would be expected given the smoothness of the remainder of the distribution. A slightly higher than zero DMAF occurs more frequently than would be expected.
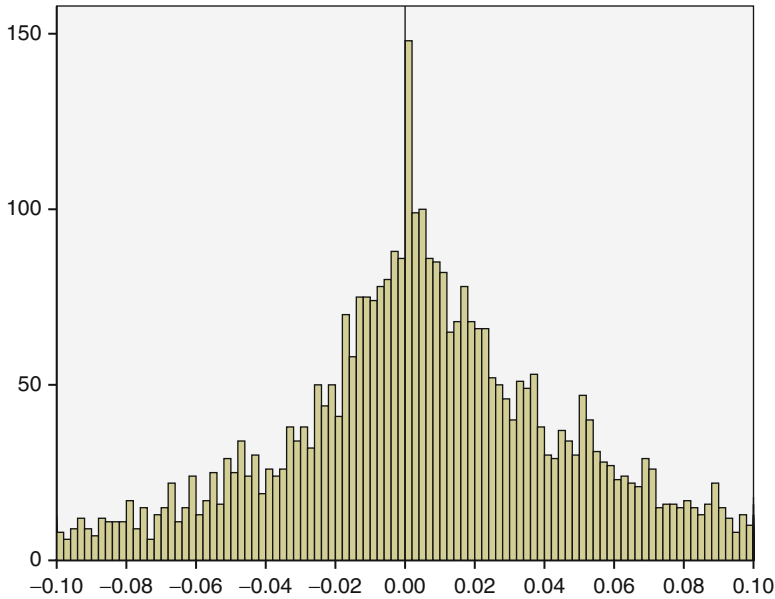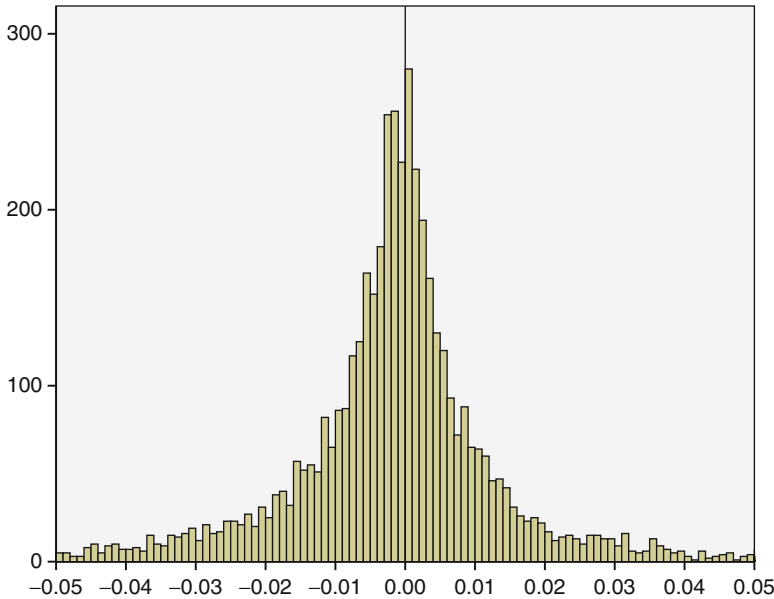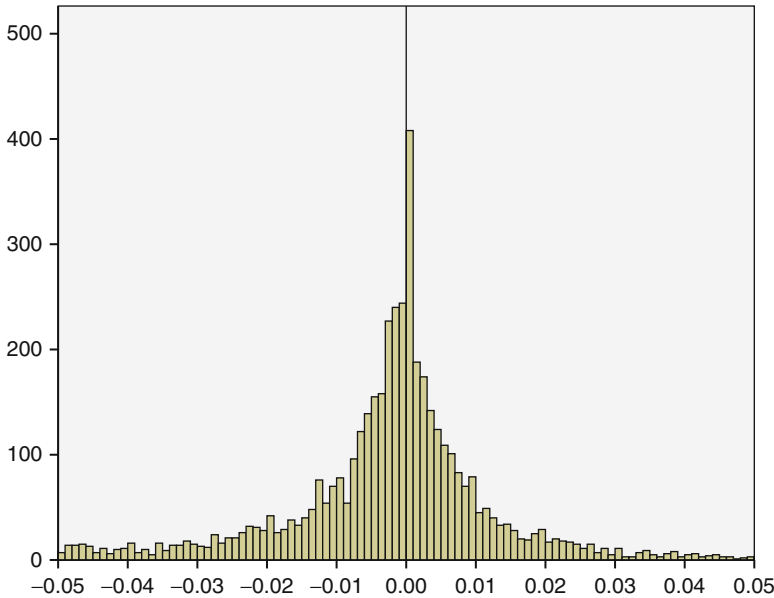
Fig. 1 Empirical distribution of differences between management and analyst forecasts of sale at the time of release of previous fiscal year's financial statements. Difference between management and analyst forecasts is defined as management forecasts provided by managers when they release the previous year's financial statements minus analyst forecasts at the end of March. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.002 and the location of zero on the horizontal axis is marked with a *line*. The *vertical axis labeled frequency* represents the number of observations in each difference between management and analyst forecasts

Table 6 indicates the standard differences of DMAF. The statistical tests again confirm the significance of the irregularity near zero, except for the interval immediately to the left of zero in case of net income. For sales, EBET, and net income, the standardized differences for the intervals immediately to the left of zero are −5.154 (8.520), −4.437 (8.837), and −1.273 (7.472), respectively. Thus, the null hypothesis that the distribution is smooth is rejected. These results imply that management forecasts issued along with the release of semi-annual financial statements are slightly higher than consensus analyst forecasts at the end of September.

The evidence shows that management forecasts released along with the announcements of previous fiscal year's or semi-annual financial statements are slightly higher than consensus analyst forecasts released at the end of March or September. It implies that managers have two incentives for issuing management forecasts. First, managers have an incentive to avoid negative surprises in the future by issuing conservative management forecasts. In this context, surprise is defined as the difference between actual earnings to be announced in the next year and analyst forecasts. Conservative management forecasts may enable managers to guide
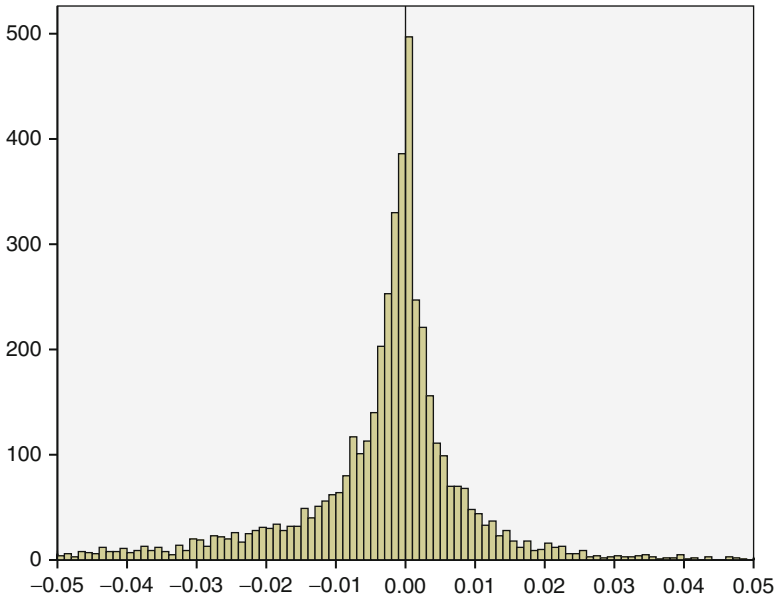
Fig. 2 Empirical distribution of differences between management and analyst forecasts of EBET at the time of release of previous fiscal year's financial statements. Difference between management and analyst forecasts is defined as management forecasts provided by managers when they release the previous year's financial statements minus analyst forecasts at the end of March. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.001 and the location of zero on the horizontal axis is marked with the *line*. The *vertical axis labeled frequency* represents the number of observations in each difference between management and analyst forecasts

consensus analyst forecasts downward. Second, managers have an incentive to exceed consensus analyst forecasts to avoid negative surprises at the time by releasing management forecasts that are higher than consensus analyst forecasts. Both the incentives have one thing in common, that is, to avoid negative surprises, both in the future and present. These incentives result in expectation management, which causes managers to release management forecasts that are slightly higher than consensus analyst forecasts.

4.2 Analysts' Herding Around Management Forecasts

To investigate whether analysts herd around management forecasts in a timely manner after the release of management forecasts, this paper analyzes the daily difference between management and consensus analyst forecasts (DMAF) of net income for 25 days.

Fig. 3 Empirical distribution of differences between management and analyst forecasts of net income at the time of release of previous fiscal year's financial statements. Difference between management and analyst forecasts is defined as management forecasts provided by managers when they release the previous year's financial statements minus analyst forecasts at the end of March. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.001 and the location of zero on the horizontal axis is marked with the *line*. The *vertical axis labeled frequency* represents the number of observations in each difference between management and analyst forecasts

Table 5 Standardized difference

|	Sale	EBET	Net income
The interval immediately to the left of zero	−2.917**	−2.173**	−2.440**
The interval immediately to the right of zero	4.048**	2.965**	2.875**

Forecast error: management forecast that managers provide initially at the beginning of the fiscal year minus analyst forecast at the end of March. We use consensus forecasts as analyst forecasts. All variables are divided by market value of equity at the end of March
** denotes significance at 1 % levels

First, we investigate DMAF by sorting samples based on whether management forecasts result in positive or negative surprise. In this analysis, positive (negative) surprise is when management forecasts for net income released at time t are higher (lesser) than consensus analyst forecasts for net income at time t.

Figure 7 shows the mean and median DMAF, as distinguished between positive and negative surprises. If management forecasts released at time t are higher (lesser) than consensus analyst forecasts at t, we include the sample into positive (negative) surprise's portfolio. Figure 7 indicates that for positive (negative)

Fig. 4 Empirical distribution of difference between management and analyst forecasts of sale at the time of release of semi-annual financial results. Difference between management and analyst forecasts is defined as management forecast provided by managers along with the release of semi-annual financial statements minus analyst forecast at the end of September. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.002 and the location of zero on the horizontal axis is marked with the *line*. The *vertical axis labeled frequency* represents the number of observations in each difference in management and analyst forecasts

surprise portfolio, DMAF gradually decreases (increases) from t to $t + 25$. For positive surprise portfolio, mean DMAF at t and $t + 25$ is 1.05 % and 0.54 %, respectively. For negative surprise portfolio, mean DMAF at t and $t + 25$ is -1.88 % and -1.09 %, respectively. Thus, these results show that consensus analyst forecasts gradually move toward management forecasts. It implies that analysts herd around management forecasts.

Then, we examine DMAF by sorting the sample based on the time of release of management forecasts, that is, management forecasts released with the announcement of previous fiscal year's financial statements, and the ones that are released with the announcement of semi-annual financial statements.

Figure 8 reports the mean and median DMAF for positive surprise management forecasts sorted based on the time of release. Figure 4 indicates that DMAF gradually decreases from t to $t + 25$. For management forecasts that are issued with previous year's financial results, mean DMAF at t and $t + 25$ is 1.10 % and

Fig. 5 Empirical distribution of difference between management and analyst forecasts of EBET at the time of release of semi-annual financial results. Difference between management and analyst forecasts is defined as management forecast provided by managers along with the release of semi-annual financial statements minus analyst forecast at the end of September. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.001 and the location of zero on the horizontal axis is marked with the *line*. The *vertical axis labeled frequency* represents the number of observations in each difference in management and analyst forecasts

0.60 %, respectively. For management forecasts that are announced with semi-annual financial results, mean DMAF at t and $t + 25$ is 1.01 % and 0.49 %, respectively.

Figure 9 shows the mean and median DMAF for negative surprise management forecasts, sorted based on the time of release. Figure 5 indicates that DMAF gradually increases from t to $t + 25$. For management forecasts that are issued with previous year's financial results, mean DMAF at t and $t + 25$ is 1.10 % and 0.60 %, respectively. For management forecasts that are announced with semi-annual financial results, mean DMAF at t and $t + 25$ is 1.01 % and 0.49 %, respectively.

Figures 8 and 9 provide evidence that DMAF gradually approaches zero from t to $t + 25$. This implies that analysts herd around management forecasts by revising analyst forecasts after the release of management forecasts.

Finally, we analyze the herding of analysts around management forecasts by sorting DMAF based on size, that is, market value of equity at the end of prior fiscal year. First, we construct five portfolios for each year based on market value of equity at the end of each prior fiscal year. Then, we merge the five portfolios over an

Fig. 6 Empirical distribution of difference between management and analyst forecasts of net income at the time of release of semi-annual financial results. Difference between management and analyst forecasts is defined as management forecast provided by managers along with the release of semi-annual financial statements minus analyst forecast at the end of September. We use consensus forecasts as analyst forecasts. All variables are scaled by market value of equity at the end of the previous fiscal year. The distribution interval width is 0.001 and the location of zero on the horizontal axis is marked with the *line*. The *vertical axis labeled frequency* represents the number of observations in each difference in management and analyst forecasts

Table 6 Standardized difference

	Sale	EBET	Net income
The interval immediately to the left of zero	−5.154**	−4.437**	−1.273
The interval immediately to the right of zero	8.520**	8.837**	7.472**

Forecast error: management forecast that managers provide initially at the beginning of the fiscal year minus analyst forecast at the end of March. We use consensus forecasts as analyst forecasts. All variables are divided by market value of equity at the end of March
** denotes significance at 1 % levels

entire period. In Figs. 10 and 11, size 1 and 5 denote the portfolios that are classified into the smallest and largest sizes, respectively. We restrict the sample considered in Figs. 10 and 11 to those management forecasts that are released with the announcement of prior fiscal year's financial statements.

Figure 10 indicates the mean and median of DMAF with positive surprise. For sample 1 portfolio with the lowest market value of equity, the mean DMAF at t and $t + 25$ is 1.60 % and 1.10 %, respectively. For sample 5 portfolio with the highest market value of equity, the mean DMAF at t and $t + 25$ is 0.45 % and 0.12 %,
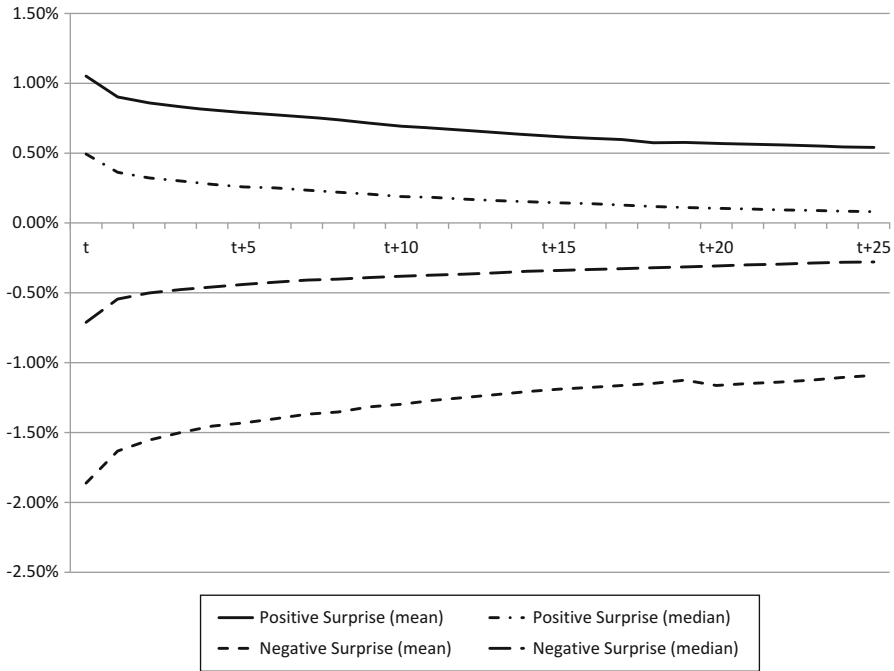
Fig. 7 Difference between management and consensus analyst forecasts (DMAF) of net income sorted based on positive or negative surprises. DMAF is scaled by market value of equity at the previous fiscal year end. We include the sample into positive (negative) surprise's portfolio, if management forecasts released at t are higher (lesser) than consensus analyst forecasts at t. The *horizontal axis* shows number of days relative to the day when management forecasts are issued

respectively. The results show that DMAF gradually approaches zero irrespective of size.

Figure 11 reports the mean and median of DMAF with negative surprise. For sample 1 portfolio with the lowest market value of equity, the mean DMAF at t and $t + 25$ is -1.88 % and -1.23 %, respectively. For sample 5 portfolio with the highest market value of equity, mean DMAF at t and $t + 25$ is -0.57 % and -0.27 %, respectively. The results show that DMAF gradually approaches zero irrespective of size.

The results indicated in Figs. 10 and 11 imply that analysts revise their forecasts after the release of management forecasts. Thus, it proves that analysts herd around management forecasts.

Thus, the empirical results show that DMAF gradually approaches zero after the release of management forecasts by firms, which means that analysts herd around management forecasts in Japan.
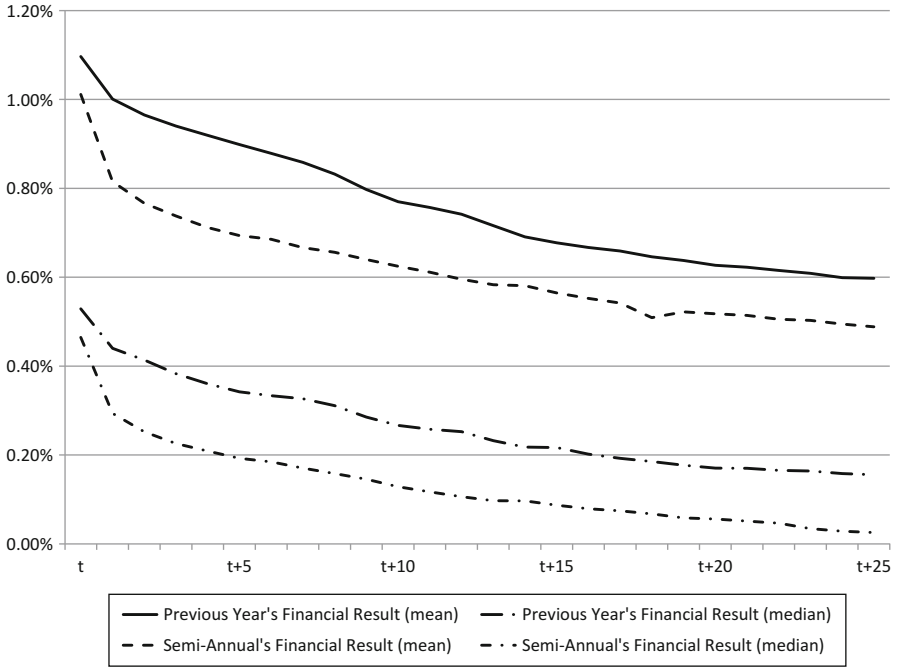
Fig. 8 Difference between management and consensus analyst forecasts (DMAF) of net income with positive surprise, sorted by the time of release of management forecasts. DMAF is scaled by market value of equity at previous fiscal year end. We include the sample into positive (negative) surprise's portfolio, if management forecasts released at t are higher (lesser) than consensus analyst forecasts at t. The *horizontal axis* shows the number of days relative to the day when management forecasts are issued
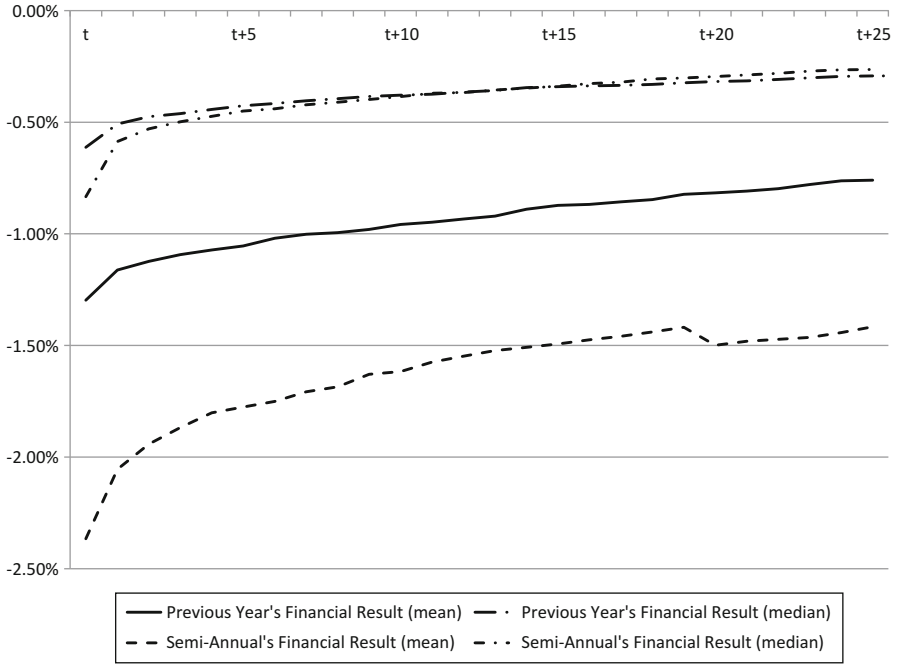
Fig. 9 Difference between management and consensus analyst forecasts (DMAF) of net income with negative surprise, sorted by the time of release of management forecasts. DMAF is scaled by market value of equity at previous fiscal year end. We include the sample into positive (negative) surprise's portfolio, if management forecasts released at *t* are higher (lesser) than consensus analyst forecasts at *t*. The *horizontal axis* shows the number of days relative to the day when management forecasts are issued
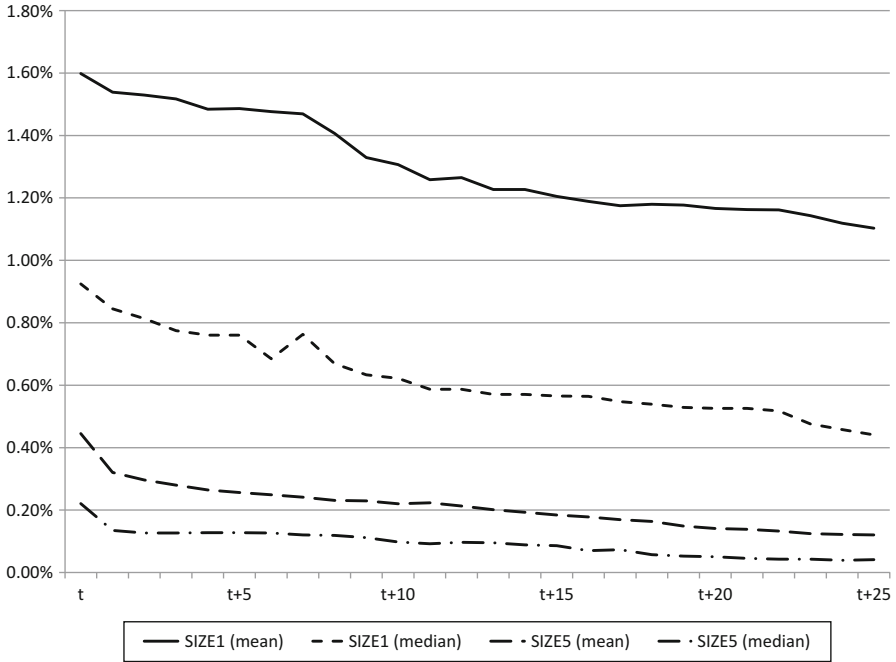
Fig. 10 Difference between management and consensus analyst forecasts (DMAF) of net income. In this figure, we restrict the samples to meet two conditions. First, management forecasts are released when firms announce prior fiscal year's financial statements. Second, management forecasts issued at t are higher than consensus analyst forecasts at t. DMAF is scaled by market value of equity at previous fiscal year end. We include the sample into positive (negative) surprise's portfolio, if management forecasts released at t are higher (lesser) than consensus analyst forecasts at t. The *horizontal axis* shows the number of days relative to the day when management forecasts are issued
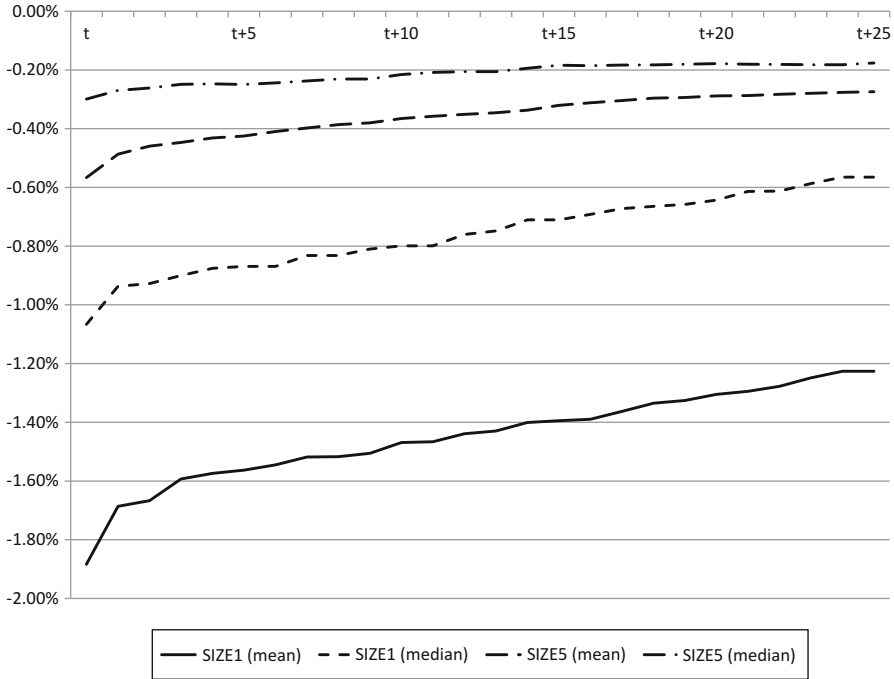
Fig. 11 Difference between management and consensus analyst forecasts (DMAF) of net income. In this figure, we restrict the samples to meet two conditions. First, management forecasts are released when firms announce prior fiscal year's financial statements. Second, management forecasts issued at *t* are lesser than consensus analyst forecasts at *t*. DMAF is scaled by market value of equity at previous fiscal year end. We include the sample into positive (negative) surprise's portfolio, if management forecasts released at *t* are higher (lesser) than consensus analyst forecast at *t*. The *horizontal axis* shows number of days relative to the day when management forecasts are issued

5 Conclusion

This study provides evidence that management forecasts released by firms slightly exceed consensus analyst forecasts. This in turn implies that managers are driven by certain incentives when they release management forecasts. One of the incentives that managers have is to avoid any negative surprises at the time of the announcement of the current fiscal year's financial results in the future. Thus, to avoid such negative surprises in the future, managers would like to manage analyst expectations by releasing conservative management forecasts. Another incentive that managers have is the avoidance of negative surprises that occur when management forecasts are lesser than consensus analyst forecasts at the time. Thus, managers tend to release management forecasts that are higher than consensus analyst forecasts to avoid negative surprises.

Moreover, this study reveals that analysts indeed revise their forecasts after the release of management forecasts, by examining the daily differences between management and consensus analyst forecasts. Thus, it is safe to say that in the Japanese capital market, analysts herd around management forecasts. This finding is further substantiated by the fact that Japanese stock exchanges strongly recommend that all listed firms release management forecasts, which indicates the central role of management forecasts in Japan. This is in definite contrast to the U.S. capital market, where analysts herd around the forecasts of other analysts, and the role of analyst forecasts is more pivotal.

One of the major reasons for the central role that management forecasts play in Japan is the trust that analysts place on management forecasts issued by managers. Analysts believe that managers in Japanese firms are self-disciplined, as they strive to avoid negative surprises, both at the moment and in the future. Thus, analysts are less hesitant to revise their forecasts based on managerial direction, and tend to herd around management forecasts.

A similar self-disciplined enforcement is also applicable on the disclosure system of management forecasts in Japan. Though stock exchanges strongly recommend firms to issue management forecasts, it is not mandated by any law. Nevertheless, more than 95 % of listed firms provide management forecasts. Thus, it can be deduced that the Japanese disclosure system that are based on self-discipline greatly influence the significance of management forecasts in Japan.

References

Anilowski, C. A., Feng, M., & Skinner, D. J. (2007). Does earnings guidance affect market returns? The nature and information content of aggregate earnings guidance. *Journal of Accounting and Economics, 44*(1–2), 37–63.

Athanasakou, V., Strong, N. C., & Walker, M. (2011). The market reward for achieving analyst earnings expectations: Does managing expectations or earnings matter? *Journal of Business Finance and Accounting, 38*(1–2), 58–94.

Baginski, S. P., & Hassell, J. M. (1990). The market interpretation of management earnings forecasts as a predictor of subsequent financial analyst forecast revision. *The Accounting Review, 65*(1), 175–190.

Bartov, E., Givoly, D., & Hayn, C. (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics, 33*(2), 173–204.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99–126.

Conroy, R. M., Harris, R. S., & Park, Y. S. (1998). Fundamental information and share prices in Japan: Evidence from earnings surprises and management predictions. *International Journal of Forecasting, 14*(2), 227–244.

Conroy, R., Kenneth, E., & Harris, R. S. (2000). A test of the relative pricing effects of dividends and earnings: Evidence from simultaneous announcements in Japan. *Journal of Finance, 55*(3), 1199–1227.

Cotter, J., Tuna, I., & Wysocki, P. D. (2006). Expectation management and beatable targets: How do analysts react to explicit earnings guidance? *Contemporary Accounting Research, 23*(3), 593–624.

Darrough, M. N., & Harris, T. S. (1991). Do management forecasts of earnings affect stock prices in Japan? In W. T. Ziemba, W. Bailey, & Y. Hamao (Eds.), *Japanese financial market research*. Amsterdam: North Holland.

Das, S., Kim, K., & Patro, S. (2011). An analysis of managerial use and market consequences of earnings management and expectation management. *The Accounting Review, 86*(6), 1935–1967.

Feng, M., & McVay, S. (2010). Analysts' incentives to overweight management guidance when revising their short-term earnings forecasts. *The Accounting Review, 85*(5), 1617–1646.

Graham, J. R. (1999). Herding among investment newsletters: Theory and evidence. *Journal of Finance, 54*(1), 237–268.

Graham, J. R., Harvey, C. R., & Rajagopal, S. (2005). TheEconomic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics, 40*(1), 3–73.

Hassell, J. M., & Jennings, R. H. (1986). Relative forecast accuracy and the timing of earnings forecast announcements. *The Accounting Review, 61*(1), 58–75.

Hassell, J. M., Jennings, R. H., & Lasser, D. J. (1988). Management earnings forecasts: Their usefulness as a source of firm-specific information to security analysts. *The Journal of Financial Research, 11*(4), 303–319.

Hong, H., Kubik, J. D., & Salomon, A. (2000). Security analysts' career concerns and herding of earnings forecasts. *Rand Journal of Economics, 31*(1), 121–144.

Kasznik, R., & McNichols, M. F. (2002). Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research, 40*(3), 727–759.

Kato, K. D., Skinner, J., & Kunimura, M. (2009). Management forecasts in Japan: An empirical study of forecasts that are effectively mandated. *The Accounting Review, 84*(5), 1575–1606.

Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review, 77*(3), 483–514.

Ota, K. (2006). Determinants of bias in management earnings forecasts: Emprical evidence from Japan. In G. N. Gregoriou & M. Gaber (Eds.), *International accounting: standards, regulations, and financial reporting* (pp. 267–294). Massachusetts: Elsevier.

Ota, K. (2010). The value relevance of management forecasts and their impact on analysts' forecasts: Empirical evidence from Japan. *ABACUS, 46*(1), 28–59.

Richardson, S., Teoh, S. H., & Wysocki, P. D. (2004). The walk-down to beatable analyst forecasts: The role of equity issuance and insider trading incentives. *Contemporary Accounting Research, 21*(4), 885–924.

Stickel, S. E. (1990). Predicting individual analyst earnings forecasts. *Journal of Accounting Research, 28*(2), 409–417.

Suda, K., & Hanaeda, H. (2008). Financial reporting in Japan: Analysis by survey. *Security Analyst Journal, 46*(5), 51–69 (in Japanese).

Trueman, B. (1994). Analysts forecasts and herd behavior. *Review of Financial Studies, 7*(1), 97–124.

Vesano, T., & Trueman, B. (2013). Expectation management. Working Paper, Yale University School of Management.

Welch, I. (2000). Herding among security analysts. *Journal of Financial Economics, 58*(3), 369–396.

Williams, P. A. (1996). The relation between a prior earnings forecast by management and analyst response to a current management forecast. *The Accounting Review, 71*(1), 103–115.

Management Incentives to Publish Aggressive or Conservative Earnings Forecasts and Disclosure Policy Change

Tomohiro Suzuki

Abstract This study illustrates some of the motives and incentives of managers who make aggressive/conservative forecasts and examines the circumstances in which managers revise their forecasting strategies. We observe that companies under which managers reap the benefits of high stock prices in their remuneration, distressed companies, companies that operate under strong stock market pressure, and companies that plan to raise funds from stockholders during the forecasted fiscal year all tend to issue aggressive forecasts, whereas companies that operate under strong pressure from creditors tend to publish conservative forecasts. This study shows that, when the management is being replaced, companies that reported an ordinary profit in the previous fiscal year by the predecessor reduce the aggressiveness of their forecasts, whereas those that reported an ordinary loss report aggressive forecasts. In addition, companies that reported a large positive forecast error in the previous fiscal year issue less aggressive forecasts, whereas companies that reported a large negative forecast error issue aggressive forecasts.

Keywords Aggressive forecast • Conservative forecast • Forecast error • Forecast revision • Management replacement

1 Introduction

As noted in the previous chapter, managements forecasts disclosure in Japan is effectively mandated, and most listed firms report management forecasts. Under these circumstances, what type of performance forecast information is issued by

---

T. Suzuki (✉)
Faculty of Business Administration, Asia University, 5-24-10 Sakai, Musashino,
Tokyo 180-8629, Japan
e-mail: tsuzuki@asia-u.ac.jp

managements of Japanese companies? This chapter analyzes this issue. Specifically, it illustrates some of the motives and incentives for managements to make aggressive/conservative forecasts and investigates the circumstances under which they revise these forecasted strategies.[1]

This analysis focuses on two main issues. First, inadequate research has been conducted on managements' motives and incentives to issue aggressive forecasts. Goto (1997) demonstrates that the proportion of companies that forecast higher profits compared to their previous performance is higher than in the ratio of actual performance. At the same time, managers are expected to recognize that, in many cases, the securities markets react by penalizing the non-achievement of forecasts.[2] Therefore, this reaction should incentivize managers to issue conservative forecasts. However, as noted above, this is not the dominant case. We surmise that managers issue these forecasts on the basis of certain motives and incentives while being fully aware of the investor responses. This study aims at clarifying this hypothesis.

Second, we illustrate the circumstances under which managements revise their forecasting strategies. Houston et al. (2010) highlight the recent increase in the number of companies that discontinued the issue of quarterly performance forecasts in the US, and analyze the factors and motives underlying this discontinuation. They demonstrate the increased incidence of discontinuation under the following conditions: poor performance, timing of managements being replaced, a large proportion of companies in the industry that do not issue performance forecasts, and a variety of analysts' estimates. In turn, Feng and Koch (2010) examine companies that fall short of their quarterly performance forecasts. Their analysis of these companies' subsequent forecasting strategies shows that poor performers are more likely to discontinue forecasts. However, both studies relate to US companies, which are subject to voluntary performance forecasts. At Japanese companies, which also issue forecasts on a voluntary basis, but where performance forecast reporting is institutionalized effectively, it is possible that managements select different options.

Although persistence is observed in the level of managements forecast errors (e.g. Gong et al. 2011; Ota 2006), companies also revise their forecasting strategies. This is illustrated in Tsumuraya (2009), who presents cases of such Japanese companies. However, the circumstances under which mangers revise their

---

[1] The analysis in this study focuses on the extent to which profits increase or decrease compared with the actual performance in the previous fiscal year. This can be expressed using the following formula: (forecasted ordinary profit − ordinary profit in the previous fiscal year)/total assets at the end of the previous fiscal year. Following Kato et al. (2009), this variable is referred to as MFI (Management Forecast Innovation). A positive MFI implies aggressive forecasting, while a negative MFI implies conservative forecasting.

[2] Reference is made to Matsumoto (2002) and Brown and Caylar (2005) that managements have a strong incentive to avoid negative surprises. Previous research also demonstrates that the negative surprise of not meeting a forecast elicits a more significant market response than a positive surprise (e.g., Skinner and Sloan 2002).

performance forecasting strategies remain ambiguous. In addition, our study illustrates some of the strategies that managements choose in relation with prospective information within an environment in which a disclosure system of performance forecasts is in place.

Our study makes three main contributions. First, it illustrates some of the major factors that influence a manager's business planning skills by analyzing the extent to which forecast performance increases or decreases compared with the actual performance in the previous fiscal year. Majority of conventional research focuses on the gap between forecasted and actual performance observed ex post and examines the various factors that have an impact on the accuracy of these forecasts. However, previous studies have not considered the skills that give rise to forecast errors/accuracy. Generally speaking, to produce accurate forecasts, managements must create and implement appropriate business plans. Although it is difficult to clearly distinguish between these two skills, it is possible to analyze some of the factors that influence planning skills by focusing on the gap between forecasted and previous actual performance, or MFI. Kato et al. (2009) also produce similar results, but their sample is limited to those companies that issue higher forecasted earnings and failed to meet them. This study relaxes this condition, thus allowing for more general information to be captured.

In addition, our study suggests that other factors may explain the persistence of forecast errors than those provided so far. Although a persistence of forecast errors has been observed in US and Japanese companies (e.g. Gong et al. 2011; Ota 2006), little evidence has clarified the factors that underlie them. Noting this, Gong et al. (2011) illustrate that this persistence cannot be exclusively explained by the factors that have been analyzed in prior research (e.g., managements' motives, company characteristics) and argue that unintended factors (e.g., managements' information processing skills) play a major role. In contrast, our study analyzes the factors that impact the level of forecasted values issued by managements (managements' planning skills), not the level of forecast's accuracy (managements' planning and execution skills) and demonstrates that these factors caused by the managements' planning skills may result in the persistence of forecast errors.

Second, by analyzing the timing of revisions to the manager's disclosure strategies on the performance forecasts, we demonstrate that the level of forecasted earnings is interrupted under specific circumstances. This study, similar with others, observes that the average level of earnings forecasted by managements is subject to persistence. But, it illustrates that the level of forecasted earnings may be revised in the year in which top management is replaced and the following year in which firms experienced the large forecast error in the previous year. There is growing international interest in the disclosure of prospective information. In the event that disclosures are institutionalized, an indication of potential outcomes should provide useful suggestions when establishing such disclosures' system.

Third, we provide some suggestions on the use of forecasted information by illustrating managements' motives who issue aggressive/conservative forecasts and the timing of revisions. Investors, including securities analysts, are thought to perceive the idiosyncrasies of every company's management forecasts based on

personal impressions and experience. This study statistically examines this issue and provides useful suggestions to investors in terms of forecasted information.

The remainder of this paper is structured as follows. Section 2 summarizes prior research on the basis of which we develop our hypotheses in Section 3. Section 4 provides a description of our test model and sample. Section 5 presents our analysis. Section 6 presents the results of our multivariate analysis. Section 7 concludes.

2 Prior Research

2.1 Factors Underlying the Disclosure of Performance Forecasts

Much of the conventional research that has analyzed the determinants of performance forecasts has focused on the variances between forecasted and actual performance observed ex post, and illustrates the various factors that influence forecast errors/accuracy (Ota 2006). However, previous studies have not considered the skills that give rise to forecast errors/accuracy. Generally speaking, to produce accurate forecasts, managements must create and implement appropriate business plans. Although it is difficult to clearly distinguish between these two skills, it is possible to analyze some of the factors that influence planning skills by focusing on the level of forecasted values issued by managements.

Analysis based on such a focus has been minimal. Kato et al. (2009) examine those companies that issued higher forecasted earnings and failed to meet them and their analysis of the determinants underlying poor performers' decisions. Therefore, the lower a company's profitability in the previous fiscal year, the more likely it is of issuing higher performance forecasts and not meeting them. In particular, this likelihood increases for companies that reported a net loss in the previous fiscal year. Scale also plays a role. The smaller the company, the more likely it is of issuing higher performance forecasts and not meeting them. In terms of ownership structure, the likelihood rises with increasing stockholdings by management, and institutional and foreign investors. This also applies to companies that failed to achieve their targets in the previous fiscal year.

2.2 Prior Research on the Revision of Forecasting Strategies

There is no available research that directly examines the revision of forecasting strategies in relation to Japanese companies; Houston et al. (2010) and Feng and Koch (2010) conduct research on US companies. Houston et al. (2010) highlight the recent increase in the number of companies that discontinued the issue of quarterly performance forecasts in the US, and analyze the factors and motives underlying

this discontinuation, the subsequent investment behavior, the use of alternative prospective information, and the accuracy of analysts' forecasts. The analysis of the factors and motives underlying the discontinuation of performance forecasts is of interest to our study. Their study focuses on earnings as a primary factor and highlights the increased incidence of discontinuing forecast information under poor performance. It also examines three underlying motives: the replacement of managers, industry trends, and the difficulty of forecasting. It concludes that three sets of circumstances increase the incidence of discontinuation: the timing of managements being replaced, the large proportion of companies in the industry that do not issue performance forecasts, and the wide dispersion of analysts' forecasts.

Following the research on performance forecasts by Hirst et al. (2008) and Feng and Koch (2010) analyze how the outcome of performance forecasts issued in one fiscal year impact those in subsequent years. Feng and Koch (2010) focus on managements' performance forecasting strategies in the fiscal years following the incidence of four negative outcomes (failure to achieve performance targets, poor expectations management vis-à-vis market participants, failure to mitigate information asymmetry, and market disappointment). Their analysis on non-achieved targets, which is of interest to our study, indicates the greater likelihood of discontinuing the issue of performance forecasts. Feng and Koch (2010) observe no statistical relationship between forecast accuracy and discontinuation of forecasts.

3   Hypothesis Development

3.1   Motives and Incentives of Managements That Issue Aggressive/Conservative Forecasts

As noted earlier, to date, minimal MFI-related research has been conducted. However, there are studies on managers using performance forecast announcements to manage expectations (e.g., Noma 2014). This suggests that managements may be influenced by certain motives and incentives when releasing performance forecast information. With this in mind, our study develops six hypotheses in relation to the motives and incentives for providing aggressive/conservative forecasts, considering, inter alia, research on forecast errors.

Our first hypothesis concerns managements that benefit from high stock prices in their remuneration. Many studies examine investor responses and demonstrate that forecasted earnings are positively related to stock prices and stock returns (e.g., Ota 2006). Therefore, we argue that managers who hold company stock or those who are granted stock options have an incentive to issue positive news to increase the value of their assets.

Hypothesis 1.1 Managers who benefit from high stock prices in their remuneration issue aggressive forecasts.

Our second hypothesis concerns financial distress. We argue that distressed companies have an incentive to issue positive news to convince the market of their improved performance. Following Kato et al. (2009), those companies that reported a net loss in the previous fiscal year are treated as distressed companies.

Hypothesis 1.2 Companies that report a net loss in the previous fiscal year issue aggressive forecasts.

Our third hypothesis concerns the pressure from creditors. Creditors may explicitly or implicitly urge managers to issue conservative forecasts with the intention of recoverability of their claims. In other words, because creditors are averse to operations being conducted on the basis of optimistic business plans that they consider unrealistic, they may require debt managers to produce not only solid business plans but also solid performance forecasts. We use the interest-bearing debt ratio as a proxy variable to measure the pressure from creditors.

Hypothesis 1.3 Companies that operate under strong pressure from creditors issue conservative forecasts.

Our fourth hypothesis concerns stock market influences. We argue that companies with high growth expectations in stock markets try to meet or beat those expectations, and thus have an incentive to issue positive news. We use the ratio of foreign stockholdings and the price-to-book (P/B) ratio as proxy variables to measure the pressure from stock markets. Foreign stockholders are viewed as relatively powerful stockholders in Japan; they have been widely used in studies of Japanese companies in recent years. However, as the ratio of foreign stockholdings tends to increase with company size, we complement this with the P/B ratio, which reflects the expectations of stock market participants.

Hypothesis 1.4 Companies that operate under strong pressure from stock markets issue aggressive forecasts.

Our fifth hypothesis concerns the procurement of funds. We argue that companies that plan to raise funds during the forecasted period have an incentive to issue positive news to improve their funding terms (Kim and Park 2012). We set the funding through both capital stock and interest-bearing debt as two variables.

Hypothesis 1.5 Companies that plan to raise funds during the forecasted fiscal year issue aggressive forecasts.

Our sixth hypothesis concerns the revision of forecasts during a fiscal year. Some Japanese companies revise their performance forecasts downward during the fiscal year to bring them closer to actual earnings. Companies that have made downward revisions in the past may again consider revisions during the current fiscal year as an option, and issue relatively aggressive forecasts at the start of the fiscal year. Conversely, there are companies that initially issue conservative

forecasts and make gradual upward revisions as business progresses. Such companies may issue conservative forecasts at the start of the fiscal year.[3]

Hypothesis 1.6 Companies that have made upward revisions in the past issue conservative forecasts whereas those that have made downward revisions issue aggressive forecasts.

3.2 Revision of Performance Forecasting Strategies

Although the circumstances under which managers revise their forecasting strategies are still unclear, possibilities are the replacement of managers, as shown in Houston et al. (2010) and the previous forecast errors, as shown in Feng and Koch (2010). However, this research demonstrates that in the US where the forecasts of performance earnings are voluntary, the likelihood of these being discontinued increases when managers are replaced or forecasts were missed. These circumstances are different in Japan, where most listed companies provide performance forecasts, even though it is requested by securities exchanges. Hence, we develop our hypotheses by speculating on the psychological factors that drive a manager.

The first is the psychological state of the new management. We argue that stockholders and other stakeholders surmise the nature and competence of the new management. The new manager issues his business policies and vision keeping this background in mind. Starting a fresh, the new manager must produce results to win the trust of stakeholders, which is why he may issue a conservative forecast that is achievable in his first fiscal year.

Hypothesis 2.1 Driven by the need to achieve their stated targets, newly appointed managers issue conservative forecasts.

Conversely, when a new manager undertakes responsibility in a growth scenario, for example, following the restructuring by his predecessor, he may make aggressive forecasts to accomplish his mission.

Hypothesis 2.2 Newly appointed managers issue aggressive forecasts with their sight set on company growth.

When a manager takes the responsibility for poor business performance by resigning, the successor's priority is to rebuild the business. Presumably, the newly appointed manager will try to reduce the losses or aim to make the company profitable from its early stages, particularly when losses have been reported by his predecessor. Having been placed in charge of revamping the business, the newly

---

[3] Revised forecasts closest to the end of the accounting fiscal year are used for interim revisions to avoid preannouncements.

appointed manager may issue aggressive forecasts to restore the company to positive profitability.[4]

Hypothesis 2.3 Newly appointed managers at companies that reported losses in the fiscal year prior to their appointment strive toward performance improvement, and thus issue aggressive forecasts.

As an additional timing issue for revisions, our study examines fiscal years prior to the fiscal that reported large forecast errors. Feng and Koch (2010) demonstrate that poor performers are more likely to discontinue the issue of performance forecasts in subsequent fiscal years, whereas this tendency is not observed for forecast accuracy. This suggests whether positive or negative variances between forecasted and actual performance matters to managers while formulating performance forecasting strategies. However, Lee et al. (2012) demonstrate that forecast accuracy and manager replacement are positively related. This suggests that the magnitude of the variances between forecasted and actual performance may also influence disclosure strategies, with the assumption that managements try to avoid replacement on account of their reporting of undesirable forecasted results. As a result, we develop our hypotheses taking both sign and size into consideration. Managements that missed their target by a considerable margin in the preceding fiscal year were mostly faced by a situation that they did not anticipate at the start of this period. We argue that when managements encounter such a situation, they revise their business plans (annual budget and medium- and long-term business plans) and performance forecasts for the subsequent fiscal years.

Hypothesis 2.4 Companies with large positive forecast errors in one fiscal year may issue aggressive forecasts in the following fiscal year by revising their business plans upward.

Hypothesis 2.5 Companies with large negative forecast errors in one fiscal year may issue conservative forecasts in the following fiscal year by revising their business plans downward.

4 Test Model and Sample

4.1 Test Model

We develop the following model to test the hypotheses presented in the previous section:

---

[4] We consider a manager to be replaced when this was put into effect within 3 months of the end of the fiscal year (up to the general meeting of stockholders). This is because we consider the newly appointed manager to bear responsibility for the forecasts relating to the fiscal year subject to analysis. We determine whether a manager was replaced on the basis of changes to company representatives in NEEDS-Cges provided by Nikkei Digital Media Inc.

$$
\begin{aligned}
\text{MFI}_t = {} & \alpha + \beta_1 \text{SOD}_{t-1} + \beta_2 \text{MOWN}_{t-1} + \beta_3 \text{LOSS}_{t-1} + \beta_4 \text{Debt}_{t-1} + \beta_5 \text{FOWN}_{t-1} \\
& + \beta_6 \text{PBR}_{t-1} + \beta_7 \text{Debt\_Finance}_t + \beta_8 \text{Equity\_Finance}_t + \beta_9 \text{MFR\_POSI}_{t-1} \\
& + \beta_{10} \text{MFR\_NEGA}_{t-1} + \beta_{11} \text{MCHG}_t + \beta_{12} \text{MCHG\_OILOSS}_t \\
& + \beta_{13} \text{MFE\_LPOSID}_{t-1} + \beta_{14} \text{MFE\_LNEGAD}_{t-1} + \gamma \text{Controls} + \varepsilon_t
\end{aligned}
$$

We set MFI as the dependent variable.[5] This reflects the degree of higher/lower forecasted earnings in relation to previous fiscal year performance. Table 1 presents the variables used to test each hypothesis. Taking into account the variables used in studies on forecast errors and forecast accuracy, the model additionally incorporates macroeconomic environment, scale, profitability, growth, R&D investment, capital investment, and previous fiscal year MFI as control variables. The industry sector Business Survey Index (BSI) values for large corporations provided in the Business and Investment Survey of Incorporated Enterprises (Ministry of Finance) are used as proxies for the macroeconomic environment variable.[6] The MFI of the previous fiscal year is included to take persistence into consideration. Although previous research provides evidence that forecast errors are subject to persistence, the persistence may also be, in part, due to MFI persistence.

4.2 Sample

Our study provides an analysis of the forecasted performance data of Japanese firms for the 7-year period of 2005–2011.[7] We obtained the financial, stock price, and forecasted management data from NEEDS-FinancialQUEST and the data on the introduction of stock option plans and management changes from NEEDS-Cges, both provided by Nikkei Digital Media Inc.[8] The industry sector BSI values for large corporations provided in the Business and Investment Survey of Incorporated Enterprises, which we use as indicators of the macroeconomic environment, were obtained from the website of the Cabinet Office.

---

[5] We set the first forecast issued within 3 months of the end of the fiscal year as the initial forecast. Initial forecast information issued thereafter is excluded from the sample.

[6] This survey is conducted every quarter and we used the survey results applicable to each company's accounting fiscal year. The survey considers three forecast horizons: the current state, 3 months ahead, and 6 months ahead. Although not indicated in the test results, no discrepancies were noted when using the values for 3 and 6 months ahead. Further, the survey covers both corporations' business conditions and domestic economic conditions. We applied the corporations' business conditions, as this data is available for the entire fiscal year subject to analysis.

[7] We classify years at the end of June. In others words, data relating to accounting fiscal year that ends between July 2009 and June 2010 are treated as 2010 data.

[8] The financial data were taken from consolidated financial statements. Company-only data were used in cases where companies did not prepare consolidated financial statements.

Table 1 Variables

Variable		Description (method of determination)
MFI	Dependent variable	(Forecasted ordinary profit − previous fiscal year's ordinary profit)/total assets at the end of the previous fiscal year
SOD	Hypothesis 1.1	Dummy variable of 1 if a stock option plan is in place
MOWN	Hypothesis 1.1	Ratio of stocks held by executives
LOSS	Hypothesis 1.2	Dummy variable of 1 if a net loss is reported
Debt	Hypothesis 1.3	Interest-bearing debt ratio = interest-bearing debt/total assets
FOWN	Hypothesis 1.4	Ratio of stocks held by foreign stockholders
PBR	Hypothesis 1.4	Price-to-book (P/B) ratio. The denominator is net assets less minority interests and stock warrants
Debt_Finance	Hypothesis 1.5	Amount of debt finance raised in the forecasted fiscal year/total assets at the end of the previous fiscal year
Equity_Finance	Hypothesis 1.5	Amount of equity finance raised in the forecasted fiscal year/total assets at the end of the previous fiscal year
MFR_POSI	Hypothesis 1.6	Value of MFR (management forecast revision) for companies with upward revision during the fiscal year; zero for companies with no upward revision. MFR = (final forecasted ordinary profit − initial ordinary profit forecast)/total assets at the end of the previous fiscal year
MFR_NEGA	Hypothesis 1.6	Value of MFR for companies with downward revision during the fiscal year; zero for companies with no downward revision
MCHG	Hypothesis 2.1, Hypothesis 2.2	Dummy variable of 1 if a manager is replaced
MCHG_OILOSS	Hypothesis 2.3	Dummy variable of 1 if a manager is replaced and an ordinary loss is reported
MFE_LPOSID	Hypothesis 2.4	Dummy variable of 1 for companies that report a positive management forecast error (MFE) in the previous fiscal year, and if at or above the top quartile. MFE = (ordinary profit − initial ordinary profit forecast)/total assets at the end of the previous fiscal year
MFE_LNEGAD	Hypothesis 2.5	Dummy variable of 1 for companies that report a negative MFE in the previous fiscal year, and if at or below the bottom quartile
Macro_Forecast	Control variable	Industry sector BSI value for large corporations provided in the Business and Investment Survey of Incorporated Enterprises (Ministry of Finance) applicable to each company's accounting fiscal year
SIZE		Natural logarithm of total assets
ROA		Return on assets based on net operating income. Net operating income = operating income + interest/dividend income + income/(loss) from equity method investments
SGrowth		Sales growth = (sales − sales in the previous fiscal year)/sales in the previous fiscal year
RDINT		Sales to R&D ratio = R&D expenses/sales
CAPINT		Sales to capital investment ratio = Amount of capital investment/sales

Using these databases, we extracted a sample that fulfils five conditions:

1. The accounting fiscal year is 12 months;
2. The financial and management forecast data are consistent in terms of whether they are consolidated or non-consolidated;
3. Data on following performance forecast are released within 3 months to end of the accounting fiscal year;
4. Data on interim revisions to performance forecasts are available; and
5. The financial, stock price, and management forecast data necessary for the analysis are available.

We then delete the top and bottom 0.5 percentiles as outliers for each variable used in the multivariate analysis and arrive at a sample of 18,580 observations.

5 Status Analysis

Before conducting a multivariate analysis, we conduct a status analysis on the basis of four perspectives. First, we divide the sample into higher forecasted earnings (MFI ≥ 0) and lower forecasted earnings (MFI < 0) to identify any trends in factors such as the MFI, forecasted achievement quotient, and the level of forecast errors of both categories. Second, we examine the MFI of companies where a manager has been replaced. Third, we examine the MFI of companies with large variances in the forecasts of the previous fiscal year. Finally, we analyze the MFI persistence.

5.1 Performance Forecasts of Companies with Higher/Lower Forecasted Earnings

Although previous research provides evidence that a large proportion of companies issue higher forecasted earnings, we first examine the proportion of such companies to ascertain the persistence of this trend in recent years. Figure 1 shows the proportion of companies with higher forecasted earnings and their MFIs, along with that of companies with lower forecasted earnings. We observe that, while this proportion fell somewhat following the Lehman Shock, approximately 75 % of the companies provided higher forecasted earnings in other fiscal years, with this proportion at around 73 % for the entire period. Compared with the proportion of companies with higher actual earnings (approximately 58 %) in the same fiscal year, we observe a larger proportion of companies with higher forecasted earnings.

The MFI of companies with higher forecasted earnings shows a rising trend since 2009, and was just over 1 % of the previous year total assets. Conversely,
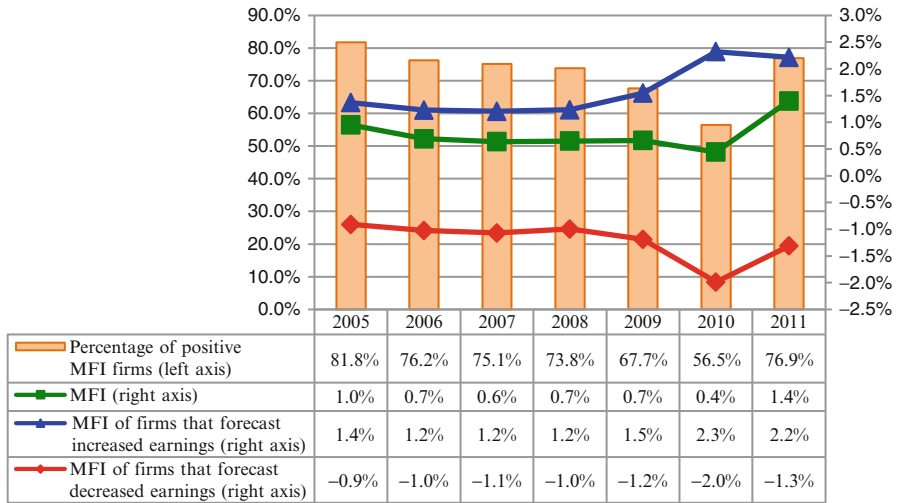
Fig. 1 The percentage of positive MFI firms

Table 2 Difference between positive MFI firms and negative MFI firms

Panel A: The percentage of firm that beat or meet management forecast earnings

	2005	2006	2007	2008	2009	2010	2011
Positive MFI firms (%)	49.40	49.26	50.08	35.16	18.52	47.54	57.14
Negative MFI firms (%)	65.63	63.12	59.08	49.86	26.23	56.93	66.07
Difference (%)	−16.23	−13.86	−9.00	−14.69	−7.71	−9.39	−8.93
t-value	−6.70	−6.23	−4.03	−6.75	−4.43	−4.84	−4.06

Panel B: Management forecast error (MFE)

	2005	2006	2007	2008	2009	2010	2011
Positive MFI firms (%)	−0.20	−0.34	−0.37	−1.04	−2.84	−0.74	0.08
Negative MFI firms (%)	0.45	0.43	0.37	−0.18	−2.40	0.17	0.47
Difference (%)	−0.64	−0.77	−0.75	−0.87	−0.45	−0.91	−0.39
t-value	−5.93	−7.22	−6.87	−8.30	−2.99	−7.33	−3.29

while indicating a low value in 2010, the MFI of companies with lower forecasted earnings was just under 1 % in overall terms.

By comparing companies with higher/lower forecasted earnings, we examine the extent of actual performance to the initial forecasted performance (Table 2, Panel A). Following the impact of the Lehman Shock, both categories present a marginal value for 2009. However, on ignoring fiscal year 2009, the achievement quotient of companies with higher forecasted earnings is approximately 50 % (approximately 43 % if 2009 data is included). This quotient is approximately 60 % for companies with lower forecasted earnings (approximately 53 % if 2009 is included). We conclude that, in terms of meeting initial forecasts, the quotient was statistically higher for companies with lower forecasted earnings.

	2005	2006	2007	2008	2009	2010	2011
Firm Numbers with Management Replacement(left axis)	321	395	359	374	372	419	343
Firm Numbers with Non-Replacement(left axis)	2,317	2,239	2,288	2,241	2,294	2,294	2,324
Percentage of Firms with Management Replacement(right axis)	12.2%	15.0%	13.6%	14.3%	14.0%	15.4%	12.9%
Percentage of Firms with Management Replacement and Loss(right axis)	1.1%	1.4%	1.2%	1.6%	1.4%	3.7%	3.0%
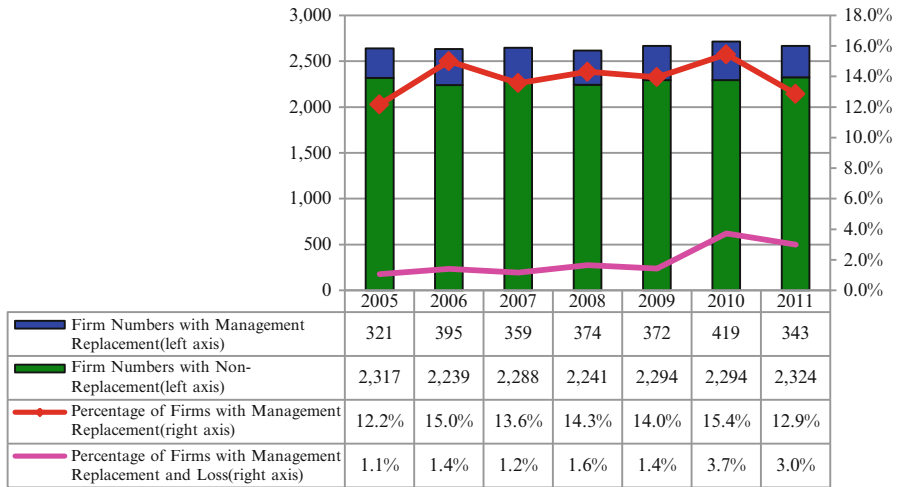
Fig. 2 The proportion of management replacements

Companies with higher forecasted earnings also show negative values based on MFE, with cases of the achievement quotient falling below 50 %, whereas companies with lower forecasted earnings show positive values (Table 2, Panel B). The difference in the mean value of each category, at around 1 %, is also statistically significant.

5.2 MFI of Companies with Management Replacement

Our study examines the replacement of managers in relation to the timing of performance forecast revisions. First, we ascertain the frequency of replacements (Fig. 2). During the period of this analysis, managers from approximately 13.9 % of the sample were replaced. Although there are years such as 2006 and 2010, when the proportion of replacements was somewhat higher, managers were replaced roughly every 7 years on an average.

The incidence of a predecessor reporting an ordinary loss was just under 2 % of the sample. Although these remain rare cases, it is noteworthy that this proportion has been increasing in the past 2 years.

We also examine whether the MFI of companies where a manager was replaced differs from that of companies where manager was retained. Table 3 illustrates the MFI of these two company categories. Companies with replaced managers are classified according to whether their predecessors reported an ordinary profit. A very large MFI of companies that replaced a manager and reported an ordinary loss is notable. We noted earlier that the MFI of companies with higher forecasted

Table 3 MFI of firms with management replacement

	2005	2006	2007	2008	2009	2010	2011
(1) Firms with management replacement (%)	0.67	0.34	0.52	0.39	0.14	−0.64	0.71
(2) Firms with management replacement and loss (%)	4.48	4.94	4.34	4.91	6.39	4.50	5.70
(3) Non-replacement firms (%)	0.95	0.67	0.63	0.64	0.55	0.37	1.33
Difference between (1) and (3) (%)	−0.28	−0.32	−0.11	−0.25	−0.40	−1.01	−0.62
t-value	−2.97	−4.26	−1.27	−2.93	−4.31	−6.93	−4.94
Difference between (2) and (3) (%)	3.53	4.28	3.70	4.27	5.84	4.13	4.37
t-value	7.36	5.62	6.40	4.87	6.69	8.71	8.66
Difference between (1) and (2) (%)	−3.81	−4.60	−3.82	−4.52	−6.25	−5.14	−4.99
t-value	−7.84	−6.02	−6.55	−5.14	−7.14	−10.58	−9.73

earnings, when averaged, was just over 1 %. By contrast, the MFI of companies that replaced a manager and reported an ordinary loss was roughly 5 %.

On the other hand, the MFI of companies that replaced a manager and reported an ordinary profit was, on average, lower than that of companies with no management replacement. On excluding 2007, this difference was statistically significant. These results may be evidence that newly appointed managers issue conservative forecasts to win the trust of investors and other stakeholders.

5.3 MFI of Companies with Large Forecasting Variances in the Previous Fiscal year

This study examines large forecasting variances (Large MFE) in previous fiscal years, in relation to the timing of performance forecast revisions. Among the companies that reported a positive MFE in the previous fiscal year (performance met forecasts), those that ranked in the top quartile are classified as Large Positive MFE companies. Similarly, among the companies that reported a negative MFE in the previous fiscal year (performance did not meet forecasts), those that ranked in the lower quartile are classified as Large Negative MFE companies.

Table 4 illustrates that the mean MFI value of companies that showed a large positive variance in their forecasts was negative in most years and tended toward conservatism. It is likely that the forecast for the current fiscal year became more conservative due to an unexpectedly high level of earnings in the previous fiscal year. Conversely, the MFI of companies that showed a large negative variance in their forecasts became very optimistic. The differences in mean values between the categories were statistically significant in all cases.

Table 4 MFI of firms recorded large MFE in the previous fiscal year

	2005	2006	2007	2008	2009	2010	2011
(1) Large positive MFE firms (%)	0.26	−0.06	−0.04	−0.07	−0.84	−1.70	0.39
(2) Large negative MFE firms (%)	4.05	3.66	3.88	4.55	3.62	1.73	5.39
(3) Non-large firms (%)	0.76	0.54	0.47	0.43	0.26	−0.21	0.84
Difference between (1) and (3) (%)	−0.50	−0.61	−0.52	−0.50	−1.10	−1.43	−0.44
t-value	−3.43	−5.76	−5.08	−5.11	−7.72	−5.41	−3.40
Difference between (2) and (3) (%)	3.29	3.10	3.36	4.00	3.30	1.88	4.49
t-value	12.47	12.03	12.95	11.23	13.41	11.91	19.27
Difference between (1) and (2) (%)	−3.79	−3.71	−3.88	−4.50	−4.40	−3.31	−4.92
t-value	−12.66	−13.45	−14.03	−12.23	−15.63	−11.06	−18.99

Table 5 The persistence of MFI

	Expected sign	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	?	0.00	(1.42)	0.00	(0.59)	0.00	(1.88)*
MFI t-1	+	0.21	(3.12)***	0.20	(3.36)***	0.21	(3.88)***
MFI t-2	+	0.14	(4.04)***	0.14	(3.89)***	0.13	(4.94)***
MFI t-3	+	0.05	(2.11)**	0.05	(1.82)*	0.06	(2.56)**
MFI t-4	+	0.12	(4.24)***	0.11	(4.37)***	0.11	(7.92)***
MFI t-5	+	0.01	(0.90)	0.01	(1.03)		
INDDUM		No		Yes		Yes	
YEARDUM		No		Yes		Yes	
adj.R^2		0.110		0.138		0.142	
#obs		12,792		12,792		15,733	

***, **, and * indicate statistical significance at the 1 %, 5 %, and 10 % levels, respectively. All t-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year level proposed by Petersen (2009)

5.4 MFI Persistence

Finally, we analyze MFI persistence. As noted in Ota (2006), for example, forecast errors (MFE) are subject to persistence. It may be that variances between initial forecast values and actual values, or forecast errors persist because of the persistence of forecast values. In other words, it may be that negative forecast errors arise because companies issue forecasts that are slightly more optimistic than what can be realized.

Table 5 presents the results of the time series regression analysis on MFI. We observe the persistence of MFI form the previous four periods. Although these results do not necessarily demonstrate that the persistence of forecast errors is due

to the persistence of the forecast values themselves, we can at least conclude, by comparison with the previous fiscal year, that there is a persistence of the higher/ lower earnings forecast margins fiscal year. In this sense, it is possible that many companies explicitly or implicitly follow certain disclosure strategies in relation to performance forecasts.

6 Results

6.1 Descriptive Statistics and Correlation Coefficients

Before presenting the results of our multivariate analysis, we examine the descriptive statistics (Table 6). The mean value of LOSS, the dummy variable for net loss, is relatively high at 0.168. This may primarily be due to the inclusion of the Lehman Shock and the ensuing global recession in the period of analysis. Although the mean P/B ratio exceeds 1, the median is 0.945, indicating an anomalous situation in which the market capitalization of over half of the companies was below net assets. As stock markets are sluggish, following the collapse of the economic bubble (the first half of the 1990s), Japanese companies became cautious about raising funds through stock issues. As a result, equity finance was absent for 75 % of companies. In contrast, funds were raised through interest-bearing debt (Debt_Finance) among more than half the sample, which was also due to the frequency of rollovers.

Table 6 Descriptive statistics

	#obs	Mean	S.D.	Min	25 %	50 %	75 %	Max
MFI	18,580	0.008	0.025	−0.087	−0.001	0.004	0.013	0.264
SOD	18,580	0.300	0.458	0.000	0.000	0.000	1.000	1.000
MOWN	18,580	0.076	0.113	0.000	0.003	0.018	0.109	0.587
LOSS	18,580	0.168	0.374	0.000	0.000	0.000	0.000	1.000
Debt	18,580	0.205	0.179	0.000	0.042	0.172	0.327	0.758
FOWN	18,580	0.080	0.099	0.000	0.006	0.038	0.120	0.577
PBR	18,580	1.214	0.930	0.200	0.634	0.945	1.485	8.892
Debt_Finance	18,580	0.075	0.129	0.000	0.000	0.033	0.093	1.270
Equity_Finance	18,580	0.003	0.015	0.000	0.000	0.000	0.000	0.233
MFR_POSI	18,580	0.004	0.009	0.000	0.000	0.000	0.003	0.078
MFR_NEGA	18,580	−0.011	0.021	−0.183	−0.013	0.000	0.000	0.000
MCHG	18,580	0.139	0.346	0.000	0.000	0.000	0.000	1.000
MCHG_OILOSS	18,580	0.019	0.137	0.000	0.000	0.000	0.000	1.000
MFE_LPOSID	18,580	0.114	0.318	0.000	0.000	0.000	0.000	1.000
MFE_LNEGAD	18,580	0.136	0.342	0.000	0.000	0.000	0.000	1.000
Macro_Forecast	18,580	−0.058	0.225	−0.939	−0.107	−0.003	0.073	0.491
SIZE	18,580	10.610	1.462	7.181	9.575	10.429	11.451	15.294
ROA	18,580	0.051	0.049	−0.208	0.023	0.045	0.075	0.269
SGrowth	18,580	0.017	0.132	−0.508	−0.048	0.017	0.079	0.851
RDINT	18,580	0.014	0.024	0.000	0.000	0.004	0.019	0.186
CAPINT	18,580	0.042	0.052	0.000	0.011	0.027	0.055	0.575

We now examine the correlation coefficients (Table 7). Control variables are excluded because of space limitations. Both the Pearson and Spearman coefficients are positively related to MFI on SOD, MOWN, LOSS, Debt, Debt_Finance, MCHG, MCHG_OILOSS, and MFE_LNEGAD. A negative relationship can be observed on FOWN, MFR_POSI, MFR_NEGA, and MFE_LPOSID. The results of the sign test for many of the variables were as expected, but Debt and FOWN produced unexpected results. However, Debt and FOWN are correlated with company size and profitability to a certain extent. Therefore, they are evaluated using the results of the multivariate analysis.[9]

6.2 *Results of the Multivariate Analysis*

Table 8 presents the results of the multivariate analysis. Our hypotheses on incentives and motives were supported for manager remuneration (Hypothesis 1.1); financial distress (Hypothesis 1.2); pressure from creditors (Hypothesis 1.3); pressure from stock markets (Hypothesis 1.4); raising equity finance (part of Hypothesis 1.5); and companies with downward revisions in the previous year (part of Hypothesis 1.6). Collating these in terms of aggressive/conservative forecasts, managers tend to issue aggressive forecasts when they benefit from high stock prices in their remuneration, face financial distress, operate under strong pressure from stock markets, raise funds by issuing stock during the fiscal year, and make interim revisions in the previous fiscal year.[10] In contrast, the primary reason for boosting conservative forecasts is pressure from creditors. Management forecasts are often characterized as optimistic; however, it is likely that optimistic forecasts, which are ultimately not realized, are issued more often than not because there are more motives and incentives to provide aggressive forecasts in the first place.

We now turn to the timing of revisions to forecast strategies. The MCHG coefficient is negative and statistically significant. Hypothesis 2.1, which states that new managers issue conservative forecasts with a view to winning the trust of stakeholders, was supported. By contrast, the MCHG_OILOSS coefficient is significantly positive. Hypothesis 2.3, which states that newly appointed managers at companies that reported losses in the fiscal year prior to their appointment strive for better earnings and thus issue aggressive forecasts, was supported.

---

[9] As some of the correlation coefficients between the independent variables used simultaneously in the regression formula showed high values, we computed the VIF (variance inflation factor), the highest value of which was below 3. However, the correlation coefficients between the independent variables relating to MFR and Large MFE exceeded 0.7 and the VIF exceeded 2. Therefore, we also conducted an analysis on these excluding one of the variables.

[10] MFR_POSI produced an unexpected result. Although we assume this is may be the result of favorable conditions from the previous year persisting into the current year, given the risk of multicollinearity for this variable, we conducted an analysis excluding the highly correlated MFE_LPOSID. This produced a positive sign, but the result was no longer statistically significant.

Table 7 Correlations matrix

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
a	MFI$_{t+1}$	0.007	0.001	0.000	0.163	−0.155	−0.183	0.048	−0.007	−0.205	−0.408	0.057	0.289	−0.126	0.411
b	SOD	0.104		0.028	0.171	0.000	−0.189	0.114	0.617	0.088	−0.045	−0.062	0.010	0.051	−0.074	0.034
c	MOWN	0.103	0.158		−0.123	−0.144	0.000	0.282	−0.104	0.154	0.156	0.095	0.012	−0.044	0.085	−0.049
d	LOSS	0.422	0.007	0.001		0.148	0.234	0.000	0.088	0.200	0.222	0.215	0.012	−0.053	0.160	−0.102
e	Debt	0.101	−0.012	0.028	0.171		−0.055	0.085	0.000	0.092	−0.030	−0.019	−0.014	0.007	−0.054	0.006
f	FOWN	−0.048	0.160	−0.153	−0.123	−0.144		0.134	0.056	0.000	0.048	0.023	0.001	0.027	0.039	0.015
g	PBR	0.095	0.124	−0.004	−0.102	0.148	0.134		−0.014	0.028	0.000	0.532	−0.026	−0.084	0.580	−0.246
h	Debt_Finance	0.048	0.056	0.111	0.020	0.405	−0.055	0.085		−0.041	0.000	0.000	−0.061	−0.188	0.295	−0.582
i	Equity_Finance	0.093	0.071	0.046	0.058	0.094	0.013	0.134	0.056		−0.030	−0.059	0.000	0.349	−0.021	0.046
j	MFR_POSI	−0.118	0.019	−0.040	−0.139	−0.067	0.112	0.186	−0.014	0.028		−0.237	0.349	0.000	−0.047	0.218
k	MFR_NEGA	−0.420	−0.102	−0.093	−0.426	−0.033	0.039	0.095	−0.009	−0.041	0.209		−0.021	−0.047	0.000	−0.142
l	MCHG	0.030	−0.004	−0.082	0.057	0.012	0.010	0.013	−0.025	0.016	−0.030	−0.059		0.218	0.000	0.000
m	MCHG_OILOSS	0.244	0.013	−0.035	0.289	0.056	−0.034	−0.017	0.004	0.071	−0.054	−0.237	0.349		0.113	−0.263
n	MFE_LPOSID	−0.124	0.008	−0.014	−0.126	−0.082	0.084	0.160	−0.023	0.028	0.728	0.181	−0.021	−0.047		−0.170
o	MFE_LNEGAD	0.393	0.102	0.103	0.411	0.042	−0.031	−0.064	0.016	0.054	−0.159	−0.754	0.046	0.218	−0.142	

Pearson (Spearman) correlations are reported below (above) the diagonal

Table 8 Regression result

	Expected sign	(a)		(b)		(c)		(d)	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	?	0.022	(5.41)***	0.027	(6.24)***	0.028	(6.38)***	0.030	(7.31)***
SOD	Hypothesis 1.1 +	0.003	(6.30)***	0.002	(7.60)***	0.002	(7.72)***	0.002	(8.42)***
MOWN	Hypothesis 1.1 +	0.017	(3.88)***	0.015	(4.27)***	0.016	(4.52)***	0.016	(4.77)***
LOSS	Hypothesis 1.2 +	0.010	(8.32)***	0.010	(9.61)***	0.011	(10.74)***	0.011	(11.43)***
Debt	Hypothesis 1.3 −	−0.005	(−2.81)***	−0.008	(−4.68)***	−0.008	(−4.50)***	−0.009	(−4.74)***
FOWN	Hypothesis 1.4 +	0.024	(4.46)***	0.025	(5.08)***	0.026	(5.30)***	0.027	(5.33)***
PBR	Hypothesis 1.4 +	0.005	(5.94)***	0.006	(7.09)***	0.006	(7.20)***	0.006	(7.59)***
Debt_Finance	Hypothesis 1.5 +	0.001	(0.43)	0.001	(0.40)	0.001	(0.42)	0.001	(0.69)
Equity_Finance	Hypothesis 1.5 +	0.028	(2.05)**	0.029	(2.08)**	0.030	(2.19)**	0.029	(1.92)*
MFR_POSI	Hypothesis 1.6 +	0.102	(2.23)**	0.091	(2.52)**	0.034	(0.82)		
MFR_NEGA	Hypothesis 1.6 −	−0.191	(−3.73)***	−0.197	(−3.89)***	−0.273	(−3.91)***		
MCHG	Hypothesis 2.1, Hypothesis2.2 ?	−0.002	(−4.40)***	−0.002	(−3.69)***	−0.002	(−3.82)***	−0.002	(−3.68)***
MCHG_OILOSS	Hypothesis 2.3 +	0.013	(5.87)***	0.013	(5.52)***	0.013	(5.58)***	0.014	(7.09)***
MFE_LPOSID	Hypothesis 2.4 +	−0.003	(−2.62)***	−0.003	(−2.59)***			−0.001	(−0.95)
MFE_LNEGAD	Hypothesis 2.5 −	0.007	(2.62)***	0.007	(2.73)***			0.014	(3.89)***
Macro_Forecast	+	0.020	(8.80)***	0.023	(4.83)***	0.022	(4.72)***	0.021	(4.55)***
SIZE	−	−0.002	(−6.12)***	−0.002	(−6.50)***	−0.002	(−6.76)***	−0.002	(−7.35)***
ROA	−	−0.176	(−4.81)***	−0.181	(−4.91)***	−0.184	(−5.16)***	−0.193	(−5.43)***
SGrowth	+	0.002	(0.18)	0.006	(0.91)	0.006	(0.80)	0.004	(0.58)

(continued)

Table 8 (continued)

	Expected sign	(a)		(b)		(c)		(d)	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
RDINT	+	0.024	(1.86)*	0.030	(2.49)**	0.032	(2.46)**	0.037	(2.78)***
CAPINT	−	−0.000	(0.17)	−0.002	(−1.00)	−0.001	(−0.59)	−0.000	(−0.13)
LAGMFI	+	0.137	(4.26)***	0.127	(3.80)***	0.132	(4.08)***	0.135	(3.74)***
MCHG + MCHG_ Hypothesis 2.3 OILOSS	+	0.011	(5.54)***	0.011	(5.41)***	0.011	(5.44)***	0.012	(6.99)***
INDDUM		No		Yes		Yes		Yes	
YEARDUM		No		Yes		Yes		Yes	
adj.R_2		0.425		0.438		0.433		0.427	
#obs		18,580		18,580		18,580		18,580	

***, **, and * indicate statistical significance at the 1 %, 5 %, and 10 % levels, respectively. All t-statistics are corrected for heteroskedasticity using a two-way cluster at the firm and year level proposed by Petersen (2009)

Finally, we examine Hypotheses 2.4 (MFE_LPOSID) and 2.5 (MFE_LNEGAD) on companies that failed to meet their forecasts by a significant margin in the previous fiscal year. Both produced unexpected results. In relation to Hypothesis 2.4, we conclude that managers who posted unexpectedly high earnings in the previous year provide conservative forecasts in the following year. Conversely, in relation to Hypothesis 2.5, it is possible for managements to believe that although their plans did not proceed as expected in the previous year, they will recover the shortfall in the current year, thus, carrying forward their existing business plans.

6.3   Robustness

We now conduct a robustness check of the results of the analysis obtained earlier from three angles (adjusted deflator, other forecasted earnings, and sensitivity check on MFE_LPOSID and MFE_LNEGAD). First, we summarize the results of the analysis when the MFI deflator is adjusted to market capitalization at the end of the previous fiscal year. An anomaly compared to our examination was that the coefficients for Debt and MFE_LNEGAD were no longer statistically significant. From this we can conclude that a significant portion of our results' analysis is not dependent on the deflator. However, they must be interpreted with caution given that some results do not support some of our hypotheses (Hypotheses 1-3 and 2-5).

We summarize the results of the analysis when we use the forecasted current year net profit.[11] The results that use total assets at the end of the previous fiscal year as the deflator, as in our examination, show that the coefficients for MOWN, Debt, Equity_Finance, and MCHG maintain their sign, but are no longer statistically significant. Debt and Equity_Finance similarly lose their statistical significance when market capitalization at the end of the previous fiscal year is used. Hypotheses 1-3 and 1-5 are not supported when the forecasted current year net profit is used.

Finally, we summarize the sensitivity check for MFE_LPOSID and MFE_LNEGAD. In our examination, we divide MFE into positive and negative values and define the first quartile (the fourth quartile for negative values) as companies that showed a large variance in their forecasts. As a sensitivity check, we conduct an analysis using quintiles, 2 % and 3 % in absolute value, as assessment criteria. In all cases, there was no difference on the results of the validation.

---

[11] The following are the two primary reasons why we use forecasted ordinary profit in the analysis of this study. First, according to Suda and Hanaeda (2008), Japanese companies tend to attach importance to ordinary profit rather than to current year net profit. Second, and related to the previous point, current year net profit is significantly affected by the situation in both the tax system and the stock markets at the end of the fiscal year, which is beyond the management's control. In view of these points, we considered it appropriate to use forecasted ordinary profit to investigate managements' motives and incentives in the forecasts they publish; we therefore design our research accordingly.

Table 9 MFI of management replacement before and after

	#obs	Prior period (%)	Event period (%)	Difference (%)	*t*-value
Non-OILOSS	1,030	0.67	0.39	−0.28	−5.48
OILOSS	94	1.96	4.56	2.60	5.37
		Event period (%)	One period after (%)		
Non-OILOSS	1,030	0.39	0.42	0.03	0.50
OILOSS	94	4.56	3.23	−1.33	−1.92
		Prior period (%)	One period after (%)		
Non-OILOSS	1,030	0.67	0.42	−0.25	−4.07
OILOSS	94	1.96	3.23	1.27	2.17
		Average of three period before (%)	Average of three period after (%)		
Non-OILOSS	1,030	0.75	0.44	−0.30	−6.35
OILOSS	94	1.55	2.97	1.41	3.40

6.4   Are Forecast Revisions Transient?

As mentioned earlier, there is a presumption that companies with a replacement manager and a large MFE in the previous year may revise their forecast strategies. However, the forecast revisions may be transient. Therefore, taking the event year as our starting point, we extract a sample in which seven consecutive years of data were available and compare the mean MFI in the 3 years before and after the event year.

6.4.1   Manager Replacement

For companies that reported an ordinary profit and those in which a manager was replaced (Non-OILOSS), MFI decreased in the event year and remained lower than previous level thereafter. We observed that the difference in the mean MFI before and after the event year was statistically significant, and that Non-OILOSS companies maintained conservative forecasts for at least 3 years following the event year (Table 9).

For companies that reported an ordinary loss and those in which a manager was replaced (OILOSS), MFI increased significantly in the event year, but fell to some extent in the following year. This fall was statistically significant at the 10 % level. However, by comparing before and after the event year (1 year before and after, average of 3 years before and after), we observed that the increase in MFI was statistically significant.

We ascertained from these results that forecast revisions are not transient, but persist at least for a certain period when a manager is replaced. This suggests that managers explicitly or implicitly follow certain disclosure strategies in relation to earnings forecasts.

Table 10 MFI of large MFE before and after

	#obs	Prior period (%)	Event period (%)	Difference (%)	*t*-value
LARGE POSI	978	0.54	−0.14	−0.68	−9.17
LARGE NEGA	508	2.46	3.80	1.34	7.20
		Event period (%)	One period after (%)		
LARGE POSI	978	−0.14	−0.15	−0.01	−0.18
LARGE NEGA	508	3.80	2.51	−1.29	−6.02
		Prior period (%)	One period after (%)		
LARGE POSI	978	0.54	−0.15	−0.70	−8.66
LARGE NEGA	508	2.46	2.51	0.05	0.23
		Average of three period before (%)	Average of three period after (%)		
LARGE POSI	978	0.75	−0.04	−0.78	−12.59
LARGE NEGA	508	2.26	2.34	0.07	0.51

6.4.2 Large MFE

Similar to management replacement, we identified movements in MFI before and after the event year for companies that recorded a Large MFE (Table 10). The MFI of companies that recorded a large positive forecast error (LARGE POSI) decreased in the event year and remained at a lower level thereafter. The decrease following the event year was statistically significant, and conservative forecasts continued for at least 3 years.

On the other hand, the MFI of companies that recorded a large negative forecast error (LARGE NEGA) increased significantly in the event year, but decreased in the following year. A comparison made before and after the event year (1 year before and after, average of 3 years before and after) revealed that the difference in the mean was statistically insignificant. We conclude that the increase in the MFI of companies that recorded LARGE NEGA is transient and aggressive forecasts are only issued in the event year.

7   Conclusions

This study illustrated some of the motives and incentives of managers who make aggressive/conservative forecasts and examined the circumstances under which they revise their forecast strategies. Summarizing the results, we observed that the variation in ordinary earnings forecasts compared to the earnings in the previous period (MFI) widens positively for companies in which the management benefits from high stock prices in their remuneration, distressed companies, companies that operate under strong stock market pressure, and companies that raise funds by issuing capital stock during the fiscal year. Previous year's interim revisions (both upward and downward) also have a positive impact on MFI. Conversely, companies that operate under strong pressure from creditors tend to issue conservative forecasts.

Since the latter half of the 1990s, Japanese companies that suffered from stagnation have learned and adopted many management techniques from their US counterparts. It can be summarized as one in which companies adopted a mode of operation that recognized stockholders—relatively neglected until then—in response to the environment in which they found themselves. As a result, managements are now thought to place greater emphasis on stockholders' response when making business judgments and decisions. Considering this point in relation to the results of our analysis in this chapter, we conclude that, although the level of performance forecasts issued by managements gets higher through the operation of greater market discipline, the traditional main creditor bank system is inhibiting this process, thus creating a situation in which it is difficult to issue aberrant forecasted earnings.

This study also examined the revisions of forecast strategies focusing on two criteria, namely the year in which managers are replaced and the following year in which firms experienced the large forecast error in the previous year. We ascertained that, when managers are replaced, companies that reported an ordinary profit reduce the aggressiveness in their forecasts, whereas those that reported an ordinary loss by the predecessors issue aggressive forecasts. Additionally, we observed that companies that reported a large positive forecast error in the previous fiscal year reduce the level of aggressiveness in their forecasts, whereas those that reported a large negative forecast error issue aggressive forecasts. Moreover, we ascertained that forecast revisions are not transient, but persist for at least a certain period of time, if we exclude companies that reported a large negative forecast error in the previous fiscal year.

Consequently, this study makes a positive contribution to research into the motives and incentives of managers who make a forecasts and the revision of forecast strategies. However, many issues remain, and much work is still to be done. For example, this study does not include those stakeholders who are involved in earnings forecasts. We intend to examine such issues in subsequent studies.

References

Brown, L. D., & Caylar, M. L. (2005). A temporal analysis of quarterly earnings thresholds: Propensities and valuation consequences. *The Accounting Review, 80*(2), 423–440.

Feng, M., & Koch, A. S. (2010). Once bitten, twice shy: The relation between outcomes of earnings guidance and management guidance strategy. *The Accounting Review, 85*(6), 1951–1984.

Gong, G., Li, L. A., & Wang, J. J. (2011). Serial correlation in management earnings forecast errors. *Journal of Accounting Research, 49*(3), 677–720.

Goto, M. (1997). *Kaikei to Yosokujyoho*. Tokyo: Chuokeizai-sha (in Japanese).

Hirst, D. E., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. *Accounting Horizons, 22*(3), 315–338.

Houston, J. F., Lev, B., & Tucker, J. W. (2010). To guide or not to guide? Causes and consequences of stopping quarterly earnings guidance. *Contemporary Accounting Research, 27*(1), 143–185.

Kato, K., Skinner, D. J., & Kunimura, M. (2009). Management forecasts in Japan: An empirical study of forecasts that are effectively mandated. *The Accounting Review, 84*(5), 1575–1606.

Kim, Y., & Park, M. S. (2012). Are all management earnings forecasts created equal? Expectations management versus communication. *Review of Accounting Studies, 17*(4), 807–847.

Lee, S., Matsunaga, S. R., & Park, C. W. (2012). Management forecast accuracy and CEO turnover. *The Accounting Review, 87*(6), 2095–2122.

Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review, 77*(3), 483–514.

Noma, M. (2014). Analyst herding around management forecast. In K. Ito & M. Nakano (Eds.), *International perspectives on accounting and corporate behavior*. New York: Springer.

Ota, K. (2006). Determinants of bias in management earnings forecasts: Empirical evidence from Japan. In *International accounting: Standards, regulations, and financial reporting* (pp. 267–294). Amsterdam: Elsevier.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies, 22*(1), 435–480.

Skinner, D. J., & Sloan, R. G. (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies, 7*(2–3), 289–312.

Suda, K., & Hanaeda, H. (2008). Corporate financial reporting strategy: Survey evidence from Japanese firms. *Securities Analysts Journal, 46*(5), 51–69 (in Japanese).

Tsumuraya, S. (2009). Analysis of bias in management forecasts. *Securities Analysts Journal, 47*(5), 77–88 (in Japanese).

Effects of Biased Earnings Forecasts: Comparative Study of Earnings Forecasts Disclosures by US and Japanese Firms

Shoichi Tsumuraya

Abstract This chapter highlights the features of and issues in the disclosure of management earnings forecasts (MEFs) in Japan. In Japan, listed companies are mandated to publish MEFs, which can also be considered a function of self-discipline for the companies. Meanwhile, prior studies in the US and Japan have reported that earnings forecasts contain a variety of biases stemming from company characteristics and executive incentives. There is a risk for Japanese companies in using biased forecasts for self-discipline. For instance, since Japan does not mandate the election of outside directors, unlike the US or Europe, companies do not have functioning external monitoring. Thus, in this chapter, we examined the relationship between optimism in earnings forecasts and the presence of outside directors. Boards composed only of internal directors may prepare more optimistic forecasts, which may be mitigated by electing outside directors who bring a neutral, external perspective. The results of our inquiry elucidated that optimism in some portions of earnings forecasts may be reduced in companies with outside directors.

Keywords Forecast bias • Management earnings forecast • Outside director • Self-discipline

1 Introduction

This chapter highlights the features of and issues in the disclosure of management earnings forecasts (MEFs) in Japan. In Japan, listed companies are mandated to publish MEFs, which can also be considered a function of self-discipline for the companies. This is supported by the results of various surveys. Meanwhile,

---

S. Tsumuraya (✉)
Graduate School of Commerce and Management, Hitotsubashi University,
2-1 Naka, Kunitachi, Tokyo 186-8601, Japan
e-mail: s.tsumura@r.hit-u.ac.jp

prior studies in the US and Japan have reported that earnings forecasts contain a variety of biases stemming from company characteristics and executive incentives. There is a risk for Japanese companies in using biased forecasts for self-discipline. For instance, since Japan does not mandate the election of outside directors, unlike the US or Europe, companies do not have functioning external monitoring. Thus, evading the loss of the self-disciplinary effect may not be possible due to the use of biased earnings forecasts. In the second half of this chapter, we focus on earnings forecast bias and the structure of the board of directors, highlighting the potential risk lurking in Japanese-style self-disciplined management.

The system in Japan is to disclose earnings forecasts, and nearly all listed companies issue them in the financial reports mandated by the securities exchanges, and make timely disclosures. This system is in contrast to that in the US, where disclosure of earnings forecasts by companies is voluntary.[1] Since, in Japan, regular earnings forecasts are obtainable for almost all listed companies, and "this unique setting in Japan makes it possible to conduct a large-scale on management forecast over a long period of time" (Ota 2006), the country has seen much progress in the study of earnings forecasts. This chapter and the following two present a portion of the results of studies on MEFs in Japan.

First, this chapter discusses management forecast information and explains the distinguishing features of disclosure by Japanese firms. In addition, it documents how earnings forecasts are the most important profitability benchmark for listed firms and discusses the emphasis placed on such information by securities markets (securities analysts). Moreover, it shows the resultant possibility of forecast information creating self-disciplined management in Japanese firms.

Second, using a survey, this study shows the types of intentions underpinning managements' preparing and publishing of earnings forecast information. In Japan, initial forecasts announced by management occupy the important position of the company's profitability benchmark. Management predicts in advance the penalties to be incurred if the forecasts are not met and prepares the forecasts on the basis of various incentives. Our second objective shows the management's incentives to control the forecasts.

Third, this study sheds light on a risk in self-disciplined management in Japanese firms. Specifically, since Japan does not mandate the election of outside directors, external monitoring is weak, leading to potentially biased earnings forecasts released by management. Such forecasts fail to impose discipline on management and may also create noise in the securities markets, a risk in Japanese-style self-disciplined management.

---

[1] However, in both countries, corporate earnings forecasts are published in an array of forms, namely by analysts at securities firms and ratings agencies, analysts affiliated with newspapers and publishers, and more recently, neutral independent analysts not affiliated with particular financial institutions.

2   Japanese Securities Markets and Information Disclosure System

2.1   Overview of Financial Reporting System and Disclosure of Earnings Forecasts

Japan has four securities exchanges, one each in Tokyo, Nagoya, Fukuoka, and Sapporo. The largest is the Tokyo Stock Exchange (TSE), with which the Osaka Stock Exchange merged in July 2013. The TSE has 3,423 listed companies post-merger and a total market capitalization of USD 4.2 trillion.

The first financial report after closing the books is the Kessan Tanshin and is calculated according to the regulations defined by the stock exchanges. About 70 % of Japanese companies have fiscal years that end on the last day of March.[2] The number of days between the closing of the books and the filing of the Kessan Tanshin was 38.4 days in fiscal year 2012 (vs. 39.3 and 39.4 for fiscal years 2011 and 2010, respectively). This means that the majority of companies with March closings announce results around May 10. The results are uploaded onto the securities exchanges' Timely Disclosure network (TDnet).[3]

A major difference in financial reports between Japan and elsewhere is the disclosure system for earnings forecasts. In Japan, earnings forecasts for the next fiscal year are simultaneously disclosed with the earnings report for the year that just ended. This system was demanded by the securities exchanges, and while disclosure is not mandatory for listed companies, the exchanges issue requests for proactive disclosure. The format for the disclosures is provided by the exchanges; almost all companies follow it, although they are not required to.

Table 1 is an example of an earnings forecast disclosure by Manufacturing Company X following this format. In Japan, listed companies preparing consolidated financial statements are obligated to disclose both consolidated and nonconsolidated stand-alone (parent-only) financial statements. Thus, it is common to see both consolidated and nonconsolidated stand-alone disclosures for earnings forecasts as well.

As can be seen in Table 1, the disclosures made include forecasts for sales, operating profit, recurring profit, net profit, and earnings per share (EPS) for the next 6-month period and the full fiscal year, in the format specified by the exchanges.

Exchange regulations also dictate the standards for revising earnings forecasts. Specifically, earnings forecasts must be promptly revised if the newly computed forecast or final results differ from the most recently announced forecast by more than 10 % for sales or 30 % for operating profit, recurring profit, and net profit. In other words, although it is not mandatory to disclose earnings forecasts, it is

---

[2] The next most common closing is December, accounting for about 8 % of the total.

[3] The English version of the timely disclosure site is https://www.release.tdnet.info/index_e.html.

Table 1 Earnings forecast disclosure by Company X for the fiscal year ending March 31, 2014 (April 1, 2013 to March 31, 2014)

	Consolidated financial results forecast (millions of Yen)					Non-consolidated financial results forecast (millions of Yen)			
	Net sales (%)	Operating income (%)	Ordinary income (%)	Net income (%)	Net income per share (Yen)	Net sales (%)	Operating income (%)	Net income (%)	Net income per share (Yen)
Six months ending Sept. 30, 2013	55,000 (6.3)	2,500 (2.5)	2,400 (6.6)	1,200 (4.1)	24.80	35,000 (9.8)	2,500 (8.1)	1,500 (3.4)	30.89
Full-year	124,000 (5.9)	9,000 (14.1)	8,800 (7.5)	4,000 (6.0)	82.67	80,000 (8.6)	6,000 (7.2)	3,400 (4.9)	70.02

% indicates changes from the previous corresponding period

Table 2 Earnings forecast revision by Company Y

	Operating revenue (million Yen)	Operating profit (million Yen)	Recurring profit (million Yen)	Net income (million Yen)	Net income per share (Yen)
Original forecast (A)	1,062,500	52,000	47,800	33,000	26.30
Revised forecast (B)	1,068,000	55,700	56,200	43,000	34.27
Changes in amounts (B − A)	5,500	3,700	8,400	10,000	–
Rate of changes (%)	0.5	7.1	17.6	30.3	–

Revised performance forecasts for the fiscal year ending March 2013 (from April 1, 2012 to March 31, 2013)

mandatory to revise them if they are disclosed. According to the statistics we have compiled, the average listed company issues revisions to earnings forecasts 1.6 times per year. Table 2 is an example of an earnings forecast revision by Manufacturing Company Y.

The variance between the management forecasts announced for fiscal year t at the beginning of the year and the actual results for that fiscal year is called MFE or Management Forecasts Error. MFE is larger in the early stages, and then shrinks as the fiscal year progresses and revised earnings forecasts closer to actual results are issued. Immediately before the final results are announced for fiscal year t, the earnings forecasts closely approximate actual results. Through revisions to earnings forecasts, the actual results of the company are artificially incorporated in the market, a feature unique to Japan.

2.2   State of Disclosure of Earnings Forecasts

The disclosure of earnings forecasts is said to have originated from the distribution of forecasts by listed companies to mass media at the time of announcing the results. Initially, this was just customary, but in 1980, a section was officially added to the Kessan Tanshin for earnings forecasts. Till date, the format has been repeatedly undergoing revisions. Although the disclosure of earnings forecasts is not mandatory, according to statistics from the TSE, 96–97 % of listed companies do disclose them. Companies that do not disclose earnings forecasts are concentrated in areas such as securities and insurance, where results are easily influenced by market conditions. Japanese-listed companies most likely engage in disclosure first as a way of respecting the custom deeply rooted in Japan's disclosure system and taking the responsibility to proactively disclose information demanded by stakeholders.[4] This, in fact, is substantiated by the companies' responses to the Great East Japan Earthquake, which struck on March 11, 2011.

---

[4] Another likely reason for disclosure is to avoid penalties from the capital markets.

In addition to injuries to staff and destruction of factories, corporate performance was impacted by the scheduled blackouts resulting from the shutdown of nuclear power plants and disruption of supply chains. About 70 % of Japanese-listed companies close their books at the end of March. With the disaster occurring immediately before the end of the fiscal year, there were concerns about delayed results announcements. Companies also found it difficult to disclose earnings forecasts given the uncertainty about the disaster's impact. The Japan Investor Relations Association (JIRA; a not-for-profit association founded in 1993 for the purpose of promoting investor relations in Japan) and QUICK Corp. (a comprehensive financial information vendor within the Nihon Keizai Shimbunsha Group or Nikkei Inc. Group) administered a joint emergency survey of 553 listed JIRA members and received responses from 202. Of these, 160 (79.2 %) responded that they would disclose earnings forecasts for the period ending March 2012 simultaneously with the announcement of results for the period ending March 2011. The reasons given included the following:

- Because our investors requirements are demanding (85.6 %)
- To continue and be consistent in disclosure (71.3 %)
- To assuage the worries and concerns of our investors, etc. (51.3 %)
- To disclose the impact of the earthquake and our recovery as much as possible (46.3 %)

Even companies originally responding that they would not disclose earnings forecasts for the period ending March 2011 said they would disclose forecasts at the earliest, and nearly all of those initially saying they would skip disclosure did publish forecasts by their Q1 2012 results announcement. These results are another indication that the disclosure of earnings forecasts has become a duty for Japanese firms.

2.3 Importance of Earnings Forecasts

Earnings forecasts play an important role in managing a company. This is highlighted by the results of a survey of CFOs in the US and Japan (Graham et al. 2005; Suda and Hanaeda 2008). Graham et al. (2005) asked, "How important are the following earnings benchmarks to your company when you report a quarterly earnings number?" Similarly, Suda and Hanaeda (2008) asked, "When reporting earnings externally, how much weight do you give the following targets?" Table 3 shows the survey results.

For US firms, the most important earnings benchmark is the quarterly EPS for the same period of the preceding year, followed by analyst forecasts. For Japanese firms, on the other hand, the most important earnings benchmark is the announced MEFs, followed by the previous year's actuals. The results show that, in Japan, announced earnings forecasts are given the highest weight as earnings benchmarks.

Table 3 How important are the following earnings benchmarks to your company

	Average rating
US CFOs	
Same quarter last year EPS	1.28
Analyst consensus forecast of EPS for current quarter	0.96
Reporting a profit (i.e. EPS > 0)	0.84
Previous quarter EPS	0.49
Japanese CFOs	
Announced management earning forecast	1.79
Previous fiscal year profit	1.26
Reporting a profit	1.13
Sector peer companies profit	-0.07
Analyst consensus forecast of profit for current fiscal year	-0.37

Source: Graham et al. (2005) Table 3; Suda and Hanaeda (2008) Table 3

At the same time, it has been shown that earnings forecasts are given much weight by investors receiving the information, analysts, and the media. According to Ota (2007), in Japan, sell-side analysts prepare their forecasts on the basis of MEFs, causing consensus analyst forecasts to be heavily influenced by management forecasts. Specifically, when a management forecast is issued or revised, over 80 % of consensus analyst forecasts immediately thereafter show numbers identical to the management forecast. It has also been reported that over 95 % of changes to consensus analyst forecasts in the course of a fiscal year can be explained by management forecasts. From this, Ota (2007) concludes, "Management earnings forecasts play a more important role than analysts' forecasts. However, since the former are not disclosed in a timely manner, the latter play a complementary role which compensates for lack of timeliness." Noma (2008) also reports that there is a strong tendency for analyst forecasts to be revised within 3 days to a level close to that announced in the revisions of MEFs.[5]

In Japan, MEFs are important as earnings benchmarks and heavily influence analyst forecasts. Managers trying to maximize the valuation of their company—to avoid penalties imposed by the market for missing forecasts and to guide analyst forecasts—therefore, have incentives to publish biased forecasts. Prior studies have in fact reported bias in MEFs and pointed out a wide variety of company characteristics or management incentives giving rise to such bias. In the following chapters, we review in detail these characteristics and incentives. In this chapter, we our company survey administered to obtain a high-level picture of how MEFs are biased. The survey allows us to understand the intentions of Japanese firms in preparing MEFs.

---

[5] Chen et al. (2011) claim that analysts cannot produce information at the same level as companies do, even if they have other sources of information.

3   Management Forecasts Bias: Survey Evidence

3.1   *Review of Prior Research*

Bias in earnings forecast has long been suggested. For example, in a survey conducted by the Nihon Keizai Shimbunsha in December 2007 (published in the morning edition of December 28, 2007), to the question "Which best represents your thinking when issuing earnings forecasts?" 44 % of the respondent firms answered they "prefer conservative earnings forecasts to avoid downward revisions."

This issue has also been pointed out in prior studies. For instance, Irani (2000) demonstrates that firms in financial distress put out more optimistic forecasts. Shimizu (2007) argues that "it is conceivable that the incentive to more positively convey operational conditions applies not only to companies in financial distress but also to those that are not." He cites the example of a company planning for a public offering, bond issuance, or bank loan, for which the want to present a slightly better outlook for future performance would be natural. He also points out that "besides these direct causes, management forecasts may reflect factors such as the characteristics of the company and its management," which may give rise to bias in earnings forecasts in a certain direction, in addition to direct factors such as company size and financial health.

Prior studies have performed regression analyses with MFE as a dependent variable serving as a proxy for management bias. Reported numbers higher than the initial forecast (i.e., MFE is positive) may show a conservative bias in the initial forecast. Reported numbers lower than the initial forecast (i.e., MFE is negative) may show an optimistic bias in the initial forecast. However, there is a problem that in good economic times, the number of firms whose actual numbers beat initial forecasts rises, and as a result, the proportion of firms with a conservative bias increases. On the other hand, in bad economic times, the number of firms with an optimistic bias increases.

In this chapter, we verified management bias by conducting a questionnaire-based survey targeting the Investor Relations Officers at listed companies. There is a broad range of empirical accounting studies that employs large amounts of data, and while this type of archival research has the advantage of obtaining statistically supported results, it also has a number of limitations. For instance, which bias should be given relatively more weight if a manager has multiple biases, such as wanting the number to be above the analyst forecast and exceed prior-year performance? Questionnaire-based surveys are more effective in providing insights on such issues than archival studies.

Table 4 Investor relations survey questions

Please select the answers applicable to your firm when preparing the earnings forecasts announced with the Kessan Tanshin. Multiple answers are permitted

(1) Investor relations is involved in the preparation of forecasts

(2) The forecasts we disclose are prepared on the basis of the internal annual budget

(3) We show numerical assumptions for forecasts (e.g., exchange rates, raw materials cost, and market outlook)

(4) We determine forecasts on the basis of numbers reported from each business division

(5) The forecasts often take into account the objectives set by top management

(6) The forecasts we prepare and issue are often more conservative than our industry peers

(7) The forecasts we prepare and issue are often more optimistic (challenging) than our industry peers

(8) We prepare and issue forecasts keeping in mind whether they exceed the previous year's actuals

(9) We prepare and issue forecasts keeping in mind whether they exceed analyst forecasts (market consensus)

(10) We prefer to avoid forecasting losses to the extent possible

(11) We set internal targets that are more conservative than the forecasts externally issued

(12) We set internal targets that are more optimistic (challenging) than the forecasts externally issued

3.2   Survey Overview

The questionnaire-based survey was carried out by adding questions concerning earnings forecasts to the Investor Relations Survey (hereinafter referred to as "Survey"), annually conducted by the JIRA. Specifically, the questions in Table 4 were added to the 18th Investor Relations Survey conducted in February 2011. The survey was sent to investor relations officers at all 3,644 companies listed as of February 2011, of which 1,032 (28.3 %) responded.

Question 1 starts off by asking whether the investor relations officer responding to the survey is involved in the preparation of management forecasts.

Question 2 investigates the linkage between the internal annual budget and the management forecasts. Questions 4 and 5 inquire whether the management forecasts are prepared by aggregating numbers from individual units or set top-down. Since the units may report achievable numbers, the earnings forecasts prepared on the basis of such numbers may be more conservative. Conversely, management forecasts driven by top management may not take into account achievability at the unit level, resulting in more challenging (optimistic) forecasts.

Questions 6 and 7 then ask whether management forecasts are intentionally prepared to be conservative or optimistic. The management forecasts of companies responding "yes" to Question 6 may be considered to have a conservative bias and those responding "yes" to Question 7 an optimistic bias. These questions include the phrase "in comparison with industry peers" to give the respondents a yardstick for gauging conservativeness and optimism.
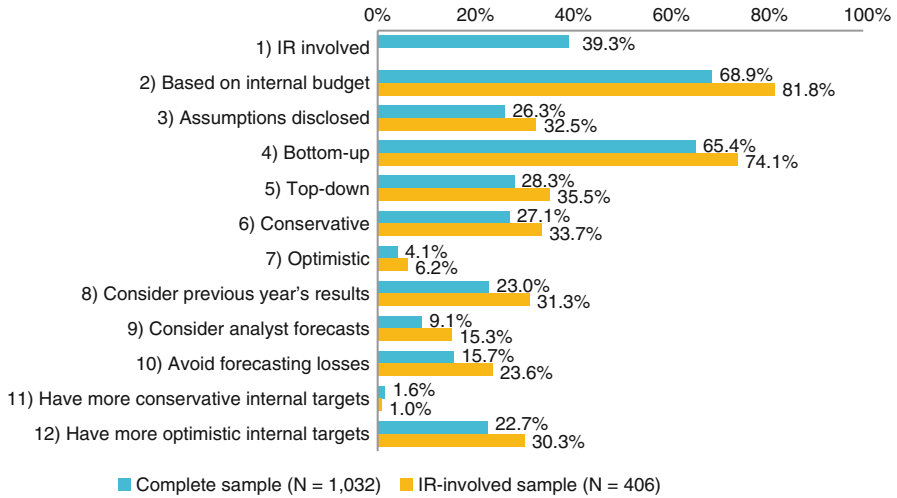
Fig. 1 Survey results

Questions 8–10 aim to reveal whether the firm actually has the biases pointed out in prior studies. For example, Kato et al. (2009) indicate that a majority of companies issue management forecasts that exceed prior year actual or estimate of earnings growth. Noma (2008) shows that a majority of companies issue initial management forecasts that meet or slightly exceed analyst forecasts as of the end of the previous fiscal period. Mande et al. (2003) point out that companies avoid forecasting losses. Questions 8–10 are intended to gauge whether any or all of these factors bias the preparation of forecasts.

Questions 11 and 12 investigate the extent to which companies have internal targets separate from those externally issued. It has been pointed out that, in Japan, internal and external targets have long been set separately. Forecasts to be publicly issued may be held down to achievable, conservative levels, while internally, a separate and more challenging set of targets is imposed.

3.3 Survey Results

Figure 1 shows the percentage of the 1,032 respondent firms who answered "yes" to each question. However, this survey targeted the investor relations officer at each company, who may not necessarily be familiarized with the process of preparing earnings forecasts. We, therefore, compiled a separate "IR-Involved Sample" [Remark 3] for only the 406 firms (39.3 %) who answered "yes" to Question 1— Is Investor Relations involved in the preparation of forecasts?"

We will proceed with our exposition, limiting ourselves to the IR-Involved Sample, where investor relations is involved in the preparation of forecasts, and

therefore, the answers obtained are likely to be more accurate. First, regarding the linkage of forecasts to annual budgets, 81.8 % answered that there was such a linkage. It has long been known that Japanese firms base their management on annual budgets, and this result demonstrates anew that there is a linkage between annual budgets and information disclosure.

Management forecasts were prepared in a bottom-up fashion (Question 4) by 74.1 % firms and in a top-down fashion (Question 5) by 35.5 %. We see that while many firms prepare company-wide earnings forecasts on the basis of numbers coming from the units, some prepare them only on the basis of their top management's decisions. To both the bottom-up and top-down questions, 30.3 % of respondent firms answered "yes." In other words, in no small number of firms, earnings forecasts are prepared by blending the opinions of the units and the top management.

In response to Question 6, 33.7 % of all firms indicated that they issue intentionally conservative forecasts. In contrast, 6.2 % of firms said they issue intentionally optimistic forecasts (Question 7). The percentage of firms issuing initial forecasts keeping in mind whether they exceed prior year results was 31.1 % (Question 8), while that of firms issuing forecasts keeping in mind whether they exceed analyst forecasts was 15.3 %. Noma (2008) states that there are two conceivable incentives: the first is to issue conservative management forecasts to dampen analyst expectations and the second is to issue management forecasts above analyst forecasts out of a concern for a drop in the stock price. Noma's results indicate that companies are not fixated only on exceeding analyst forecasts. This may be the reason for only a small number of companies answering "yes" to the "exceed analyst forecasts" question. The percentage of companies avoiding forecasting losses (Question 10) was 23.6 %. These results are consistent with those of Kato et al. (2009)—it is more common for firms to forecast earnings increases over the prior year—and those of Mande et al. (2003)—unprofitable companies issue more optimistic forecasts.

Regarding companies setting separate internal targets (Questions 11 and 12), 1.0 % set internal targets that are more conservative than the published forecasts and 30.3 % targets are more challenging. In other words, at companies who set more challenging internal targets, the externally disclosed management forecasts are lower than the internal targets, such that the possibility of achieving the external forecast is increased. We cannot tell from the results of this survey whether Japanese firms place more weight on achieving internal targets or publicly issued numbers, but at a minimum, the results highlight the fact that more than 30 % of all firms set separate targets in an attempt to soften the market penalty for missing their published forecasts.

Of the 406 companies in the IR-involved sample, 149 (36.7 %) did not answer "yes" to any of Questions 6–10, relating directly to management bias. This indicates that these companies have no bias whatsoever. Meanwhile, 257 (63.3 %) of the 406 companies answered "yes" to at least one of Questions 6–10, implying management bias in their earnings forecasts. In summary, the questionnaire survey used
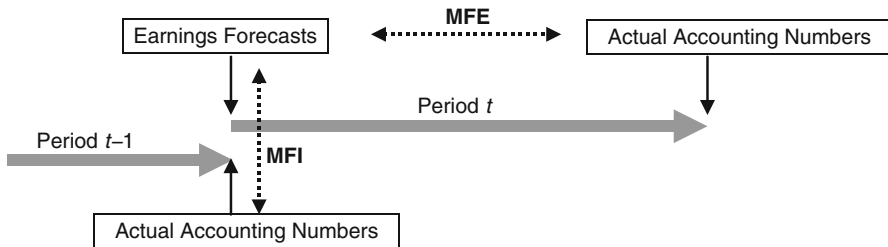
Fig. 2 Management forecast error (MFE) and management forecast innovation (MFI)

in this study succeeded in confirming the existence of management bias, already detected in archival research.

This study has shown that, in Japan, disclosing management forecasts has become a responsibility for listed firms, and in fact, almost all firms do so. The earnings forecasts disclosed not only provide important information for the capital markets but also clearly function as a benchmark for what the company needs to achieve. Disclosing forecasts imposes discipline on a company, which is a distinguishing feature of Japanese firms' earnings forecasts. However, it is also clear that there are biases in the disclosed earnings forecasts. Biased earnings forecasts weaken self-discipline and bring the risk of failure of corporate governance in Japan, where outside directors are not mandated and monitoring is lax. In the following, we examine this governance risk with a focus on bias in MEFs and the composition of the board of directors (Fig. 2).

4 Outside Directors and Earnings Forecasts

Kahneman et al. (1986) report that groups solely composed of homogenous insiders make optimistic decisions. Apparently, the reason is that insiders tend to believe that things they want to happen will happen and that they are capable of dealing with the risks as well as underestimate the foreseeable risks. An outsider, in contrast, does not have such preconceptions and makes objective and statistical judgments. Thus, an outsider gives advice that keeps the optimistic decision making in check. This description is a comparison of their tendencies and does not mean that insiders and outsiders have different capabilities or skills.

In the US, Europe, and some Asian countries, the election of outside directors is mandated by the legal system (corporation law or securities law) or in the listed company rules issued by the securities exchanges. In many cases, independent directors with even more independence are required. For instance, Section 303A.01 of the Listed Company Manual of the New York Stock Exchange requires that a majority of directors be independent.

Currently, in Japan, there is no law requiring the election of external directors for companies with audit and supervisory board members, the format used by almost

all listed companies.[6] The TSE, in its Securities Listing Regulations, Section 436 (2), requires at least one independent officer, but no independent directors.[7] According to the "Public Company Corporate Governance Survey," published by the Japan Association of Corporate Directors in May 2013, as of that date, the percentage of companies listed on the TSE with an elected external director was 55.1 %; for those listed on the first section, it was 56.3 %. Boards composed only of internal directors are prone to unconsciously prepare and disseminate overly optimistic MEFs. This, in turn, may distort the self-disciplinary effect of the forecasts.

5   Prior Research

Several prior studies have examined relationships between the composition of the board of directors and MEFs. For example, Ajinkya et al. (2005) and Saito (2010) examined these relationships in the US and Japan, respectively. Ajinkya et al. (2005) demonstrate that companies with a greater proportion of external directors on the board have a greater tendency to issue MEFs, which tend to be concrete, accurate, and less optimistic (more conservative).[8]

In Japan, Saito (2010) computes the MFE for the companies composing the Nikkei 500 from 1997 to 2006, regressing it as a dependent variable against a dummy variable representing the appointment of outside directors. His analysis shows that companies with outside directors have smaller MFEs (less optimism) at a statistically significant level. He also examines the proportion of outside directors on the board, but was unable to obtain statistically significant results. His interpretation is that since MEFs are not subject to a resolution of the board, they may not necessarily be affected by the number of outside directors, and that what is important is the introduction of an analytical perspective into the board with the addition of at least one outside director.

This research modifies that of Saito (2010) as follows. First, Saito (2010) defines the MFE as the difference between the forecasts at the beginning of period t and the reported results at the end of period t. This introduces the effect of noise from economic changes during the period. In addition, as mentioned above, there is a possibility that executives manage reported earnings to achieve the forecasts. This means that the difference between the initial forecast at the start of the period and the reported results for the period is contaminated by factors other than optimism at

---

[6] Japanese Corporate Law permits two organizational formats: company with audit and supervisory board members and company with committees. A company with committees has a US-style governance structure and the election of outside directors is obligatory. However, there are extremely few companies in Japan choosing this organizational format.

[7] As long as there are one or more independent audit and supervisory board members, there is no need for independent directors to be elected.

[8] Karamanou and Vafeas (2005) also report that a higher proportion of outside directors increases the frequency of MEFs.

the time the forecasts were issued. Thus, here, we use the difference between the reported results for period t-1 and the forecasts issued at the start of period t. We call this difference Management Forecasts Innovation (MFI).

Second, whereas Saito (2010) uses the Nikkei 500, in this research, we cover all listed companies with end-of-March closings. Finally, Saito (2010) focuses on the presence or absence of outside directors. Here, we extend this by examining the presence or absence of independent directors. Outside directors such as those sent from the company's lead bank may tend to align their opinions with those of internal directors. Advice based on objective and statistical assessments may have a greater impact when coming from independent directors.

6   Research Design

As described in the previous section, in this paper, we use the difference between the actuals for the previous period and the forecast as of the beginning of the period as a proxy for optimism in MEFs. Specifically, for all listed companies with end-of-March closings, we use the following formula to calculate MFI as the difference between the reported results for the period ending March 2013 and the initial forecast for the year ending March 2014.

$$\text{MFIs}_{i, FY2013} = \frac{\text{Earnings Forecasts}_{i, FY2013} - \text{Actual Accounting Numbers}_{i, FY2012}}{\text{Market Value}_{i, FY2012-\text{end}}}$$

MFIs = Management Forecasts Innovation (Sales, Operating income, Ordinary income, and Net income).

We created four sets of MFIs comparing initial forecasts with previous year actuals for sales, operating profit, recurring profit, and net profit. For companies disclosing both consolidated and nonconsolidated stand-alone forecasts, we used the consolidated numbers. All items are normalized on the basis of common stock market capitalization as of March 31. A higher MFI means that a company is disclosing more optimistic forecasts for the year ending March 2014 than the March 2013 actuals.

This study is based on cross-sectional data for a single fiscal year. The reason is that our time range starts with the year ending March 2011, when the TSE imposed the requirement for the selection of independent directors, to investigate the impact of independent directors in addition to outside directors. However, we omitted the year ending March 2011 due to the confusion in MEF disclosures caused by the Great East Japan Earthquake, as well as the year ending March 2012, which was the first year after the TSE granted more flexibility in earnings forecasts disclosure. This left us with cross-sectional data for the year ending March 2013. This issue is left for future research.

First, we divided MFIs for listed companies (sales, operating profit, recurring profit, and net profit) into groups of companies with external directors and those without, and compared the means and medians. We then performed a regression analysis with MFIs as dependent variables. For the selection of independent variables, prior studies do not necessarily provide an explanatory theory for MFIs and have not obtained consistent results for the significance of the independent variables. In our study, based on the absence of any reported counter-evidence at this point in time, we incorporated in our model, in addition to the independent variables used by Kato et al. (2009), dummy variables for the presence of outside directors and independent directors.

7   Sample

We created our sample from the 3,554 publicly traded companies as of March 31, 2013, excluded the 2,470 companies with full-year closings at the end of March, and eliminated some companies for the following reasons. First, regarding the disclosure of MEFs, we eliminated 113 companies that did not disclose any forecasts and 115 companies that did not disclose a forecast for any one of the four line items of sales, operating profit, recurring profit, and net profit. The banking and insurance sectors issue forecasts for recurring revenue, recurring profit, and net profit, and therefore, were excluded because operating profit is not available. Of the 115 excluded companies, 91 were banks and insurance companies.

We also excluded 12 companies for which we were unable to obtain the corporate governance report, filed by each company after its general meeting of shareholders, for the period ending March 2012. This is because the report is a source of data about outside directors and independent directors for each company, as well as 45 "companies with committees" who are mandated to have outside directors.

Finally, we excluded 74 companies for which we could not obtain the necessary data for the variables due to being newly listed during the year ending March 2013 or changes in accounting standards, month of closing, or consolidated/stand-alone status due to mergers or acquisitions. This resulted in a final sample size of 2,111 companies.

Of these 2,111 companies, 1,983 (88.8 %) reported consolidated results and the remainder stand-alone results. For this study, we used consolidated information for companies reporting consolidated results (and consolidated forecasts) and nonconsolidated stand-alone information otherwise. Of the 2,111 companies, 1,028 (48.7 %) had outside directors and 579 (27.4 %) independent directors.

8 Analysis Results

8.1 Comparison of Means and Medians

Tables 5 and 6 show the results of comparing the means and medians of MFI for net sales, operating income, ordinary income, and net income for companies with outside directors on the board and those without. Higher MFIs indicate more optimistic forecasts.

In Table 5, Panel A shows the results of comparing the sample divided by whether or not there is an outside director. Comparing the means, MFI for all line items (net sales, operating income, ordinary income, and net income) are lower for companies with outside directors than for companies without. However, there is a significant difference only for operating income (at the 1 % level) and ordinary income (at the 5 % level). For operating income, MFI for companies with outside directors was 0.028, which compares to 0.040 for those without. For ordinary

Table 5 Summary statistics for MFIs. Panel A: outside directors

		All firms	Firms with outside directors	Firms without outside directors	Statistic
Net sales	Mean	0.191	0.174	0.208	1.741
	Median	0.113	0.107	0.117	2.513*
Operating income	Mean	0.034	0.028	0.04	2.814**
	Median	0.015	0.014	0.016	2.940**
Ordinary income	Mean	0.025	0.02	0.029	2.057*
	Median	0.009	0.009	0.009	1.723
Net income	Mean	0.037	0.032	0.041	1.308
	Median	0.006	0.007	0.006	0.098
Sample size		2,111	1,028	1,083	

**,* denotes a significant difference at the 1 % and 5 % level, respectively

Table 6 Summary statistics for MFIs. Panel B: independent directors

		All firms	Firms with independent directors	Firms without independent directors	Statistic
Net sales	Mean	0.191	0.161	0.202	1.897
	Median	0.113	0.107	0.117	1.4
Operating income	Mean	0.034	0.029	0.036	1.539
	Median	0.015	0.014	0.016	0.642
Ordinary income	Mean	0.025	0.022	0.026	0.736
	Median	0.009	0.009	0.009	0.341
Net income	Mean	0.037	0.033	0.038	0.573
	Median	0.006	0.007	0.006	1.734
Sample size		2,111	579	1,532	

**,* denotes a significant difference at the 1 % and 5 % level, respectively

income, it was 0.020 as opposed to 0.029. Next, examining medians, the results obtained were significant only for net sales (at the 5 % level) and operating income (at the 1 % level).

Panel B of Table 6 shows the results of comparing the sample divided by whether or not there is an independent director. Comparing the means, sales forecast bias was significant at the 10 % level (t-value of 1.897); no other items were found to be significant. Next, comparing the medians, the null hypothesis could not be rejected for any of the line items.

From the comparison of the means and medians, we have shown that management forecasts of operating income differ at a significant level depending on whether there is an outside director, and that optimism at the group of companies with outside directors is lower (Table 7).

8.2   Multiple Regression Analysis

Next, we show the results of a multiple regression analysis. We used MFI for net sales, operating income, ordinary income, and net income as dependent variables. We performed the regression analysis, using as independent variables, a dummy for the presence of an outside director, a dummy for the presence of an independent director, and the independent variables included by Kato et al. (2009). Thus, there are eight regression equations in all. The regression equations and the definitions of the variables used are as follows.

$$
\begin{aligned}
MFIs_i = {} & \propto_i + \beta_1 \text{Outside dummy}_i(\text{Indep.dummy}_i) + \beta_2 \text{Lagged ROA}_i \\
& + \beta_3 Loss * Lagged\ ROA_i + \beta_4 \text{Prior Optim.}_i + \beta_5 \text{Size}_i + \beta_6 \text{Insider Own.}_i \\
& + \beta_7 \text{FInancial Inst.Own.}_i + \beta_8 \text{Foreign Own.}_i + \varepsilon_i
\end{aligned}
$$

Variable Definitions:

MFIs _Management Forecast Innovation (Net sales, Operating income, Ordinary income, Net income.);
Outside dummy _ 1 if the company elect outside directors, and 0 otherwise;
Indep. dummy _ 1 if the company elect independent directors, and 0 otherwise;
Lagged ROA _ net income for year FY2012 divided by total assets at FY2012-end;
Loss _ 1 if net income in year FY2012 is negative, and 0 otherwise;
Prior Optim. _ MFIs(Net sales, Operating income, Ordinary income, Net income.) in prior year;
Size _ log of total assets atFY2012-end;
Insider Own. _ percentage ownership interest of management and board members;
Financial Inst. Own. _ percentage ownership interest of financial institutions (banks and insurance companies);
Foreign Own. _ percentage ownership of foreign investors.

Table 7 OLS regressions of the MFIs

	Pred. sign	MFIs (dependent variables)							
		Net sales		Operating income		Ordinary income		Net income	
		1	2	3	4	5	6	7	8
Intercept		−0.256*	−0.266**	−0.017	−0.019	−0.025	−0.026	−0.084**	−0.086**
		(−2.551)	(−2.682)	(−0.923)	(−1.020)	(−1.332)	(−1.390)	(−2.611)	(−2.711)
Outside dummy	(−)	−0.014		−0.008*		−0.007*		−0.007	
		(−0.683)		(−2.489)		(−2.247)		(−1.355)	
Indep. dummy	(−)		−0.026		−0.003		−0.002		−0.005
			(−1.099)		(−1.024)		(−0.592)		(−0.846)
Lagged ROA	(−)	−1.505**	−1.498**	−0.382**	−0.385**	−0.327**	−0.33**	−0.737**	−0.739**
		(−5.476)	(−5.446)	(−6.114)	(−6.179)	(−5.594)	(−5.679)	(−4.730)	(−4.758)
Loss*Lagged ROA	(+)	1.575**	1.563**	−0.316	−0.314	−0.349	−0.346	−1.024*	−1.024*
		(5.132)	(5.098)	(−1.685)	(−1.682)	(−1.931)	(−1.924)	(−1.971)	(−1.972)
Prior Optim.	(+)	0.091**	0.091**	0.04**	0.04**	0.043**	0.043**	0.044**	0.044**
		(4.686)	(4.729)	(13.383)*	(13.357)	(13.657)	(13.614)	(8.940)	(8.882)
Size	(−)	0.082**	0.084**	0.007	0.006	0.007	0.006	0.02**	0.02**
		(3.872)	(3.937)	(1.671)	(1.605)	(1.691)	(1.610)	(2.803)	(2.818)
Insider Own.	(+)	0.19	0.195	0.025	0.029	0.016	0.019	0.045	0.048*
		(1.810)	(1.876)	(1.451)	(1.689)	(1.032)	(1.285)	(1.901)	(2.073)
Financial Inst. Own.	(+)	−0.088	−0.076	−0.042*	−0.04*	−0.033*	−0.032*	−0.034	−0.031
		(−0.922)	(−0.772)	(−2.543)	(−2.384)	(−2.107)	(−1.983)	(−1.328)	(−1.179)
Foreign Own.	(−)	−0.385**	−0.374**	−0.019	−0.021	−0.014	−0.017	−0.009	−0.01
		(−3.699)	(−3.557)	(−1.177)	(−1.304)	(−0.886)	(−1.036)	(−0.288)	(−0.301)
Industry Effects		Included		Included		Included		Included	
Adj R²		0.064	0.064	0.315	0.315	0.317	0.316	0.451	0.451
Sample size		2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111

**, * denotes a significant difference at the 1 % and 5 % level, respectively. In parentheses are robust standard errors

As control variables, we first introduce a metric for performance. Since poorly performing companies (those with low ROA) [Remark 3] are believed to issue more optimistic forecasts, forecasted ROA is negative. However, when ROA is negative (reported net loss), it is possible that the earnings forecasts will be optimistic to the extent ROA is higher (smaller net loss). Therefore, there is the possibility of returning to the black the following year. The forecasted cross term between the reported net loss dummy and ROA is thus positive. Prior research in the US and Japan has established that there is an ongoing pattern in forecast bias. Thus, we add a dummy variable taking the value of 1 if the forecasting bias in the initial forecast for the previous period was optimistic. It is believed that optimistic decision making is kept in check at larger companies due to the imposition of discipline by various stakeholders. Similarly, discipline externally imposed is weaker when the shareholdings of executives and financial institutions are proportionally greater, whereas companies with a high percentage of foreign ownership are more disciplined, which inhibits optimism.

Of the models examining the outside dummy, in the operating income model (3) and the ordinary income model (5), the outside director dummy both yielded negative coefficients significant at the 5 % level and consistent with the a priori forecast for the sign. It is possible that optimistic forecasts of operating and ordinary incomes are held in check at companies with outside directors. We obtained no significant results from the regression model, including the independent directory dummy (2, 4, 6, and 8). These results are by and large identical to those of Kato et al. (2009), but we found no significance for Insider Own (ownership share by executives) and Financial Inst. Own (ownership share by financial institutions). In terms of Size, we obtained significant results for some, signs that differed from those obtained by Kato et al. (2009). Note that the variance inflation factor (VIF) was below 10 in all models, including for the cross terms.

While the results we obtained show the possibility of optimism in earnings forecasts being mitigated by the existence of outside directors, they are not robust. In addition, the independent director dummy was not significant for any item. In other words, that even in the presence of independent directors, impartial external opinions are not being reflected in the preparation of earnings forecasts. One conceivable reason for our results' lack of robustness is that the dependent variables are not proxies for earnings forecast bias. Studies of earnings forecasts have not succeeded in theoretically or empirically identifying company characteristics or executive incentives that drive a bias in earnings forecasts. Thus, the problem of omitted variables may arise, leaving the topic for future discussion

9 Summary and Conclusions

This chapter has given an overview of the earnings forecast disclosure system in Japan and shown the important role that earnings forecasts play for both the company and the capital markets. In particular, for companies, earnings forecasts represent earnings benchmarks they need to meet, and are believed to give rise to a

self-disciplinary effect. It is also clear from prior studies and surveys, however, that bias is inherent in MEFs and that such bias derives from properties of the company and management incentives.

There is a risk in practicing self-discipline using biased earnings forecasts. For instance, since Japan does not mandate the election of outside directors, unlike the US or Europe, there is no functioning external monitoring, resulting in biased forecasts and a loss of the self-disciplinary effect. Thus, in this chapter, we examined the relationship between optimism in earnings forecasts and the presence of outside directors. Boards composed only of internal directors may prepare more optimistic forecasts, which may be mitigated by electing outside directors who bring a neutral, external perspective. The results of our inquiry elucidated that optimism in some portions of earnings forecasts may be reduced in companies with outside directors. But our results lack robustness and we were unable to obtain significant results for any line item regarding independent directors. These issues represent opportunities for further enhancing the analysis in this chapter.

References

Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors institutional investors and the properties of management earnings forecasts. *Journal of Accounting Research, 43*, 343–376.

Chen, S., Matsumoto, D., & Rajgopal, S. (2011). Is silence golden? An empirical analysis of firms that stop giving earnings guidance. *Journal of Accounting and Economics, 51*(1–2), 134–150.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*, 3–73.

Irani, A. J. (2000). Determinants of bias in management earnings forecasts. *Accounting Enquiries, 10*, 33–86.

Kahneman, D., Knetsch, J., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review, 76*, 728–741.

Karamanou, I., & Vafeas, N. (2005). The association between corporate boards, audit committees, \and management earnings forecasts: An empirical analysis. *Journal of Accounting Research, 43*, 453–486.

Kato, K., Skinner, D. J., & Kunimura, M. (2009). Management forecasts in Japan: An empirical study of forecasts that are effectively mandated. *The Accounting Review, 84*(5), 1575–1606.

Mande, V., Wohar, M. E., & Ortman, R. F. (2003). An investigation of asymmetric earnings forcasts of Japanese financial analysts. *The Multinational Business Review, 11*(1), 13–42.

Noma, M. (2008). Management forecasts and analyst forecast: Expectation management and herding. *Kigyo Kaikei (in Japanese), 60*(5), 116–122.

Ota, K. (2006). Determinants of bias in management earnings forecasts: Empirical evidence from Japan. In G. N. Gregoriou & M. Gaber (Eds.), *International accounting: Standards, regulations, and financial reporting* (pp. 267–294). Burlington, MA: Elsevier.

Ota, K. (2007). Role of earnings forecasts by management and analysts. *Security Analysts Journal, 45*(8), 54–66.

Saito, T. (2010). Boards with and without outside directors: An empirical comparison. Working Paper.

Shimizu, Y. (2007). Continuity of bias in management forecasts and mispricing. *Security Analysts Journal, 45*(8), 80–96.

Suda, K., & Hanaeda, H. (2008). Corporate financial reporting strategy: Survey evidence from Japanese firms. *Security Analysts Journal, 46*(5), 51–69.

Index

A

Accounting slack, 64, 78
Accounting Standards Advisory Forum
  (ASAF), 4
Accounting Standards Board of Japan (ASBJ), 4
Accrual discretion, 33, 36, 43, 50, 53
Accruals, 30, 33, 36, 37, 43, 44, 50, 53
Acquisition, 129–131, 133, 135, 138, 141, 142
The Act on the Protection of Personal
  Information, 191
Actuarial gains and losses, 145–147, 149,
  151–156, 158, 159
Aggressive earnings forecast, 285–308
Allocation, 128, 130, 141
Amortization, 127–131, 133–139, 141
  accounting, 60, 63
  of long-lived assets at a rate above the
    expected economic amortization
    rate, 60, 62
  period for prior service costs, 143–147,
    149–156, 158, 159
Analyst forecast, 261–264, 266–282
Analyst herding, 261–282
Asset(s) and liability(ies) view, 11, 82, 84,
  86, 105
Asymmetric amortization period, 154

B

Bargain purchase, 128, 129, 141
Big bath, 173
Boilerplate, 224
Business
  combination, 128, 130, 131, 133–139,
    141, 142
  risk disclosure, 223–232, 234, 235, 242, 245
  risk etc., 208, 219, 232

C

Canada, 82, 83, 88, 89, 93, 95–98, 101
Capital investment, 61, 62, 64, 67–71, 73,
  75–78
Cash flows from operating activities, 83,
  87–89, 91, 92, 97–102
Change in analysts' forecast, 264
China, 82, 83, 88, 89, 93, 95, 96, 101, 102
Code-law, 162, 163, 168, 170, 171, 183, 184
Common-law, 162, 170
Common risk, 225, 231, 241, 242, 244, 245
Company characteristics, 287
Competitiveness, 191, 195–198, 220
Compliance, 204
Comprehensive income (CI), 13, 107–123
Conditional conservatism, 12, 59–68, 70, 71,
  74, 76–78
Consensus analyst forecast, 261–264, 267–274,
  277–282
Conservatism, 11, 12, 24, 59–78, 82, 84,
  85, 103
Conservative earnings forecast, 285–308
Conservative management forecast, 262, 264,
  271–272, 281
Continuous reporting, 257
Contracting perspective, 107, 109
Convergence, 2–4, 6, 8, 9, 11–15
Corporate behavior, 2–15
Corporate brand, 204, 216–219
Corporate governance, 156
Corporate image, 191, 219
Corporate management, 204
Corporate social responsibility (CSR), 196,
  219, 220
Corporate social responsibility (CSR) report,
  250, 251
Corporate system, 10, 16