Empirical research on gains and losses under Japanese GAAP and IFRS: focusing on the impairment losses and presentation of the income statement

Doctoral Dissertation

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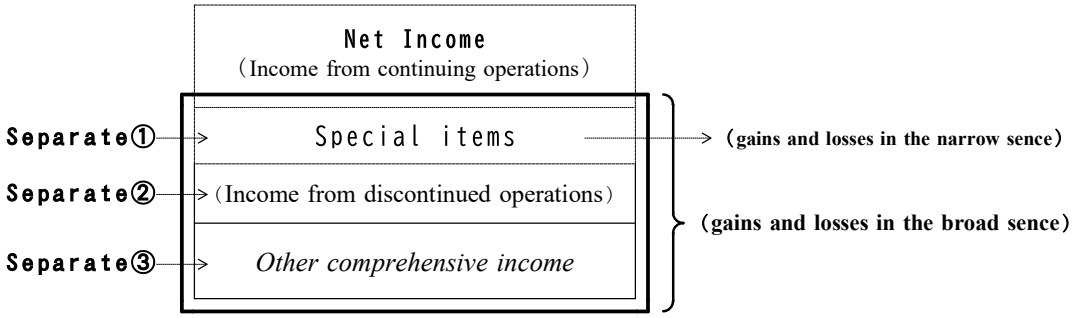
Chapter 1: The purpose of this paper

1. Introduction

1.1. Aim of this paper

This study conducts an empirical analysis of gains and losses from the perspective of presentation in the income statement under Japanese generally accepted accounting principles (J-GAAP) and international financial reporting standards (IFRS). In this study, the technical term "gains and losses" has two meanings. One is special items used in practice under US GAAP and IFRS in the narrow sense of gains and losses. In this case, special items under international standards are the same as extraordinary gains and losses under Japanese GAAP. Both are treated as special items herein unless otherwise noted. Adding to the above, the other is including discontinued operations under US GAAP and IFRS and other comprehensive income (OCI) in the broad sense of gains and losses. Firstly, the nature of income from discontinued operations is unusual and non-recurring and is therefore partially treated as special items under J-GAAP.[1] Secondly, OCI is "gain and loss" in the Conceptual Framework (FASB 1985 No. 6, par. 74, IASB 2010, par. 4.31 and 43.5) due to the characteristic of OCI that should be clearly distinguished from operating income. OCI items are economic gains and losses affected by external management factors, such as market value difference of securities and foreign currency translation. The reason I focus on the gains and losses from the perspective of the presentation of the income statement is that these are presented separately. Figure 1 shows the uniqueness of the presentation form of gains and losses in the income statement.

Figure 1: The presentation form of special items in the income statement



Interestingly, the presentation remains a significant difference between J-GAAP and IFRS, even after the comprehensive progression of the convergence project. Special items in Figure

[1] The reason it is "partially" treated as special items under J-GAAP is the contents of income from discontinued operations are operating income and special items, such as a capital gain and loss of selling a subsidiary, restructuring loss, and impairment loss.

1 are separated only under J-GAAP (1), while discontinued operations are separated only under IFRS (2). Moreover, J-GAAP clearly draws the line between net income and other comprehensive income, resulting in much being made of the "recycling of OCI." Therefore, the separation between net income and OCI is significant for J-GAAP (3). On the other hand, IFRS does not emphasize the concept of net income itself; thus, the separation is not clear, causing the restriction on OCI recycling. These differences stem from the difference in the accounting view between J-GAAP and IFRS. Therefore, this study directly sheds light on the international debate on the convergence of accounting standards. Another aspect of the theme of this study is explained by the existence of "Japan's Modified International Standards (JMIS or J-IFRS)." J-IFRS is highly unique (or maybe quite unusual) in Japanese accounting regulations; its peculiarity stands out in that no firm has adopted it. The purpose of J-IFRS seems to be to encourage more listed firms to adopt IFRS (ASBJ, 2015b); however, J-IFRS successfully reflects the relentless commitments of J-GAAP that will never be convergent with IFRS, that is, "goodwill impairment (ASBJ, 2015c)," "net income," and "OCI recycling (ASBJ, 2015a)." These commitments are the same as the points of the main topic of this paper. From a different viewpoint, the other issues are either already in convergence or, if not, only minor differences that the J-GAAP can tolerate. Therefore, this study considers the most important accounting issue attributed to the significant differences between J-GAAP and IFRS.

1.2. The structure of this paper

This study investigates gains and losses from the perspective of presentation in the income statement under J-GAAP and IFRS. Regarding special items as the narrow sense of gains and losses, one of the significant differences between the standards is "impairment loss." The accounting standard is internationally controversial because there are notable differences among J-GAAP, US GAAP, and IFRS. Considering the impact and importance of impairment losses in practice, the differences in these standards could be a serious issue for users of financial statements. Therefore, this study first considers one of the most controversial accounting issues, "impairment loss."

In chapter 2, I investigate goodwill impairment loss under J-GAAP and IFRS, focusing on the predictive value for future operating cash flows. The argument regarding the accounting treatment for goodwill impairment reflects the characteristics of both standards. The impairment method under IFRS differs from J-GAAP in two principal ways: (1) non-amortization and (2) annual impairment tests. Both differences have long been debated

internationally in the accounting field, and the impairment approach is about to drastically change in the current movement among US GAAP and IFRS (FASB, 2017; IASB, 2018). This study can contribute to the international debate from Japan. In chapter 3, I compare the quality of tangible long-lived asset impairments under J-GAAP and IFRS. Not only goodwill impairment, but also impairments of the aforementioned assets under J-GAAP also differ significantly from that under IFRS, mainly in terms of recognition criterion and impairment reversals. Furthermore, the ratio of tangible assets is significantly higher due to the great development of the manufacturing industry in Japan. Focusing on the differences, I attempt to reveal which impairment standard has higher quality in terms of the predictive value for future cash flow and determinations of impairment. Besides, I also investigate the reversals of impairment losses under IFRS in chapter 4.

Regarding gains and losses of presentation in the income statement, discontinued operations is the specific regulation of IFRS. In chapter 5, I analyze the classification shifting using this and the impact on core earnings. I attempt to reveal the potential problems and usefulness of such operations under IFRS, assuming future adoption as J-GAAP (ASBJ, 2009).[2] This is the first empirical investigation on classification shifting using discontinued operations by the IFRS sample.

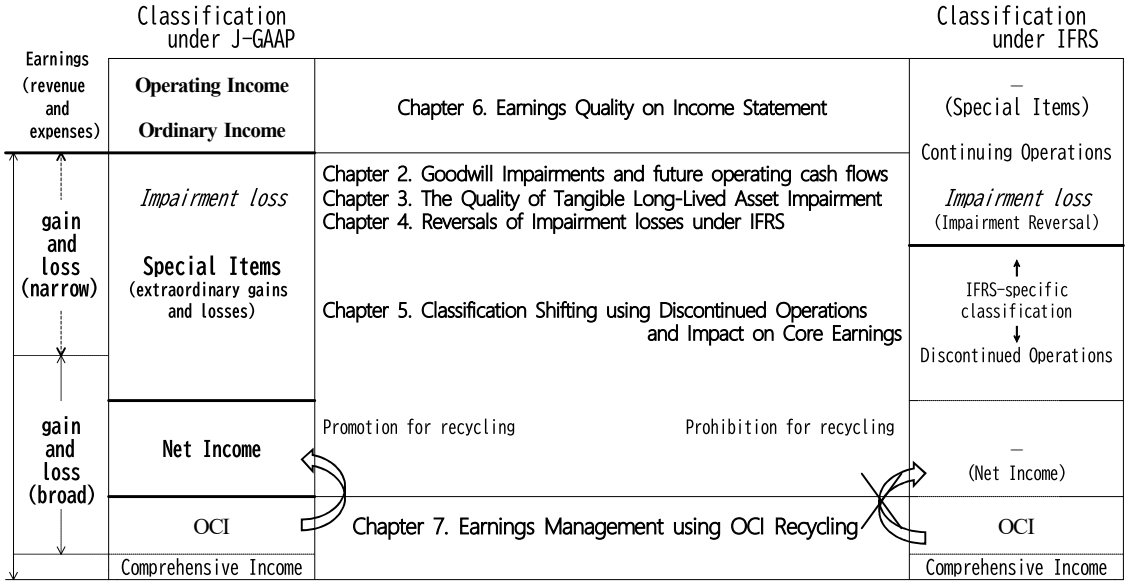
In chapter 6, I survey the earnings quality on the income statement under J-GAAP and IFRS. I compare subtotal incomes in the presentation, such as operating, ordinary, and income from continuing operations because the presentation of the income statement relies heavily on the view of income, which stems from the whole accounting view.

Finally, since the ASBJ accepted the regulation on the presentation of comprehensive income (ASBJ Statement No. 25) as a part of the convergence project between J-GAAP and IFRS in 2010, Japanese listed firms disclose comprehensive income in addition to net income. However, while J-GAAP requires full recycling for the sake of emphasizing net income in the income statement, IFRS fundamentally prohibits OCIR due to earnings management concerns. In chapter 7, I investigate the earnings management using OCI recycling comparing J-GAAP and IFRS.

Figure 2 describes the big picture of the research framework and structure, indicating the relationship between all issues in this study and the difference between J-GAAP and IFRS.

[2] ASBJ (2009) considers the adoption of the accounting standard on discontinued operations by comparing the usefulness of information with the burden on financial statement preparers.

Figure 2: Research framework and structure of this study



2. The current issues of Convergence between J-GAAP and IFRS

With the "Accounting Big Bang" in the late 1990s, the development of accounting standards in Japan has made significant progress. After that, with the rapid globalization of the capital market after 2000, overseas trends began to directly affect Japanese accounting standards so as to keep pace with the global standard, which is known as “Convergence.” As a result, the development of accounting standards in Japan for internationalization has been promoted at an even faster pace. In response to the organizational reforms of the International Accounting Standards Board (IASB), the Accounting Standards Board of Japan (ASBJ) was established in April 2001 as an independent private accounting standard-setter in Japan. Since then, global convergence centered on International Financial Reporting Standards (IFRS) has accelerated, and ASBJ's activities have also been strongly influenced by the evaluation of accounting standards in the European Union (EU). Convergence has become central for Japan. With the requirement to apply IFRS to consolidated financial statements prepared by firms in the region listed on the European market from 2005, “the 2005 issue” was going to be discussed in Japan in July 2004. This is because there was concern that it would have a significant impact on Japanese firms listing in the European market. Non-EU securities issuers are required to prepare financial statements in accordance with IAS or IAS-equivalent domestic standards from 1st January 2007. The European Commission (EC) is required to establish a mechanism to assess the equivalence of accounting standards in countries outside of the EU. In June 2004, the EC issued an instruction to the European Securities Regulators Commission (CESR) to provide technical advice on the equivalence of US GAAP, J-GAAP, and Canadian GAAP.

CESR conducted a technical assessment of its equivalence to US GAAP, J-GAAP and Canadian GAAP, and published technical advice to EC on July 5, 2005. Despite the fact that

the Financial Services Agency, ASBJ, and Nippon Keidanren (Japan Federation of Economic Organizations) have complained that Japanese accounting standards are equivalent to IAS, CESR's advice was shocking to Japanese standards as follows. CESR, along with US GAAP and Canadian GAAP, called for certain supplementary measures, albeit "overall equivalent." The important differences subject to supplementary measures were 26 items for J-GAAP, 19 items for US GAAP, and 14 items for Canadian GAAP. The crucial differences in J-GAAP by complementary measures pointed out by CESR are as follows in Figure 3.

Figure 3: The crucial differences in J-GAAP from IFRS pointed out by CESR

Share-based payment transaction (IFRS 2)	Investment Property (IAS 40)
Non-controlling interest at acquisition cost (IFRS 3)	Aquisition date (IFRS 3)
Step acquisition (IFRS 3)	Acquired R & D (IFRS 3)
Abnormal Risk Reserve (IFRS 4)	Negative goodwill (IFRS 3)
Construction contract (IAS 11)	Last-in first-out method (IAS 2)
Bad debt, non-performing loans (IAS 12, IAS 30)	Unification of accounting policies (IAS 28)
Asset retirement obligations (IAS 16)	Impairment Test - Recognition criteria (IAS 36)
Employee Benefits (IAS 19)	Capitalization of development costs (IAS 38)
Goodwill conversion (IAS 21)	Agriculture (IAS 41)
Fair Value of Derivatives (IAS 32)	Equity pooling method (IFRS 3)
Impairment Reversal (IAS 36)	Scope of consolidation (definition of control-qualified SPE) (IAS 27)
Disposal costs (IAS 37)	Financial Instruments (IAS 39)

Convergence work proceeded as planned in the "Tokyo Agreement" published by ASBJ and IASB in 2007 regarding the critical differences from IFRS. As a result of that convergence, in April 2008, the EC adopted the conclusion that J-GAAP, as well as US GAAP, are equivalent. The accounting standard equivalence evaluation that began in 2004 is now settled, and it has become possible that Japanese firms continue to be listed on the European market after 2009 using financial statements prepared in accordance with Japanese standards. Agriculture (IAS 41) is excluded from the consideration of convergence because it is not necessary for Japanese standards. Regarding the capitalization of development costs (IAS 38), it is not an urgent matter because it is a rule that is not permitted by US GAAP and is treated in the same way as J-GAAP, but convergence is currently under consideration.

Interestingly, Impairment Reversal (IAS 36) Disposal costs (IAS 37) Impairment Test (IAS 36) that are all related to gains and losses treatment remains to be converged among the crucial differences. In other words, the most significant differences between J-GAAP and IFRS exist in the income statement, what is more, gains and losses. That is why this study investigates the practice and situation of impairment reversals under IFRS using a Japanese sample in Chapter 4 and empirically analyzes the difference of impairment loss recognition between J-GAAP and IFRS in Chapters 2 and 3. Besides, the presentation of the income statement is also

considered to be one of the important differences between J-GAAP and IFRS. In this regard, the "Analysis of Issues Regarding Presentation of Financial Statements" published by the Accounting Standards Board of Japan (ASBJ) in 2009, comparing the usefulness of information with the burden on financial statement preparers. It is specified that the introduction of IFRS 5 "Non-current Assets Held for Sale and Discontinued Operations" will be considered in the future (ASBJ, 2009). Therefore, assuming that IFRS 5 may be introduced in Japan near future, and that is why this study analyzes discontinued operations in Japan in Chapter 5. This study can contribute to adopting the regulation on discontinued operation as a part of J-GAAP and indicate potential issues of this standard. ASBJ (2009) also considers the difference in the treatment of gains and losses in the income statement presentation and whether to distinguish them from operating income or include them like IFRS. Therefore, I take this significant issue regarding the presentation of the income statement as a current issue of convergence in the way of comparing the earnings quality of each stepwise income stages that stem from the treatment of gains and losses in Chapter 6.

Lastly, here is another difference between J-GAAP and IFRS regarding gains and losses that is other comprehensive income (OCI) recycling. While J-GAAP requires full recycling for the sake of emphasizing net income in the income statement, IFRS fundamentally prohibits OCIR due to the earnings management concerns. There is ongoing debate over the years whether to prevent OCI recycling or not. IASB revise the conceptual framework (IASB 2018, para.7.36) suggests that the current recycling rule has no clear guidance regarding when an item of income or expenses should be included in the income statement or the statement of OCI, and this issue needs to be addressed in future standards. Following the evidence from this study in Chapter 7, both IASB and J-GAAP may need to reconsider whether current recycling rules should be eliminated.

3. Prior studies

This paper basically belongs to the comparability of domestic standards and IFRS in terms of the quality of accounting standards (ex. Barth et al., 2008). As I show prior research below in Figure 5, most previous studies focus on earnings quality (Schipper and Vincent, 2003; Francis et al., 2008; Dechow et al., 2010) using several indexes of earnings qualities (ex. discretionary accruals, accruals quality, persistence, predictability, smoothness, value relevance, timeliness, conservatism). While previous studies have compared the impact and quality of different accounting standards on summarized accounting measures (Barth et al., 2008; Barth et al., 2012), there is no guarantee that all financial statement items are equally comparable even if accounting standards have high comparability between a domestic standard and IFRS as a whole. Considering that, this study examines the quality of aggregated earnings (Dechow, 1994; Barth et al., 2001; Gordon and Hsu, 2018), extending one of the most controversial accounting issues, such as impairment losses, discontinued operations, and the

recycled net income, which differs significantly between J-GAAP and IFRS.

The prior research on the comparability of international accounting standards has begun in the U.S. to compare the accounting quality of US GAAP to IAS as non-US GAAP (Harris and Muller, 1999; Lang et al., 2003; Lang et al., 2006). After the position of IASB rose in the European countries when IFRS was adopted as a national accounting standard in place of the domestic standard, the study on compatibility on IFRS with US GAAP gradually conducted among U.S. and each European countries (Gordon et al., 2008; Hughes and Sander, 2008; Bradshaw and Miller, 2008). In addition to European countries, it is a major research topic in Canada and Australia after a decision to adopt IFRS as domestic accounting standards. The more countries decided to adopt IFRS, the more international research using global data was conducted, and individual Asian and African countries.

IFRS comparability studies are classified based on which domestic standard to be compared with IFRS. Figure 4 is a table showing the primary prior research based on the area of domestic standards, including studies using global data (cross-country study).

Figure 4: The primary prior research based on the country

Country	Prior research	Summary
United States	Harris and Muller 1999	The US GAAP adjustments of 31 US-listed foreign firms applying IFRS are increments related to IFRS-based accounting amounts.
United States	Lang et al. 2003	Comparing foreign firms currently not cross-listing in the United States, foreign firms cross-listing on U.S. exchanges are less aggressive in terms of earnings management and report accounting data that are more conservative, take account of bad news in a more timely manner, and are more strongly associated with the share price, suggesting a unique quality to cross-listing on U.S. exchanges.
United States	Lang et al. 2006	Comparing the earnings of US firms with the adjusted earnings of cross-listed non-US firms, earnings of non-US firms have a lot of evidence of income smoothing, are more likely to manage their earnings towards their goals, are less relevant to stock prices, and are not timelier to recognize losses.
United States	Barth et al. 2007	Comparing earnings quality between firms in 21 countries that have voluntarily or enforced IFRS and US GAAP. Results show that the US GAAP is higher earnings quality, and the application of IFRS did not improve the earnings quality.

United States	Gordon et al. 2009, Hughes and Sander 2008	Comparing earnings attributes of earnings based on IFRS and US GAAP adjustments provides evidence that the earnings adjusted under IFRS and US GAAP are comparable, but the quality of earnings adjusted under US GAAP is higher.
United States	Bradshaw and Miller, 2008	Non-US firms that have adopted US GAAP tend to adjust items that need to be required by US GAAP. There are moves to ensure comparability by approaching US standards.
Australia	Goodwin et al. 2008	Indicating that while there is weak evidence of a decline in earnings value relevance, firms that capitalize intangibles have increasing earnings value relevance.
Australia	Bryce et al. 2015	The quality of accounting has not improved significantly since the adoption of IFRS in Australia.
Australia, France, England	Jeanjean and Stolowy 2008	There is no evidence that earnings management is suppressed after the compulsory application of IFRS in Australia and the United Kingdom, whereas there is evidence that earnings management is promoted in France.
Brazil	Eng et al. 2019	In the post-IFRS implementation period, there has been no improvement in revenue information, analyst forecast accuracy, or post-employment liquidity.
UK, France and German	Barth et al. 2014	Net income adjustments focusing on IAS 39 Financial Instruments, IFRS is more value relevant than European domestic standards.
Canada	Jermakowicz et al. 2018	The adoption of IFRS in Canada has produced a better financial report on the book value and net income of equity in the post-employment period.
China	DeFond et al. 2019	The association between earnings and returns generally declines after IFRS adoption, consistent with reduced earnings quality because China's institutional setting creates weak incentives for managers to produce high-quality financial statements.
Finland	Jarva and Lantto 2010	Earnings under IFRS are no more timely in reflecting publicly available news than earnings under Finnish standards. Furthermore, book values of assets and liabilities measured under IFRS are no more value relevant than they are under FAS.
France	Armstrong et al. 2010	For French banks, the application of IAS 39 reduces the usefulness of financial statements. This suggests that French securities regulators may have weakly enforced the standards, which may have reduced the relevance of net income adjustments associated with IAS39.
Germany	Gassen and Sellhorn 2006	Analyzing German firms from 1998 to 2004, the earnings quality is higher for firms that voluntarily changed from German accounting

		standards IFRS (IAS).
Germany	Van Tendeloo and Vanstraelen, 2005	Using a sample of German firms, we show that voluntary adoption of IFRS cannot be associated with reducing profit management behavior.
Germany	Bartov et al. 2005	Using the German firms, the value relevance of US GAAP and IAS-based income is higher than the value relevance of German GAAP.
Germany	Daske 2006	Investigating the hypothesis that the adoption of IAS / IFRS or US-GAAP reduces the cost of capital of German companies, the analysis based on the period from 1993 to 2002 shows firms applying IAS / IFRS or US-GAAP fail to find a reduction in the expected cost of equity capital.
Germany	Jermakowicz et al. 2007	Analyzing major German firms, finding that the value relevance of earnings after voluntarily applying IFRS or US GAAP has improved.
Germany	Van Tendeloo and Vanstraelen 2005	Investigating the discretionary accruals when German firms voluntarily apply to IFRS, and finding that the discretionary accruals are not suppressed by the application of IFRS, but rather increased
Germany	Gontcharov and Zimmermann 2007	Voluntary transitions from German accounting standards to IFRS report no evidence of restraining management's opportunistic discretionary behavior.
Germany	Paananen and Lin 2009	Comparing the earnings quality before and after the compulsory application to IFRS in German accounting standard, the earnings quality deteriorates after the compulsory application because earnings management is rather promoted, and the recognition of losses is delayed.
Germany	Bartov et al. 2005	The earnings response coefficient is the highest among German firms applying US GAAP, followed by firms applying IFRS, and followed by firms applying German GAAP.
Greece	Bellas et al. 2007	Evidence that the adjustments of Greece's accounting standard to net income improve incremental value relevance.
Indonesia	Shara and Mita 2017	The convergence of IFRS shows that Indonesian SMEs will increase the number and proportion of foreign ownership by countries adopting IFRS.
Italy	Paglietti 2009	IFRS adoption contributes to an improvement in accounting quality by documenting value relevance improve after the mandatory IFRS application.

Malaysia	Ismail et al. 2013	IFRS adoption is associated with higher quality of reported earnings. Earnings reported during the period after the adoption of IFRS are associated with lower earnings management and higher value relevance.
New Zealand	Islam et al. 2009	Analyzing absolute discretionary accruals are significantly higher under IFRS than under pre-IFRS NZ GAAP, suggesting lower earnings quality under IFRS than under pre-IFRS NZ GAAP.
Nigeria	Udofia 2018	Finding a positive perception from users and preparers of financial statements on the benefits derived from IFRS adoption in Nigeria.
Norway	Gjerde et al. 2008	Little evidence of increased value relevance after adopting IFRS for Norwegian listed companies applying IFRS
Norway	Beisland and Knivsfla 2010	The result shows IFR increases the value relevance of book values and decreases the value relevance of earnings because of the fair value accounting.
Polrtgy	Morais and Curto 2008	Comparing the earnings quality and value relevance of accounting data of 34 Portuguese listed firms before and after the adoption of IFRS, finding that IFRS firms report less smooth earnings than those firms that adopted domestic accounting standards, suggesting an improvement in earnings quality while the value relevance of accounting information decreases with the adoption of IFRS.
Singapore, Malaysia, Indonesia	Joshi et al. 2016	The analysis of the data shows that accounting professionals in Singapore, Malaysia, and Indonesia strongly supported IFRS adoption;
South Africa	Negash 2008, Ames 2013	There is no evidence that value relevance does not improve after adopting IFRS, resulting in the earnings quality is not significantly ameliorated post-adoption.
South Korea	Kwon et al. 2017	Significant IFRS adoption effects by documenting smaller absolute values in discretionary accruals and real earnings management, higher accrual quality, stronger earnings persistence, and less frequent negative earnings, providing evidence of improved earnings quality with Korea's mandatory IFRS adoption.
Spain	Callao et al. 2007	The application of IFRS worsens comparability as a result of the large deviation between Spanish national standards and IFRS. There is no improvement in the relevance of financial reporting to local equity market operators.

Sweden	Paananen 2008	The quality of financial reporting has not improved in the first two years after the adoption of IFRS in Sweden. On the contrary, there are some signs of poor financial reporting quality measured as earnings smoothing, timely loss recognition, and value relevance.
Turkey	Turel 2010	The value relevance has improved after the compulsory application of IFRS for Turkish firms.
United Kingdom	Horton and Serafeim 2010	Using a sample of a large non-financial UK firm that adopted IFRS mandatorily provide evidence of value relevance of adjustments related to total net income adjustments and some individual criteria.
EU	Christensen et al. 2015	Earnings management (smoothing) has increased following the 2005 mandatory IAS/IFRS adoption in the (EU.
EU	Chen et al. 2010	The compulsory application of IFRS improves the earnings quality in 15 EU countries (the profit adjustment of loss avoidance is suppressed, and the absolute value of discretionary accounting accrual is reduced).
EU	Kvaal and Nobes 2010	Covering five EU countries and points out that principle-based IFRS is more susceptible to management judgment and discretion than rule-based accounting standards.
EU	Kaserer and Klinger 2008	The quality of profits does not improve because fair value information with low verifiability impairs the information value.
Global	Barth et al. 2008	Value relevance increased after firms voluntarily adopted IFRS. Firms applying IAS from 21 countries generally have less earnings management, more timely loss recognition, and more value relevant accounting amounts than matching sample firms applying non-U.S. domestic standards.
Global	Daske, 2008	Examining the economic impact of mandatory IFRS among 26 countries that are required to adopt IFRS. By analyzing market liquidity, cost of capital, and Tobin's q, they find that market liquidity increases before and after the introduction of IFRS, which indicate market liquidity increases around the time of the introduction of IFRS as well as a decrease in firms' cost of capital and an increase in equity valuations.
Global	Ahmed et al. 2010	Discovering that the earnings quality has deteriorated in 21 countries that enforced IFRS in 2005
Global	Atwood et al. 2010	Regarding 21 countries applying IFRS, it is pointed out that the earnings quality of IFRS is even worse than that of their own domestic standards.

US and Global	Barth et al. 2012	The application of IFRS by non-US firms generated a better accounting system, which is more value relevant and comparable with US firms when IFRS firms adopt IFRS rather than national standards.

Some of the IFRS comparability studies pay attention to the significance of the fair value accounting as a major characteristic of IFRS (Ball, 2006), based on the usefulness of the balance sheet by comparing the value relevance of net assets or capitalization of intangible assets such as R&D (Lin and Chen, 2005; Hung and Subramanyam, 2007; Agostino et al., 2008; Capkun et al., 2008; Chalmers et al., 2011a; Gjerde et al., 2008; Kinsey et al., 2008; Paananen and Parmaer, 2008; Horton and Serafeim, 2010; Karampinis and Hevas, 2009; Morricone et al., 2009; Truel, 2009; Beisland and Knivslfa, 2010; Devalle et al., 2010; Jarva and Lantto, 2010; Oliveira et al., 2010). Another notable aspect of comparing with IFRS is principle-based, especially comparing rule-based accounting of US GAAP (Barh et al., 2007; Kvaal and Nobes, 2010).

Most of the prior research shown in Figure 4 mainly focuses on earnings quality using several indexes of earnings quality. Therefore, the income statement is the most significant element of a financial statement when comparing the quality accounting standard. That is why this study focuses on the income statement, including a presentation to analyze the comparability of IFRS to J-GAAP. Even IFRS is thought to be a high-quality accounting standard; prior research provides mixed evidence on whether the transition to IFRS deters or contributes to greater accounting outcomes. This paper also investigates the earnings qualities between J-GAAP and IFRS in Chapter 6, which is more specific to J-GAAP earnings, named "ordinary income." This specific income, based on the philosophy to be separated gain and losses from ordinal income under J-GAAP, successfully reflects J-GAAP uniqueness against IFRS because it treats gains and losses included in the operating income.

Interestingly, there is no international analysis using global data with Japanese IFRS firms because of the limitation of a sample and voluntary adoption. Furthermore, it seems that there is little research on compatibility between IFRS and domestic standards in Japan because of the sample limitation. Gray et al. (2019) investigate what factors make Japanese firms motivate to adopt IFRS voluntarily. They find that Japanese firms are motivated to better communicate with global capital market participants through using IFRS. Kim et al. (2019) investigate the effect of voluntary IFRS adoption on information asymmetry among investors in Japan and fail to find a statistically significant association between bid-ask spread, which is our proxy for information asymmetry, suggesting that voluntary IFRS adoption does not affect information asymmetry in Japan.

While most of the prior studies on comparability of IFRS focus on the quality of earnings summarized accounting measures, some international studies deal with specific items such as

R&D or impairment losses because there still remains the differences between US GAAP and IFRS even after convergence. Tsoligkas and Tsalavoutas (2011) study the relationship between R & D assets and the value of costs in the UK since 2005, showing that the capitalized portion of R & D has a significant positive relationship with the market value. This suggests that the market recognizes these items as successful projects with future economic benefits. Gordon and Hsu (2018) and (2019) investigate the quality of impairment losses comparing UG GAAP and IFRS using global data except for Japan. They conclude that impairment losses of long-lived assets under IFRS are more related to the decline of future cash flow and firm-specific factors. Szczesny and Valentincic (2013), working on asset impairments of German private firms during the period of adoption of IFRS (between 2003 and 2006), find that German firms that are profitable, have financial liabilities, and pay dividends tend to report assets impairment losses. Hong et al. (2018) sample firms in a single country to study US and IFRS foreign firms listed in the United States and compare the two impairment criteria. The IFRS impairment process requires impairments to be recognised based on direct discounted cash flows and allows the impairment to be reversed if the asset's economic conditions change. On the one hand, this reveals that incentives reflect the firm's unique economic setting. On the other hand, US GAAP impairments require recognition based on discounted cash flows and prohibit the reversal of impairment losses. Previous studies on impairment rehearsals tend to regard them as an earnings management tool and find evidence consistent with this belief (Duh et al., 2009; Trottier, 2013; Cao et al., 2018; Tan and Trotman, 2018; Shaari et al., 2017). Considering prior studies show no positive aspect of impairment reversals, there is room to indicate the benefit of impairment reversals in accordance with the orient of accounting standards.

The difference of recognition criteria of impairment losses evokes another academic question, which is goodwill impairment losses between J-GAAP and IFRS. In 2014, the Accounting Standards Board of Japan (ASBJ), the European Financial Reporting Advisory Group (EFRAG), and the Italian Standards Setter (OIC) published the discussion paper (ASBJ, EFRAG, and OIC, 2014) and concluded that it would be appropriate to reintroduce GW amortization based on a survey conducted through a questionnaire, and a majority of respondents also agreed with the proposed view that GW amortization should be reintroduced (ASBJ, EFRAG, and OIC, 2015). Churyk and Chewning (2003) show that in the initial abolishment of systematic GW amortization in the US, only weak support for GW impairment is found, but strong evidence of subsequent impairment is found later, supporting the decision of regulators to eliminate GW amortization. Some empirical studies that have investigated GW amortization (Jennings et al., 2001; Moehrie et al., 2001; Yamaji and Miki, 2011), implying that earnings before amortization are more relevant than earnings after amortization. On the contrary, Henning et al. (2000) point out that the equity market may not see goodwill as an

expense because the amortization of goodwill is not necessarily negatively evaluated in the equity market.

While the impairment test and GW amortization became a controversial topic again internationally these days, there is no empirical research on comparing the impairment test with GW amortization and without amortization these days. Therefore, there still remains to be investigated the difference of goodwill impairment test recognition with amortization from the international perspective. Once GW impairment testing has been discussed after the FASB issued SFAS 121 (FASB, 1995), Riedl (2004) investigate its effect on the characteristics of reported impairments prior to the issuance of SFAS 121. His results reveal that economic factors are weakly associated with impairments after SFAS 121, suggesting that impairments reporting under SFAS 121 are of poor quality. Jarva (2009) finds that the reporting of GW impairment under SFAS 142, which calls for the non-amortization and annual impairment test, is relevant to future cash flows. There are many prior studies on problems of the impairment test under SFAS 142. Some investigations under IFRS also point out the same issues (e.g., André et al., 2015; Carlin and Finch, 2010; Caruso et al., 2016; D'Alauro, 2013; Saastamoinen and Pajunen, 2016). However, some studies support the benefits of the current impairment test. Stokes and Webster (2010) show that the IFRS-based GW impairment reflects the underlying economic conditions of firms under the circumstance where the enforcement and implementation of IFRS are ensured with higher audit quality by large audit firms. Chalmers et al. (2011b) found that GW impairment losses, as IASB expects, reflect the underlying economic attributes of GW better than systematic amortization in Australia. Abughazaleh et al. (2012) further explored the value relevance of GW impairment in the U.K. They provide evidence that the reported GW impairment is significantly and negatively associated with market value. This result implies that investors adequately recognize the decline in value of GW through impairment and incorporate it in their assessments of firms' value. Karampinis and Hevas (2014), using an international sample, find that GW impairments under IFRS are enhanced timeliness but less reliable in predicting future OCF compared to impairments of tangible long-lived assets.[3] Andreicovici et al. (2020) explore whether disclosing GW

[3] Recent prior research reveals conditions when the GW impairment test works. Knauer and Wöhrmann (2016) suggest that when the level of legal enforcement in a country is low, investors respond to GW impairment more negatively and allow more management discretion. Besides, the market response to GW impairment is associated with managers' explaining the valuation and reports on which they rely to verify these explanations. The market reacts more positively when provided with a verifiable external explanation while more negatively when given a non-verifiable internal explanation. Andreicovici et al. (2020) explore whether the disclosing GW impairment tests is useful to analysts or not. They find that the transparency of disclosures is negatively related to not only information disparities between analysts but also between analysts and managers. They also point out that opportunistic and boilerplate disclosures disturb their ability to resolve information asymmetries and information

impairment tests is useful to analysts or not. They find that the transparency of disclosures is negatively related to not only information disparities between analysts but also between analysts and managers. They also point out that opportunistic and boilerplate disclosures disturb their ability to resolve information asymmetries and information uncertainties. Investigating prior literature on the GW impairment test, there are a majority of conclusions that capture the native aspect of GW impairment testing in US-based research, while they tend to be mixed conclusions of both native and positive in the IFRS-based research. The GW impairment test between SFAS 142 and IFRS is not yet fully unified. Furthermore, this difference may be due to institutional factors significantly affecting the quality of accounting reporting (Leuz et al., 2003; Burgstahler et al., 2006; Lang et al., 2006; Barth et al., 2012; Gordon and Hsu, 2018). Therefore, it is worth considering the effectiveness of the IFRS-based GW impairment test in Japan, which is becoming a large IFRS user country.

One of the international discussion which Japan does not pay attention to is "Discontinued operations" between SFAS 144 and IFRS 5. In 2002, SFAS 144 broadened the definition of discontinued operations by replacing the business segment requirement under APB 30 with the component of an entity concept. This change allowed firms to report smaller asset dispositions as discontinued operations, increasing the reporting frequency. As a result of that, the recognition of discontinued operations significantly increased after SFAS 144. Taking that issue into consideration, the joint FASB/IASB convergence project sought to define the scope of transactions reported in discontinued operations. Later, in 2010, amendments were made for convergence with the IASB, where frequent reports of discontinued projects were questioned. In response, the 2014 revision (ASU 2014-08) clarified the definition of discontinued projects, and it is expected that the frequency of reporting discontinued projects will decrease after the revision. Those two FASB/IASB standards of discontinued operations are quite similar thanks to the convergence project. However, the IFRS Interpretations Committee discusses problems with the practical application and interpretation of the scope of discontinued operations under IFRS 5, how to display intra-group transactions between continuing and discontinued operations, and non-continuing operations. It includes a review of the current definition of discontinued operations because how to set the requirements for classification as discontinued projects has a strong influence on the quality of discontinued projects. Barua et al. (2010) is the first to investigate classification shifting using discontinued operations that are segregated from the results of continuing operations and are presented separately in the income statement. Curtis et al. (2014) find no evidence of opportunistic growth when comparing APB 30 and SFAS 144. They emphasize the usefulness of a wide range of discontinued operations under SFAS 144. On the contrary to previous SFAS 144,

uncertainties.

Accounting Standards Update 2014-08 (ASU 2014-08) narrows the scope of discontinued operations. Ji et al. (2020) discover that the application of ASU 2014–08 results in fewer opportunities for earnings management using discontinued operations. However, Kang et al. (2018) insist that ASU 2014-08 lowers the quality of core earnings based on the evidence that the persistence and response coefficient of core earnings significantly reduces, resulting in that analysts' forecast error and dispersion increase. Given these previous studies, the range of discontinued operations in the standard could affect both usefulness and earnings management practices; however, both Curtis et al. (2014) and Ji et al. (2020) do not find significant earnings management behavior of discontinued operations according to the new accounting standard. Focusing on income decreasing (negative) discontinued operations, Darrough et al. (2019), using the date of U.S. firms, investigate whether managers shift income-decreasing special items to discontinued operations. They obtain the evidence that managers classification-shift asset write-downs to discontinued operations. Skousen et al. (2019) find that more capable managers reduce the degree of classification shifting using discontinued operations, and the shifting is mainly driven by firms with income-decreasing discontinued operations. Kaplan et al. (2019) find that the asymmetric phenomenon of shifting operating expenses to negative discontinued operations is due to the fact that positive discontinued operations are valued higher than negative discontinued operations. Silva et al. (2018), one of the limited prior literatures on discontinued operations under IFRS based, examine 191 discontinued operations in Brazil firms that adopted IFRS. The results do not show that managers incur in opportunistic decisions to discontinue operations to increase the core earnings. At the moment, there is no prior study finding earnings management evidence regarding classification shifting using discontinued operations under IFRS.

Finally, OCI recycling (OCIR) substantially differ between J-GAAP and IFRS. The ASBJ accepted the Accounting Standard for Presentation of Comprehensive Income (ASBJ Statement No. 25) as part of the convergence project between J-GAAP and IFRS in 2010; thus, Japanese listed firms disclose comprehensive income in addition to net income. However, while J-GAAP requires full recycling to emphasize net income in the income statement, IFRS fundamentally prohibits OCIR due to earnings management concerns. There is an ongoing debate on whether to prevent OCI recycling. Historically, the topic of OCIR has been controversial. That OCIR can be used to manage earnings is a major concern, as expressed by the Financial Accounting Standards Board (FASB) members (FASB, 1993). Prior literature provides evidence that eliminating OCIR helps control earnings management (Rees and Shane, 2012). Previous studies in the United States investigate the opportunistic use of OCIR, focusing on a single industry (e.g., banks or insurance companies) and specific OCI items (Barth et al., 2014; Graham et al., 2005; Lee et al., 2006). Jones and Smith (2011) argue that managers' discretion over investment choices and the timing of realization encourage earnings management concerns regarding OCIR. Graham et al. (2005) conduct a survey in the United

States on whether respondents consider the benefits of selling investments and other assets to meet or beat the prior year's earnings. Lee et al. (2006) reveal that U.S. insurance company managers engage in 'cherry-picking' to timely coordinate the realization of security gains or losses to manage earnings. Barth et al. (2014) provide further supporting evidence for this finding. They reveal that U.S. banks engage in income smoothing and big bath accounting through the sale of AFS securities.

While the abovementioned previous studies mainly deal with the sale of AFS financial assets as a means of OCIR, another relevant area is "cash flow hedge accounting." Chiorean et al. (2017) examine whether U.S. firms engage in OCIR earnings management using cash flow hedge accounting. Their findings reveal that managers opportunistically reclassify the OCI of cash flow hedges and strategically designate and de-designate derivatives in cash flow hedges to achieve earnings benchmarks such as analysts' forecasts, prior period return on assets (ROA), and zero earnings in the current period. Furthermore, they find that adopting the revised standard (ASU 2011-05) regarding OCIR does not eliminate earnings management but reduces it significantly. Arthur et al. (2017), based on a sample of Australian firms, find that there is a positive link between OCIRs that increase revenue and meeting or exceeding both last year's revenue and analyst forecasts. However, there is no evidence of using OCIR to avoid losses. In addition, they show that companies whose OCIR-managed earnings far exceed revenue benchmarks used OCIRs to reduce earnings. This is consistent with the income smoothing hypothesis. Finally, they suggest that OCIR and discretionary accrual complement each other rather than compete with each other, providing additional evidence of a significant positive association between OCIR and discretionary accruals. Rees and Shane (2012) examine whether the demand for OCIR stems from the importance of EPS calculations. If investors emphasize EPS based on net income, and OCIR recognizes all realized cumulative transactions through OCI in the net income, EPS will be calculated more favorably than without OCIR (Rees and Shane, 2012). As long as net income is highlighted in the income statement, OCIR keeps net income a key performance indicator (Detzen, 2016). However, Frendy and Semba (2016) investigate the usefulness of OCI recycling in Japan and reveal that unlike ASBJ's expectations that recycling enhances the usefulness of net income, the inclusion of recycling reduces sustainability and increases net income volatility.

4. Characteristic of this study

This study is the first comprehensive investigation of gains and losses in the income statement under J-GAAP and IFRS in Japan and has three exclusive characteristics. The first is the use of an IFRS sample from Japan. From the fiscal year ended March in 2010, voluntary application of IFRS to the consolidated financial statements of listed companies was permitted in Japan. Since then, listed firms in Japan start considering voluntary adoption of IFRS from J-

GAAP. For the moment of 2020, 224 listed firms have adopted IFRS in Japan (6 percent in the listed firms), including those to be applied. In the firms, 203 firms shifted from J-GAAP to IFRS and 21 firms newly listed. Considering the current trend that the number of IFRS-applied firms is increasing, it is necessary to investigate which standard is better for Japan. This study attempts to reveal the accounting quality between J-GAAP and IFRS, contributing to the current policy debates for standard setters in Japan regarding whether to adopt IFRS fully for all listed firms.

Another characteristic is using an exclusive data set for impairment loss and special items under IFRS. Because the sample data regarding goodwill impairment and impairment of tangible long-lived assets under US GAAP and IFRS are not available in the Japanese database, data were hand-collected from the annual report in Japan. International empirical research on impairment is conducted on each type of asset. Due to the restriction of the dataset in Japan, there is a lack of previous research on impairment by asset type in Japan, much less research on IFRS. This study is a pioneering approach to IFRS comparative and impairment research in Japan.

The last characteristic of this study is the adoption of a fixed effects model for regression. When using panel data, controlling fixed effects is crucial. Whether to control the firm-specific effect, the 'Hausman test' is necessary (Hausman et al., 1981). Except for "expected core earnings regression" in chapter 5,[4] the results of the Hausman test support the fixed effects model; thus, I adopt fixed effects regressions to deal with correlated omitted variables. The greatest merit of the model is that the individual (firm) effect, which cannot be made variable, does not affect the estimated value because the individuality of each firm is completely eliminated. In pooling regression analysis using panel data, the estimates are far from appropriate because the unobserved heterogeneity biases the estimates. To distinguish this study from others, regression analysis is consistently performed using a fixed effects model.

5. Chapter summary

5.1. Chapter 2. Goodwill impairments and future operating cash flows under Japanese GAAP and IFRS: Evidence from Japan

This study examines the predictive value of goodwill impairment for future operating cash flows under J-GAAP and IFRS using a Japanese sample. I investigate whether the difference

[4] There are two exceptions of results from fixed-effects regressions. First, expected core earnings in chapter 5 are predicted using McVay (2006)'s model and estimated by industry-year, excluding individual firms from the estimation. Second, I could not partially find expected significant results with the fixed-effect model in Chapter 3.

in the predictive value of goodwill impairment is due to distinctions in recognition and goodwill amortization under both impairment standards. I find that goodwill impairments reported under IFRS, which requires an annual impairment test with non-amortization of goodwill, are more negatively related to changes in future operating cash flows than those under J-GAAP, which requires a two-step impairment test and amortization of goodwill. Furthermore, evidence suggests that the goodwill impairment of firms that switched their accounting standard from J-GAAP to IFRS is also negatively associated with changes in future operating cash flows after shifting the standard. This result implies that goodwill impairments under IFRS are more informative and timelier than those under J-GAAP, even in the case of voluntarily shifting to IFRS. This study supports the adoption of non-amortization and annual impairment tests in Japan and sheds light on the current movement for the improvement of goodwill impairment tests and amortization.

5.2. Chapter 3. The Quality of Tangible Long-Lived Asset Impairments under Japanese GAAP and IFRS

This study samples Japanese firms to examine the quality of tangible long-lived asset impairments under J-GAAP and IFRS, with a specific focus on two aspects: (1) the determinants of impairments and (2) the predictive value for future operating cash flows. I investigate whether the quality of such impairments is due to differences in the recognition process, including the reversing between two standards. This study clarifies the impact of differences in the recognition criteria of tangible long-lived assets under J-GAAP and IFRS. Consistent with Gordon and Hsu (2019), a sample of firms adopting J-GAAP or IFRS in Japan reveals that IFRS impairments relate more to macroeconomic factors consistent with the one-step impairment model expected to capture declines in profitability in a more timely manner. By contrast, J-GAAP impairments further relate to macroeconomic factors consistent with the two-step impairment model expected to delay recognition. These results also indicate that J-GAAP impairments are associated with reporting incentives more than IFRS impairments. Consistent with Gordon and Hsu (2018), this study also demonstrates that impairments reported under IFRS, which require a one-step impairment model and allow for reversing impairments, are negatively associated with changes in future operating cash flows. However, those under J-GAAP are not and require a two-step impairment model and prohibit reversing impairments. Thus, adopting IFRS impairment standards can contribute to higher-quality impairments as they provide accounting-specific information and an association with future declines in

operating cash flows consistent with impairments-related accounting standards.

5.3. Chapter 4. Investigation on reversals of impairment losses under IFRS: Evidence from Japan

The purpose of this survey is to clarify the status of reversing impairment losses of firms applying IFRS by examining the tendency of firms to reverse impairment losses. The results reveal a unique trend in specific firms and industries in reversing impairment losses in Japanese IFRS firms. I find that the types of assets with impaired losses that can be reversed are slightly more intangible fixed assets than tangible fixed assets. In addition, I statistically examine whether there is a difference in performance between the reversal firm and no-reversal firm. Results indicate a significant difference in both net income and operating cash flow in the medical product and food industries, which have a high rate of reversing impairment losses on intangible assets. On the other hand, the difference in business performance disappeared as the industry reversed more tangible fixed assets. In some actual disclosure examples in practice, there are cases in which detailed disclosure regarding the reversal of impairment is not appropriately made, which is considered to be an institutional issue in IFRS.

5.4. Chapter 5. Classification Shifting using Discontinued Operations and Impact on Core Earnings: Evidence from Japan

Using reported discontinued operations among Japanese firms adopting IFRS, this study investigates whether managers engage in earnings management through classification shifting to manage core earnings. Using a methodology based on McVay (2006) and Barua et al. (2010), I find evidence that firms shift operating expenses of continuing operations to discontinued operations to increase core earnings, consistent with Barua et al. (2010). Additionally, I desegregate reported discontinued operations into core and non-core earnings because previous literature assumes that firms engage in classification shifting using special items. Results reveal that firms employ the classification shifting using negative non-core earnings (negative special items) of discontinued operations. These results would be beneficial for both standard setters and investors by clarifying the potential risks of the income statement under IFRS. Furthermore, the income-increasing discontinued operations negatively influence both current and future core earnings, while income-decreasing discontinued operations do not. This result demonstrates the usefulness of disclosing discontinued operations as a premise of the importance of core earnings to evaluate firms' performance.

5.5. Chapter 6. Earnings Quality on Income Statements Under Japanese GAAP and IFRS

This study investigates the quality of stepwise earnings on income statements, such as operating, ordinary, and net income, under J-GAAP and IFRS. A sample of Japanese firms adopting J-GAAP or IFRS is used to compare multiple attributes of J-GAAP versus IFRS earnings, including their closest J-GAAP equivalent similar to ordinary income, by adjusting IFRS earnings. J-GAAP earnings are found to be superior to IFRS earnings in terms of persistence, predictability, smoothness, value relevance, and timeliness, while IFRS earnings are superior in conditional conservatism. However, the results also reveal that "pseudo-ordinary" income in the IFRS sample is ultimately better than GAAP-based IFRS earnings and equivalent to the J-GAAP earnings in persistence, predictability, smoothness, and value relevance. The comparison of IFRS earnings attributes with pseudo-earnings that are the closest to J-GAAP ordinary income reflects the demand for value-relevant measures of financial performance beyond GAAP-based IFRS earnings. The results do not support the adoption of IFRS in Japan to improve earning quality. Further, IFRS should disclose compulsorily "ordinary income (or core earnings)" as GAAP earnings that require regulation and statutory auditing.

5.6. Chapter 7. Earnings Management using Other Comprehensive Income Recycling: Evidence from Japan

This study investigates other forms of comprehensive income recycling (OCIR) as a tool for classification shifting for earnings management and compares J-GAAP and IFRS to determine whether adopting IFRS prevents classification shifting using OCIR. Based on a sample of Japanese firms, I find a positive association between income-increasing OCIR and meeting or beating zero earnings, prior year's earnings, and managers' forecasts among J-GAAP firms while earnings management behaviors using OCIR disappear in the firms under IFRS except for meeting or beating management's forecast of EPS. Additionally, I investigate the relationship between OCIR and net income before OCIR (PRNI) to test the hypothesis of "Big Bath" hypothesis and "Income Smoothing," that is, whether firms use OCIR to influence the current earnings. The result shows that firms with PRNI below zero use OCIR to reduce current earnings and magnify losses under J-GAAP, consistent with the "Big Bath" hypothesis, while there is no supportive evidence under IFRS. However, I do not obtain the evidence both under J-GAAP and IFRS for the income smoothing hypothesis that firms with PRNI above

zero use OICR to reduce current earnings. Given these results, permitting OCIR entirely under J-GAAP encourages Japanese firms to engage in earnings management using OCIR while adopting IFRS can successfully prevent classification shifting.

6. Contribution

The contributions of this study are as follows. First, this study is one of the first papers to conduct empirical research that comprehensively compares gains and losses, including the presentation in the income statement under J-GAAP and IFRS in Japan. Given the unique situation in which Japan allows listed firms to choose accounting standards among J-GAAP, US GAAP, pure-IFRS, and J-IFRS, I can compare J-GAAP and IFRS in a single country, and differences in institutional settings between countries can be ignored. This allows me to focus on the difference between J-GAAP and IFRS and compare them more adequately and accurately because previous studies demonstrate that national institutional incentives, including regulatory systems, legal environment, and enforcement, influence the quality and properties of accounting information (Ball et al., 2000; Ball et al., 2003; Lang et al., 2006; Bradshaw and Miller, 2008).

Second, the results provide evidence that the quality of IFRS is higher than J-GAAP in terms of impairments of both goodwill and tangible assets, impairment reversals, and OCI recycling that are crucial differences between J-GAAP and IFRS. However, the results also show that the investigation on discontinued operations in chapter 5 and earnings quality in the income statement in Chapter 6 indicate mixed results. While I find evidence that is consistent with earnings management behavior using discontinued operations, the results also indicate the useful aspect regarding the impact of core earnings. Likewise, the survey on earnings quality in chapter 6 complements the positive result on the high quality of J-GAAP earnings while the advantage of IFRS earnings on conditional conservative. As a whole, this study supports the adoption of each individual accounting standard of IFRS regarding gains and losses. However, considering the supportive results for J-GAAP earnings quality, adopting IFRS in Japan might not lead to improvement regarding earnings quality. Additionally, one supportive suggestion from J-GAAP is the value of "ordinary income." The result of chapter 6 supports the adoption of J-GAAP ordinary income for IFRS firms to improve the usefulness of accounting information. Overall, the common view from this paper is that the quality of accounting could rely on the treatment of gains and losses.

Finally, the implications of this study must be important for regulators and standard setters

in Japan. Since accounting standards are different in J-GAAP and IFRS, standard setters should pay attention to the impact on financial reporting outcomes and differences in predicted gains and losses, including the presentation of the income statement. As regulators in Japan are considering adopting IFRS and have expressed concern about material differences in certain items, it is also essential to pay attention to differences in specific standards. Since IFRS is the predominant set of high-quality accounting standards worldwide, financial statement users will be interested in the implications of this study.

Chapter 2: Goodwill impairments and future operating cash flows under Japanese GAAP and IFRS: Evidence from Japan

ABSTRACT

This study investigates whether the difference in the predictive value of goodwill impairment for future cash flows is caused by the distinctions between recognition and goodwill amortization under the Generally Accepted Accounting Principles in Japan (J-GAAP) and International Financial Reporting Standards (IFRS) using a Japanese sample. I find that goodwill impairments reported under IFRS, which require an annual impairment test with a non-amortization of goodwill, are more negatively related to changes in future operating cash flows than those under J-GAAP, which requires a two-step impairment test with an amortization of goodwill. Subsequent evidence suggests that the goodwill impairment of firms that switched their accounting standard from J-GAAP to IFRS is also negatively associated with changes in future operating cash flows. This result implies that goodwill impairments under IFRS are more informative and timelier than those under J-GAAP, even in the case of voluntarily shifting to IFRS.

1. Introduction

The purpose of this study is to investigate the predictive value of goodwill (GW) impairment for future operating cash flows (OCF) under the Generally Accepted Accounting Principles in Japan (J-GAAP) and International Financial Reporting Standards (IFRS).[5]

GW impairment loss is one of the most controversial accounting issues in the international arena. There are numerous prior studies investigating impairment tests under US GAAP or IFRS; however, there is limited research on the relationship between GW impairment and future OCF. Jarva (2009) finds that the reporting of GW impairment under SFAS 142, which calls for the non-amortization and annual impairment test, is relevant to future cash flows. Lee (2011) examines the ability to predict future cash flows by comparing GW amortization expense in the period before applying SFAS 142 and GW impairment loss in the period after applying SFAS 142, finding that the ability to predict the cash flows becomes significant after applying SFAS 142 thanks to the benefit of fair value valuations. However, a comparison between the current impairment test without GW amortization and previous impairment tests with GW amortization remains to be investigated regarding predictive value for future OCF. It seems too late to examine a similar topic in this study because the era of both normal impairment tests and GW amortization has been gone a long time ago since SFAS 142 was implemented. However, the impairment test and GW amortization became a controversial topic again internationally. In 2014, the Accounting Standards Board of Japan (ASBJ), the European Financial Reporting Advisory Group (EFRAG), and the Italian Standards Setter (OIC) published the discussion paper, *Should goodwill still not be amortised? - Accounting and disclosure for goodwill* (ASBJ, EFRAG, and OIC, 2014). The research group concluded that it would be appropriate to reintroduce GW amortization based on a survey conducted through a questionnaire, and a majority of respondents also agreed with the proposed view that GW amortization should be reintroduced (ASBJ, EFRAG, and OIC, 2015).[6]

Furthermore, the FASB issued new guidance for simplified GW impairment testing because the current GW impairment test is complicated and strict (FASB, 2017), and the IASB

[5] Japan allows listed firms to choose voluntarily accounting standards among J-GAAP, US GAAP, pure-IFRS, and Japan's Modified International Standards (JMIS or J-IFRS). For the moment of 2020, 224 listed firms have adopted IFRS in Japan (6 percent in the listed firms), including those to be applied. In the firms, 203 firms shifted from J-GAAP to IFRS and 21 firms newly listed.

[6] ASBJ is actively communicating internationally its views on GW amortization and impairment test (ASBJ, (2015d). In addition, ASBJ published Research Paper No.2. *Quantitative Study on Goodwill and Impairment* (ASBJ, 2016), and Research Paper No.3. *Analyst Views on Financial Information Regarding Goodwill* (ASBJ, 2017). One of the practical solutions ASBJ proposes on the GW impairment issue is an 'optional approach'. It is a selective application approach that requires that the current IAS 36 impairment-only model or the amortization and impairment model be the accounting policy that managers consider useful in fulfilling its accountability.

also discusses ways to improve current GW impairment tests (IASB, 2018) in accordance with the movement in the US.[7] Given these trends, GW amortization and impairment tests are the primary topics discussed internationally. Interestingly, since the impairment standards under J-GAAP and IFRS are not uniform even after convergence projects have proceeded, the GW impairment procedure under J-GAAP, requiring GW amortization and recognition criterion as same as other asset impairment, is entirely opposite to the international rules. Additionally, it is currently available only in Japan to have the data environment among major economic growth countries in which domestic GAAP and IFRS samples coexist officially in a single country.[8] Therefore, it is a great opportunity to create a stir in the current emerging discussion on GW impairment by empirically comparing J-GAAP and IFRS.

The impairment method under IFRS differs from J-GAAP in two principal ways: (1) non-amortization and (2) annual impairment tests. GW impairment under J-GAAP is considered to be less timely than impairment under IFRS due to the use of a "two-step impairment test" and "GW amortization." Given these differences, I expect that the relationship of GW impairment under both impairment standards and the predictive value of GW impairment for future OCF would be different. The reason why I investigate the relationship to future OCF is that the validity of an accounting procedure should be primarily judged by the theoretical consistency of the description of both the conceptual framework and accounting standards. Considering the meaning of the existence of the conceptual framework in the contemporary accounting system, the criteria for value judgment should first weigh the highest conceptual provisions. The individual accounting standard is fundamentally established, consistent with the conceptual framework, and introduces concrete accounting rules to achieve the common object.

The conceptual framework under both the ASBJ and IASB states that the objective of financial reporting is to provide useful information for users to assess the prospects for future net cash inflows to an entity (ASBJ 2006 Cap.2 par.1; IASB 2010, OB3). Moreover, it is

[7] FASB issued the new guidance of simplified GW impairment testing (FASB, 2017), which requires only a one-step quantitative impairment test resulting GW impairment is simply and directly measured as the carrying amount of a reporting unit exceeds its fair value. Recently, IASB discusses the way to improve current GW impairment tests based on the feedback that the entity-specific nature of value-in-use might give managers to avoid recognizing impairments with unwarranted management optimism. IASB attempts to devise an approach to GW impairment testing that considers movements in 'headroom,' which is the excess of the recoverable amount of the cash-generating unit (or group of units) over the carry amount of that unit (IASB, 2018).

[8] Most previous studies address the comparability of standards in multiple countries, allowing the investigation of institutional settings across countries (e.g., Barth et al., 2012; Gordon and Hsu, 2018). However, if firms are not confronted with the same incentives, enforcement, regulation, and litigation environment that they all face, the analysis of comparability of accounting standards is inaccurate (Lang et al., 2006). A comparison of accounting standards by domestic companies implicitly controls factors other than accounting standards (Barth et al., 2012). This study explores GW impairment in a single country so that differences in institutional settings between countries can be ignored.

common that the recognition trigger of an impairment loss is decidedly based on future performance according to the impairment standards (Business Accounting Council of Japan (BACJ) 2002b par. 3-1; IASB 2004 IAS 36, par. 59).[9] Therefore, investigating the predictive value of GW impairments for future OCF under J-GAAP and IFRS can directly verify the validity and effectiveness of the impairment standard, which is evidence of successful reflection of firms' underlying economics. If it becomes clear which standard is more predictable for future OCF implying timelier impairment recognition, the result could be one possible answer to the current argument on GW impairment.

Using a sample of firms in Japan reporting under J-GAAP and IFRS from 2007 to 2016, I investigate the influences of recognition and amortization treatment differences on the predictive value of GW impairments. The empirical evidence shows that a negative relationship between GW impairments and changes in future OCF under IFRS, but weaker under J-GAAP. Furthermore, using a sample shifting from J-GAAP to IFRS voluntarily, I investigate the relationship between GW impairments and future OCF. Considering the appreciation for the non-amortization of GW to avoid higher depreciation costs by adopting voluntary IFRS, these firms might have an opportunistic motivation to delay GW impairment loss.[10] Nevertheless, I still obtain evidence of a greater negative association between GW impairments and changes in future OCF. Additional tests using propensity score matching (PSM) also provide supportive evidence for it. Given these results, the GW impairment standard under IFRS has a more predictive value of GW impairment for future OCF than that under J-GAAP in the predictive value of future OCF.

This study also contributes to the literature on standard comparability. Previous studies have compared the impact and quality of different accounting standards on summarized accounting measures (Barth et al., 2008; Barth et al., 2012). However, there is no guarantee that all financial statement items are equally comparable even if accounting standards have high comparability between a domestic standard and IFRS as a whole. Gordon and Hsu (2018) focus on impairments of tangible long-lived assets to investigate the differences between US GAAP and IFRS because the comparability of specific accounting items can be limited by

[9] The finding that earnings' association with future OCF is getting stronger while the relationship with earnings and market price is getting weaker over time (Kim and Kross, 2005) also supports my investigation on the relationship with future OCF as a proxy of impairments quality.

[10] This study makes up a part of research on the voluntary adoption of IFRS. While the prior research on voluntary adoption of IFRS during the period before the mandatory IFRS application mainly focuses on the motivations or determinations for earlier IFRS adoption in the short period, which might influence the disclosure quality (e.g., Christensen et al, 2015; Kim and Shi, 2012a, 2012b; Iatridis, 2012), I use IFRS sample that contains at least consecutive five fiscal years long, and focusing the consistency between specific accounting items and future OCF as stipulated in the Conceptual Framework and standard.

differences in accounting standards. I extend this study and investigate one of the most controversial accounting issues, GW impairment," which differs significantly between J-GAAP and IFRS.

2. Background and Prior research

2.1. GW Impairments Standard Under J-GAAP and IFRS

Both J-GAAP and IFRS consider GW to be impaired whenever events or changes in circumstances indicate that the asset's carry amount (CA) may not be recoverable (BACJ, 2002b par. 3–1; IASB 2004 IAS 36, par. 59); however, those of impairment accounting are different in loss recognition criteria. J-GAAP does not demand a particular test for GW impairment and accepts a "probability criterion," which calls for GW impairment loss to be recognized when it is probable that the CA of an asset will not be fully recoverable (BACJ, 2002b par. 4-2(2)). The probability criterion is practiced in a two-step approach, similar to other long-lived assets. In the first step, firms assess the possibility of impairment by comparing the CA to the sum of undiscounted expected future OCF. If the CA is higher than the amount of undiscounted expected future OCF, then the firm has to move to the second step. In the second step, firms compare the asset's CA to its recoverable amount (RA), which is defined as the higher between value-in-use (VIU) and fair value less costs of disposal (BACJ, 2002a par.2-2). If the RA is lower than CA, then an impairment loss is reported as the difference between the RA and CA. Since comparing an asset's CA with its undiscounted future cash flows to avoid recognizing excessive impairment losses by considering probability, the two-step test approach is thought to be prudent. However, this careful treatment of GW impairments under J-GAAP might result in a weak and less timely relationship between GW impairment and future cash flows.

In addition to a two-step impairment test, J-GAAP requires systematic amortization of GW, unlike US GAAP and IFRS. Traditionally, it is thought in Japan that 'amortization' is reasonable and conservative in dealing with the uncertainty of future prediction and difficulty of GW evaluation. Moreover, ASBJ insists on GW amortization because it is suitable for the historical cost accounting system, consistent with the cost allocation and matching principle (ASBJ 2003, No.21, par. 105).[11] From the view of accounting usefulness, ASBJ believes that

[11] In addition to that reason, J-GAAP also insists that GW amortization can avoid 'internally generated goodwill' (ASBJ 2003, No.21, par.106). On the other hand, FASB insists that the useful life of GW and its depreciation pattern cannot be predicted with sufficient reliability (FASB 2001 SFAS 142, B74). FASB also believes that GW amortization does not provide useful information because it does not reflect economic substance (FASB 2001 SFAS 142, B79).

reflecting allocation cost upon earnings for each reporting period through systematic amortization will provide financial statement users with useful information on financial performance (ASBJ, 2015). The description of GW amortization has been discussed separately from GW impairment in Japan, t. Recently, the international trend for GW impairment has moved back to the past. ASBJ, EFRAG, and OIC propose that GW amortization should be reintroduced for the sake of GW impairment based on a survey conducted through a questionnaire (ASBJ, EFRAG, and OIC, 2014, 2015).

From the viewpoint of the recognition trigger, the systematic amortization results show that the CA of GW is to be smaller than that of non-amortization. In addition, comparing the asset's CA to undiscounted future OCF under a two-step impairment test makes GW impairment more unlikely to be recognized than non-amortization due to the higher threshold. As long as the impairment standard under J-GAAP considers that future OCF is recognition triggers of impairments by comparing current assets' CA, investigating the predictive value of GW impairment for future OCF is a related research topic to whether GW should be amortized or not.

In contrast, IFRS (IASB 2004 IAS 36) uses a one-step recognition approach and an annual strict impairment test. The one-step approach under IFRS is employed by evaluating the asset's CA to its RA directly; when the CA is greater than its RA, an impairment loss is recognized. Furthermore, IFRS prohibits the systematic amortization of GW.[12] Instead, IFRS requires annually or more frequently impairment tests whenever changes or events in a business environment indicate assets impairments. The IASB argues that the mechanism of impairment under IFRS successfully reflects the underlying economic attributes of GW (IASB 2004 IAS 36, BC131G). As a result, GW impairment under IFRS is expected to be more informative and timelier than a two-step test approach with GW amortization under J-GAAP. Furthermore, IFRS requires the non-amortization of GW, making systematic assets' CA higher and the recognition threshold lower. Therefore, GW impairments under IFRS are more likely to be recognized than and amortized CA under J-GAAP.

2.2. Goodwill Impairment Accounting Research

Previous studies provide empirical evidence that GW amortization over an arbitrary period begets noise, making it more difficult for users to predict future performance rather than

[12] In 2004, IASB rejected GW amortization because the amount amortized in a particular period can, at best, be described as an arbitrary estimate of the consumption of acquired GW during that period (IASB 2004).

provide useful information to financial statement users, suggesting that GW amortization is not useful in decision making (Jennings et al., 2001; Moehrle et al., 2001).[13] It seems that the majority of GW impairment amortization in prior research is negative and critical.

In addition to the argument on systematic amortization, GW impairment testing has been discussed after the FASB issued SFAS 121 (FASB, 1995). Riedl (2004) investigated its effect on the characteristics of reported impairments prior to the issuance of SFAS 121. His results revealed that economic factors are weakly associated with impairments after SFAS 121, suggesting that impairments reporting under SFAS 121 are of poor quality.

Further studies have focused on GW impairments after following the application of SFAS 142 (FASB, 2001). Henning and Shaw (2004) show that firms do not engage in earnings management for the amounts and timing of impairments after adopting SFAS 142. Lee (2011) posits that eliminating systematic amortization and taking a fair value estimate contributes to an improvement in the representational faithfulness of the GW report based on the discovery of SFAS 142's impact on the ability of GW to predict future cash flows. Li and Sloan (2017) indicate that managers use discretionary guidelines provided by the revised SFAS 142 to delay GW impairment, causing a temporary rise in earnings and stock prices. Ramanna and Watts (2012) paid attention to the verifiability of the estimation of GW fair value by managers under SFAS 142. Their results suggest that managers tend to engage in individual reporting incentives opportunistically, the discretion outlined in SFAS 142 rather than communicating internal information about the future foresight.

As mentioned above, there are many prior studies on problems of the impairment test under SFAS 142.[14] Some investigations under IFRS also point out the same issues (e.g., André et al., 2015; Carlin and Finch, 2010; Caruso et al., 2016; D'Alauro, 2013; Saastamoinen and Pajunen, 2016). However, some studies support the benefits of the current impairment test.[15]

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[13] Churyk and Chewning (2003) show that in the initial abolishment of systematic GW amortization in the US, only weak support for GW impairment is found, but strong evidence of subsequent impairment is found later, supporting the decision of regulators to eliminate GW amortization. Some empirical studies that have investigated GW amortization in Japan (Yamaji and Miki, 2011), implying that earnings before amortization are more relevant than earnings after amortization. Jennings et al. (2001) and Moehrie et al. (2001) reveal that the value relevance of net income before deduction of amortization of goodwill and net income after deduction does not necessarily differ significantly. On the contrary, Henning et al. (2000) point out that the equity market may not see goodwill as an expense because the amortization of goodwill is not necessarily negatively evaluated in the equity market.

[14] On the contrary to criticism for impairment test, Jarva (2009) finds that GW impairments under SFAS 142 are associated with future expected cash flows required by the standard, while no evidence of opportunistic behavior when avoiding impairments of non-impairment companies is discovered, even when GW has to be impaired.

[15] It is not a specific thesis to GW impairment test, but, Hong, Paik, and Smith (2018) indicate that the adoption of IFRS motivates managers to reflect the underlying economics of a firm by requiring management to impairments based on discounted cash flows and canceling the impairment if the economic condition of the asset changes. On the other hand, the impairment test under U.S. GAAP based on undiscounted cash flows, combined with prohibiting the reversal of impairment losses, allows managers for earnings management behavior at both

Stokes and Webster (2010) show that the IFRS-based GW impairment reflects the underlying economic conditions of firms under the circumstance where the enforcement and implementation of IFRS are ensured with higher audit quality by large audit firms. Chalmers et al. (2011b) found that GW impairment losses, as IASB expects, reflect the underlying economic attributes of GW better than systematic amortization in Australia. Abughazaleh et al. (2012) further explored the value relevance of GW impairment in the U.K. They provide evidence that the reported GW impairment is significantly and negatively associated with market value. This result implies that investors adequately recognize the decline in value of GW through impairment and incorporate it in their assessments of firms' value. Karampinis and Hevas (2014), using an international sample, find that GW impairments under IFRS are enhanced timeliness but less reliable in predicting future OCF compared to impairments of tangible long-lived assets.[16]

Investigating prior literature on the GW impairment test, there are a majority of conclusions that capture the native aspect of GW impairment testing in US-based research, while they tend to be mixed conclusions of both native and positive in the IFRS-based research. The GW impairment test between SFAS 142 and IFRS is not yet fully unified. Furthermore, this difference may be due to institutional factors significantly affecting the quality of accounting reporting (Leuz et al., 2003; Burgstahler et al., 2006; Lang et al., 2006; Barth et al., 2012; Gordon and Hsu, 2018). Therefore, it is worth considering the effectiveness of the IFRS-based GW impairment test in Japan, which is becoming a large IFRS user country.

2.3. Impairment and Future Cash Flow

Jarva (2009) is one of the few previous studies showing positive aspects of SFAS 142 implementation regarding the association with future OCF. Jarva (2009) finds that GW impairment under SFAS 142 is related to one and two years of future OCF required by the standard but finds no compelling evidence that non-impairment firms opportunistically avoid

management discretion and incentives.

[16] Recent prior research reveals conditions when the GW impairment test works. Knauer and Wöhrmann (2016) suggest that when the level of legal enforcement in a country is low, investors respond to GW impairment more negatively and allow more management discretion. Besides, the market response to GW impairment is associated with managers' explaining the valuation and reports on which they rely to verify these explanations. The market reacts more positively when provided with a verifiable external explanation while more negatively when given a non-verifiable internal explanation. Andreicovici et al. (2020) explore whether the disclosing GW impairment tests is useful to analysts or not. They find that the transparency of disclosures is negatively related to not only information disparities between analysts but also between analysts and managers. They also point out that opportunistic and boilerplate disclosures disturb their ability to resolve information asymmetries and information uncertainties.

impairment. However, there are signs that GW impairment is lagging behind the GW's economic impairment when firms with contemporaneous restructuring due to agency-based motivation. Cready et al. (2012) also indicate a result of GW impairment's negative relationship with future OCF. They decompose negative special items such as restructuring charges, asset impairment losses, and GW impairment losses into subtypes and investigate the predictable and variable impact on future performance. The result suggests that negative special items have information content that contributes to future earnings and cash flow forecasts.

Gordon and Hsu (2018) is the most influential study in my research. Gordon and Hsu (2018) focus on the difference in impairment standards between US GAAP and IFRS. Unlike IFRS, US GAAP accepts the 'probability criterion,' which requires a two-step impairment test and adopts a fair value measurement of impairments. They probe into the predictive value of impairments of tangible long-lived assets for future changes in OCF under US GAAP and IFRS.[17] The impairment reported under IFRS is negatively related to changes in future OCF, but not at all under US GAAP. Furthermore, IFRS impairments are more predictable in highly enforceable countries. However, they do not find that the VIU measurement attributes permitted under IFRS provoke an underreporting of impairment. Therefore, there is no significant difference in impairment measurements between VIU and fair values. Since this research does not focus on GW impairment and leaves another examination, I examine GW impairment as the major accounting indicator contributing to the predictability of future OCF in terms of the usefulness of accounting information.

3. Hypothesis development

3.1. Differences in Recognition and GW Amortization

As is common with both J-GAAP and IFRS, GW is impaired when events or changes in circumstances indicate that an asset's CA may not be recoverable (BACJ, 2002b par. 3–1; IASB 2004 IAS 36, par. 59). The recoverability of assets causally relates to future cash flow because investments on the assets are to be recovered by OCF. Therefore, an impairment loss is recognized when the expected future OCF is estimated to decline to a threshold that indicates that the investment in the asset cannot be recovered by the future OCF.

However, the quality of the reporting of impairments is different due to the difference in

[17] Before Gordon and Hsu (2018), prior literature investigates whether current earnings, accruals, and cash flows are informative for future OCF (e.g., Barth, et al., 2001; Dechow, 1994). Barth et al. (2001) disaggregate accruals and investigate how the accrual components contribute to the predictability of changes in future OCF. As GW impairment is an accrual component, I also extend this prior literature.

recognition criteria and the amortization of GW. GW impairments under IFRS should have incremental predictive value beyond GW impairments under J-GAAP. The combination of a 'two-step model' and 'amortization' as the GW impairment premises suggests that GW impairments are delayed and less informative under J-GAAP relative to IFRS. During the period between the economic GW impairment and the delayed recognized GW impairment, the related cash flow has already declined or is independent of economic impairment. Because the GW impairment is reported after a decrease in cash flow, it is unpredictable or difficult to predict future changes in OCF adequately given the nature of the GW, that decrease in cash flow can continue for a certain period. On the contrary, GW impairment under IFRS is expected to be recognized in the timing reflecting the economic situation related to each firm thanks to the one-step model and annual impairment test. Furthermore, non-amortization of GW, making assets' CA higher and the recognition threshold lower, is more likely to recognize GW impairments. These differences in impairment standards between J-GAAP and IFRS lead to the second hypothesis below:

H1. Goodwill impairments reported under IFRS are more negatively associated with changes in future operating cash flows than those under J-GAAP.

3.2. GW Impairment and Past OCF

Taking a two-step impairment test and GW amortization aims to be more prudent about uncertainty in exchange for the delayed impairment losses. Following Gordon and Hsu (2018), I also examine the relationship between GW impairments and a change in "past" OCF. Given the differences in loss recognition between J-GAAP and IFRS, GW impairments under J-GAAP are more likely to be related to changes in past OCF and negatively related to changes in past OCF. In contrast, GW impairments under IFRS are unlikely to be related to changes in past OCF or positively related to changes in past OCF. Focusing on "past" cash flows leads to my third hypothesis as follows:

H2. Goodwill impairments reported under J-GAAP are negatively associated with changes in past operating cash flows (goodwill impairments reported under IFRS are positively associated with changes in past operating cash flows).

3.3. Adopting IFRS and Accounting Quality

In prior research that compares accounting amounts based on IFRS and domestic standards, Barth et al. (2008) discover that the accounting quality of firms applying IFRS in multiple countries other than the US is generally higher than that of firms using national standards. Barth et al. (2012) also find that the application of IFRS by non-US firms generated a better accounting system, which is more value relevant and comparable with US firms when IFRS firms adopt IFRS rather than national standards. Given these results, GW impairment of firms switching to IFRS from J-GAAP will be more informative and timelier after shifting to IFRS. The fourth hypothesis is as follows:

H3. Goodwill impairments of firms that switched their accounting standards from J-GAAP to IFRS are negatively associated with changes in future operating cash flows after adopting IFRS.

4. Research design

The following two models were constructed to examine the predictive value of GW impairment for changes in future OCF, which is implemented when future OCF is used subject to the current OCF (Barth et al., 2001; Gordon and Hsu, 2018; Jarva, 2009).

$$\sum(OCF_{i,t+y} - OCF_{i,t+y-1}) = \alpha_0 + \alpha_1 OCF_{it} + \alpha_2 ACC_{it} + \alpha_3 IFRS_i + \alpha_4 GWIM_{it} + \alpha_5 IFRS_i * GWIM_{it} + \alpha_6 IROA_{it} + \alpha_7 \Delta OFC_{it} + \alpha_8 CAPX_{it} + \alpha_9 REST_{it} + \varepsilon_{it} \cdots \quad (1)$$

$$\sum(OCF_{i,t+y} - OCF_{i,t+y-1}) = \beta_0 + \beta_1 OCF_{it} + \beta_2 \Delta AR_{it} + \beta_3 \Delta AP_{it} + \beta_4 \Delta INV_{it} + \beta_5 DEP_{it} + \beta_6 IFRS_i + \beta_7 GWIM_{it} + \beta_8 IFRS_i * GWIM_{it} + \beta_9 OTHER_{it} + \beta_{10} IROA_{it} + \beta_{11} \Delta OFC_{it} + \beta_{12} CAPX_{it} + \beta_{13} REST_{it} + \varepsilon_{it} \cdots \quad (2)$$

where:

$\sum(OCF_{i,t+y} - OCF_{i,t+y-1})$: firm *i*'s accumulation of change in operating cash flows from year t+y-1 to t+y; $(y = -1,1,2,3)$

ACC_{it} : firm *i*'s accrual components excluding impairment losses and restructuring losses, equal

to $EARN_{it} - OCF_{it} + IM_{it} + REST_{it}$, where $EARN_{it}$ is firm *i*'s income before extraordinary items and discontinued operations, and $REST_{it}$ is firm *i*'s restructuring losses (shown as a positive amount).

IM_{it} : firm *i*'s reported long-lived assets impairments (shown as a positive amount);

$IFRS_i$: an indicator that equals 1 if firm *i* reports under IFRS, and 0 if the firm reports J-GAAP;

$GWIM_{it}$: firm *i*'s reported GW impairments (shown as a positive amount);

ΔAR_{it} : change in firm *i*'s accounts receivable per the statement of cash flows;

ΔAP_{it} : change in firm *i*'s accounts payable per the statement of cash flows;

ΔINV_{it} : change in firm *i*'s inventory per the statement of cash flows;

DEP_{it} : firm *i*'s depreciation and amortization expense;

$OTHER_{it}$: firm *i*'s net of all other accruals, calculated as $EARN_{it} - (OCF_{it} + \Delta AR_{it} - \Delta AP_{it} + \Delta INV_{it} - DEP_{it} - IM_{it} - REST_{it})$

$IROA_{it}$: median in firm *i*'s country-industry return on assets in year *t*. Industry classification is based on Nikkei-Middle-Industry code;

ΔOFC_{it} : change in firm *i*'s net operating cash flows;

$CAPX_{it}$: firm *i*'s capital expenditures; and

$REST_{it}$: firm *i*'s restructuring losses.

Using a set of panel data in this study, subscript *i* identifies the firm, and subscript *t* represents the fiscal year. All variables except $IFRS_i$ are divided by the beginning of total assets in year *t*. Equations (1) and (2) correspond to the concept that desegregated accruals contribute to the predictability of changes in future OCF (Barth et al., 2001; Dechow et al., 1998). Dechow et al. (1998) investigate the role of accruals in predicting future cash flows by showing that each accrual component reflects different information about OCF. Barth et al. (2001) expand Dechow's model of the accrual process. They prove that dividing accruals into changes in accounts receivable, accounts payable, and inventory, depreciation, amortization, and other accruals significantly enhances predictive ability. Following Gordon and Hsu (2018), both models were used to ensure robust results.

In Equation (1), earnings are disaggregated into current operating cash flows (OCF_{it}),[18] accruals excluding impairments (ACC_{it}), GW impairments ($GWIM_{it}$), and restructuring losses ($REST_{it}$). Both GW impairment and restructuring losses were coded as positive amounts. An

[18] In this paper, I used the Nikkei adjusted operating cash flow in the database "NEEDS-FinancialQUEST."

indicator variable for reporting under IFRS and an interaction term for GW impairments reported under IFRS, $IFRS_i*GMIM_{it}$, are included. The estimated coefficient of GM impairment is expected to be significantly negative, as the impairment should be related to future declines in OCF. The interaction term is also expected to be significantly negative if $IFRS_i*GMIM_{it}$ has an incremental predictive value. Following Cready et al. (2012), the dependent variable is examined one year ahead and cumulative change OCF two and three years ahead because the timing and pattern of future OCF declines are unknown, and future OCF is expected to decrease persistently over multiple periods.

Restructuring firms frequently report GW impairments, so restructuring losses from aggregate accruals as an additional control factor are excluded (Gordon and Hsu, 2018). $REST_{it}$, restructuring losses, is expected to be positively associated with future cash flows. The median of industry returns on assets, $IROA_{it,}$ is included to control industry-specific performance and macroeconomic factors. According to Jahmani et al. (2010), a return on assets is used as an indicator of possible GW impairment. They show strong evidence that the majority of firms whose return on assets is 2 percent or less for two years did not report GW impairment. Next, the current changes in cash flows, $\Delta OCF_{it,}$ are included to control the firm-specific relationship between current and future cash flows. The firm's capital expenditures, $CAPX_{it,}$ is included to control the firm's implementation of investment activities, which is expected to be positively related to future cash flows (Gordon and Hsu, 2018).

In Equation (2), the accruals (excluding impairments and restructuring losses) are further disaggregated, similar to the cash flow statement. As in Equation (1), the estimated coefficient of GW impairment is predicted to be negative and significant because GW impairment relates to declines in future OCF. The interaction term, $IFRS_i*GWIM_{it}$, is expected to be more negative and significant than $GWIM_{it}$ under J-GAAP if GW impairment under IFRS has an incremental predictive value.

In the research design above, I compare all J-GAAP samples and IFRS samples. However, firms voluntarily changed their accounting standards from J-GAAP to IFRS might have certain motivation to shift their standards. Prior research on voluntary IFRS adoption indicates the motivations or determinations for earlier IFRS adoption, which might influence disclosure quality (e.g., Christensen et al., 2015; Iatridis, 2012; Kim and Shi, 2012a, 2012b). To deal with endogeneity, I drop the sample of firms using only J-GAAP and keep the sample o firms voluntarily switching their accounting standards. Assuming that all shifted IFRS firms have a certain motivation, such as avoiding GW amortization cost, comparing pre-and post-IFRS of

the same firm sample can offset the common incentive.

The estimated coefficients for each variable are robust *t*-statistics based on standard errors clustered at the firm level and fiscal year. When using panel data, controlling fixed effects is crucial. The year and industry fixed effects are included in the results. To control the firm-specific effect, the 'Hausman test' is necessary (Hausman and Taylor, 1981). This test is undertaken to establish which model between a random effect model and a fixed-effects model is more suitable for the panel data. The result of the Hausman test in this research favors the fixed effects model; thus, it is adopted in the panel datasets to deal with correlated omitted variables.[19]

5. Sample and Descriptive statistics

My sample consists of 9,995 firm-year observations representing 1,222 firms from 2007 to 2016, including J-GAAP and IFRS firms in Japan. The reason why I pick this period is that the sample of IFRS firms is available from 2009 at earliest; furthermore, I need to collect continuous data over multiple periods of the firms and firms that shifted their accounting standard from J-GAAP to IFRS at least from two years before to analyze the H2. I use the NEEDS-FinancialQUEST Nikkei databases to obtain financial statement data. The NEEDS database does not contain detailed data about GW impairment. Therefore, GW impairment data from annual reports in Japan are collected by hand. Furthermore, the NEEDS database does not include special item data of IFRS firms such as impairment and restructuring charges, so these are also collected by hand. Due to the work effectiveness of hand collection and the required condition to adopt IFRS in Japan, firms with total assets of less than 500 million USD are deleted in the sample selection.20

Financial operating firms such as banks, securities, and insurance companies are excluded because of the significantly different financial reporting frameworks. Sample observations whose fiscal periods are not equal to 12 months are excluded. The data at the upper and lower-1 percentages for all explanatory variables by industry are winsorized, and observations with

[19] The greatest merit of the fixed-effect model is that the individual (firm) effect, which cannot be made variable, does not affect the estimated value because the individuality of each firm is completely eliminated in the calculation of the fixed effect estimation. In pooling regression analysis using panel data, the estimates are far from appropriate because the unobserved heterogeneity biases the estimates.

[20] According to the regulation for the requirement to adopt IFRS in Japan, it is mandatory for firms to have specific systems to ensure the appropriateness of the consolidated financial statements of IFRS. Gray and Street (2000) argue that firms that comply with IFRS disclosure requirements tend to be listed in the United States or abroad and must be audited by a large auditor. Additionally, Firm size can affect the quality of profits (Ball and Foster, 1982; Doyle et al., 2007). Firms that apply IFRS are considered to be relatively large in Japan, so, I consider eliminating small size J-GAAP firms is rather reasonable for comparing to IFRS firms in this study.

missing data are deleted. In the sample, 9,736 observations (1,192 firms) are J-GAAP firms, and 259 observations (30 firms) are IFRS firms. Table 1 provides the sample selection. Table 2 presents the composition of the industry classification based on the Nikkei-Middle-Industry Classification codes.

[Insert Table 1 here]

[Insert Table 2 here]

Table 3 shows the descriptive statistics for each of the J-GAAP and IFRS explanatory variables, adding GW and net income (*NI*) for the reference, including mean, median, standard deviation, minimum, and maximum. Both the average ratio of GW and GW impairments to total assets at the beginning of the year are higher in IFRS firms than J-GAAP firms. Regarding firms' performance, both net income (*NI*) and OCF in IFRS firms are, on average, higher than J-GAAP firms because large global firms tend to adopt IFRS in Japan.

[Insert Table 3 here]

Prior to showing the results of the regressions, the Pearson correlation matrix for the dependent and explanatory variables is reported in Table 4. The upper row presents a Pearson correlation matrix under IFRS, while the lower row is under J-GAAP. Accumulated OCF, current OCF, and changed OCF tend to have a strong relationship. The negative correlation between GW impairment (*GWIM*) and future OCF suggests that GW impairment could be informative and timely. Multicollinearity concerns caused by the variation inflation factors (VIF) in the multivariate analysis were tested and confirmed that this is not a problem.

[Insert Table 4 here]

6. Empirical results

Panel A in Table 5 represents the results of the models in Equations (1), and Panel B represents (2), where the dependent variable is the sum of changes from one-year-ahead to three-year-ahead OCF. The estimated coefficients on GW impairments, $GWIM_{it}$, are samples under J-GAAP. Except for two-year-ahead OCF, the estimated coefficients $GWIM_{it}$ of 0.0626 (1) and 0.0823 (2) with the changes in one-year-ahead OCF, and the estimated coefficients

$GWIM_{it}$ of 0.2877 (1) and 0.3481 (2) with the sums of changes in three-year-ahead OCF are insignificant in both Models (1) and (2), respectively. However, the estimated coefficient $GWIM_{it}$ of -0.1499 (1) and -0.1954 (2) with the sum of changes in two-year-ahead OCF is negatively significant. This result implies that J-GAAP GW impairments could be timely and informative about future OCF; however, it would not be sufficient.

On the other hand, the estimated coefficients on the interaction term, *IFRSi*GWIMit* of -0.7024 and -0.5607 in Models (1) and (2), respectively, are negatively and significantly associated with a change in one-year-ahead OCF, suggesting that GW impairments under IFRS have incremental predictive value. Further, the estimated coefficient on *IFRSi*GWIMit* of -2.3588 is negatively significant in Models (1) with the sums of changes in two-year-ahead OCF, and -1.9878 and -1.8326 are negatively significant in Models (1) and (2) with the sums of changes in three-year-ahead OCF, respectively. The results under IFRS that estimated coefficients on the interaction term, *IFRSi*GWIMit*, are all negatively and significantly associated with a change in future OCF, implying that GW impairment under IFRS has a higher predictive value than J-GAAP and supporting H1.

[Insert Table 5 here]

Table 6 reports the results with changes in the prior year's OCF as the dependent variable to test H2. The estimated coefficients of GW impairments under J-GAAP, *GWIMit*, of -1.1583, and -1.3439 in Models (1) and (2), respectively, are negative and significant in both models, suggesting that GW impairments under J-GAAP are related to a decrease in past OCF. The negative relationship is consistent with both reporting delays as a measure of GW impairment and previous cash flow declines. The estimated coefficients on the interaction term, *IFRSi*GWIMit*, of 2.1874 and 2.5389 in Models (1) and (2), respectively, are positive and significant with changes in the prior year OCF, implying that GW impairments under IFRS do not delay reporting GW impairments and are timelier to recognize GW impairments than J-GAAP. These results support H2.

[Insert Table 6 here]

Table 7 reports the results of the investigation on firms changing their accounting standards from J-GAAP to IFRS voluntarily. None of the estimated coefficients on GW

impairments under J-GAAP, $GMIM_{it}$, are significant in either model (1) and (2), suggesting that GW impairments of the shifting firms under J-GAAP are not timely and informative. On the contrary, all estimated coefficients on the interaction term, *IFRSi*GWIMit*, are negative and significant with changes in the future OCF, except for the change in the two-year ahead OCF in Model (2). This result suggests that GW impairments become timelier and more informative after adopting IFRS, supporting H3.

[Insert Table 7 here]

7. Additional Analyses

7.1. Propensity Score-matched (PSM)

Although using the IFRS shifting sample is thought to be an entirely matched paired sample that faces the same economic environment, I follow Gordon and Hsu (2018) and conduct a propensity score matching test to obtain robust results. The propensity score matching (PSM) sample is used to test the difference in the standard by comparing firms with similar economic abilities and situations. I use logistic regression by setting the indicator $IFRS_i$ as a dependent variable and net income (NI_{it}), accruals (ACC_{it}), GW (GW_{it}), restructuring ($REST_{it}$), and return on assets (ROA_{it}) as explanatory variables, following a PSM matching procedure. Then, conducting one-to-one nearest-neighbor matching and permutation from the propensity scores calculated from the logistic estimation makes one firm-year observation under IFRS is paired with one observation under J-GAAP. Statistics results show a significant difference between J-GAAP and IFRS in the estimated coefficient on *GWIMit* with the sums of changes in one-year and three-year-ahead OCF, implying that GW impairment under IFRS is negatively significant with future OCF declines than matched J-GAAP firms (untabulated). However, I fail to find a significant result of the sum of changes in two-year-ahead OCF. The reason for the lack of significant results for two-year-ahead OCF is that the estimated coefficient on *GWIMit* under J-GAAP is negatively significant as well as under IFRS, leading to no significant difference in the predictive value of GW impairment between both standards. Furthermore, as Table 7 indicates, the fact that the result of firms shifting their accounting standard from J-GAAP to IFRS is not significant in the two-year ahead OCF in Model (2) is consistent with the result in this PSM test.

7.2. Eliminating the First Year of IFRS Adoption

The sample of first-year IFRS adopters might be different from another sample because applying IFRS for the first time may not be sufficiently effective or may cause significant changes in the calculation of earnings, leading to false anomalies due to earnings management (Tendeloo and Vanstraelen, 2005). I employ the same analysis using the sample of IFRS firms by dropping the sample of first-year IFRS adoption, but no significant results are found (untabulated). This result is interpreted in terms of audit quality. Auditors must pay more attention and have incentives to enforce compliance by their client firms with the new standard and limit the extent of discretion exercised by client firm management for earnings management purposes, especially in the first year of IFRS adoption. This implies that GW impairment in the first year is of higher quality than that of another period.

8. Conclusions

This study investigates the predictive value of GW impairment for future OCF under J-GAAP and IFRS using the Japanese sample because the accounting standard of GW impairment is one of the most controversial accounting issues and differs significantly between J-GAAP and IFRS. I investigated whether the difference in the predictive value of GW impairment is due to distinctions in recognition and GW amortization under both impairment standards. The results show that GW impairments reported under IFRS, which requires an annual impairment test with GW non-amortization, are more negatively related to changes in future OCF than those under J-GAAP, which requires a two-step impairment test and GW amortization. Moreover, the evidence suggests that the GW impairment of firms that have shifted their accounting standard from J-GAAP to IFRS is also negatively associated with changes in future OCF after the shift. This result implies that GW impairment under IFRS is more useful and timelier than those under J-GAAP, even in the case of voluntarily shifting to IFRS. Given these results, I insist on adopting the non-amortization of GW and annual impairment tests to improve accounting reports in Japan regarding the predictive value of GW impairment for future OCF.

Since GW impairment is an internationally controversial accounting issue, I agree with the current movement to improve the GW impairment test in the FASB and IASB in terms of the room for managers' discretionary judgment and the practical burden due to complicated procedures. However, it is still controversial whether the cause of the current problem lies in the structure of an accounting standard or the operation of accounting standards. The new

approach could sacrifice effectiveness rather than alleviate the burden. The results of this study, which focuses on the relationship with future OCF, will provide evidence on the adequacy of GW amortization and the effectiveness of GW impairment tests from a viewpoint consistent with the objective written in the impairment standard, but under ignoring any earnings management motivations and governance structures.

While the results of this study are informative, there is a significant limitation. The firms that report GW tend to have a large amount of GW on the balance sheet. This could be a selection bias because the firms that have a large amount of GW are a specific tendency for future CF. One of the solutions to this problem is to put a "GW in the beginning of the year" variable in the equations to control the amount of GW. However, the model of this study is based on the research that documents current earnings, cash flows, and accruals are informative about future OCF (Dechow, 1994; Barth et al., 2001). Further, disaggregated accruals contribute to the predictability of changes in future OCF (Barth et al., 2001). Following these prior studies, I did not put a control variable for the amount of GW in this study; however, future research will take care of that potential bias in the model.

Tables

Table 1: Sample selection

Year	J-GAAP	IFRS	Total
2007	897	0	897
2008	914	0	914
2009	936	1	937
2010	949	3	952
2011	961	5	966
2012	987	15	1,002
2013	1,012	28	1,040
2014	1,031	53	1,084
2015	1,059	73	1,132
2016	990	81	1,071
Total	**9,736**	**259**	**9,995**
Sample Firms	1,192	30	1,222

Table 2: Industry composition

Industry	J-GAAP	IFRS	Industry	J-GAAP	IFRS
Food	416	7	Fisheries	41	
Fiber	150	4	Mining	30	
Pulp and Paper	97		Construction	687	
Chemicals	763	10	Trading	845	39
Medical Supplies	237	29	Retailer	758	5
Oil	45	1	Other Financial Services	443	11
Rubber	95	3	Real Estate	258	6
Glass and Ceramic	187	10	Rail and Bus	239	
Steel	225	3	Land Transportation	153	3
Metal Products	353	3	Sea Transportation	64	
Machinery	741	8	Air Transportation	24	
Electrical Equipment	758	37	Warehouse Transportation	116	
Shipbuilding	33		Communication	106	7
Automobile	433	27	Electric	110	
Transportation Equipment	82		Gas	88	
Precision Machine	136	13	Service	739	33
Other Manufacturing	284		Total	9,736	259

Table 3: Descriptive statistics

Variables	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max
GWIM	0.0001	0.0000	0.0014	0.0000	0.0519	0.0010	0.0000	0.0037	0.0000	0.0451
GW	0.0106	0.0000	0.0314	0.0000	0.4684	0.0678	0.0212	0.1002	0.0000	0.4634
NI	0.0284	0.0249	0.0352	-0.2771	0.3127	0.0469	0.0376	0.0459	-0.1416	0.2132
OCF	0.0640	0.0624	0.0511	-0.2585	0.4029	0.0811	0.0747	0.0557	-0.0932	0.2878
ΔOCF	0.0005	0.0001	0.0528	-0.3139	0.3839	-0.0032	-0.0011	0.0443	-0.2295	0.1232
ACC	-0.0088	-0.0107	0.0468	-0.3263	0.3535	0.0061	0.0002	0.0481	-0.1052	0.2035
CAPX	0.0447	0.0366	0.0380	0.0001	0.3463	0.0452	0.0381	0.0324	0.0000	0.1780
REST	0.0012	0.0000	0.0042	0.0000	0.0683	0.0027	0.0000	0.0053	0.0000	0.0435
IROA	0.0267	0.0269	0.0132	-0.0258	0.0669	0.0352	0.0357	0.0122	-0.0136	0.0595
ΔAR	-0.0022	-0.0012	0.0327	-0.1766	0.1737	-0.0025	-0.0008	0.0238	-0.0907	0.1333
ΔAP	0.0000	0.0001	0.0281	-0.1546	0.1434	0.0004	-0.0003	0.0173	-0.0981	0.0788
ΔNV	-0.0022	-0.0007	0.0230	-0.3067	0.1933	-0.0029	0.0000	0.0188	-0.1714	0.0562
DEP	0.0342	0.0310	0.0238	0.0002	0.2688	0.0374	0.0385	0.0210	0.0004	0.1247
OTHER	0.0300	0.0282	0.0891	-0.4673	0.6645	0.0486	0.0439	0.0756	-0.2713	0.3483

There are 9,995 firm-year observations. All variables are winsorized at 1 percent and 99 percent. See variable definitions in Appendix A.

Table 4: Pearson correlation matrix

(Upper row IFRS; Lower row J-GAAP)

J.GAAP/IFRS	$(OCF_{t-1}-OCF_{t-2})$	$\sum(OCF_{t+1}-OCF_t)$	$\sum(OCF_{t+2}-OCF_{t+1})$	$\sum(OCF_{t+3}-OCF_{t+2})$	*GWIM*	*OCF*	*ΔOCF*	*ACC*	*CAPX*	*REST*	*IROA*	*ΔAR*	*ΔAP*	*ΔINV*	*DEP*	*OTHER*
$(OCF_{t-1}-OCF_{t-2})$	1	-0.1098	-0.1016	-0.1237	-0.1092	-0.1261	-0.3339	-0.1978	0.0093	0.0207	0.0453	-0.1153	-0.0844	0.0013	0.0046	-0.1924
$\sum(OCF_{t+1}-OCF_t)$	-0.4786	1	0.7164	0.7063	-0.1553	-0.1682	0.5848	-0.2070	-0.1320	0.0832	0.0063	0.0433	-0.0128	-0.0228	-0.0141	-0.1139
$\sum(OCF_{t+2}-OCF_{t+1})$	-0.4599	0.5598	1	0.7852	-0.2682	-0.1741	0.5805	-0.1533	-0.1093	0.1093	0.0145	0.0594	-0.0113	0.0366	-0.0025	-0.0570
$\sum(OCF_{t+3}-OCF_{t+2})$	-0.4475	0.559	0.5968	1	-0.2575	-0.2082	0.5330	-0.1133	-0.0952	0.0587	0.0403	0.1018	-0.0123	0.0158	-0.0338	-0.0312
GWIM	0.0033	0.0076	-0.0114	-0.0339	1	0.0984	-0.0091	0.0576	-0.0917	-0.0683	-0.0306	0.0461	0.0737	-0.0389	-0.066	0.041
OCF	0.0173	-0.0236	-0.0451	-0.0323	0.0236	1	0.2634	-0.2339	0.4050	-0.0117	0.3278	-0.1086	0.0844	-0.2146	0.4737	-0.0956
ΔOCF	-0.4661	0.5184	0.5046	0.5361	-0.0207	0.5077	1	-0.3981	-0.0778	0.0662	0.0165	-0.0141	0.0995	-0.2220	0.0198	-0.2762
ACC	0.0244	-0.0498	-0.0204	-0.0622	0.0883	-0.5310	-0.4856	1	-0.2612	0.1378	0.0341	0.3507	0.1922	0.4213	-0.3490	0.7753
CAPX	-0.0142	-0.0500	-0.0432	-0.0557	-0.0025	0.3187	-0.0229	-0.2124	1	-0.0271	0.1789	-0.0082	0.0204	0.0386	0.7058	0.0481
REST	-0.0303	0.0391	0.0419	0.0536	0.0623	-0.0425	-0.0002	0.0615	0.0078	1	0.0060	-0.0529	-0.0062	-0.1973	0.1070	0.0278
IROA	0.0293	-0.0455	0.0097	0.0176	-0.0012	0.2030	0.0336	0.1907	0.0291	-0.0573	1	0.1185	0.1341	0.0746	0.1665	0.1538
ΔAR	0.0222	-0.0145	-0.0291	-0.0054	-0.0148	-0.1182	-0.1594	0.2848	-0.0155	-0.0700	0.1760	1	0.6404	0.1588	-0.0417	0.7160
ΔAP	0.0223	-0.0795	-0.0330	0.0120	-0.0171	0.1681	0.1025	-0.0317	0.0204	-0.0666	0.1642	0.7016	1	0.2984	-0.0549	0.5928
ΔINV	-0.0119	-0.0986	-0.0208	-0.0463	-0.0047	-0.1680	-0.2624	0.3774	0.1019	-0.0723	0.1731	0.1024	0.2205	1	-0.1295	0.591
DEP	-0.0052	-0.0212	-0.0269	-0.0418	0.0228	0.4210	0.0026	-0.3923	0.5299	0.0967	0.0184	0.0091	0.0275	0.0542	1	0.0107
OTHER	0.0214	-0.0861	-0.0445	-0.0535	0.0828	-0.1934	-0.3452	0.6123	0.0560	-0.0061	0.2679	0.7758	0.6324	0.5762	0.0890	1

There are 9,995 firm-year observations. All variables are winsorized at 1 percent and 99 percent. See variable definitions in Appendix A.

Table 5: Fixed effects regressions of future operating cash flows on goodwill impairment – Panel A reports the results of models in Equation (1)

		Model（1）		
	Dependent Variable:	$\sum(OCF_{t+1}-OCF_t)$	$\sum(OCF_{t+2}-OCF_{t+1})$	$\sum(OCF_{t+3}-OCF_{t+2})$
	Exp. Sign	Coef.	Coef.	Coef.
OCF	-	-1.0022 ***	-0.9645 ***	-1.0097 ***
		-27.54	-34.71	-35.86
ACC	+	0.1454 ***	0.1949 ***	0.1169 ***
		4.45	7.85	4.88
GWIM	**-**	0.0626	**-0.1499** **	0.2877
		0.39	-2.01	0.62
IFRS	?	-0.0103 **	-0.0045 **	-0.0034
		-2.42	-1.2	-0.99
GWIM*IFRS	-	**-0.7024** **	**-2.3588** *	**-1.9878** **
		-1.95	-1.69	-2.04
ΔOCF	?	0.0517 ***	0.0394 ***	0.0528 ***
		2.89	2.6	3.59
CAPX	+	0.0169	-0.0314	-0.0084
		0.64	-1.24	-0.39
REST	+	0.0561	0.2455 *	-0.2084
		0.38	1.65	-1.52
IROA	+	0.0993 ***	-0.0441 *	-0.0747 ***
		2.77	-1.68	-3.54
cons	?	0.0713 ***	0.0683 ***	0.0621 ***
		23.37	28.06	27.66
Fixed Effect		Year Industry Firm	Year Industry Firm	Year Industry Firm
R^2		0.525	0.559	0.559

***, **, * Indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. Coefficients are estimated based on revised Models (1) with the indicator *IFRSi* to identify firms adopting IFRS. All variables are defined in Appendix A.

Panel B reports the results of models in Equation (2)

		Model（2）		
	Dependent Variable:	$\sum(OCF_{t+1}-OCF_t)$	$\sum(OCF_{t+2}-OCF_{t+1})$	$\sum(OCF_{t+3}-OCF_{t+2})$
	Exp. Sign	Coef.	Coef.	Coef.
OCF	-	-0.9490 ***	-0.9939 ***	-1.0372 ***
		-25.33	-31.16	-31.5
ACC	+			
GWIM	**-**	0.0823	**-0.1954** **	0.3481
		0.47	-2.21	0.72
IFRS	?	-0.0082 **	-0.0037	-0.0031
		-2.05	-0.97	-0.88
GWIM*IFRS	-	**-0.5607** *	-2.0598	**-1.8326** **
		-1.65	-1.56	-1.98
ΔOCF	?	0.0518 ***	0.0432 ***	0.0541 ***
		2.98	2.9	3.67
CAPX	+	-0.0228	-0.0410 **	-0.0160
		-0.83	-2.09	-0.77
REST	+	0.1415	-0.1540	-0.1065
		0.98	-1.04	-0.74
IROA	+	0.0665 **	-0.0129	-0.0536 **
		2.25	-0.39	-2.02
ΔAR	+	-0.2636 ***	0.1344 ***	0.0574
		-4.28	2.6	1.16
ΔAP	-	-0.4661 ***	-0.2035 ***	-0.0557
		-10.48	-4.79	-1.33
ΔINV	+	0.0491	0.1091 **	0.0599
		0.77	2.02	1.11
DEP	+	0.2389 ***	0.1491 ***	0.0742
		3.16	2.73	1.14
OTHER	+	0.0690 **	0.1552 ***	0.0840 ***
		2.01	5.98	3
cons	?	0.0575 ***	0.0604 ***	0.0589 ***
		15.86	21.91	19.8
Fixed Effect		Year Industry Firm	Year Industry Firm	Year Industry Firm
R^2		0.544	0.561	0.560

***, **, * Indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. Coefficients are estimated based on revised Models (2) with the indicator *IFRS i* to identify firms adopting IFRS. All variables are defined in Appendix A.

Table 6

Fixed effects regressions of past operating cash flows on goodwill impairment

Dependent Variable: $(OCF_{t-1} - OCF_{t-2})$

	Model(1)		Model(2)	
	Coef.		Coef.	
OCF	-0.9908	***	-0.9500	***
	-39.26		-39.48	
ACC	0.1454	***		
	6.38			
GWIM	**-1.1583**	**	**-1.3439**	***
	-2.23		-2.59	
IFRS	-0.0071	*	-0.0062	
	-1.72		-1.52	
GWIM*IFRS	**2.1874**	***	**2.5389**	***
	2.9		3.36	
ΔOCF	1.0598	***	1.0649	***
	83.71		84.57	
CAPX	0.1353	***	0.0987	***
	6.63		5.29	
REST	-0.0193		0.1235	
	-0.15		1.46	
IROA	0.0815	***	0.0443	**
	3.07		2.05	
ΔAR			0.0773	**
			1.96	
ΔAP			-0.2628	***
			-8.07	
ΔINV			-0.0653	
			-1.59	
DEP			0.1441	***
			2.57	
OTHER			0.1290	***
			6.03	
Cons	0.0620	***	0.0513	***
	27.53		19.45	
Fixed Effect	Year Industry Firm		Year Industry Firm	
R^2	0.491		0.497	

***, **, * Indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. *OCF it-2* is used in place of *ΔOCF it* as a result of using the alternate dependent variable, *OCF it-1* .
Coefficients are estimated based on revised Models (1) and (2) with the indicator *IFRSi* to identify firms adopting IFRS. All variables are defined in Appendix A.

Table 7

IFRS shifting firms fixed effect regressions of past and future operating cash flows on goodwill impairment

Dependent Variable:	$(OCF_{t-1}-OCF_{t-2})$	$\sum(OCF_{t+1}-OCF_t)$	$\sum(OCF_{t+2}-OCF_{t+1})$	$\sum(OCF_{t+3}-OCF_{t+2})$
		Model(1)		
	Coef.	Coef.	Coef.	Coef.
GWIM	0.2638	0.2565	-0.1074	1.1144
	0.18	2.77	-0.51	1.03
IFRS	-0.0036	-0.0072	-0.0034	-0.0008
	-0.63	-1.3	-0.61	-0.14
***GWIM*IFRS**	**1.9984** **	**-1.0686** **	**-4.0301** **	**-2.9432** ***
	1.98	-2.05	-2.01	-2.94
R^2	0.481	0.560	0.623	0.601
		Model(2)		
	Coef.	Coef.	Coef.	Coef.
GWIM	-0.1647	0.1370	-0.1381	1.3411
	-0.15	1.13	-0.65	0.91
IFRS	-0.0036	-0.0071	-0.0033	-0.0006
	-0.53	-1.3	-0.58	-0.12
***GWIM*IFRS**	**2.4085** **	-0.5475	**-3.7157** *	**-3.1330** **
	2.27	-0.64	-1.91	-1.98
R^2	0.491	0.596	0.627	0.602

***, **, * Indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. Control variables and fixed effects following Models (1) and (2) are included (untabulated) with the indicator *IFRSi* to identify firms adopting IFRS. All variables are defined in Appendix A.

Appendix A

Variable definitions

Variable	Definition
$\sum(OCF_{i,t+y} - OCF_{i,t+y-1})$	= firm i's sum of change operating cash flows from year t+y-1 to t+y ; (y = -1,1,2,3)
$EARN_{it}$	= firm i's income before extraordinary items and discontinued operations, and $REST_{it}$ is firm i's restructuring charges.
ACC_{it}	= firm i's accrual components excluding GW impairments and restructuring losses, equal to $REST_{it} - OCF_{it} + EARN_{it} + IM_{it}$
IM_{it}	= firm i's reported long-lived assets impairments (shown as a positive amount);
$IFRS_i$	= an indicator that equals 1 if firm i reports under IFRS, and 0 if the firm reports J-GAAP
$GWIM_{it}$	= firm i's reported GW impairments (shown as a positive amount);
ΔAR_{it}	= change in firm i's accounts receivable per the statement of cash flows;
ΔAP_{it}	= change in firm i's accounts payable per the statement of cash flows;
ΔINV_{it}	= change in firm i's inventory per the statement of cash flows;
DEP_{it}	= firm i's depreciation and amortization expense;
$OTHER_{it}$	= firm i's net of all other accruals, calculated as $EARN_{it} - (OCF_{it} + \Delta AR_{it} - \Delta AP_{it} + \Delta INV_{it} - DEP_{it} - IM_{it} - REST_{it})$
$IROA_{it}$	= median in firm i's country-industry return on assets in year t. Industry classification is based on Nikkei-Midle-Indstry code;
ΔOFC_{it}	= change in firm i's net operating cash flows;
$CAPX_{it}$	= firm i's capital expenditures; and
$REST_{it}$	= firm i's restructuring charges (shown as a positive amount).

Chapter 3: The Quality of Tangible Long-Lived Asset Impairments under Japanese GAAP and IFRS

ABSTRACT

This study analyses Japanese firms to examine the quality of tangible long-lived asset impairments under Japanese GAAP and IFRS and thus understand the determinants of impairments and the predictive value for future operating cash flow. I investigate whether the quality of tangible long-lived asset impairments is due to differences in the recognition process of impairments, including the reversal between the two standards, by analyzing a sample of firms adopting Japanese GAAP or IFRS in Japan. The result shows that IFRS impairments are more related to macroeconomic factors; this is consistent with the one-step impairment model, which is expected to capture profitability declines in a timelier manner. By contrast, J-GAAP impairments are more related to macroeconomic factors, consistent with the two-step impairment model expected to delay recognition. Moreover, another investigation indicates that IFRS impairments relate more to macroeconomic factors consistent with the one-step impairment model expected to capture declines in profitability in a timelier manner, whereas Japanese GAAP impairments are more related to macroeconomic factors consistent with the two-step impairment model. Overall, these results imply that adopting IFRS impairment standards can contribute to higher quality impairments, as they provide accounting-specific information and an association with future declines in operating cash flow consistent with impairment-related accounting standards.

1. Introduction

This study examines the quality of tangible long-lived asset (LLA) impairments under Japan's Generally Accepted Accounting Principles (J-GAAP) and International Financial Reporting Standards (IFRS).[21] The criteria for impairment quality in this study are based on its consistency with accounting standards, as accounting information's usefulness primarily depends on accounting-specific information. Therefore, this study focuses on the objectives of impairment standards, which can be used to capture future declines in cash flows and reflect firm-specific information. This study is motivated by the impact and importance of impairment-based accounting in practice, as well as the greater difference in impairment standards between J-GAAP and IFRS. Internationally, impairment standards are not yet integrated between US GAAP and IFRS despite a convergence project. In situations in which accounting standards' convergence is taken for granted, some impairment standards are more characteristic than others. One crucial research topic involves analysing which impairment standards are superior, as differences in accounting standards may result in predictable gaps in the observable financial reporting results between standards. Thus, comparing the quality of impairment standards benefits users, standard setters, and regulators.

Prior research that compares accounting standards, especially IFRS, uses global data (Barth et al., 2008; Gordon and Hsu, 2018; Karampinis and Hevas, 2014). However, one issue with such research is that the results tend to be influenced by each country's economic and legal system. The data set in this study is unique, as the Japanese sample enables a comparison of J-GAAP and IFRS in the same country and in the same period. Further, among countries experiencing major economic growth, only Japan has a data environment in which J-GAAP and IFRS samples officially co-exist. Therefore, this provides a compelling opportunity to significantly influence the discussion on the differences in impairment standards by empirically comparing J-GAAP and IFRS, regardless of the different systems in each country.

This study follows Gordon and Hsu (2018, 2019) to examine the quality of tangible LLA impairments under J-GAAP and IFRS, with a specific focus on two aspects: (1) the relationship with future cash flows and (2) the determinants of impairments based on the difference in recognition processes, including reversing impairment losses. One advantage of this study is that comparing J-GAAP and IFRS enables a focus on only the difference in impairment

[21] This study addresses tangible LLAs to focus on the difference in the recognition and measurements among standards, as intangible LLAs and goodwill impairments are subject to another impairment test. Further, the magnitude of tangible assets in Japan is considerable because of the nation's highly developed manufacturing industry. Therefore, the differences in impairment standards between J-GAAP and IFRS are more problematic than in other countries.

recognition criteria, while Gordon and Hsu (2018, 2019) compare US GAAP and IFRS by examining not only impairment recognition but also the measurement process between them.

However, these authors fail to discover evidence of the difference in measurement between US GAAP and IFRS. Consequently, the magnitude of the difference attributed to the 'recognition process' is presumably important when comparing impairment standards. This study differs from those comparing US GAAP and IFRS in that it focuses solely on the difference in the recognition process between J-GAAP and IFRS, as the measurement of impairments is the same between the two sets of standards.[22] Therefore, one peculiarity of this research is that different accounting standards can be compared by focusing only on the differences in the process of recognising impairment losses.

This study assesses the quality of impairment standards relative to future operating cash flow (OCF) and the determinants of impairments with two points: (1) users are interested in future OCF, as mentioned in the Accounting Standards Board of Japan's Conceptual Framework[23] and (2) the trigger of an impairment relies on future OCF, as the impairment standard mentions.[24] Therefore, examining the relationship between impairments and future OCF enables a direct comparison of the impairments' quality. Second, as prior research investigates the determinants of impairments (Banker et al., 2017; Gordon and Hsu, 2019; Riedl, 2004), the current study also examines the relationship between impairments and economic factors. The difference between the two standards raises the question of whether they reflect the underlying economics of firms reporting impairments. This study follows prior research examining not only whether the impairment of tangible LLAs under each criterion is associated with an economic factor but also whether that association is similar between the two standards. In addition to economic factors, this study investigates the association between reporting incentives and impairments under the two standards, as impairments are also associated with the incentive-reporting function (Gordon and Hsu, 2019; Riedl, 2004).

With two criteria for the quality of impairments and the relationship between future OCF

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[22] The measurement rules of impairment in both J-GAAP and IFRS commonly adopt the value-in-use (VIU) measurement. According to Amiraslani et al., (2013), 77 per cent of firms in European countries used VIU from 2010 to 2011. I also examine the use of VIU in Japan, finding that 45 per cent of 100 firm-year samples from Japan used VIU from 2010 to 2016.

[23] The Accounting Standards Board of Japan's Conceptual Framework, Financial Accounting Standards Board, and International Accounting Standards Board argue that 'existing and potential investors, lenders, and other creditors need information to help them assess the prospects for future net cash inflows to an entity' (ASBJ, 2006; IASB, 2010). Investigating the predictive value of LLA impairments for changes in future OCF directly verifies the usefulness of such accounting information.

[24] J-GAAP, US GAAP, and IFRS commonly consider a tangible LLA as impaired when events or changes in circumstances indicate that the carrying amount (CA) may not be recoverable (BACJ, 2002b; FASB, 2011; IASB, 2004).

and the determinants of impairments, this study provides ample evidence that the impairments reported under IFRS, which require a one-step impairment model and allow impairment reversals, are negatively associated with future changes in OCF. By contrast, those under J-GAAP are not, and require a two-step impairment model while prohibiting impairment reversals. Additionally, IFRS impairments are more closely related to macroeconomic factors, while J-GAAP impairments are relevant to macroeconomic factors. The results also demonstrate that J-GAAP impairments further relate to the reporting of incentives than to IFRS impairments. Given these findings, IFRS provides higher quality impairments than J-GAAP by offering accounting-specific information consistent with the objectives of the impairment accounting standards.

This study is the first to empirically research the quality of tangible LLA impairments under J-GAAP and IFRS in Japan and provides four major contributions. First, it extends the literature that compares domestic and international standards by examining their relationship with impairments' quality. Specifically, it proposes a solution to converge these impairment standards, which is a topic both critical and controversial in financial accounting. The results provide evidence that IFRS provides higher quality impairments than J-GAAP, which should encourage Japan to adopt a one-step impairment test, such as with IFRS. Second, past studies indicate that national institutional incentives, including regulatory systems, the legal environment, and enforcement, influence the quality and properties of accounting information (Ball et al., 2000; Ball et al., 2003; Bradshaw and Miller, 2008; Lang et al., 2006). Most previous studies also address standards' comparability in multiple countries, which allows for the investigation of institutional settings globally. However, if firms are not confronted with the same incentives, regulations, enforcement, and litigation environment, any analysis to compare accounting standards is inaccurate (Lang et al., 2006). A comparison of accounting standards by domestic firms implicitly controls for factors other than accounting standards (Barth et al., 2012; De Franco et al., 2011). This study explores tangible LLA impairments in a single country to disregard the differences that occur in institutional settings globally, as this enables a focus on the difference between J-GAAP and IFRS to compare them more adequately and accurately.

Third, comparing impairment standards under J-GAAP and IFRS could dispel the controversy between historical cost and fair value accounting. As the difference in impairment standards between J-GAAP and IFRS stems from the difference in the accounting systems' ideologies, the impairment standard's quality could also reflect that of the accounting system.

Finally, the results of this study are useful to standard setters, financial statement users, and regulators, as they demonstrate that standard setters should focus on tangible LLA impairments' impacts on financial reporting results. This study's findings display differences in predictive value consistent with differences in the standards. As regulators in Japan are considering adopting IFRS and have expressed concern about the material differences in certain items, including tangible LLA impairments, it is also important to observe the differences in certain standards. As IFRS is expected to be the predominant high-level set of accounting standards worldwide, users of financial statements will be interested in the different estimates of tangible LLA impairments between J-GAAP and IFRS.

2. Background and prior research

2.1. Impairments under J-GAAP and IFRS

Both J-GAAP and IFRS consider LLAs to be impaired when events or changes in circumstances indicate that the asset's CA may not be recoverable (BACJ, 2002b; IASB, 2004); however, impairment accounting differs in its loss recognition criteria. On the one hand, J-GAAP accepts a practical standpoint in adopting a 'probability criterion' (FASB, 1995). This calls for an impairment loss to be recognised when it is deemed probable that the asset's CA cannot be fully recovered because measuring an impairment loss highly depends on estimating future cash flows. Unlike financial assets, which have certain future cash flows, the impairment of assets with uncertain performance must be subjective in measurement. Therefore, it is appropriate to recognise impairment loss only if the impairment's existence is reasonably certain (BACJ, 2002b). This practical standpoint is observed in the two-step approach of testing impairments for tangible LLAs (BACJ, 2002a; FASB, 1995). The first step assesses asset recoverability by comparing the asset's CA with the sum of undiscounted expected future OCF. If the CA is higher than the sum of undiscounted expected future OCF, then the firm must proceed to the second step, which compares the asset's CA with its recoverable amount (RA). The RA is defined as the higher of the VIU and fair value, less any disposal costs. If the RA is less than the CA, then an impairment loss is reported as the difference between the RA and CA. When comparing an asset's CA with its undiscounted future cash flows makes impairment unlikely to be recognised, the two-step test approach is thought to be prudent. This is one reason why J-GAAP prohibits impairment reversals (BACJ, 2002a). The impairment loss under the two-step approach is recognised and measured only when the impairment's existence is fairly

certain, and thus impairment losses should not be reversed (BACJ, 2002b).[25]

The purpose of an impairment standard in the entire J-GAAP accounting system is not to evaluate an asset itself but to allocate investment costs consistent with historical cost accounting (BACJ, 2002b). Under the two-step impairment test, determining the possibility of impairments based on undiscounted future OCF is consistent with historical cost accounting (IASB, 2004). As Japan traditionally values the historical cost accounting system, the impairment standard is both practical and conservative from the standpoint of prudence.[26] However, this careful treatment of LLA impairments might make loss recognition less timely and weaken the relationship between LLA impairments and negative future cash flows. Further, the expected delay in the two-step impairment model influences the determinants of impairments. When firm-specific economic conditions have already deteriorated, undiscounted OCF can be met too late in the first step under the two-step impairment model to trigger the second condition in testing.

On the contrary, IFRS accepts a theoretical standpoint based on the measurement of the asset in adopting an 'economic criterion,' which calls for loss recognition when the asset's CA exceeds its fair value (FASB, 1995). The economic criterion comes out in a one-step model for impairment testing and does not apply the threshold for impairment decisions by directly comparing the asset's CA with its RA. This criterion is adopted in many other accounting standards within IFRS and can be a fundamental concept that supports the entire accounting system (IASB, 2004). Therefore, the economic criterion is consistent with fair value accounting, which is considered to be the best criterion to provide useful information for users to assess the future OCF to be generated by a firm as a whole (IASB, 2004).

From the perspective of consistency with the Conceptual Framework, which includes the objective of reporting accounting information and the measurement of assets to achieve that objective, the economic criterion leading to the one-step impairment test is theoretical. Therefore, it is expected that the impairments reported under IFRS are less likely to be delayed when firm-specific economic conditions deteriorate to provide useful information for users.

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[25] Additionally, the impairment standard under J-GAAP mentions that an impairment reversal may increase the administrative burden (BACJ, 2002b). The non-reversal of impairment losses can be explained from a cost allocation perspective based on the historical accounting system, as the allocated costs including impairment losses must not be reversed. Further, SFAS 121 does not allow for the reversal of impairment losses. Measuring an impairment loss under US GAAP adopts the 'fair value' rather than an RA. Therefore, the CA after impairment losses is considered to be its new cost (BACJ, 2002b).

[26] The Accounting Standards Board of Japan's (2006) Conceptual Framework emphasizes that the primary component in financial statements is net income (ASBJ, 2006). Therefore, the concepts of earnings realization and matching principles still dominate in accounting practice, even after the initiation of the convergence project to convert to international accounting standards.

Further, IFRS differs from J-GAAP in that the former not only allow for reversals of impairment losses to maintain consistency with the Conceptual Framework but also provides users with a more useful indication of the potential for future benefits (IASB, 2004). Permitting reversals of impairment losses under IFRS (IASB, 2004) might encourage firms' more timely and positive recognition of impairments, while these are prohibited under J-GAAP and might deter firms from recognising impairments in a prudent manner.

This study depends on impairment quality criteria based on consistency with an accounting standard from two aspects: (1) the relationship with future cash flows and (2) the determinants of impairments. In extending Gordon and Hsu (2018, 2019), this study investigates whether the quality of tangible LLA impairments depends on differences in the recognition process, including reversing impairment losses between the two standards. First, following Gordon and Hsu (2019) and Riedl (2004), it examines whether the difference in the recognition process influences impairment determinants, including macroeconomic factors such as changes in GDP, unemployment, and industry returns, as well as firm-specific economic factors such as changes in OCF, earnings, and market volatility and differences in the recognition process between J-GAAP and IFRS.

Given the differences between standards, this study predicts that IFRS impairments are associated with these firm-specific economic factors, while J-GAAP impairments relate to macroeconomic factors.[27] Additionally, Gordon and Hsu (2019) do not predict differences in the incentives related to recognising impairments, as reporting incentives are not expected to differ between US GAAP and IFRS reporters. Thus, a two-step impairment model is presumed to be more discretionary than a one-step model, as the former considers the possibility of managers' discretion over the lower threshold attributed to undiscounted OCF. Tangible LLA impairments under both standards induce reporting incentives after considering impairments' overall discretionary characteristics; however, the current study predicts that J-GAAP impairments relate more to reporting incentives than those of IFRS.

Second, this study examines the predictive value of tangible LLA impairments for future OCF under J-GAAP and IFRS. As an impairment standard indicates, the relationship with future OCF is a proxy of the quality measurement for impairments, as the recognition trigger of an impairment is highly based on future performance. Regarded as typical special items, impairments are highly distinct from other special items, as prior studies reveal that special

[27] This study differs from that of Gordon and Hsu (2018) in that the former does not use the 'foreign assets as a percentage of total assets' variable because the data set does not include global data.

items include noise or are independent of future performance predictions (Burgstahler et al., 2002; Jones and Smith, 2011).[28]

Further, while the relationship between earnings and market price has weakened over time, earnings' association with future OCF has strengthened (Kim and Kross, 2005), supporting the current investigation of the relationship with future OCF as a proxy of impairments' quality. This study follows Gordon and Hsu (2018) to examine whether the difference in the recognition process influences the relationship with future OCF. It is anticipated that impairment losses reflect declines in future performance to provide useful information to users as written in an impairment standard. However, the difference in the recognition process between J-GAAP and IFRS results in different reporting outcomes. As discussed in the determinants of impairments, adopting a 'probability criterion' or a leading two-step impairment test could cause the less timely recognition of impairments compared with IFRS. The delayed reporting of impairments is not expected to properly capture declines in future performance.

2.2. Prior research on impairment accounting

Early research on impairment accounting before SFAS 121 was conducted in the United States primarily investigated earnings quality, market reactions, and earnings management incentives associated with asset write-offs. Evidence shows that asset write-offs reduce the quality of earnings (Elliott and Shaw, 1988). Further, the likelihood of future write-offs is reportedly associated with lower earnings response coefficients, as abnormal returns are lower in the two years following reported write-offs (Bartov et al., 1998).

Since the implementation of SFAS 121 in the United States, the quality of accounting treatments under the impairment accounting standard has been extensively debated. First, Riedl (2004) investigates whether reporting incentives or economic factors related to LLA impairments are strongly associated before and after SFAS 121. Consequently, he discovers that economic factors are less related to impairments while reporting incentive factors relate to impairments after the SFAS 121 implementation. The findings suggest that contrary to the Financial Accounting Standards Board's expectations, implementing SFAS 121 has resulted in poor financial reporting. Regarding goodwill (GW) impairment losses, Li and Sloan (2017) reveal that SFAS 142's replacement of the systematic amortisation of GW with an annual impairment test gives managers new discretionary opportunities, resulting in reporting delayed

[28] By contrast, Fairfield et al., (1996) insist that special items, including impairment losses, can be beneficial for certain future performance.

impairments with the intention to temporarily increase both earnings and share prices.

By contrast, Banker et al. (2017) provide evidence of firm-specific economic factors' stronger effects on asset impairments. They find that future impairments differentially explain impairments of current assets, tangible LLAs, and indefinite-lived GW by incorporating asymmetric timeliness into their research design, which includes multiple indicators: stock returns, sales changes, and changes in current OCF. Gordon and Hsu's (2019) work—as one of the most influential in this study—investigates the determinants of LLA impairments under US GAAP and IFRS. Their research observes that LLA impairments in the United States are associated with more macroeconomic factors, given the delayed impairment under the two-step impairment test and fair value measurement. They also discover that US GAAP impairments are more relevant to reporting incentives, with the exception of private debt. By contrast, IFRS impairments relate more to company-specific factors because of the one-step impairment test and use of VIU. However, IFRS impairments are influenced by enforcement, suggesting that less enforcement creates a lesser (or greater) association between impairments and IFRS reporting-related economic factors (or reporting incentives).

Hong et al. (2018) sample firms in a single country to study US and IFRS foreign firms listed in the United States and compare the two impairment criteria. The IFRS impairment process requires impairments to be recognised based on direct discounted cash flows and allows the impairment to be reversed if the asset's economic conditions change. On the one hand, this reveals that incentives reflect the company's unique economic setting. On the other hand, US GAAP impairments require recognition based on discounted cash flows and prohibit the reversal of impairment losses. These provide management both discretion and incentives and motivate earnings management behaviours.

Accounting income is not the only primary measurement of firms' performance, as users also evaluate and predict cash flows (Dechow, 1994). Regarding the association between impairments and future OCF, Jarva (2009) studies whether recording a GW impairment under SFAS 142—which calls for non-amortisation and GW impairments—is relevant to future cash flows. He analyses the relationship between GW impairments and cash flows for up to three years and discovers that GW impairments negatively relate to one- and two-year future cash flows. This implies that GW impairments are more associated with economic factors than incentive reporting. Additionally, Cready et al. (2012) investigate whether future earnings increase after reported negative special items due to the transfer of future expenses or as a result of real improvements. They note that extraordinary losses relate to real improvements in the

long term with an increase in cash flows. They also decompose negative special items into subtypes such as restructuring charges, asset impairment losses, and GW impairment losses and investigate the predictable and variable impacts on future earnings and cash flows. Their results suggest that extraordinary losses contain informational content that contributes to future profit and cash flow forecasts.

Gordon and Hsu (2018) offer influential research highly relevant to this study, as they consider that an impairment loss of tangible LLAs under IFRS is more timely and significant than that under US GAAP because of the two-step impairment test and use of fair value under the latter. They examine the predictive value of impairments of tangible LLAs for future changes in OCF under US GAAP and IFRS. The impairments reported under IFRS are found to negatively relate to changes in future OCF, but this is not the case for those under US GAAP. The authors also investigate whether differences in predictive values occur because of differences in recognition or measurement, suggesting that the recognition of impairments is delayed under US GAAP. Additionally, they observe that the VIU measurement attributes permitted under IFRS do not provoke an underreporting of impairments, as impairments under both IFRS and US GAAP relate to future impairments. Their evidence suggests that impairments under IFRS are more predictable in highly enforceable countries. Gordon and Hsu's (2018) results imply that adopting IFRS could thus contribute to improving predictive values for future OCF.[29] Therefore, this study considers the J-GAAP and US GAAP impairment standards to be similar and posits that the quality of impairments under IFRS in the Japanese sample is superior to that under J-GAAP.

3. Hypotheses development

3.1. Determinants of impairments

Prior research such as the works by Riedl (2004) and Zucca and Campbell (1992) mentions that the reporting of impairments is a function of economic factors and reporting incentives; Gordon and Hsu (2019), in particular, consider both macroeconomic and microeconomic factors. Generally, such macroeconomic and microeconomic factors are interrelated, and the recognition of impairments relates to a firm's poor performance, which reflects deteriorating macroeconomic conditions. Collectively, impairments under both J-GAAP and IFRS are expected to relate to macroeconomic factors; however, a firm's poor

[29] While Palea and Scagnelli (2017) do not specifically research impairment losses, they report that evidence from a sample of continental European banks reveals that IFRS improves the ability to predict future cash flows through net income.

performance is also influenced by macroeconomic conditions and vice versa. If accounting standards are expected to reflect an entity's economics, the reported impairments must be associated more with microeconomic conditions than macroeconomic conditions. Furthermore, impairments under J-GAAP should be delayed by a probability criterion of recognition and a two-step model, implying that impairments under J-GAAP are less susceptible to firm-specific impairment indicators. By contrast, IFRS employs a one-step model for impairment testing, which allows firms to capture the underlying economic conditions in a timelier manner. Thus, it is posited that:

H1a: Tangible LLA impairments are more associated with macroeconomic impairment indicators under J-GAAP than under IFRS.

H1b: Tangible LLA impairments are more associated with firm-specific impairment indicators under IFRS than under J-GAAP.

Riedl (2004) reveals that economic factors are weakly related to the write-offs reported after the release of SFAS 121, suggesting that managers opportunistically report write-offs rather than providing personal information about the underlying economy of the firm. He notes that insufficient guidelines can be a cause of deteriorating quality, including the use of undiscounted cash flows. Gordon and Hsu (2019) do not predict the differences in the incentives related to taking an impairment because the reporting incentives between US GAAP and IFRS reporters are not expected to differ. However, this study presumes that a two-step impairment model is more discretionary than the one-step model, as the former allows managers to consider the lower threshold attributed to undiscounted OCF. Tangible LLA impairments under both standards induce reporting incentives after considering the impairments' overall discretionary characteristics; however, the current study predicts that J-GAAP impairments relate more to reporting incentives than those of IFRS. Considering that J-GAAP adopts a recognition probability criterion and a two-step model, the following hypothesis is proposed:

H1c: Tangible LLA impairments are associated more with reporting incentives under J-GAAP than under IFRS.

3.2. LLA impairments and future OCF

According to the Conceptual Framework for Financial Reporting (IASB, 2010), financial reporting aims to provide financial information that is useful to users in making decisions related to providing resources to the entity (IASB, 2010, OB1). Specifically, an entity provides useful information that helps existing and potential investors, lenders, and other creditors assess its prospects for future net cash inflows (ASBJ, 2006; FASB, 2010; IASB, 2010). Therefore, accounting information cannot be useful without the predictive value of future cash flows. Impairment standards under J-GAAP and IFRS are prescribed to provide useful information on the impairments recognised when events or changes in circumstances indicate that the asset's CA may not be recoverable. As long as LLA investments should be recoverable by future OCF, impairments must be recognised when future OCF is no longer informative for users. Therefore, impairment standards' quality relies on the predictive value of LLA impairments in anticipating changes in future OCF.

This study follows Gordon and Hsu (2018) and anticipates that a negative association exists between reported LLA impairment losses and changes in future OCF. However, considering that Gordon and Hsu (2018) fail to discover evidence that US GAAP impairments are negatively associated with such changes, the current study does not expect J-GAAP impairments to be associated with changes in future OCF because of the two-step impairment test. The probability criterion as an impairment indicator and the two-step impairment test under J-GAAP both demonstrate that the reported impairment is delayed. Moreover, the relationship between delayed impairments and future OCF may have already declined between the economic impairment and reported impairment. By contrast, IFRS impairments are recognised in a timely manner relative to the economic conditions that each firm faces through a one-step impairment testing model based on the economic criterion. These differences in impairment standards between J-GAAP and IFRS drive the following hypothesis:

H2. Tangible LLA impairments reported under IFRS are negatively associated with changes in future OCF, whereas those under J-GAAP are not.

4. Research design

4.1. Determinants of impairments

Impairments' determinants are examined by setting tangible LLA impairments (IM_{it}) as the independent variable and three aspects of such determinants as the dependent variables (macroeconomic factors, firm-specific characteristics, and reporting incentives). As this study examines the quality of impairments as an accounting standard, firm-specific characteristics must be identified from other economic factors. Following Riedl (2004) and Gordon and Hsu (2019), each determinant is explained, including several proxies for economic activity such as macroeconomic factors, firm-specific characteristics, and reporting incentives as follows:

$$IMit = Macroeconomic\ Factors + Firm\text{-}Specific\ Characteristics + Reporting\ Incentives + Controls \quad \cdot\cdot \quad (0)$$

$$IMit = \alpha 0 + \alpha 1 \Delta TOPIXit + \alpha 2 \Delta UERit + \alpha 3 \Delta IROAit + \alpha 4 \Delta OCFit + \alpha 5 \Delta Eit + \alpha 6 \Delta EMPit. + \alpha 7 VOLit + \alpha 8 BHit + \alpha 9 SMit + \alpha 10 COMit + \alpha 11 SIZEit + \alpha 12 MTBit + \alpha 13 LOSSit\text{-}1 + \varepsilon it \quad \cdot\cdot \quad (1)$$

$$\begin{aligned} IMit = {} & J\text{-}GAAP_i * (\alpha 0 + \alpha 1 \Delta TOPIXit + \alpha 2 \Delta UERit + \alpha 3 \Delta IROAit + \alpha 4 \Delta OCFit, \\ & + \alpha 5 \Delta Eit + \alpha 6 \Delta EMPit + \alpha 7 VOLit + \alpha 8 BHit + \alpha 9 SMit + \alpha 10 COMit + \\ & \alpha 11 SIZEit + \alpha 12 MTBit + \alpha 13 LOSSit\text{-}1) \\ & + IFRS_i * (\beta_0 + \beta 1 \Delta TOPIXit + \beta 2 \Delta UERit + \beta 3 \Delta IROAit + \beta 4 \Delta OCFit + \beta 5 \Delta Eit + \\ & \beta 6 \Delta EMPit + \beta 7 VOLit + \beta 8 BHit + \beta 9 SMit + \beta 10 COMit + \beta 11 SIZEit \\ & + \beta 12 MTBit + \beta 13 LOSSit\text{-}1) + \varepsilon it \quad \cdot\cdot\cdot \quad (2) \end{aligned}$$

This study uses a set of panel data to identify the firm as subscript *i*, with subscript *t* representing the fiscal year. All the variables except the indicator variables are divided by the initial total assets in year *t*. Equation (0) represents the basic model of the test to classify the determinants in one macroeconomic factors, firm-specific characteristics (microeconomic factors), and reporting incentives. The quality of LLA impairments is then evaluated by anticipating a higher association with firm-specific characteristics, consistent with impairments' accounting standards. Equation (1) represents the more specific indicator variables in these three factors. This study examines the J-GAAP and IFRS samples in the equation to compare the differences in the determinants of LLA impairments between J-GAAP and IFRS. Both the

determinants and the control variables interact with the indicators of accounting standards, or $J\text{-}GAAP_i$ and $IFRS_i$, respectively.

4.1.1. Macroeconomic factors

Three proxies for macroeconomic factors are included ($\Delta TOPIX_{it}$, ΔUER_{it}, and $\Delta IROA_{it}$), as macroeconomic conditions affect asset impairments. The percentage change in TOPIX (Tokyo Stock Price Index) in Japan, $\Delta TOPIXit$, is used to capture Japan's macroeconomic conditions. Gordon and Hsu (2019) use the percentage change in GDP, ΔGDP, in their global data. This is based on Riedl's (2004) finding that significant negative associations existed between GDP growth and reported total LLA write-offs before SFAS 121 was implemented. While the current study attempted to use GDP growth, the results were insignificant in both the J-GAAP and the IFRS samples, perhaps because of this study's use of a single country's data and Japan's recent stable economic growth. Besides, the whole stock market may reflect the macroeconomics Japanese firms face rather than GDP because Japanese companies relatively rely on overseas economic activity. Therefore, I use $\Delta TOPIX$ instead of ΔGDP in this study to capture Japan's macroeconomic conditions more suitably.

The percentage change in the unemployment rate is based on the total labor force in Japan, ΔUER_{it}, and is included following Loh and Tan (2002). These authors discover negative associations between the unemployment rate and write-off decisions in Singapore before IFRS was adopted. The current study forecasts a negative (or positive) association between the change in the market index (or the unemployment rate) and LLA impairments because the future OCF generated from assets is likely to be less than initial expectations when lower macroeconomic growth and higher unemployment signal a recession period.

Finally, $\Delta IROA_{it}$ is included as the change in the industry's median return on assets; this is based on firms' Nikkei Middle Industry code. $\Delta IROA_{it}$ is included as a complementary macroeconomic factor to anticipate a negative association with asset impairments.

4.1.2. Firm-specific characteristics (microeconomic factors)

Four proxies for microeconomic firm-specific factors are included (ΔOCF_{it}, ΔE_{it}, $\Delta EMPit$, and VOL_{it}) to identify the quality of LLA impairments. The change in OCF (ΔOCF_{it}) and change in earnings before asset impairments (ΔE_{it}) are proxies for a firm's underlying performance. The impairment standard determines impairments as recognised when expected future cash flows are anticipated to decline to a threshold that indicates that they cannot recover

their original asset investment amounts. Thus, impairment testing considers changes in OCF to be an impairment indicator (Gordon and Hsu, 2019). The change in pre-impairment earnings, ΔE_{it}, is a proxy for the variation in a firm's summary performance, which relates to asset impairments. Therefore, this study anticipates that both ΔOCF_{it} and ΔE_{it} are negatively associated with current impairments. The change in the number of employees in each firm, $\Delta EMPit$, is a proxy for the possibility of impairments in accordance with restructuring, as previous studies in the United States suggest that impairment losses tend to be reported at the same time as a restructuring (Hayn and Hughes, 2006; Riedl, 2004).

As a measure of firm and asset values' volatility, *VOLit* is calculated as the average annual price movement from average to high and low. Prior research indicates that the higher volatility, the more difficult it is for managers' ability to predict future performance (e.g., Duru and Reeb, 2002; Givoly, Hayn et al., 2009; Lim, 2001). According to Gordon and Hsu (2019), higher volatility, representing higher risk in the firm, may increase the probability of impairing asset values.

4.1.3. Reporting incentives

As impairment reporting is explained by both economic factors and reporting incentives (Riedl, 2004), the current study investigates the association between reporting incentives and impairments under both standards. BH_{it} and SM_{it} are included to capture reporting incentives related to asset impairments (Bartov, 1993; Francis et al., 1996; Gordon and Hsu, 2019; Riedl, 2004; Zucca and Campbell, 1992). Moreover, I set another proxy of management compensation, COM_{it}, because compensation contracts may promote discretionary impairment recognition (Cheng and Farber, 2008; Comprix and Muller, 2006; Darrough et al., 2014).

BH_{it} is used to measure 'big bath' behavior, and it equals one if the change in pre-impairment earnings deflated by total assets at the beginning of the year is less than the median of non-zero negative values of this measure, and zero otherwise. According to Kirschenheiter and Melumad (2002), a larger earnings surprise reduces not only the accuracy of earnings estimates but also their impact on firm value, thus encouraging managers to engage in earnings management.

SM_{it} measures earnings smoothing behavior, which equals one if the change in pre-impairment earnings deflated by total assets at the beginning of the year is greater than the median of non-zero positive values of this measure, and zero otherwise. Similar to the *BH* negative income surprise, SM_{it} indicates a positive income surprise, which might also provoke

earnings management behavior.

COM_{it} indicates management compensation to control for the possibility that compensation contracts may prevent timely impairment recognition. This is based on evidence of the relationship between management compensation and accounting numbers (Cheng and Farber, 2008; Comprix and Muller, 2006). It set in light of the tendency of the Compensation Committee to include GW impairments when defining earnings for compensation calculations (Darrough et al., 2014).

4.1.4. Controls

As control variables, $SIZE_{it}$, MTB_{it}, and $LOSS_{it-1}$ are included, defined as the natural log of total assets, market-to-book ratio, and an indicator of net income loss, respectively. Large firms may experience a greater recession in various industries because of their wide range of businesses, and their corporate governance effect leads to conservative reporting behavior. Therefore, the coefficient for $SIZE_{it}$ is expected to be positive, given the increased probability of reporting impairments. As the market-to-book ratio (MTB_{it}) measures firms' growth opportunities, and a growing firm is unlikely to report impairments because of its good performance, the coefficient for MTB_{it} is expected to be negative. Further, $LOSS_{it-1}$ is an indicator variable that equals one if a firm's net income in year *t–1* is less than zero, and zero otherwise. As poor performing firms reporting impairments are likely to experience future impairments, both in frequency and in magnitude (Elliott and Hanna, 1996), the coefficient for $LOSS_{it-1}$ is expected to be positive.

4.2. LLA impairments and future OCF

The following model is constructed to examine LLA impairments' predictive power for changes in future OCF, which occurs when future OCF is used subject to current OCF (Barth et al., 2001; Gordon and Hsu, 2018; Jarva, 2009):

$$\sum\left(CFO_{i,t+y} - CFO_{i,t+y-1}\right) = \alpha_0 + \alpha_1 OCF_{it} + \alpha_2 ACC_{it} + \alpha_3 IM_{it} + \alpha_4 IFRS_i + \alpha_5 IFRS_i * IM_{it} + \alpha_6 IROA_{it} + \alpha_7 \Delta OCF_{it-1} + \alpha_8 CAPX_{it} + \alpha_9 REST_{it} + \alpha_{10} IMRE_{it} + \varepsilon_{it} \cdots (3)$$

where

$\sum(OCF_{i,t+y} - OCF_{i,t+y-1})$:

firm *i*'s accumulated change in OCF from year ($t + y - 1$) to ($t + y$); ($y = 1, 2, 3$);

ACC_{it}: firm *i*'s accruals components excluding impairments and restructuring charges, equal to $EARN_{it} - OCF_{it} + IM_{it} + REST_{it}$, where $EARN_{it}$ is firm *i*'s income before extraordinary items and discontinued operations and $REST_{it}$ signifies firm *i*'s restructuring charges;

$IFRS_i$: an indicator that equals one if firm *i* reports under IFRS, and zero otherwise;

$IROA_{it}$: the median of firm *i*'s country-industry return on assets in year *t*; the industry classification is based on the Nikkei Middle Industry code;

ΔOFC_{it}: the change in firm *i*'s net OCF;

$CAPX_{it}$: firm *i*'s capital expenditure; and

$REST_{it}$: firm *i*'s restructuring charges.

This study uses a set of panel data; subscript *i* identifies the firm, and subscript *t* represents the fiscal year. All the variables except $IFRS_i$ are divided by the initial total assets in year *t*. Equation (1) corresponds to the concept that desegregated accruals contribute to the predictability of changes in future OCF (Barth et al., 2001; Dechow et al., 1998). Further, Dechow et al. (1998) investigate the role of accruals in predicting future cash flows by demonstrating that each accruals component reflects different information about future OCF. This study follows Gordon and Hsu's (2018) work and uses their model to compare the predictive value of LLA impairments for changes in future OCF. This model is essentially interpreted as the change specifications, as the levels of future and current OCF are the dependent and independent variables, respectively (Gordon and Hsu, 2018).

Earnings in Equation (1) are disaggregated into current OCF (OCF_{it}),[30] accruals excluding impairments (ACC_{it}), LLA impairments (IM_{it}), and restructuring losses ($REST_{it}$), with LLA impairments and restructuring losses coded as positive amounts. An indicator variable is also included to denote reporting under IFRS and an interaction term for IFRS LLA impairments $IFRS_i * IM_{it}$. As impairments should be associated with lower OCF in the future than in the past, the estimated coefficient for LLA impairments is predicted to be negative and significant. The interaction term is also expected to be negative and significant if $IFRS_i * IM_{it}$ exhibits an incremental predictive value. The OCF is examined one year ahead, and cumulative changes in OCF are examined at two and three years ahead, as the timing and pattern of future OCF declines are unknown, and LLA impairments are likely to reduce OCF years into the

[30] This study uses Nikkei-adjusted OCF from the FinancialQuest NEEDS database.

future. As with Gordon and Hsu's (2018) work, this study anticipates that the magnitude of coefficients for LLA impairments and interaction term increase over time as the cumulative effect of the decline in future OCF increases.

The current study also reflects Gordon and Hsu's (2018) research by excluding restructuring losses from aggregate accruals as an additional control because restructuring firms often make LLA impairments. The restructuring loss $REST_{it}$ is expected to positively relate to future cash flows (Atiase et al., 2004; Cready et al., 2010). The median of industry returns on assets $IROA_{it}$ is included to control for industry-specific profitability and macroeconomic factors, as return on assets indicates possible GW impairments (Jahmani, Dowling, and Torres, 2010). The literature presents strong evidence that the majority of firms earning returns on assets of 2 percent or less for two years do not impair their GW. Subsequently, current changes in cash flow ΔOCF_{it} control for the firm-specific relationship between current and future OCF. The firm's capital expenditure $CAPX_{it}$ is included to control for its implementation of investment activities, which should positively relate to future cash flows (Gordon and Hsu, 2018).

5. Sample and descriptive statistics

Creating the study sample consists of two stages to deal with the concern of survivorship bias to test the determinants of LLA impairment because examining future OCF and LLA impairment requires four consecutive years of data. First, I use the sample to test for the determinants of LLA impairment; then, I drop data observations that lack data for four consecutive years to create a variable for cumulative future OCF.

The sample of determinants of the LLA impairment test (H1) consists of 11,803 firm-year observations representing 1,460 firms from 2009 to 2019, including J-GAAP and IFRS reporters in Japan. Meanwhile, the sample of the future OCF and LLA impairment test (H2) consists of 8,184 firm-year observations representing 1,227 firms from 2009 to 2016. Nikkei's FinancialQuest NEEDS database is used to obtain firms' financial statement data, although this database does not contain detailed data on tangible LLA impairments, special items under IFRS, and management compensation. Therefore, firm data are hand-collected from annual reports in Japan.[31] This study excludes financial firms such as banks, securities firms, and insurance

[31] All the impairment losses of tangible non-financial assets (fixed assets) are aggregated when collecting the impairment loss data of companies applying IFRS in their annual reports. Impairment losses based on IFRS are not all recorded as extraordinary losses as in Japan, but are often displayed in the 'selling, general, and administrative expenses', 'other expenses', 'impairment loss when classified as held for trading', and 'income from continued operations' sections. All impairment losses that have been diversified are aggregated to compare

companies because they have significantly different financial reporting frameworks. Further, observations with fiscal periods of more or less than 12 months are excluded. The data are winsorized at the 1 and 99 percent levels for all the explanatory variables by industry, and observations with missing data are deleted. In the first sample, 11,060 observations are J-GAAP (1,270 firms), and 743 observations also included IFRS (190 firms), while in the second sample, 8,184 observations are J-GAAP (1,192 firms) and 259 observations also included IFRS (35 firms). Table 1 displays the sample selection with Panel A for H1 and Panel B for H2, while Table 2 presents the composition of industry classifications based on the Nikkei Middle Industry classification codes.

[Insert Table 1 here]

[Insert Table 2 here]

Table 3 displays the descriptive statistics for each J-GAAP and IFRS explanatory variable, including its mean, median, standard deviation, minimum, and maximum. The average ratio of tangible LLA impairments to total assets at the beginning of the year (*IM*) under IFRS is slightly greater than that under J-GAAP, but this difference does not seem to be substantial. This is presumably because the impairment measurement method is the same for both J-GAAP and IFRS.

[Insert Table 3 here]

The Pearson correlation matrix for the independent variables in Table 4 is reported before calculating the regression results. The upper row presents the Pearson correlation matrix under IFRS and the lower row shows that under J-GAAP. Panel A presents the Pearson correlation matrix for the variables used to examine the economic factors and financial reporting incentives, and Panel B presents the Pearson correlation matrix for the variables used to examine the association with future OCF.

The accumulated, current, and changed OCF tend to exhibit a strong relationship. The negative correlation between *IM* and future OCF suggests that LLA impairments are more informative and timelier under IFRS. A test for multicollinearity concerns caused by the

the impairment losses in Japan among the collected data.

multivariate analysis' variation inflation factors confirms no multicollinearity issues.

[Insert Table 4 here]

6. Empirical results

6.1. Determinants of tangible LLA impairments under J-GAAP and IFRS

Table 5 presents the results of the fixed-effect model regressions for the determinants of tangible LLAs under J-GAAP and IFRS. The percentage change in the annual average market index, $\Delta TOPIX_{it}$, is negative and significant under J-GAAP but not under IFRS; this suggests that reporting tangible LLA impairments under J-GAAP is connected with the Japanese market's movement. The change in the unemployment rate, ΔUER_{it}, is positively significant, and the growth in industry returns on assets, $\Delta IROA_{it}$, is negatively significant under J-GAAP but not under IFRS. This implies that tangible LLA impairments are more closely associated with the macroeconomic conditions under J-GAAP but not under IFRS, which supports H1a.

Regarding the firm-specific characteristics, the estimated coefficient of change in current OCF, ΔOCF_{it}, is significant under both J-GAAP and IFRS, but the sign differs. The estimated coefficient is positive under J-GAAP and negative under IFRS, consistent with a decrease in OCF. The estimated coefficient for the change in earnings, ΔE_{it}, is negative and significant under both J-GAAP and IFRS, capturing the macroeconomic conditions. However, the change in the number of employees at each firm, $\Delta EMPit$, is negatively significant under IFRS only. Market volatility, $VOLit$, is positively significant under both J-GAAP and IFRS, implying that the probability of impairments increases for each firm's higher market volatility. Given these firm-specific characteristics, tangible LLA impairments are more associated with the macroeconomic conditions under IFRS than J-GAAP, which supports H1b.

Regarding the reporting incentives, the estimated coefficients of BH_{it} and SM_{it} are significant under both J-GAAP and IFRS, and their signs are as anticipated. Therefore, reporting incentives influence the reporting of impairments under both J-GAAP and IFRS. However, the positively significant estimated coefficient for COM_{it} under J-GAAP suggests a collectively greater influence of reporting incentives than IFRS, which supports H1c.

[Insert Table 5 here]

6.2. Future OCF and tangible LLA impairments under J-GAAP and IFRS

Table 6 presents the results of the models in Equation (3), in which the dependent variable is the sum of the changes in OCF from one to three years ahead. The estimated coefficients of tangible LLA impairments, IM_{it}, represent samples under J-GAAP. The estimated coefficients for IM_{it} are 0.3262 with the changes in OCF at one year ahead, 0.4276 with the sums of changes in OCF at two years ahead, and 0.3088 with the sums of changes in OCF at three years ahead; all are significant. This result implies that tangible LLA impairments under J-GAAP could better reflect restructuring behavior rather than timeliness. Clearly, tangible LLA impairments under J-GAAP do not adequately capture the decline in future OCF, as anticipated in the impairment standard.

Alternatively, the estimated coefficient for the interaction term $IFRS_i*IM_{it}$ of -0.7248 is negatively and significantly associated with OCF at one year ahead, suggesting that tangible LLA impairments under IFRS have predictive value in capturing declines in future OCF. Additionally, the estimated coefficient $IFRS_i*IM_{it}$ of -0.4866 is negatively significant given the sums of changes in OCF at three years ahead. However, the estimated coefficient for $IFRS_i*IM_{it}$ of 0.0897 is positively insignificant, given the sums of changes in OCF at two years ahead. Together, these results imply that tangible LLA impairments under IFRS have greater predictive value than those under J-GAAP, supporting H2.

[Insert Table 6 here]

7. Conclusions

This study examines two facets of the quality of tangible LLA impairments under J-GAAP and IFRS: (1) the predictive value for future OCF and (2) the determinants of impairments from a viewpoint consistent with the impairment standard's objectives. This study extends two prior studies—Gordon and Hsu (2018, 2019)—to investigate whether the variable quality of tangible LLA impairments occurs because of differences in the impairment recognition process, including the reversal of impairments between the two standards. Unlike prior research, this study is conducted in a single country to disregard any differences in institutional settings globally, which provides an adequate comparison of the two standards.

Consistent with Gordon and Hsu (2019), this study finds that IFRS impairments are more related to macroeconomic factors; this is consistent with the one-step impairment model, which

is expected to capture profitability declines in a timelier manner. By contrast, J-GAAP impairments are more related to macroeconomic factors, consistent with the two-step impairment model expected to delay recognition. The result also indicates that J-GAAP impairments are more associated with reporting incentives than with IFRS impairments. The current study also reveals that consistent with Gordon and Hsu's (2018) results, the impairments reported under IFRS, which require a one-step impairment model and allow for impairment reversals, are negatively associated with changes in future OCF. By contrast, those under J-GAAP are not, and require a two-step impairment model and prohibit impairment reversals. Given these findings, adopting IFRS impairment standards can contribute to higher quality impairments, not only from the perspective of providing accounting-specific information but also given the association with a decline in future OCF consistent with impairment accounting standards' objectives.

This study proposes a solution for the convergence to impairment standards by expanding the literature by comparing domestic and international standards and examining their relationship with impairment quality. The results provide evidence that IFRS offers higher quality impairments than J-GAAP, which should encourage Japan to adopt a one-step impairment test with impairment reversals. As the difference in impairment standards between J-GAAP and IFRS is driven by differences in the accounting systems' ideologies, this research's comparison of the impairment standards' quality may also reflect the quality of the entire accounting system. The IFRS-based one-step model for impairments and their reversal could also prove the usefulness of fair value accounting. Japanese regulators have considered fully adopting IFRS in the future and have expressed concern about the significant differences in certain items, including LLA impairments. In response, this study indicates that standard setters should be aware of the differing quality of LLA impairments.

Tables

Table 1: Sample Selection

Panel A: Determinants of the LLA Impairment Test under J-GAAP and IFRS (H1)

Year	JGAAP	IFRS	Total
2009	947	1	948
2010	942	3	945
2011	946	5	951
2012	965	15	980
2013	988	25	1,013
2014	1,000	51	1,051
2015	1,031	71	1,102
2016	1,057	104	1,161
2017	1,078	140	1,218
2018	1,086	177	1,263
2019	1,020	151	1,171
Total	11,060	743	**11,803**
Sample Firms	1,270	190	1,460

Panel B: Future OCF and LLA Impairment Test under J-GAAP and IFRS (H2)

Year	JGAAP	IFRS	Total
2009	936	1	937
2010	949	3	952
2011	961	5	966
2012	987	15	1,002
2013	1,012	28	1,040
2014	1,031	53	1,084
2015	1,059	73	1,132
2016	990	81	1,071
Total	**7,925**	**259**	**8,184**
Sample Firms	1,192	36	1,228

Table 2: Industry Composition

Industry	(H1)		(H2)		Industry	(H1)		(H2)	
	JGAAP	IFRS	JGAAP	IFRS		JGAAP	IFRS	JGAAP	IFRS
Food	475	30	341	7	Fisheries	49		35	
Fiber	172	1	120		Mining	41		26	
Pulp and paper	113		81		Construction	770		555	
Chemicals	875	43	614	14	Trading	1,025	73	697	39
Medical supplies	240	69	190	29	Retailer	924	18	632	5
Oil	54	4	37	1	Other financial services	215	28	373	11
Rubber	97	14	75	3	Real estate	350	12	213	6
Glass and ceramics	220	16	151	10	Rail and bus	265		193	
Steel industry	246	10	180	3	Land transportation	174	9	123	3
Metal products	408	12	289	3	Sea transportation	77		51	
Machinery	858	36	596	8	Air transportation	29		20	
Electrical equipment	887	100	609	37	Warehouse transportation	128		92	
Shipbuilding	39		27		Communications	127	24	90	7
Automobile	467	70	347	27	Electricity	123		88	
Transportation equipment	102		70		Gas	97		70	
Precision machinery	146	35	108	13	Services	935	139	606	33
Other manufacturing industries	332		226		Total	11,060	743	7,925	259

Table 3: Descriptive Statistics

Panel A: Determinants of the LLA Impairment Test under J-GAAP and IFRS (H1)

	JGAAP					IFRS				
Variables	N	Mean	Median	SD.	Min.	Max.	N	Mean	Median	SD.	Min.	Max.
IM	11,060	0.0022	0.0001	0.0055	0	0.0904	743	0.0038	0.0011	0.0066	0	0.0602
ΔTOPIX	11,060	0.1220	0.0897	0.2155	-0.4898	0.9599	743	0.1069	0.1114	0.2085	-0.3231	0.9599
ΔUER	11,060	-0.1557	-0.2667	0.4025	-0.4750	1.0917	743	-0.2657	-0.2833	0.1237	-0.4750	1.0917
ΔIROA	11,060	0.0299	0.0304	0.0139	-0.0348	0.0667	743	0.0403	0.0432	0.0106	-0.0136	0.0595
OCF	11,060	-0.0002	-0.0004	0.0529	-0.3139	0.3441	743	-0.0040	-0.0033	0.0435	-0.2055	0.1582
ΔE	11,060	0.0001	0.0010	0.0306	-0.2723	0.1661	743	-0.0013	0.0007	0.0363	-0.1677	0.1510
ΔEMP	11,060	0.0287	0.0147	0.0998	-0.5495	4.6258	743	0.0568	0.0273	0.1438	-0.3932	1.1500
VOL	11,026	0.0976	0.0454	0.3662	-0.8918	5.3260	726	0.1022	0.0363	0.4103	-0.6189	2.7725
BH	11,060	-0.0025	0.0000	0.0122	-0.1772	0	743	-0.0022	0.0000	0.0151	-0.1974	0
SM	11,060	0.0365	0.0000	0.0294	0	0.2873	743	0.0546	0.0000	0.0399	0	0.2740
COM	11,060	0.0008	0.0001	0.0016	0	0.0160	743	0.0019	0.0008	0.0037	0	0.0250
SIZE	11,060	12.2019	11.9030	1.0958	10.8230	16.7570	743	13.3442	13.4550	1.7541	8.2980	17.0200
MB	11,060	1.1826	0.9501	0.8463	0.1656	13.0400	743	2.0888	1.4314	1.8731	0.3083	13.0725
LOSS	11,060	0.0901	0.0000	0.2864	0	1	743	0.0700	0.0000	0.2553	0	1

Variables for the predictive value for future operating cash flows(H2). N (for "The number of observations"), S.D. (for "Standard Deviation"). Of the 11,803 firm-year observations, 11,060 and 743 are under JGAAP and IFRS, respectively. All variables are winsorized at 1 and 99 percent; see the variable definitions in Appendix A."

Panel B: Future OCF and LLA Impairment Test under J-GAAP and IFRS (H2)

	JGAAP					IFRS				
Variables	N	Mean	Median	SD.	Min.	Max.	N	Mean	Median	SD.	Min.	Max.
$\sum(OCF_{t+1}-OCF_t)$	9,736	0.0010	0.0006	0.0551	-0.4764	0.3860	259	-0.0031	-0.0033	0.0400	-0.1966	0.1539
$\sum(OCF_{t+2}-OCF_{t+1})$	9,736	0.0014	0.0015	0.0562	-0.3887	0.5082	259	-0.0042	-0.0008	0.0468	-0.2871	0.2652
$\sum(OCF_{t+3}-OCF_{t+2})$	9,736	0.0019	0.0017	0.0555	-0.4141	0.4455	259	-0.0082	-0.0060	0.0473	-0.2936	0.1428
OCF	9,736	0.0640	0.0624	0.0511	-0.2585	0.4029	259	0.0811	0.0747	0.0557	-0.0932	0.2878
ACC	9,736	-0.0357	-0.0350	0.0458	-0.3574	0.3226	259	-0.0336	-0.0361	0.0442	-0.1946	0.1496
IM	9,736	0.0019	0.0000	0.0051	0	0.0864	259	0.0030	0.0009	0.0059	0	0.0592
ΔOCF	9,736	0.0005	0.0001	0.0528	-0.3139	0.3839	259	-0.0032	-0.0011	0.0443	-0.2295	0.1232
CAPX	9,736	0.0447	0.0366	0.0380	0.0001	0.3463	259	0.0452	0.0381	0.0324	0.0000	0.1780
REST	9,736	0.0012	0.0000	0.0042	0	0.0683	259	0.0032	0.0000	0.0068	0	0.0620
IROA	9,736	0.0267	0.0269	0.0132	-0.0258	0.0669	259	0.0352	0.0357	0.0122	-0.0136	0.0595
IMRE	-	-	-	-	-	-	259	0.0001	0.0000	0.0005	0	0.0045

Variables for the predictive value for future operating cash flows(H2). N (for "The number of observations"), S.D. (for "Standard Deviation"). Of the 8,184 firm-year observations, 7,925 and 259 are under JGAAP and IFRS, respectively. All variables are winsorized at 1 and 99 percent; see the variable definitions in Appendix A."

Table 4: Pearson Correlation Matrix

(Upper Row: IFRS; Lower Row: J-GAAP)

Panel A: Determinants of the LLA Impairment Test under J-GAAP and IFRS (H1)

JGAAP / IFRS	*IM*	*ΔTOPIX*	*ΔUER*	*ΔIROA*	*ΔOCF*	*ΔE*	*ΔEMP*	*VOL*	*BH*	*SM*	*COM*	*SIZE*	*MB*	*LOSS*
IM	1	0.033	0.122	-0.030	-0.050	-0.203	-0.082	-0.049	-0.190	-0.065	0.014	-0.049	-0.024	0.022
ΔTOPIX	0.021	1	0.446	-0.044	-0.076	0.074	0.020	0.101	0.027	0.091	0.061	-0.020	0.057	0.038
ΔUER	0.026	0.087	1	-0.142	-0.130	-0.110	-0.051	-0.186	-0.122	-0.043	0.066	-0.071	-0.025	-0.043
ΔIROA	-0.031	-0.060	-0.453	1	0.022	0.020	0.138	0.089	0.022	0.307	0.200	-0.284	0.268	-0.132
ΔOCF	0.011	-0.014	-0.011	0.002	1	0.335	-0.064	0.115	0.115	0.007	-0.063	0.039	-0.001	0.116
ΔE	-0.209	-0.084	-0.244	0.136	0.244	1	-0.097	0.242	0.287	0.266	-0.133	0.113	-0.046	0.304
ΔEMP	-0.030	-0.003	-0.046	0.110	-0.022	0.016	1	0.168	-0.050	0.196	0.288	-0.210	0.287	-0.033
VOL	-0.041	0.092	-0.258	0.113	0.148	0.350	0.070	1	0.110	0.163	0.068	-0.023	0.311	0.012
BH	-0.212	-0.036	-0.195	0.212	0.055	0.446	0.121	0.146	1	0.198	-0.125	0.203	-0.025	-0.239
SM	-0.053	-0.016	-0.179	0.413	0.036	0.236	0.191	0.188	0.254	1	0.146	-0.165	0.417	-0.180
COM	-0.007	0.003	-0.003	0.034	0.002	0.013	0.050	0.023	0.031	0.094	1	-0.654	0.269	0.034
SIZE	-0.019	-0.031	-0.012	-0.116	-0.011	0.000	0.050	-0.006	-0.004	-0.058	-0.257	1	-0.274	-0.085
MB	-0.006	-0.012	-0.104	0.234	0.017	0.076	0.142	0.272	0.061	0.451	-0.006	0.147	1	-0.026
LOSS	0.077	-0.046	0.022	-0.165	0.103	0.358	-0.128	0.095	-0.210	-0.219	-0.034	0.005	-0.060	1

Variables for the predictive value for future operating cash flows(H2). Of the 11,803 firm-year observations, 11,060 and 743 are under JGAAP and IFRS, respectively. All variables are winsorized at 1 and 99 percent; see the variable definitions in Appendix A."

Panel B: Future OCF and LLA Impairment Test under J-GAAP and IFRS (H2)

JGAAP / IFRS	$\sum(OCF_{t+1}-OCF_t)$	$\sum(OCF_{t+2}-OCF_{t+1})$	$\sum(OCF_{t+3}-OCF_{t+2})$	*IM*	*OCF*	*△OCF*	*ACC*	*CAPX*	*REST*	*IROA*	*IMRE*
$\sum(OCF_{t+1}-OCF_t)$	1	0.812	0.796	-0.065	-0.234	0.625	-0.308	-0.113	0.067	0.029	-0.012
$\sum(OCF_{t+2}-OCF_{t+1})$	0.558	1	0.847	-0.005	-0.261	0.626	-0.311	-0.115	0.024	0.030	0.022
$\sum(OCF_{t+3}-OCF_{t+2})$	0.553	0.590	1	-0.059	-0.273	0.621	-0.294	-0.102	-0.003	0.037	0.020
IM	0.023	0.036	0.014	1	0.043	-0.052	-0.092	0.236	0.198	-0.236	-0.054
OCF	-0.022	-0.057	-0.064	0.023	1	0.177	-0.149	0.388	-0.023	0.319	0.046
△OCF	0.518	0.498	0.515	0.004	0.501	1	-0.485	-0.094	-0.023	0.019	0.062
ACC	-0.062	-0.030	-0.051	0.068	-0.526	-0.488	1	-0.224	0.196	0.039	0.010
CAPX	-0.045	-0.062	-0.063	0.038	0.325	-0.018	-0.210	1	0.009	0.162	0.035
REST	0.040	0.047	0.047	0.123	-0.040	0.003	0.049	-0.001	1	0.010	0.018
IROA	-0.037	-0.017	0.014	-0.026	0.198	0.028	0.193	0.037	-0.062	1	0.010
IMRE	-	-	-	-	-	-	-	-	-	-	1

Variables for the predictive value for future operating cash flows(H2). Of the 8,184 firm-year observations, 7,925 and 259 are under JGAAP and IFRS, respectively. All variables are winsorized at 1 and 99 percent; see the variable definitions in Appendix A."

Table 5: Regressions of the Fixed-Effect Tobit Model on the Determinants of Tangible LLA Impairments under J-GAAP and IFRS

Dependent Variable: IM_{it}		JGAAP		IFRS		Difference	
	Exp. Sign	Coef.		Coef.			
$\Delta TOPIX_{it}$	-	**-0.0007**	**	0.0016		-0.0022	*
		-1.99		1.17		-2.41	
ΔUER_{it}	+	**0.0027**	***	-0.0022		0.0049	***
		4.41		-0.98		8.93	
$\Delta IROA_{it}$	-	**-0.0224**	***	-0.1081		0.0857	***
		-2.61		-1.62		-6.16	
ΔOCF_{it}	-	0.0064	***	0.0090	**	-0.0025	***
		6.14		2.02		3.44	
ΔE_{it}	-	**-0.0536**	***	**-0.0399**	**	-0.0137	***
		-8.23		**-2.99**		8.68	
ΔEMP_{it}	-	-0.0001		**-0.0042**	*	0.0041	***
		-0.05		**-1.75**		4.09	
VOL_{it}	+	0.0006	***	0.0013	**	-0.0007	***
		2.85		2.05		5.32	
BH_{it}	-	**-0.0394**	***	**-0.1716**	*	0.1322	***
		-3.02		**-1.87**		7.47	
SM_{it}	+	**0.0383**	***	**0.0428**	***	-0.0044	***
		6.59		**2.72**		3.26	
$COMP_{it}$	-	**-0.3441**	***	-0.3797		0.0355	***
		-3.21		-1.47		3.75	
$SIZE_{it}$	+	-0.0029	***	-0.0015		-0.0014	***
		-4.51		-0.66		8.82	
MTB_{it}	-	-0.0002		-0.0011	***	0.0009	
		-0.98		-3.52		1.38	
$LOSS_{it-1}$	+	0.0026	***	0.0005		0.0020	***
		6.17		0.58		8.93	
Cons.	?	0.0387	***	0.0279			
		4.87		0.94			
Fixed Effects		Year		Year			
		Industry		Industry			
		Firm		Firm			
R^2		0.106		0.235			

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. All variables are defined in Appendix A. The complete model is

$$IMit = JGAAPi*(\alpha 0 + \alpha 1 \Delta TOPIXit + \alpha 2 \Delta UERit + \alpha 3\ \Delta IROAit + \alpha 4\ \Delta OCFit + \alpha 5\ \Delta Eit + \alpha 6 EMPit + \alpha 7 VOLit + \alpha 8 BHit + \alpha 9 SMit + \alpha 10 LBit + \alpha 11 SIZEit + \alpha 12 MTBit + \alpha 13\ LOSSit\text{-}1) + IFRSi*(\beta 0 + \beta 1 \Delta TOPIXit + \beta 2 \Delta UERit + \beta 3\ \Delta IROAit + \beta 4 \Delta OCFit + \beta 5 \Delta Eit + \beta 6 EMPit + \beta 7 VOLit + \beta 8 BHit + \beta 9 SMit + \beta 10 LBit + \beta 11 SIZEit + \beta 12 LBit + \beta 13\ MTBit + \beta 14 LOSSit\text{-}1) + \varepsilon it$$

Table 6: Regressions of Future OCF on Tangible LLA Impairments

Dependent Variable:		$\sum(OCF_{t+1}-OCF_t)$		$\sum(OCF_{t+2}-OCF_{t+1})$		$\sum(OCF_{t+3}-OCF_{t+2})$	
	Exp. Sign	Coef.		Coef.		Coef.	
OCF	-	-0.3490	***	-0.4144	***	-0.4957	***
		-14.41		-14.13		-16.82	
ACC	+	0.2505	***	0.1993	***	0.1339	***
		9.00		6.48		4.61	
IM	+	**0.5876**	***	**0.6999**	***	**0.6214**	***
		5.23		5.26		4.66	
IFRS	?	0.0004		-0.0020		-0.0009	
		0.12		-0.53		-0.20	
IFRS*IM	-	**-0.6962**	**	-0.2075		**-0.7184**	*
		-2.38		-0.51		-1.79	
$\triangle$ *OCF*	-	-0.2093	***	-0.2151	***	-0.1817	***
		-11.92		-11.9		-11.02	
CAPX	+	0.1895	***	0.1632	***	0.1744	***
		9.68		7.13		7.01	
REST	+	0.5036	***	0.4565	***	0.4280	***
		3.83		3.45		3.35	
IROA	+	0.2134	***	0.1968	***	0.3650	***
		4.08		3.33		5.87	
IMRE	+	-0.4870		4.0793		3.4010	
		-0.17		1.14		0.89	
Cons.		0.0161	***	0.0173	***	0.0076	***
		7.30		7.21		3.02	
Fixed Effects		Year Industry		Year Industry		Year Industry	
R^2		0.380		0.398		0.400	

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. Coefficients are estimated based on a revised Models (3) with the indicator $IFRS_i$ to identify firms using IFRS.

All variables are defined in Appendix A. The complete model is

$$\sum(OCF_{t+y}-OCF_{t+y-1}) = \gamma_0 + \gamma_1 OCFit + \gamma_2 ACC_{it} + \gamma_3 IM_{it} + \gamma_4 IFRS_{it} + \gamma_5 IFRS*IM_{it} + \gamma_6 IROA_{it} + \gamma_7 \Delta OCF_{it} + \gamma_8 CAPX_{it} + \gamma_9 REST_{it} + \gamma_{10} IMRE_{it} + \varepsilon_{it}$$

Appendix A

Variable Definitions

Variable		Definition
IMit	=	firm *i* 's reported tangible long-lived assets impairments (shown as a positive amount)
ΔTOPIXit	=	percentage change in TOPIX (Tokyo Stock Price Index) in Japan
ΔUERit	=	percent change of unemployment rate based on the total labor force in Japan
ΔIROAit	=	median in firm *i* 's country-industry return on assets in year *t*. Industry classification is based on the Nikkei Middle Industry code
ΔOFCit	=	change in firm *i* 's operating cash flows
ΔEit	=	change in earnings before asset impairments
ΔEMPit	=	change in the number of employees at each firm
VOLit	=	volatility with regards to firm and asset values, calculated as the average annual price movement from average to high and low
BHit	=	'big bath' behavior, which equals one if the change in pre-impairment earnings deflated by total assets at the beginning of the year is less than the median non-zero negative values of this measure, and zero otherwise
SMit	=	earnings-smoothing behavior, which equals one if the change in pre-impairment earnings deflated by total assets at the beginning of the year is greater than the median of non-zero positive values of this measure, and zero otherwise
COMit	=	management compensation
SIZEit	=	the natural log of total assets
MTBit	=	the market-to-book ratio, calculated as the market value of equity multiplied by the book value of equity
LOSSit-1	=	an indicator variable that equals one if firms' net income in year (t - 1) is less than zero, and zero otherwise
$\sum(OCF_{i,t+y} - OCF_{i,t+y-1})$	=	firm *i* 's sum of changes in operating cash flows from year ($t + y$ - 1) to ($t + y$); (y = -1, 1, 2, 3)
EARNit	=	income before extraordinary items and discontinued operations, and *RESTit* is firm *i* 's restructuring charges
ACCit	=	accrual components excluding impairments and restructuring losses, equal to $EARNit - OCFit + RESTit + IMit$
IFRSi	=	an indicator that equals one (or zero) if firm *i* reports under IFRS
CAPXit	=	firm *i* 's capital expenditures
RESTit	=	firm *i* 's restructuring charges
IMREit	=	IFRS firm *i* 's impairment reversals

Chapter 4. Reversals of impairment losses under IFRS: Evidence from Japan[32]

ABSTRACT

The purpose of this survey is to clarify the status of reversing impairment losses of firms applying IFRS by examining the tendency of firms to reverse impairment losses. The results revealed a unique trend in specific firms and industries in reversing impairment losses in Japanese IFRS firms. I find that the types of assets with impaired losses that can be reversed are slightly more intangible fixed assets than tangible fixed assets. In addition, I statistically examine whether there is a difference in performance between the reversal firm and no-reversal firm. Results indicate a significant difference in both net income and operating cash flow in the medical product and food industries, which have a high rate of reversing impairment losses on intangible assets. On the other hand, the difference in business performance disappeared as the industry reversed more tangible fixed assets.

1. Introduction

The purpose of this paper is to improve the understanding of the actual reversals of impairment losses under IFRS in Japan by examining the tendency of firms that do so. Japanese GAAP (J-GAAP) and US GAAP prohibit the reversal of impairment losses, but it is permitted under IFRS, under IAS 36 "Impairment of Assets" (IASB, 2004) (IAS36, par. 114). There are several reasons to reverse impairment losses under IFRS. First, the reversal of impairment losses is consistent with the definition of assets in the Conceptual Framework. Reversing an impairment loss means that it is more likely that future economic benefits will flow into the firm that were not expected to arise from the previously impaired asset. Therefore, revaluing the asset is more consistent with the definition of assets in the framework (IAS36, BCZ184).[33] Second, it is also supported by the fact that the reversal of impairment losses is a change in estimates. Since the impairment is performed based on the estimated recoverable amount, if

[32] This article is translated in English of Inoue (2020a), published in "Accounting & Audit Journal" the Japanese Institute of Certified Public Accountants and published in "Fukuoka University Review of Commercial Sciences" as Inoue (2020b).

[33] The reasons for reversing the impairment loss are (a) it is against cost-based accounting, (b) it causes fluctuations in profit, and (c) it is not useful to users of financial statements, (d) it leads to the recording of internally generated goodwill, (e) it is used as a means for leveling profits, and (f) it increases the administrative burden (BCZ183).

the estimation changes and the new estimation reduces the impairment, then it is necessary to reverse the impairment loss (Business Accounting Council of Japan (BACJ), 2002a, par. 4・3(2)). Third, reversing the impairment loss provides useful information for users of financial statements. As users of financial statements expect information about future cash flows, reversing impairment losses provides them with useful information about the potential future benefits of an asset or group of assets (IAS36, BCZ184).

In contrast, J-GAAP prohibits reversal of impairment losses because (1) impairment losses are recognized only when the existence of impairment is reasonably certain based on the "probability criterion," and (2) reversal may increase the administrative burden (BACJ, 2002a, par. 4・3(2). Besides, US GAAP also prohibits the reversal of impairment loss. SFAS No. 121 (FASB 1995) adopts a fair value measurement rather than a removable amount as the measurement of an impairment loss; thus, the carrying amount after impairment losses is considered to be its new cost (FASB 1995, ASC 360-10-35-17, pars. 11, 20, 105).

2. Previous research

Previous studies on impairment loss reversals are minimal. One reason is that empirical analysis using regressions is infeasible because of the small sample (Gordon and Hsu, 2018, p.207). There are a few investigations of the relationship between impairment reversals earnings management. Duh et al. (2009) analyze firms in Taiwan to clarify impairment losses. Consistent with the earnings management hypothesis associated with incentives to avoid debt management breaches, they observe impairment reversal behavior in firms with higher debt ratios. However, effective corporate governance mechanisms can mitigate such behavior. Trottier (2013) analyzes the relationship between reversal of impairment loss and management compensation in Canada based on a questionnaire survey. The results suggest that permitting reversals increases the likelihood that a manager will recognize the impairment, especially if the manager has a bonus plan. Cao et al. (2018) document evidence that firms with high levels of abnormal accruals and weak corporate governance avoid earnings decline by reversing previously recognized impairments. In addition, they find that firms engaging in big baths, as evidenced by high accumulated impairment balances and prior changes in top management, use impairment reversals to avoid earnings declines. Tan and Trotman (2018) use an experimental method to analyze the effect of revertive behavior on disclosure behavior. They find that managers are more willing to impair when they can reverse impairment losses than when they cannot do so, but this effect does not vary with disclosure transparency. Chen et al.

(2009) investigate the actual situation of impairment loss reversals in China and show that managerial opportunism may have reduced the reliability of otherwise value-relevant reversal information. On the contrary, Shaari et al. (2017) analyzes the impact of reversing impairment losses in Malaysia and report that firms reversing impairments are not more incentivized to engage in earnings management and do not actually engage in more earnings management than a control sample matched on size and industry.

Researchers tend to regard impairment reversals as an earnings management tool and find evidence consistent with this belief. Overall, prior studies show no positive aspect of impairment reversals. However, the reversal of impairment losses, which provides direct information about future cash flows, must be useful as information on future cash flows is of paramount importance in contemporary accounting standards. Usually, it is difficult to obtain information on future cash flows in companies as an outsider. In this regard, the impairment reversal is expected to communicate the management's outlook on future business performance. This study attempts to reveal the usefulness of impairment reversals, unlike prior research. I conduct a basic analysis with a limited sample in Japan, focusing on a point that prior studies do not address, such as the characteristics of the industry and the types of fixed assets.

3. Understanding impairment reversals among IFRS firms in Japan

3.1. Sample selection

The data of impairment losses and impairment reversals of IFRS firms are hand-collected from annual reports. Other data are collected from Nikkei Media Marketing, NEEDS Financial QUEST.[34] The analysis period is limited to the general operations of IFRS-adopting companies from 2011 to 2019, when impairment reversals occurred. Thus, the data sample consists of 861 firm-year observations.

3.2. Status of IFRS firms and reversal implement firms

Figure 1 shows the implementation status of IFRS firms in Japan. The number of firms performing impairment reversal is increasing annually; however, it has not increased in proportion to the number of firms applying IFRS.[35] Considering the number of firms that carried out impairment reversals, it seems that the reversal amounts (cumulative) in 2016 and

[34] For operating cash flow, I use "subtotal,", but when data for subtotal are missing, I instead use the "Nikkei Adjusted Operating Cash Flow" from NEEDS Financial QUEST.

[35] Gordon and Hsu (2018) observe 38 impairment reversals out of 1,412 samples (tangible long-lived assets) among 289 firms in major IFRS countries such as France, Germany, and the United Kingdom from 2005 to 2011, which is 0.2% of total assets at the beginning of the period on average.

2018 are significant. This may be because some firms have large amounts of impairment reversals at one time, and that firms experienced improving future cash flows simultaneously.

Figure 1: Number of firms reversing impairment (left) and the amount of implemented reversals (right, unit: million USD, cumulative)

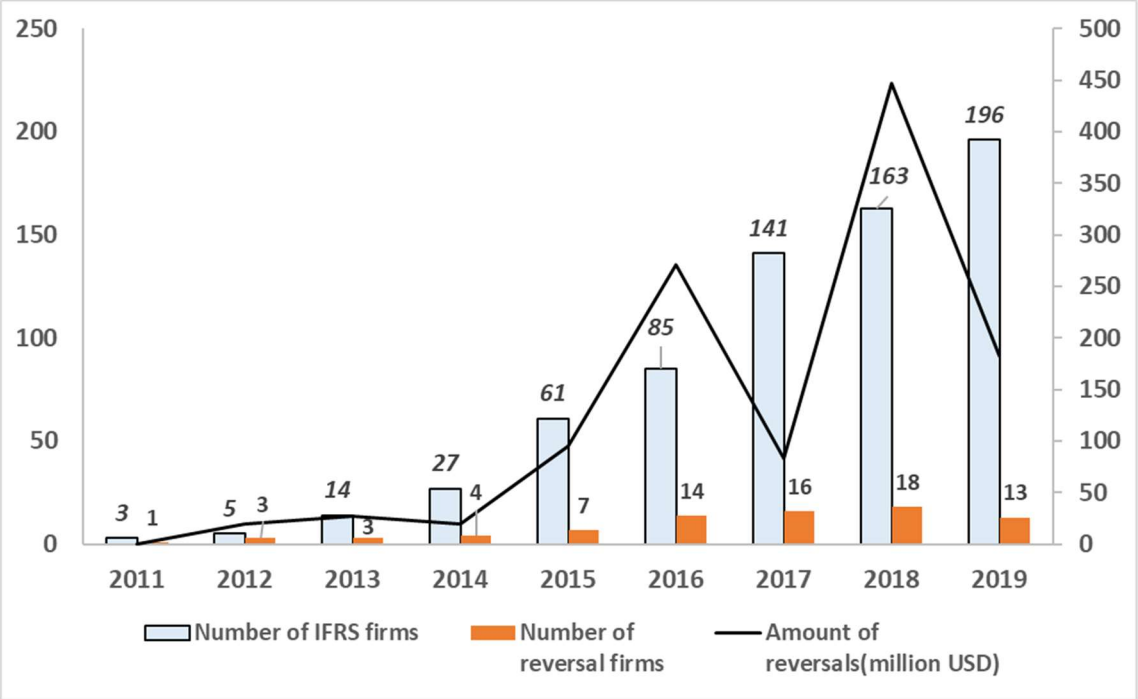

Figure 2 shows the firms that implement impairment reversals by industry, classified based on Nikkei-Middle-Industry Classification codes. The left side of Figure 2 presents the classification of firms that apply IFRS by industry, sorted based on the number of samples rather than the number of firms.

The pharmaceutical industry most frequently implements impairment reversals, followed by food, electrical equipment, and ceramics (glass). There is an example of one firm carry out 9 reversals in consecutive years. One of the reasons that certain firms intensively reverse impairment losses is that the firm's management system for the impairment reversals is sufficient. According to this article, a specific company that develops fixed asset management software created new software for firms applying IFRS that supports the reversal of impairment losses. Since many firms that reversed impairment losses introduced this software, the implementation of impairment reversal highly depends on the existence of the management system.

Figure 2: Firms applying IFRS by industry (left) and firms implementing impairment reversal (right)

Industry	Number of firms	Obsavations	Ratio
Service	50	216	25.1%
Electrical Equipment	23	100	11.6%
Medical Supplies	16	81	9.4%
Trading	12	73	8.5%
Automobile	15	70	8.1%
Chemicals	13	45	5.2%
Machinery	11	39	4.5%
Precision Machinery	8	36	4.2%
Other Financial Services	7	33	3.8%
Food	9	30	3.5%
Communication	8	29	3.4%
Retailer	5	20	2.3%
Glass and Ceramic	2	16	1.9%
Metal Products	4	15	1.7%
Rubber	4	14	1.6%
Real Estate	2	12	1.4%
Land Transportation	2	11	1.3%
Steel Industry	3	10	1.2%
Fiber	1	7	0.8%
Oil	1	4	0.5%
Total	196	861	100.0%

Industry	Number of reversal firms	Obsavations	Ratio
Medical Supplies	8	13	16.5%
Food	3	11	13.9%
Electrical Equipment	5	10	12.7%
Glass and Ceramic	1	9	11.4%
Service	3	7	8.9%
Chemicals	3	6	7.6%
Trading	3	5	6.3%
Automobile	3	4	5.1%
Other Financial Services	1	4	5.1%
Machinery	1	3	3.8%
Land Transportation	2	2	2.5%
Oil	1	2	2.5%
Precision Machinery	1	1	1.3%
Real Estate	1	1	1.3%
Retailer	1	1	1.3%
Total	37	79	100.0%

3.3. Comparison of impairment reversal by asset type

Figure 3 summarizes the reversal of impairment losses by asset type. IAS 36 requires disclosure of the details of reversed impairment losses when they are material to the financial statements as a whole, including (1) the events and circumstances that led to the reversal of the impairment loss, (2) the amount of the impairment loss reverted, and (3) the amount of the impairment loss reverted for each asset type (IAS 36, par.130). Using these disclosures, I aggregate the types of fixed assets that actually saw impairment loss reversals in IFRS-adopting firms in Japan. Tangible fixed assets are categorized into "land and buildings," "machinery and equipment," and "construction in progress/ invested real estate/others ("Others" in Figure 3)." If the specific tangible fixed asset reversed is unknown, then I include it in "Others" in Figure 3.

Figure 3 indicates that the intangible fixed assets with reversed impairment is slightly larger than that of tangible fixed assets. It is possible that a large amount of impairment loss due to uncertainty in measuring the impairment of intangible fixed assets was reversed at once due to the improvement of the recoverable amount. One of the possible reasons that several intangible fixed assets saw reversals is that some firms applying IFRS have many intangible

assets in their specific industries, such as the medical industry. As a type of reversed impairment, firms disclose “land and buildings” separately. Based on the contents, there are many cases of reversing the impairment of “land.” The reason for this result is that the improvement of the recoverable value can be objectively identified because the market value of land is easy to grasp.

Figure 3: Aggregate impairment reversal by asset type (Unit: million USD, cumulative)

Year	IFRS firms	Reversal firms	Amount of Reversal	**Tangible**	(Land/Buildings)	(Machinery/Equipment)	(Others)	**Intangible**
2011	3	1	0.01	0.01	0.00	0.01	0.00	0.00
2012	5	3	0.20	0.08	0.01	0.05	0.02	0.12
2013	14	3	0.28	0.28	0.01	0.02	0.25	0.00
2014	27	4	0.19	0.19	0.03	0.16	0.00	0.00
2015	61	7	0.95	0.54	0.42	0.12	0.00	0.40
2016	85	14	2.71	0.51	0.11	0.02	0.38	2.20
2017	141	16	0.83	0.69	0.51	0.18	0.00	0.13
2018	163	18	4.47	1.49	0.27	0.36	0.87	2.98
2019	194	13	1.82	1.71	0.37	0.59	0.75	0.11
Total		79	**11.45**	**5.50**	1.72	1.51	2.27	**5.95**

3.4. Analysis of the reasons for impairment reversals

When reversing an impairment loss, firms must mention the reason for performing the reversal (IAS36, pars.130, 131). Basically, the reason should be that the recoverable amount improved, but the actual case in Japan can be summarized as follows.

① Changes in the situation after a natural disaster	Regarding the impairment loss recorded when a typhoon or flood occurred, there are cases in which the impairment loss is reversed due to the subsequent improvement in the situation, and the recoverable value is reassessed. When a natural disaster occurs, the existing loss is so great that many impairment losses are recorded due to the suspension of operations. However, it is conceivable that cash flow will improve in the future due to the resumption of operations, etc., depending on the passage of time thereafter.
② Improving the market value of land	There are also cases where the impairment loss is reversed due to improvements in the market value of the land. If the land is idle, then it will be a unit of cash generation, and if the market price rises independently, then it can be returned. In some cases, firms conduct a new real estate appraisal to reverse the land's impairment loss.

③ Deciding to sell	In some cases, an impairment loss is recorded because the asset was idle, but then the firm decides to sell the impaired asset, and the past impairment loss is reversed. In other cases, non-current assets classified as held for sale have their fair values subsequently increased, and the impairment losses are reversed.
④ Progress in research and development	The medical industry has a high degree of uncertainty in the R&D of new products, so an impairment loss may be recorded during the development process. However, in some cases, the recoverable amount will improve due to the prospect of actual commercialization as the development plan progresses. The amount of work-in-process R&D acquired through the acquisition of a company is also large, so the amount of money to be returned is also large.
⑤Performance improvement of unprofitable stores	In the service industry, such as in restaurants and clothing sales, the unit of cash generation is often a "store." In this case, an impairment loss is recorded for each store due to the deteriorating business performance, and if the business performance of the store is likely to Improve thereafter, the impairment loss recorded in the past will be reversed.
⑥ Others	・Reassessment of recoverable amount (improvement of the recoverable amount of specific business subject to impairment loss) ・Updated business plan ・Restart operations of a halted production line ・Change from the suspension of operation to the usage method (such as changing the closed building structure to continuous use) ・Future oil and gas prices expected to rise in exploration and development investment ・Improved product sales prospects ・Increasing demand overseas

4. Comparison of reversals in implementation and non-implementation firms

Many IFRS-adopting firms in Japan do not reverse impairment losses. Therefore, the firms that reverse impairment losses may have special and characteristics. Assuming that firms that carried out an impairment loss reversal even once tend to implement a reversal in the future,

I classify such firms as a "reversal firm." On the other hand, I classify the sample of firms that have never performed a reversal as a "no-reversal firm" and examine whether there is a difference between these two groups.

4.1. Basic statistics of reversal and no-reversal firms

Figure 5 compares the average impairment reversal, impairment loss (including goodwill impairment loss), and performance in terms of net income and operating cash flow (OCF) for both reversal and no-reversal firms. All figures are standardized by total assets at the end of the period. Since a past impairment loss that can be reversed is an impairment (except for goodwill impairment), the potential reversible impairment loss is the amount of deduction of goodwill impairment from the overall impairment loss. Firms that carry out reversals appear to have more opportunities for reversals, as they recorded higher average amounts of past impairment losses. Next, focusing on the differences in performance, the average firm that carries out reversals tends to show higher performance for both net income (net income after tax) and operating cash flow. Therefore, it is possible that firms with better performance are reversing impairment losses.

Figure 5: Basic statistics: Reversal and no-reversal firms

		Reversal	Impairment	(GW impairment)	Net income	OCF
Reversal firms	Average	0.0003	0.0059	0.0009	0.0478	0.0823
216 observations	SD	0.0009	0.0078	0.0021	0.0359	0.0479
	Min	0.0000	0.0000	0.0000	-0.0614	-0.0972
	Max	0.0056	0.0467	0.0146	0.1598	0.2462
Non-reversal firms	Average	—	0.0055	0.0016	0.0426	0.0682
645 observations	SD	—	0.0227	0.0081	0.0581	0.0664
	Min	—	0.0000	0.0000	-0.3605	-0.3360
	Max	—	0.4793	0.1430	0.3671	0.5489
Total	Average	0.0001	0.0056	0.0014	0.0439	0.0926
861 observations	SD	0.0005	0.0201	0.0071	0.0535	0.0625
	Min	0.0000	0.0000	0.0000	-0.3605	-0.3360
	Max	0.0056	0.4793	0.1430	0.3671	0.5489

4.2. Average difference test (statistical analysis)

I conduct a t-test to analyze whether there is a difference in the mean value between reversal and no-reversal firms.[36] First, I perform an F-test to test whether the variances of the

[36] This study just attempts to compare the average of performance (net income and operating cash flows) from the perspective of the difference of the firms that report impairment reversals. Since the sample of IFRS firms in

two groups differ, and after confirming that the variances are different, I conduct the Welch t-test for analysis. First, I analyze whether there is a significant difference between reversal and no-reversal firms for the average value of net income and operating cash flow using the full sample, as shown in the upper part of Figure 6. I find a significant difference in both net income and operating cash flow between the reversal and no-reversal firms. Reversal of impairment loss influences earnings without current cash flow generation and is a kind of "accrual" at the time of recording; however, the difference in other accruals is that indicates the recoverable amount (future cash flow) is expected to improve. This aspect is consistent with the reason that the impairment standard permits impairment reversal.

However, the reversal of impairment losses has a unique trend because of being conducted in specific industries. Therefore, I conduct a comparative analysis between reversal and no-reversal firms for the pharmaceuticals, foods, trading companies, chemical industries, electrical equipment, and service industries, which have a sample size that allows for statistical analysis.[37]

The right side of Figure 6 shows the proportion of fixed assets with reversed impairment for tangible and intangible assets. As Figure 3 shows, firms reverse intangible fixed assets at slightly higher rates than they do tangible fixed assets. In the pharmaceutical and food industries, where a large amount of intangible fixed assets are reversed, I find a significant difference in both net income and operating cash flow between reversal and no-reversal firms. The reversal of impairment losses in the pharmaceutical and food industries reflects more specific cash flow improvements, such as progress in new drug development and new product development. Therefore, reversals of impairment losses in these industries or in intangible assets may transmit a positive signal to the market, such as improving future performance.

On the other hand, in industries where many tangible fixed assets are reversed for impairment, the average performance is basically higher than in no-reversal firms in the same industry. However, except for the net income in the service industry and the operating cash flow in the electrical equipment industry, I find no significant difference in the average performance between reversal and no-reversal firms. The reversal of impairment loss related to tangible fixed assets may be triggered by just “a land price increase” or “decision to sell.” These causes do not necessarily indicate that the ongoing improvement of earnings and cash

Japan and impairment reversals are limited because of the short period of sample at the moment, I compare an average of the level standardized by total assets at the end of the period. However, it is more appropriate to compare an average of the change of the performance instead.

[37] The ceramics industry is excluded from the analysis because the full sample contains only one firm.

flows will increase. It is possible that such differences influence the reversal of impairment losses on intangible assets.

Regarding the service industry, no-reversal firms have significantly higher averages in net income but no significant difference in operating cash flow. Impairment reversals in the service and retail industries are done on a store-by-store basis and tend to be of small value in practice. It is conceivable that the performance of each store, such as restaurants and clothing stores, may represent small performance fluctuations. If management could systematically grasp the reversal of impairment loss for each store every time the outlook for each store would change, they could implement impairment reversals automatically.

Figure 6: Comparison of average values (t-test)

		No-reversal firms	Reversal firms	p-value	Ratio of Tangible	Ratio of Intangible
Full sample	Observation	(645)	(216)		47.7%	52.3%
	Net income	0.042	0.048	0.009 *		
	OCF	0.068	0.081	0.002 ***		
Medical Supplies	Observation	(36)	(45)		3.6%	96.4%
	Net income	-0.017	0.054	0.003 **		
	OCF	-0.010	0.084	0.001 ***		
Food	Observation	(14)	(16)		12.7%	87.3%
	Net income	0.038	0.068	0.001 ***		
	OCF	0.076	0.094	0.022 ***		
Trading	Observation	(51)	(22)		36.3%	63.7%
	Net income	0.027	0.035	0.156		
	OCF	0.051	0.047	0.468		
Chemicals	Observation	(29)	(16)		100.0%	0.0%
	Net income	0.052	0.060	0.304		
	OCF	0.085	0.101	0.144		
Electrical Equipment	Observation	(74)	(27)		100.0%	0.0%
	Net income	0.038	0.051	0.138		
	OCF	0.065	0.087	0.003 ***		
Service	Observation	(198)	(18)		100.0%	0.0%
	Net income	0.064	0.044	0.008 ***		
	OCF	0.122	0.135	0.392		

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels.

5. Conclusion

The findings of an investigation into the actual reversals of impairment losses in Japanese firms applying IFRS are as follows. First, although reversal of impairment loss events are not limited to a specific firm or industry, specific firms and industries tend to implement it in practice. This may be because the impairment reversal creates an administrative burden, and the importance of the impairment loss differs for each industry and firm. In addition, intangible fixed assets saw slightly more reversed impairment than tangible fixed assets. This can make a

difference in the information content. Analyzing the actual reason for the reversals, the impairment reversals on intangible fixed assets are associated with higher average operating cash flow due to research and development progress, whereas the reversal of tangible fixed assets is not linked to the continuous improvement of future cash flows, such as increasing market prices and decision-making on sales.

Next, I examine whether the difference in the types of fixed assets reversed is related to the difference in performance by determining whether there are differences in business performance between reversal and no-reversal firms. First, I confirm some differences in both net income and operating cash flow between reversal and no-reversal firms in the full sample. This result implies that reversing an impairment loss is essentially an indication of an increase in cash flow; therefore, it is consistent with the purpose of the impairment standard. However, the implementation of impairment reversals in Japan is observed in specific industries. Second, I analyze the industries for which a comparative analysis is possible. I find a significant difference in both net income and operating cash flow for the pharmaceutical and food industries, which have a high rate of impairment loss reversals on intangible assets. Therefore, the reversal of the impairment losses of intangible fixed assets may be useful information for evaluating a firm's future performance. On the other hand, the more industries that reverse tangible fixed assets, the smaller the difference in average performance. From this point of view, it is necessary to focus on the factors of impairment reversals and utilize them for future predictions, rather than to unequivocally capture the reversal of impairment losses. Therefore, it is necessary to further strengthen the disclosure of details about impairment reversals in the footnotes. In the actual disclosure examples, the detailed content is unclear in some cases, which is considered to be an institutional issue.

Both US GAAP and J-GAAP do not permit reversals of impairment losses, which is a specific provision of IFRS. The reversal of impairment losses, which provide direct information on improvement in future cash flows, must be useful information about future performance because the information on future cash flows is of paramount importance in contemporary accounting standards. Usually, it is difficult to obtain information on future cash flows from companies as an outsider. In this regard, reversing an impairment loss should have the effect of communicating management's outlook for future business performance. However, it is unclear whether the reversal of all impairment losses is worthwhile, and there is a need for improvements such as strengthening the disclosure contents related to the reversal and reducing the burden, and promoting its application in practice. Given that the number of firms applying

IFRS in Japan will continue to increase, further analysis of the reversal of impairment losses is highly required.

Chapter 5: Classification shifting using discontinued operations and impact on core earnings: Evidence from Japan[38]

ABSTRACT

This study investigates whether managers of Japanese firms that adopt the IFRS engage in earnings management by shifting core expenses to reported discontinued operations. Using the expected-core-earnings model, I find evidence that firms do this very thing. Additionally, I desegregate reported discontinued operations into core earnings and non-core earnings because firms engage in classification shifting by using special items. Results show that firms employ classification shifting using negative non-core earnings (i.e., negative special items) of discontinued operations. Furthermore, I find that the income-increasing discontinued operations negatively influence both current and future core earnings and that income-decreasing discontinued operations do not. This result indicates the usefulness of disclosing discontinued operations as a premise of the importance of core earnings to evaluate firms' performance.

1. Introduction

The purpose of this study is to analyze earnings-management behaviors that leverage the shifting of classifications of operating expenses (core expenses) items to discontinued operations. While Barua et al. (2010) find the earnings management practice using discontinued operations with US GAAP-based, there is no evidence of earnings management with IFRS-based yet (Silva et al., 2018). Therefore, I investigate whether adopting IFRS No.5 "Non-current Assets Held for Sale and Discontinued Operations," evokes earnings management practice in Japan because Japan has adopted IFRS as one of the options of accounting standards since 2010. Furthermore, I also investigate the impact on the core earning of continuing operations because the core earnings model based on McVay (2006) is designed from the viewpoint of impact on both current and future core earnings. Kang et al. (2018) also investigate the association between earnings quality of the core earnings and discontinued operations.

Classification shifting using discontinued operations is a form of earnings management wherein operational line items are intentionally misclassified as discontinued operational line

[38] This article is supposed to be published in "Journal of Financial Reporting and Accounting" in 2021.

items in income statements. Both US GAAP and IFRS, unlike Japanese GAAP (J-GAAP), require that discontinued operation line items be segregated from continuing operations items (SFAS 144; IFRS 5). Ironically, this line enables a type of earnings management wherein managers allocate operating expenses items to below-the-line items (discontinued operations) to manipulate above-the-line (or core) earnings in the income statements.

Using a research model similar to McVay (2006) and Barua et al. (2010), I find a positive relationship between discontinued operations and unexpected core earnings during the year a firm reports discontinued operations. Conversely, I find a negative association between discontinued operations and unexpected changes in core earnings during the year after a firm reports discontinued operations.[39] These reversed results between the current year and next year provide evidence consistent with prior research that suggests that managers shift core expenses opportunistically in continuing operations to discontinued operations to inflate core earnings. Furthermore, I classify income from discontinued operations into core and non-core earnings because it is thought that firms engage in classification shifting using these special items. Doing so enables me to more accurately analyze classification shifting and the impact on core earnings on continuing operations by removing discontinued operations. I find a negative association between negative non-core earnings of discontinued operations and unexpected core earnings, and I find a positive association with the change in unexpected core earnings. These findings support the assumption that managers shift core expenses to non-core earnings of discontinued operations to inflate current core earnings. Moreover, I conclude that income-increasing core earnings of discontinued operations negatively influence core earnings of continuing operations while income-decreasing discontinued operations have no significant impact on continuing operations. This result implies that core earnings of discontinued operations have a different impact on core earnings of continuing operations, depending on whether the sign of discontinued operation is positive or negative.

Japan allows listed companies to voluntarily choose accounting standards among J-GAAP, US GAAP, IFRS, and Japan's Modified International Standards (JMIS).[40] While Barua et al. (2010) investigate the same issue with U.S. data, this is the first empirical research in Japan on classification shifting using discontinued operations under IFRS, and also the first to use IFRS samples for this research question among the accounting literature. The reason why I do use only Japanese samples rather than global data is that I aim to focus more on IFRS itself as an accounting standard by ignoring the systematic individualities of each country. Most previous studies address the comparability of standards in multiple countries, allowing the investigation

[39] I take the amount of income-decreasing discontinued operations as positive numbers multiplying by negative 1 (-1) according to McVay (2006) and Batua et al. (2010).

[40] For the moment of 2020, 224 listed companies have adopted IFRS in Japan, including those to be applied. The total market capitalization of the Japanese market for IFRS-applied companies alone amounts to USD 2,200B, accounting for 33% of market capitalization (USD 6,700B) of Tokyo Stock Exchange-listed companies. There are no companies that choose JMIS at the moment.

of institutional settings across countries (e.g., Bradshaw and Miller, 2008; Barth et al., 2012; Gordon and Hsu, 2018). However, if firms are not confronted with the same incentives, enforcement, regulation, and litigation environment that they all face, the analysis of comparability of accounting standards is inaccurate (Ball et al., 2000; Lang et al., 2006). A comparison of accounting standards by domestic companies implicitly controls factors other than accounting standards (Barth et al., 2012). This study explores in a single country so that differences in institutional settings between countries can be ignored.

This work provides four major contributions. First, extending the literature on classification shifting by examining the relationship between unexpected core earnings and discontinued operations, I expose a potential earnings management practice under IFRS. Second, I extend McVay's research design for classification, developing it to an investigation of the impact on core earnings, finding that income-increasing discontinued operations negatively influence core earnings, whereas income-decreasing discontinued operations do not. Doing so, I provide another aspect of McVay's research design for future studies. Third, I focus on the negative special items, even in the discontinued operations research, because prior studies have been considering the assumption of a classification shifting tool in practice is to use extraordinary or special items. Unlike Barua et al. (2010), I obtain the evidence that firms use negative special items (non-core earnings) of discontinued operations to inflate core earnings of continuing operations. This finding enforces the current research assumption for classification shifting behavior in practice. Fourth, the results of this study benefit standard setters, regulators, and financial statement users. This study indicates that standard setters should pay close attention to the potential problems of line-item separations of discontinued operations in profit and loss statements because regulators in Japan are slowly adopting IFRS and have expressed concern about material differences in the presentation rules. Because IFRS is thought to be the predominant set of global accounting standards, financial-statement users will be interested in the usefulness and potential risks of IFRS No. 5.

2. Prior research

2.1. Prior research on classification shifting

Earnings management is known to be conducted in three ways: accrual management (Dechow et al., 1995; Payne and Robb, 2000); real activity management (Dechow and Sloan, 1991; Bushee, 1998; Roychowdhury, 2006); and classification shifting (Ronen and Sadan, 1975; Barnea et al., 1976; McVay, 2006; Fan et al., 2010). Previous studies primarily focus on earnings management that uses accruals or real activities, whereas relatively limited studies examine earnings management resulting from classification shifting. Using the former two earnings-management methods, managers have been known to reduce future earnings while increasing discretionary current earnings. However, classification shifting is a relatively new earnings-management method whereby managers reclassify recurring items to non-recurring

items within income statements when they separate ordinary income and extraordinary items to improve core earnings. Classification shifting does not actually change net income because only certain income, expenses, gains, and losses move to different line items within the income statement. Thus, classification shifting is likely to be less costly and largely unmonitored by auditors and regulators (Nelson et al., 2002).

Ronen and Sadan (1975) argue that the presentations of earnings management and stepwise income are relating, because, when focusing on the bottom line of net income, the targeted classification shifts are meaningless and useless. However, managers have the incentive to engage in classification shifting if the goal is to smooth subtotals of stepwise income other than the bottom line. This begs the question of which income subtotal is the one of interest to investors. Barnea et al. (1976) extend this notion by providing evidence that managers use extraordinary income and expenses to smooth recurring or operating incomes. Other studies demonstrate that investors are interested in subtotals of recurring income rather than net income, including nonrecurring items. Lipe (1986) concludes that investors understood the impact on future earnings among the various earnings components reported in the income statement, suggesting that managers are more motivated to manage subtotal earnings rather than total net income.

Although the Accounting Principles Board's Opinion No. 30 defined an extraordinary item as a transaction that was both unusual and not expected to recur in the foreseeable future, classification shifting using extraordinary and unusual items was regarded as a serious problem in the U.S. These items were gradually restricted and regulated. Bradshaw and Sloan (2002) provide evidence of non-GAAP earnings, such as street and proforma earnings, replacing GAAP earnings as a key determinant of stock prices. This implies that core earnings representing non-recurring income is an important benchmark, even after excluding the line of extraordinary items.

McVay (2006) shows that, based on the expected core earnings model, managers opportunistically shift core costs to special items to inflate and correct current core earnings. This provides a wide range of evidence about fiscal relationships. McVay's model is designed to divide the core earnings, defined as operating income before depreciation, into expected and unexpected components. They find that special items are positively associated with unexpected core earnings over the same period and negatively associated with unexpected changes in future core earnings. These results imply that managers opportunistically shift operating expenses to negative special items. Evidence is also provided that shows managers are motivated to change classifications to meet or beat analysts' expectations. Furthermore, a negative stock-price reaction is found to be an unexpected core-earnings reversal, indicating that investors might not truly understand earnings management. However, because the expected core-earnings model includes current-year accruals as an indicator of extreme performance, the model is problematic. According to McVay (2006), current-year accruals are important in the model

because special-item firms tend to experience extreme negative performance (McVay, 2006, p.524-525). Nevertheless, expected results disappear when current-year accruals are dropped from the model.

To this point, Fan et al. (2010) insist that the relationship between the negative special items and both unexpected core earnings and the changes in future core earnings may be biased in favor of the special accrual items include in the total accruals as the independent variable in the model. Fan et al. (2010) extend McVay's model using returns and lagged returns to control current performance instead of current-year accruals to exclude potential bias. Using quarterly data, they complement McVay's (2006) findings and provide evidence that classification shifting using negative special items is more prevalent during the fourth quarter.

In Japan, Shirato and Ngata (2012), using McVay's (2006) findings, investigate earnings management via classification shifting, where the traditional presentation form of the income statement is continued. Consistent with prior research in the U.S., these authors found a strong tendency for managers to shift expenses (gains) downwardly (upwardly) to increase core earnings. Malikov et al. (2018) focus on shifting gains instead of losses and reveal the relationship between unexpected core earnings and non-operating earnings based on McVay's model. These prior studies indicate that positive special items (gains) also can be used for classification shifting as well as negative special items (losses) that used to be thought of as major practice for the management due to the asymmetric between losses and gains attributed to conservatism.

Recently, researchers focus on the specific situation when firms tend to engage in classification shifting. Noh et al. (2017) investigate classification shifting when firms adopt IFRS. Nagar and Sen (2017) find that shifting is more likely to take place during the decline phase of the firm lifecycle.

2.2. Prior research on Discontinued operations

Regarding discontinued operations, Barua et al. (2010) is the first to investigate classification shifting using discontinued operations that are segregated from the results of continuing operations and are presented separately in the income statement. The fact that there is a clear line between income from continuing operations and discontinued operations evokes a motivation of classification shifting when considering continuing income is more valuable. Using a methodology based on McVay (2006), Barua et al. (2010) find evidence consistent with the hypothesis that firms shift operating expenses to income-decreasing discontinued operations to increase core earnings. Additionally, they test the opportunistic behavior of managers who are motivated to meet or beat benchmarks, finding that they meet or beat analysts' forecasts, inducing classification shifting using discontinued operations. They also find that the introduction of SFAS No.144 caused the reporting frequency of discontinued

operations to increase, whereas the magnitude of classification shifting decreased. Consistent with the finding of Barua et al. (2010), Curtis et al. (2014) find no evidence of opportunistic growth when comparing APB 30 and SFAS 144. They emphasize the usefulness of a wide range of discontinued operations under SFAS 144.[41] On the contrary to previous SFAS 144, Accounting Standards Update 2014-08 (ASU 2014-08) narrows the scope of discontinued operations. Ji et al. (2020) discover that the application of ASU 2014–08 results in fewer opportunities for earnings management using discontinued operations. However, Kang et al. (2018) insist that ASU 2014-08 lowers the quality of core earnings based on the evidence that the persistence and response coefficient of core earnings significantly reduces, resulting in that analysts' forecast error and dispersion increase. Given these previous studies, the range of discontinued operations in the standard could affect both usefulness and earnings management practices; however, both Curtis et al. (2014) and Ji et al. (2020) do not find significant earnings management behavior of discontinued operations according to the new accounting standard.

Focusing on income decreasing (negative) discontinued operations, Darrough et al. (2019), using the date of U.S. firms, investigate whether managers shift income-decreasing special items to discontinued operations. They obtain the evidence that managers classification-shift asset write-downs to discontinued operations. Skousen et al. (2019) find that more capable managers reduce the degree of classification shifting using discontinued operations, and the shifting is mainly driven by firms with income-decreasing discontinued operations. Kaplan et al. (2019) find that the asymmetric phenomenon of shifting operating expenses to negative discontinued operations is due to the fact that positive discontinued operations are valued higher than negative discontinued operations. Taken these results into consideration, I expect classification shifting using discontinued operations is likely to be conducted when firms report income-decreasing (negative) discontinued operations and using negative special items.

Silva et al. (2018), one of the limited prior literatures on discontinued operations under IFRS based, examine 191 discontinued operations in Brazil firms that adopted IFRS. The results do not show that managers incur in opportunistic decisions to discontinue operations to increase the core earnings. At the moment, there is no prior study finding earnings management evidence regarding classification shifting using discontinued operations under IFRS.

2.3. Prior research on restructuring charges

This study investigates the impact on core earnings of discontinuing operations using McVay's expected core-earnings model, which examines how core earnings distinguish real improvement (deterioration) from upward (downward) artificial earnings. There is a possibility that core earnings could be influenced by not only classification shifting but also by discarding

[41] Curtis et al. (2014) analyze whether the reporting of discontinued operations makes the quality of continuing income higher, focusing on the increased persistence of continuing income by examing the relationship between discontinued operations and future operating income.

whole business units because discontinued operations are conducted for restructuring.

Atiase et al. (2004) indicate that restructuring in the early 1990s in the U.S. did not necessarily guarantee improved operating performance, although firms incurred restructuring charges resulting from actions aimed at improving operating performance. On the contrary, some studies insist that accounting performance does not degrade after restructuring (Brickley et al., 1990; Holder Webb et al., 2005). Cready et al. (2012) investigate whether future earnings increase following reported negative special items because of the transfer of future expenses or the result of real improvements in the U.S. They find that extraordinary losses, especially restructuring charges, are related to real improvements over the long term, with an increase in cash flows. Khurana and Lippincott (2000) reveal that restructuring with the objective of separating the business unit is positively linked to returns in cases of negative income. Investors consider these activities to result in an increase in market value. In contrast, returns for a positive income firm has no positive relationship with restructuring costs. This suggests that the relationship between the restructuring charges and income during the restructuring year is different for loss firms than profit firms. Because there are two contrasting cases (i.e., positive and negative income from discontinued operations), both have the same rate in practice in Japan. Thus, I expect a different impact on core earnings depending on whether reported income from discontinued operations is positive or negative.

3. Hypothesis development

3.1. Classification shifting using discontinued operations

Prior research shows that managers are likely to engage in earnings management when reporting below-the-line income statement items. Income statements under both US GAAP and IFRS contain lines of discontinued operations. Thus, there can be assumed to be motivation for managers to commit classification shifting using discontinued operations. Although investors tend to pay attention to continuous operations to predict future performance, managers can find the motivation to take advantage of an opportunity when discontinued operations are to be removed. As Barua et al. (2010) mention, a segregated discontinued operations line on the income statement causes an information asymmetry between managers and investors. Thus, investors do not know exactly which revenues, expenses, gains, and losses should be allocated to income from discontinued operations. This leads to my first hypothesis:

H1: Managers engage in classification shifting using discontinued operations to manage core earnings.

This hypothesis ignores positive and negative income signs of discontinued operations because there is a possibility that managers commit to classification shifting in the case of

positive income from discontinued operations (Malikov et al., 2018). Barua et al. (2010), however, fail to find consistent evidence of classification shifting of firms reporting income-increasing discontinued operations. I interpret this as firms are hesitant to intentionally lower income-increasing discontinued operations by expecting larger gains on the sale of a business to make trading more advantageous after considering all discontinued operations cases are conducted by selling subsidiary shares in Japan.[42] However, when discontinued operations are negative (i.e., income-decreasing), managers are more likely to be motivated to shift classifications because there appears to be no difference in the negatively larger income decrease caused by shifting operating expenses. This assumption is consistent with prior research that supposed that classification shifting is likely to be observed when using negative special items. Like the big-bath effect (an earnings management technique whereby a one-time charge is taken against income in order to reduce assets, resulting in lower expenses in the future), there is little hesitation in making larger losses after determining income-decreasing discontinued operations. It is thus reasonable to set the second hypothesis as follows:

H2: Managers shift operating expenses to income-decreasing discontinued operations to increase core earnings.

Prior research on classification shifting deals with negative special items because they are disclosed separately, owing to their differentiating characteristics from other operating expenses. Negative special items, such as impairment losses and restructuring losses, are relatively discretionary, relying on managers' decisions. In practice, the operating unit to be discontinued would be an entire segment with subsidiaries, such that income from discontinued operations would comprise whole income statements rather than mediocre single income items. Darrough et al. (2019) show that firms shift the asset write-downs of continuing operations to those of discontinued operations to increase core earnings. According to IFRS No.5, firms must disclose details about the income component of discontinued operations (IFRS5, par.33). Owing to the complementary information, it is relatively clear to investors which revenues, expenses, gains, and losses are allocated to the discontinued operations. Thus, for managers who attempt earnings management, special items can still be important when shifting core operating expenses to income from discontinued operations. Moreover, although the recognition criteria for discontinued operations are defined in the GAAP, the costs allocated to discontinued operations are not. Therefore, the range of disclosures through footnotes differs from firm to firm, such that we cannot always obtain details about special items from discontinued operations. In this study, I directly collect primary details on special first. Then, I calculate negative non-core earnings, which are supposed to be similar to negative special items

[42] There could be a motivation for managers to inflate income-increasing discontinued operation by shifting operating revenues conversely to make a capital gain of selling a business advantageously.

via hand-collected annual report and disclosed data.[43] Consistent with prior research, focusing on negative special items (or negative non-core earnings) in discontinued operations, I arrive at the third hypothesis;

H3: Managers shift operating expenses to negative special items of discontinued operations to increase core earnings.

3.2. Impact on core earnings

McVay's expected core-earnings model is designed to identify not only classification shifting but also to distinguish real improvement (deterioration). The model has a two-step process. The first step compares current special items and current unexpected core earnings. The second step compares current special items and future changed unexpected core earnings. The reason that we analyze future changed unexpected core earnings is that we cannot arrive at classification-shifting results just because current special items unexpectedly inflate current core earnings. Income-decreasing special items can, thus, be recognized as improving the real economy because of restructuring effects. Thus, comparing current special items and future changed unexpected core earnings enables us to analyze whether or not current unexpected core earnings contribute to artificial inflation via classification shifting or real improvement. If current unexpected core earnings are artificially caused by earnings management, changes in unexpected core earnings must drop during the following year, never persisting. On the other hand, the fact that unexpected core earnings can persist at least until the next year indicates the possibility of real improvement (or deterioration) rather than artificial management. Discontinued operations are commonplace with special items in terms of restructuring behavior. Thus, it is possible to use the expected core-earnings model to analyze the impact on core earnings via discontinued operations. However, discontinued operations do not always imply cutting off poor-performing businesses. Firms can decide to sell well-performing businesses in order to become slimmer as a part of a restructuring. An impact on core earnings via discontinuing operations will, therefore, depend on whether business to be discontinued positive or negative. Khurana and Lippincott (2000) indicate an asymmetric relationship between the effect of restructuring charges and positive or negative signs of income. Although removing income-decreasing operations is clearly similar to negative special items (e.g., restructuring), removing income-increasing operations does not have a clearly positive effect on core earnings. Simply put, selling income-increasing operations can negatively affect core

[43] The priorities for collecting special items of discontinued operations are as follows. First, if items treated as special items under J-GAAP are available in the footnotes of the financial statements, I collect them directly. Second, if operating expenses and other expenses are disclosed separately, other expenses are regarded as special items. Third, by deducting operating income from pre-tax net income, I calculate special items via back-calculation.

earnings in the short term because the firm will lose a well-performing business[44]. The different impact of negative and positive discontinued operations leads to my fourth hypothesis:

H4: Income-decreasing (-increasing) core earnings of discontinued operations positively (negatively) affect the core earnings of continuous operations.

4. Research design

4.1. Expected core-earnings model (McVay 2006)

Barua et al. (2010) investigate whether firms discretionarily cause core-earnings increases by shifting operating expenses to discontinued operations. Thus, I follow the research design of McVay (2006) and Barua et al. (2010) to measure core earnings, expected core earnings, unexpected core earnings, and unexpected changes in core earnings based on the expected core-earnings model. In McVay (2006), core earnings are defined as operating earnings before depreciation and special items, scaled by the current amount of sales. To estimate the level of unexpected core earnings and changes in unexpected core earnings, I use the following expectation models:

$$CE_t = \alpha_0 + \alpha_1 CE_{t-1} + \alpha_2 ATO_{it} + \alpha_3 ACC_{t-1} + \alpha_4 \Delta SALES_t + \alpha_5 NEG\_\Delta SALES_t + \varepsilon_t \quad \ldots(1a)$$

$$\Delta CE_t = \beta_0 + \beta_1 CE_{t-1} + \beta_2 \Delta CE_{t-1} + \beta_3 \Delta ATO_t + \beta_4 ACC_{t-1} + \beta_5 \Delta SALES_t + \beta_6 NEG\_\Delta SALES_t + \tau_t \ldots(1b)$$

where CE_t is core earnings, calculated as [sales - cost of goods sold - selling, general and administrative expenses - net income from discontinued operations] /sales. ΔCE_t reflects the change in core earnings, calculated as $CE_t - CE_{t-1}$. ATO_t is the asset turnover ratio, defined as $Sales_t / \{(NOA_t + NOA_{t-1}) / 2\}$. NOA_t is net operating assets, which equals operating assets - operating liabilities = [total assets - cash, inventory, securities and short-term loans receivable] - [total assets - total debt - book value of capital stock and preferred equity - minority interest]. ΔATO_t is the change in asset turnover, calculated as $ATO_t - ATO_{t-1}$. ACC_t represents operating accruals, calculated as [net income before special items and discontinued operations - cash flow from operations (Nikkei Adjusted)] / sales. Special items include impairment loss, restructuring loss, gains, losses from the sale of fixed assets and long-term securities, and other

[44] Managers expect a larger capital gain when selling a well-performed business. However, the capital gain is not a core earning, but it is a positive special item.

extraordinary losses and gains. $\Delta SALES_t$ includes the percentage change in sales, calculated as $[SALES_t - SALES_{t-1}] / SALES_{t-1}$. Lastly, $NEG\_\Delta SALES_t$ includes the percentage change in sales ($\Delta SALES_t$), if $\Delta SALES_t$ is less than zero, and 0 otherwise.

Equation (1a) presents the level of core earnings, and Eq. (1b) shows the changes in core earnings. In the levels of core earnings and Eq. (1a), lagged core earnings (CE_{t-1}) is included because core earnings tend to be persistent. Note the correlation of 0.804 between core earnings and 1-year-ahead lagged core earnings in Table 3. The asset turnover ratio (ATO_t) is included as inversely related to profit margin (Nissim and Penman, 2001; McVay, 2006), and the definition of the core-earnings model in McVay (2006) closely parallels profit margin. Note the negative correlation between CE_t and ATO_t in Table 3. According to McVay (2006), the purpose of the inclusion of ATO_t is that firms having large income-decreasing special items are likely to make changes to their operating strategy, possibly altering their mix of margin and turnover. Consistent with McVay's view, I consider classification shifting using discontinued operations to be conducted through income-decreasing discontinued operations or negative special items of discontinued operations. The inclusion of prior-year operating accruals (ACC_{t-1}) is based on Sloan's (1996) finding that the accrual level is the explanatory variable for future performance. Specifically, earnings performance attributable to earnings-generating components is less sustained than that which is attributable to cash flow components of earnings (McVay, 2006). Although core earnings are scaled by sales, sales growth ($\Delta SALES_t$) is included as an explanatory variable because fixed costs become a smaller per-sales dollar in accordance with sales growth. Furthermore, the reason for the inclusion of the negative change in sales ($NEG\Delta SALES_t$) is that the cost of the increased activity is greater than the cost of the decreasing activity by the same amount (Anderson et al., 2003).

In the change of the core-earnings model of Eq. (1b), both lagged core earnings (CE_{t-1}) and the change in core earnings from year *t-2* to *t-1* (ΔCE_{t-1}) are included to allow the model to vary the degree of mean reversion based on the prior year's level of core earnings (McVay, 2006). Furthermore, the change in asset turnover, (ΔATO_t), ACC_{t-1}, $\Delta SALES_t$, and $NEG\Delta SALES_t$, is retained and replaced by the level model.

McVay (2006) include current-year accruals (ACC_t) in the expected core-earnings model because the extreme performance is highly correlated with changes in accrual levels (DeAngelo, H., DeAngelo, L., and Skinner, 1994). However, including current-year accruals to control performance can result in a possible bias. As discussed, the potential problem of McVay's model, including current-year accruals, can mislead by under-estimating expected core earnings due to negative special items in the current-year accruals. To avoid this problem, I remove current accruals (ACC_t) from the expected core-earnings model and exclude special items from the definition of ACC_t in the model.[45] I measure the level of expected core earnings and the changes in prior-year core earnings for firm *i* using the predicted values from

[45] Fan et al. (2010) used McVay's expected core-earnings model that does not include current accruals.

Eqs. (1a) and (1b), respectively. I estimate each equation by industry-year, excluding firm *i* from the estimation. The level of unexpected core earnings and the unexpected change in core earnings are calculated using the difference between the actual and predicted values of Eqs. (1a) and (1b), respectively, as shown in Eqs. (2) and (3).

$$UE\_CE_t = CE_t - Expected\_CE_t (\text{from } Eq.(1a)) \quad \cdots (2)$$

$$\Delta UE\_CE_{t+1} = \Delta CE_{t+1} - Expected\_\Delta CE_{t+1} (\text{from } Eq.(1b)) \quad \cdots (3)$$

4.2. Classification shifting using discontinued operations

McVay (2006) concludes that managers shift core expenses to special items to inflate current core earnings, resulting in a positive relationship between unexpected core earnings and income-decreasing special items. I follow McVay (2006) and Barua et al. (2010) in designing my regression models to test whether firms discretionarily increase core earnings by using classification shifting when reporting discontinued operations. Barua et al. (2010) modify McVay's equations by substituting discontinued operations for special items and by adding control variables. I also follow this modification, adding restructuring losses, $REST_t$, as a control variable to control the relationship between restructuring and unexpected core earnings, because it is highly important to distinguish the result, whether or not unexpected core earnings attribute to classification shifting or real improvement. I, therefore, use the following equations to analyze H1:

$$UECE_t = \gamma_0 + \gamma_1 DO_t + \gamma_2 SIZE_t + \gamma_3 BM_t + \gamma_4 ACC_t + \gamma_5 OCF_t + \gamma_6 ROA_t + \gamma_7 REST_t + \varepsilon_t \ldots (4a)$$

$$UE\_\Delta CE_{t+1} = \delta_0 + \delta_1 DO_t + \delta_2 DO_{t+1} + \delta_3 SIZE_t + \delta_4 BM_t + \delta_5 ACC_t + \delta_6 OCF_t + \delta_7 ROA_t + \delta_8 REST_t + \tau_{t+1} \ldots (4b)$$

where UE_CE_t represents unexpected core earnings in year t (from $Eq.(2)$). $UE\_\Delta CE_{t+1}$ represents the unexpected change in core earnings in year $t+1$ (from $Eq.(3)$). DO_t is the income from discontinued operations, calculated as [income from discontinued operations ± capital gains and losses for sale] / sales. $SIZE_t$ is the firm size, calculated as the natural log of total assets. BM_t is the ratio of book value to market value, calculated as [book value/market value]. OCF_t represents the operating cash flow scaled by lagged total assets, calculated as [cash flow from operations (Nikkei-adjusted) / TA_{t-1}(total assets). ROA_t is the net income divided by average total assets, calculated as [net

income before special items and discontinued operations / (($TA_t + TA_{t-1}$)/2)]. Finally, $REST_t$ is restructuring losses.

When testing H1, I predict a positive association between the level of current unexpected core earnings and discontinued operations. However, a positive association could also arise from operational improvements, owing to the discontinuation of loss-making operations, causing positive effects of restructuring. In this case, I expect that the improvement in core earnings will persist in the future, at least until the next year. However, if the improvement is caused by an artificial upward motion via classification shifting, I predict a negative association between the unexpected change in core earnings in year *t+1* and the discontinued operations in year *t*. This reversal is caused by operating expenses reappearing as part of core expenses, reducing core earnings unexpectedly. To control for prior-year discontinued operations, Barua et al. (2010) add discontinued operations to year *t+1*, DO_{t+1}, as shown in Eq. (4b). Following Barua et al. (2010), I add the control variables to Eqs. (4a) and (4b): firm size *(*$SIZE_t$*)*, book-to-market ratio (BM_t), accruals *(*ACC_t*)*, operating cash flow (OCF_t), and return on assets (ROA_t). I predict $\gamma_1(\delta_1)$ to be positive (negative) if firms engage in classification shifting using discontinued operations. Restructuring charges, $REST_t$ is included in this study because restructuring induces real improvement and upward-unexpected core earnings. I expect a significant relation between unexpected core earnings and discontinued operations after controlling for the effect of restructuring, which enables me to extract the effect of classification shifting more accurately.

4.3. Income-decreasing discontinued operations

Causing core earnings to intentionally increase using discontinued operations means causing income from discontinued operations to decrease. Generally, managers prefer magnifying losses to reduce positive income in practice. Kinney and Trezevant (1997) show that, when a firm suffers an irreversible loss, the market reaction remains the same, and managers prefer to make the losses look even worse. Levitt (1998) indicates that, if a firm decides to reorganize, it typically incurs significant costs associated with restructuring, which helps them clean up their balance sheets. This asymmetric preference between gains and losses influences earnings management behavior. Both Skousen et al. (2019) and Kaplan et al. (2019) consider that classification shifting using discontinued operations is more likely to take place when reported income from discontinued operations is negative. Therefore, a firm's classification-shifting behavior can vary, depending on whether firms report positive or negative incomes from discontinued operations. For example, managers might have more incentive and greater discretion to shift operating expenses when discontinued operations already have losses, consistent with the big bath theory. To test H2, I replace the discontinued operations variable, *DO*, with *DO_NEG* for income-decreasing

discontinued operations and *DO_POS* for income-increasing operations:[46]

$$UE\_CE_t = \theta_0 + \theta_1 NEG\_DO_t + \theta_2 POS\_DO_t + \theta_3 SIZE_t + \theta_4 BM + \theta_5 ACC_t + \theta_6 OCF_t + \theta_7 ROA_t + \theta_8 REST_t + \varepsilon_t \cdots \text{(5a)}$$

$$UE\_\Delta CE_{t+1} = \mu_0 + \mu_1 NEG\_DO_t + \mu_2 POS\_DO_t + \mu_3 NEG\_DO_{t+1} + \mu_4 POS\_DO_{t+1} + \mu_5 SIZE_t + \mu_6 BM_t + \mu_7 ACC_t + \mu_8 OCF_t + \mu_9 ROA_t + \mu_{10} REST_t + \tau_{t+1} \cdots \text{(5b)}$$

Negative discontinued operations (*NEG_DO*) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-decreasing and 0 otherwise. Positive discontinued operations *(POS_DO*) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-increasing and 0 otherwise. I predict θ_1 (μ_1) will be positive (negative) if firms engage in classification shifting using income-decreasing discontinued operations, supposing managers prefer magnifying losses.

4.4. Special items and core earnings of discontinued operations

Prior research supposes that classification shifting is conducted by using negative special items for three reasons. First, creating larger losses by shifting operating expenses is consistent with the big-bath method. Second, because the regulation of special items is flexible and ambiguous, there is plenty of room for discretionary estimations and judgments. Third, users tend to value persistent earnings to estimated future performance while undervaluing non-recurring items. Because we can collect detailed components of discontinued operations from report footnotes, I classify income from discontinued operations into core and non-core earnings, enabling me to investigate methods of classification shifting more directly and to analyze the impact on the core earnings of continuing operations by removing discontinued operations. In practice, the ratio of negative or positive income from discontinued operations is nearly 50% in Japan. Although we can expect to improve core earning by removing poor-performing businesses, it is not clear whether or not the expected consequences of removing well-performed businesses can be effective. There are possible reasons why firms would discontinue income-increasing operations. They may want to concentrate on core businesses, or they may aim at large capital gains for sale. When considering the impact on current core earnings, it is natural that removing income-increasing operations would negatively affect current core earnings because of the loss of well-performing businesses. To simultaneously test H3 and H4, I replace the discontinued operations variable, *DO*, with three variables: *NEG_CEDO* for negative core earnings of discontinued operations; *POS_CEDO* for

[46] I do not use indicator variables to distinguish the sample of income-increasing and –decreasing discontinued operations because I follow the model of Barua et al. (2010).

positive core earnings of discontinued operations; and *NSPI_DO* for negative special items (negative non-core earnings)[47]of discontinued operations.

$$UE\_CE_t = \rho_0 + \rho_1 NEG\_CEDO_t + \rho_2 POS\_CEDO_t + \rho_3 NSPI\_DO_t + \rho_4 SIZE_t + \rho_5 BM + \rho_6 ACC_t + \rho_7 OCF_t + \rho_8 ROA_t + \rho_9 REST_t + \varepsilon_t \cdots \text{(6a)}$$

$$UE\_\Delta CE_{t+1} = \omega_0 + \omega_1 NEG\_CEDO_t + \omega_2 POS\_CEDO_t + \omega_3 NSPI\_DO_t + \omega_4 NEG\_CEDO_{t+1} + \omega_5 POS\_CEDO_{t+1} + \omega_6 NSPI\_DO_{t+1} + \omega_7 SIZE_t + \omega_8 BM_t + \omega_9 ACC_t + \omega_{10} OCF_t + \omega_{11} ROA_t + \omega_{12} REST_t + \tau_{t+1} \cdots \text{(6b)}$$

Negative core earnings of discontinued operations (*NEG_CEDO*) are scaled by sales and multiplied by (-1) when reported core earnings of discontinued operations are income-decreasing and 0 otherwise. Positive core earnings of discontinued operations (*POS_CEDO*) are scaled by sales and multiplied by (-1) when reporting core earnings of discontinued operations are income-increasing and 0 otherwise. Negative special items of discontinued operations *(NSPI_DO*) are scaled by sales and multiplied by (-1) when reported special items or non-core earnings of discontinued operations are income-decreasing and 0 otherwise. If firms engage in classification shifting using negative special items of discontinued operations, I predict ρ_3 (ω_3) to be positive (negative). Additionally, when if negative core earnings of discontinued operation positively affect core earnings, I predict both ρ_1 and ω_1 to be positive, implying that unexpected upward core earnings will last until the next year. However, if removing positive core earnings of discontinued operations negatively affects core earnings, I predict both ρ_3 and ω_3 will be positive, implying that unexpected downward core earnings will last until next year, because I multiply (-1) variables of discontinued operations.

All results include the robustness of firm clustering. I omit subscript *i*, which identifies the firm in the equations, except those of the expected core-earnings model following prior research, McVay (2006) and Barua et al. (2010). However, the data in this study include panel data. When using panel data, controlling fixed effects is crucial. Thus, I include year and industry fixed effects in the result. To control for firm effects, I apply the Hausman test (Hausman and Taylor, 1981). This test is used for the random-effect model vs. the fixed-effect model in panel data. The result of the Hausman test in this research favors the fixed-effects model. Thus, I adopt the fixed-effect model used for panel datasets as a way of dealing with correlated omitted variables.[48]

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[47] The reason why I do not use positive special items (positive non-core earnings) in this study is that all examples of discontinued operations in Japan are conducted via the sale of subsidiary shares. In the sample, positive special items of discontinued operations included mostly capital gains for business sales. I exclude capital gains and sale losses from the income of discontinued operations.

[48] The greatest merit of the fixed-effect model is that the individual (firm) effect, which cannot be made

5. Sample and descriptive statistics

My sample consists of 317 firm-year observations representing 48 Japanese firms that adopted IFRS from 2010 to 2018, noting that Japan has adopted IFRS since 2010.[49] I use the NEEDS-Financial QUEST Nikkei database to obtain financial-statement data. However, the NEEDS database does not include special items and details on the discontinued operations of IFRS firms. Therefore, I hand-collect data from annual reports. I exclude financial business firms, such as those of banks, securities, insurance, and finance, because they have a substantially different financial reporting framework. Observations of fiscal periods are not equal to 12 months. Each firm-year has to have all the required variables for estimating unexpected core earnings and at least 10 observations per industry-year. All variables are winsorized per industry at the extreme 1 and 99%, and I delete observations missing data. The final sample used for my empirical analyses contains 317 firm-year observations (48 firms) having 27 observations (15 firms) reporting discontinued operations (8.5%). The sample composition per year is presented in Table 1, which displays data from the period of 2010–2018. Column 2 provides details of the total number of observations. Columns 3–4 respectively provide the number and percentage of firms reporting discontinued operations per year. Columns 5–6 show the numbers of observations having income-decreasing (negative) and income-increasing (positive) reporting of discontinued operations, respectively.

[Table 1 about here]

Table 2 provides the composition of industry classification based on Nikkei-middle-industry codes in the pooled sample. Under IFRS, the highest proportions of firms and observations are in the medical supplies.

[Table 2 about here]

Table 3 presents descriptive statistics for explanatory variables, including mean, median, standard deviation, 25%, 75%, maximum, and minimum. I multiplied *DO, NEG_DO, POS_DO, NEG_CEDO, POS_CEDO,* and *NSPI_DO*, by -1 to capture the positive associations between discontinued operations and unexpected core earnings.

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variable, does not affect the estimated value, because the individuality of each firm is eliminated in the calculation of the fixed-effect estimation. With pooling regression analysis using panel data, the estimates are far from appropriate, because the unobserved heterogeneity biases the estimates.

[49] The sample of firms adopting IFRS in this study included firm-samples prior to shifting IFRS, because it is necessary to ensure ample sample sizes to estimate expected core earnings using the McVay's model. Therefore, there are some firm-samples under Japanese GAAP prior to switching to IFRS.

[Table 3 about here]

Before presenting the regression results, I report the Pearson and Spearman correlation matrix for the independent variables in Table 4. Comparing McVay (2006), there is no unsuitable relation between variables. In the multivariate analysis, I test multicollinearity concerns using the variation inflation factors.

[Table 4 about here]

6. Empirical results

6.1. Level of unexpected core earnings

Table 5 displays the results of Eqs. (4a), (5a), and (6a), wherein the dependent variable is UE_CE_t. The estimated coefficient for DO_t of 0.351 in Eq. (4a), having the level of unexpected core earnings, UE_CE_t, is positively significant, which is consistent with prior research (Barua et al. 2010). This implies that both income-decreasing and income-increasing discontinued operations have something to do with unexpected upward inflation of current core earnings. Likewise, the estimated coefficient of NEG_DO_t of 0.733 in Eq. (5a) is also positively significant, consistent with Barua et al. (2010). These results are also consistent with H1 and H2. However, the estimated coefficient of POS_DO_t of -0.197 is negative and insignificant. The estimated coefficient of NEG_CEDO_t of 0.144 in Eq. (6a) is positive and insignificant. On the other hand, $NSPI\_DO_t$ of 0.300 in Eq. (6a) is positive and significant. This result is consistent with H3, indicating that managers shift operating expenses to negative non-core earnings or special items of discontinued operations to increase core earnings. Regarding H4, positive core earnings of discontinued operations unexpectedly lower current core earnings, resulting in the estimated coefficient of POS_CEDO_t of 0.445 in Eq. (6a) being positive and significant because I multiply the variables of discontinued operations by (-1). However, I do not find supporting evidence that income-decreasing core earnings of discontinued operations positively affect core earnings of continuing operations because the estimated coefficient of NEG_CEDO_t of 0.144 in Eq. (6a) is positive and insignificant.

[Table 5 about here]

6.2. Future unexpected change in core earnings

Table 6 reports the results of Eqs. (4b), (5b), and (6b), where the dependent variable is ΔUE_CE_{t+1}. The estimated coefficient of DO_t of -0.173 in Eq. (4b), having the future change in unexpected core earnings, ΔUE_CE_{t+1}, is negatively significant, which is consistent with Barua et al. (2010). This implies that the unexpected upward inflation of current core earnings

could have been caused by the artificial manipulation related to the improvement of core earnings not persisting until next year. Likewise, the estimated coefficient of *NEG_DOt* of -0.726 in Eq. (5a) is also negatively significant, which is consistent with Barua et al. (2010). These results successfully support H1 and H2. However, the estimated coefficient of *POS_DOt* of -0.125 is negative and insignificant.

Regarding core and non-core earnings of discontinued operations, the estimated coefficient of *NEG_CEDOt* of 0.159 in Eq. (6b) is positive and insignificant. On the other hand, *NSPI_DOt* of -0.188 in Eq. (6b) is negative and significant. This result successfully supports H3 because the positive relationship between the unexpected inflation of current core earnings and negative non-core earnings (or special items) does not last until the next year. Regarding H4, the positive core earnings of discontinued operations unexpectedly lower only current core earnings, but they change core earnings, resulting in the estimated coefficient of *POS_CEDOt* of 0.397 in Eq. (6b) being positive and significant. This implies that the positive core earnings of discontinued operations negatively affect the core earnings of continuous operations. However, I do not find supporting evidence that income-decreasing core earnings of discontinued operations positively affect core earnings of continuing operations because the estimated coefficient of *NEG_CEDOt* of 0.159 in Eq. (6b) is positive and insignificant. Therefore, income-decreasing core earnings of discontinued operations bring real improvements (e.g., restructuring).

[Table 6 about here]

7. Additional analyses

7.1. Meeting or beating benchmarks

Barua et al. (2010) examine the motivation of managing core earnings using discontinued operations and find that firms report discontinued operations having decreasing incomes using classification shifting to meet or beat analyst forecasts. However, I do not find consistent evidence for any motivations to manage earnings using discontinued operations. I interrupt that this is quite normal because creating discontinued operations is a crucial business decision similar to business combination transactions. It is difficult to assume that assessing the timing of selling a large business entity only for the purpose of meeting or beating benchmarks would be plausible. All examples of discontinued operations in Japan are conducted by selling subsidiary shares. When it is unavoidable to discontinue operations, managers engage in classification shifting to maximize profits regardless of the timing of meeting or beating benchmarks.

7.2. Models having current-year accruals

Fan et al. (2010) show that the model that includes current accruals induced a mechanical relation between unexpected core earnings and special items. To prevent the possibility of suspicious special accrual items from driving the results, they eliminate current accruals from their model. The main test in this study, following Fan et al. (2010), remove current accruals. However, McVay (2006) obtains expected results from current accruals while failing to find evidence when dropping current accruals.

Following McVay's original model, I re-estimate the expected core-earnings models using current-year accruals as an additional test. Although I find consistent results having a level of unexpected core earnings, I do not find consistent results with a change of future unexpected core earnings. McVay's core-earnings model is controversial and could have had room for improvement with future research. However, the current accruals should indeed be removed from the model because McVay (2006) fails to find evidence, even when using current accruals without special items. Furthermore, a dependence on incomplete models is a limit to that research. Fan et al. (2010) show that the potential defect of the original model stems from current accruals, including special items. Thus, expected results should have been obtained by the model, including current accruals lacking special items. The fact that both Fan et al. (2010) and this study successfully obtain the expected results without current accruals from the model provides sufficient support to my claim. However, considering that Barua et al. (2010) obtain prospective classification results by shifting both models with and without current accruals, I must leave further investigation of this issue for future research.[50]

8. Conclusions

This study investigates whether managers use classification shifting to manage core earnings when reporting discontinued operations among Japanese firms that adopted IFRS. Using a methodology similar to McVay (2006) and Barua et al. (2010), I find evidence that firms shift operating expenses to income-decreasing discontinued operations to increase core earnings. Additionally, I divide reported discontinued operations into core and non-core earnings because it is thought that firms engage in classification shifting using special items. Results show that firms engage in the classification shifting using negative non-core earnings of discontinued operations. Therefore, providing detailed information on discontinued operations, segmented core earnings, and non-core earnings (special items) is necessary.

Furthermore, I find that income-increasing discontinued operations negatively influence core earnings, and income-decreasing discontinued operations do not. However, I do not find consistent evidence for the motivations to manage earnings using discontinued operations,

[50] Barua et al. (2010) insist that their research is not affected by the potential bias of McVay's model, because the results of discontinued operations are reported separately from continuing operations and are used to estimate unexpected core earnings and accruals.

failing to find that firms reporting income-decreasing discontinued operations use classification shifting to meet or beat benchmarks. In addition to classification shifting, I examine the impact on core earnings because McVay's model basically analyzes the relationship between reported discontinued operations and both current and future-year core earnings. I find that income-increasing discontinued operations negatively influenced both current and future core earnings, whereas income-decreasing discontinued operations did not. This result reflects the usefulness of disclosing discontinued operations as a premise of the importance of core earnings to evaluate firm performance.

The results of this study are a matter to standard setters, financial-statement users, and regulators. The findings of this study could have implications for the convergence project on the presentation of the income statement between the Accounting Standards Board of Japan (ASBJ) and IASB. Standard setters must pay attention to the potential problems of line separation of discontinued operations in profit and loss statements because regulators in Japan are considering adopting IFRS and have expressed concern about material differences in presentation rules. A practical solution for this problem is asking for more complementary information about the allocation of discontinued operations. Deficiency of details on discontinued operations can create information asymmetry between managers and investors. It can encourage managers to engage in opportunistically earnings management using discontinued operations, taking advantage of investors' ignorance of the nature of the expenses allocated to discontinued operations. Although the supplementary explanation of discontinued operations varies from firm to firm, discontinued operations have a magnificent impact and may include many special items. The profits and losses from discontinued operations, unlike operating income, lack specific guidance on disclosure, which causes an asymmetry in information between managers and users. Although this study does not closely analyze the usefulness of segmental disclosure of discontinued operations, except for the impact on core earnings, I believe that regulations on the supplementary information would suppress the possibility of earnings management to provide even more useful information to users. Because it is believed that IFRS is to be the predominant set of accounting standards in the world, this study would be beneficial to investors by informing them of the potential usefulness and risks of IFRS.

Although the findings in this study are informative, there are four major caveats. Firstly, since I examine classification shifting using McVay's model by examing the association between core earnings and discontinued operations, this study relies on the accuracy and effect of that model. Secondly, some of the instances of reported discontinued operations in Japan are serial (ex, reporting discontinued operations in several years in a row). In this case, the impact on future core earnings is complicated. One of the possible solutions for serial case is to limit the sample to a single reporting case by eliminating the serial cases. However, I cannot investigate the case of serial discontinued operations because of the limited sample. Thirdly,

the fact that I intentionally use only Japanese samples to control the differences in institutional settings between countries could invalidate the results in this study for another IFRS country. Lastly, some prior studies in the U.S. focus on the scope of discontinued operations in the new accounting standard to capture the impact on the usefulness and behaivour of earnings management, while this study does not. Future studies can treat the difference between standards, including US GAAP and IFRS.

Table 1. Sample composition by year

year	observations	The number of reporting DO	Percentage of reporting DO	The number of reporting Negative DO	The number of reporting Positive DO
2010	36	1	2.8%	0	1
2011	37	1	2.7%	0	1
2012	38	1	2.6%	0	1
2013	41	0	0.0%	0	0
2014	38	3	7.9%	3	0
2015	38	7	18.4%	2	5
2016	30	5	16.7%	2	3
2017	32	5	15.6%	4	1
2018	27	4	14.8%	2	2
Total	317	27	8.5%	13	14

Table 2. Industry Composition

Nikkei-Middle-Classification	observation
Food	17
Medical Supplies	82
Rubber	17
Glass, Ceramic	17
Steel industry	11
Metal products	17
Automobile	66
Precision machine	36
Other Financial services	12
Real Estate	12
Land Transportation	11
Communication	19
Total	317

Table 3. Descriptive Statistics

variables	obsavation	mean	median	standard deviation	25%	75%	max	min
△*SALESt*	317	0.030	0.019	0.173	-0.052	0.095	1.082	-0.664
CEt	317	0.090	0.073	0.174	0.040	0.152	0.502	-1.456
△*CEt-1*	317	0.014	0.001	0.111	-0.019	0.021	1.026	-0.352
UE_CEt	317	0.082	0.074	0.146	0.043	0.129	0.395	-0.894
△*UE_CEt+1*	317	-0.007	0.001	0.118	-0.009	0.014	0.527	-0.495
DOt	27	0.007	0.001	-0.001	0.022	0.010	0.087	-0.192
NEG_DOt	13	0.010	0.002	0.057	0.009	0.026	0.138	0.000
POS_DOSt	14	-0.020	-0.002	0.044	-0.026	0.000	0.000	-0.191
NEG_CEDOt	15	0.007	0.000	0.020	0.000	0.005	0.087	0.000
POS_CEDOt	12	-0.008	0.000	0.014	-0.006	0.000	0.000	-0.051
NSPI_DOt	12	0.006	0.001	0.008	0.000	0.013	0.021	0.000
ACCt	317	0.069	-0.001	0.212	-0.028	0.108	1.644	-0.258
ATOt	317	1.211	1.183	0.623	0.788	1.532	3.654	0.043
SIZEt	317	10.331	10.576	1.387	10.214	12.214	17.255	8.669
BMt	317	1.204	0.847	2.795	0.563	1.254	27.791	0.074
OCFt	317	0.091	0.096	0.185	0.054	0.148	0.787	-2.222
ROAt	317	0.057	0.039	0.054	0.029	0.080	0.313	-0.016
RESTt	317	0.005	0.000	0.014	0.000	0.005	0.164	0.000

UE_CEt − Unexpected core earnings in year *t*

UE_△CEt+1 = Unexpected change in core earnings in year t+1

DOt = income from Discontinued Operations, calculated as [income from discontinued operations ± capital gains and losses for sale] / Sales

NEG_DOt = Negative discontinued operations (NEG_DO) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-decreasing and 0 otherwise.

POS_DOSt = Positive discontinued operations (POS_DO) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-increasing and 0 otherwise.

NEG_CEDOt = Negative core earnings of discontinued operations are scaled by sales and multiplied by (-1) when reported core earnings of discontinued operations are income-decreasing and 0 otherwise.

POS_CEDOt =Positive core earnings of discontinued operations are scaled by sales and multiplied by (-1) when reporting core earnings of discontinued operations are income-increasing and 0 otherwise.

NSPI_DOt =Negative special items of discontinued operations are scaled by sales and multiplied by (-1) when reported special items or non-core earnings of discontinued operations are income-decreasing and 0 otherwise.

ACCt =Operating accruals, calculated as [net income before special items and discontinued operations - cash flow from operations (Nikkei Adjusted)] / sales.

ATOt = Asset turnover ratio, defined as Salest / {(NOAt + NOAt-1) / 2}. NOAt is net operating assets, which equals operating assets - operating liabilities = [total assets - cash, inventory, securities and short-term loans receivable] - [total assets - total debt - book value of capital stock and preferred equity - minority interest]

SIZEt = Firm size, calculated as Natural log of total assets

BMt = Ratio of book value to market value, calculated as [Book value / Market value]

OCFt = operating cash flow scaled by lagged total assets, calculated as [Cash Flow from Operations (Nikkei Adjusted) / TA_{t-1} (Total Assets)

ROAt = Net income divided by average total assets, calculated as [Net Income before Special Items and Discontinued Operations / ((TAt+TAt-1)/2)]

*REST*t = Restrcuring losses

Table 4: Correlation matrix (Upper row Spearman and lower row Pearson)

	$\triangle SALES_t$	CE_t	CE_{t+1}	$\triangle CE_{t-1}$	$\triangle CE_{t+1}$	UE_CE_t	$\triangle UE\_CE_{t+1}$	DO_t	NEG_DO_t	POS_DO_t	ROA_t	ACC_t	ATO_t	OCF_t	$REST_t$	$SIZE_t$	BM_t
$\triangle SALES_t$	1	0.188	0.045	0.050	-0.236	0.262	-0.399	0.014	-0.062	-0.002	0.217	0.128	0.060	0.043	-0.085	0.018	-0.036
CE_t	0.090	1	0.804	0.057	-0.182	0.490	-0.148	-0.050	0.043	-0.013	0.590	0.576	-0.446	0.621	0.040	0.339	-0.491
CE_{t+1}	-0.005	0.805	1	-0.028	0.222	0.585	0.143	0.012	0.073	0.025	0.465	0.503	-0.510	0.599	0.062	0.318	-0.580
$\triangle CE_{t-1}$	0.156	-0.033	-0.161	1	-0.216	0.307	-0.103	-0.085	0.018	0.037	0.100	0.194	0.021	-0.127	-0.077	0.010	-0.024
$\triangle CE_{t+1}$	-0.161	0.115	0.481	-0.229	1	-0.153	0.369	0.068	0.025	0.081	-0.186	-0.132	-0.076	-0.062	0.042	0.006	-0.136
UE_CE_t	0.097	0.591	0.620	-0.179	0.107	1	-0.130	-0.049	0.039	0.029	0.529	0.526	-0.399	0.559	0.019	0.344	-0.442
$\triangle UE\_CE_{t+1}$	-0.090	0.124	0.402	-0.205	0.646	0.036	1	0.098	0.050	0.059	-0.147	-0.193	-0.052	0.020	0.028	0.043	0.000
DO_t	-0.050	-0.019	0.015	0.022	0.071	0.021	0.010	1	0.413	0.368	-0.040	-0.044	-0.001	-0.002	-0.032	0.012	-0.031
NEG_DO_t	-0.064	0.119	0.140	0.232	0.087	0.092	-0.005	0.226	1	0.012	0.076	-0.007	-0.127	0.126	0.065	0.093	-0.105
POS_DO_t	-0.049	-0.017	0.015	0.025	0.068	0.025	0.009	0.695	0.006	1	0.086	0.077	0.071	-0.010	-0.063	0.007	-0.014
ROA_t	0.103	0.487	0.465	-0.172	0.054	0.521	0.222	0.078	0.053	0.085	1	0.352	0.132	0.448	-0.132	0.064	-0.408
ACC_t	0.123	0.520	0.412	0.464	-0.277	0.439	-0.498	0.030	0.078	0.030	0.061	1	-0.245	-0.098	0.017	0.088	-0.398
ATO_t	0.017	-0.116	-0.152	-0.060	-0.101	-0.073	0.014	0.031	-0.056	0.031	0.190	-0.117	1	-0.323	-0.177	-0.465	0.246
OCF_t	-0.059	0.362	0.375	-0.489	0.321	0.317	0.676	-0.011	0.043	-0.011	0.396	-0.604	0.015	1	0.120	0.315	-0.335
$REST_t$	-0.063	0.015	0.051	-0.099	0.095	-0.053	0.032	-0.353	-0.011	-0.353	-0.328	-0.002	-0.114	0.002	1	0.254	-0.080
$SIZE_t$	-0.037	0.247	0.234	-0.224	0.114	0.263	0.195	0.063	0.077	0.064	0.194	-0.041	-0.178	0.281	0.034	1	-0.296
BM_t	-0.011	-0.040	-0.078	-0.038	-0.072	-0.027	0.018	-0.008	-0.010	-0.008	-0.141	-0.137	0.003	0.111	0.032	-0.096	1

Table 5. Fixed-effects Regression of Unexpected Core Earnings on Discontinued Operations

Dependent Variable = *UE_CEt*

Independent Variables	Equation (4a) Coefficient	t-stat	Equation (5a) Coefficient	t-stat	Equation (6a) Coefficient	t-stat
DOt	0.351	2.73 ***				
NEG_DOt			0.733	2.22 **		
POS_DOt			-0.197	-0.70		
NEG_CEDOt					0.144	0.10
POS_CEDOt					0.445	2.28 **
NSPI_DOt					0.300	3.08 ***
ACCt	0.347	6.35 ***	0.346	6.31 ***	0.355	6.25 ***
OCFt	0.220	2.25 **	0.220	2.25 **	0.228	2.31 **
ROAt	0.380	1.68 *	0.388	1.67 *	0.396	1.69 *
RESTt	-0.918	-4.08 ***	-0.861	-3.69 ***	-0.866	-3.97 ***
SIZEt	-0.008	-0.18	-0.008	-0.20	-0.007	-0.16
BMt	0.001	0.66	0.001	0.65	0.001	0.66
Intercept	0.210	0.36	0.221	0.38	0.197	0.34
Fixed Effects	year industry firm		year industry firm		year industry firm	
R^2	0.315		0.313		0.289	

*, **, *** Indicate significance at the 10, 5, and 1 percent levels, respectively. All the test results use a two-tailed t-test except DO_t, NEG_DO_t, POS_DO_t, NEG_CEDO_t, POS_CEDO_t, and $NSPI\_DO_t$ (use a one-tailed t-test). Discontinued operations (*DO*) are scaled by sales multiplied by(-1); [Discontinued Operations×(-1)]/SALES. Negative discontinued operations (*NEG_DO*) scaled by sales and multiplied by(-1), when reported discontinued operations are income-decreasing, and 0 otherwise. Positive discontinued operations (*POS_DO*) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-increasing, and 0 otherwise. All other variables are as defined in Apendix Ⅰ.

Table 6. Fixed-effect regression of unexpected changes in core earnings on discontinued operations

Dependent Variable = *UE_ ⊿CE t+1*

Independent Variables	Equation (4b) Coefficient	t-stat	Equation (5b) Coefficient	t-stat	Equation (6b) Coefficient	t-stat
DOt	-0.173	-3.90 ***				
DO t+1	0.221	0.89				
NEG_DOt			-0.726	-2.11 **		
POS_DOt			-0.125	-1.19		
NEG_DO t+1			0.124	7.11 ***		
POS_DO t+1			-0.546	-2.12 **		
NEG_CEDOt					0.159	0.20
POS_CEDOt					0.397	2.83 ***
NSPI_DOt					-0.188	-3.30 ***
NEG_CEDO t+1					0.473	2.19 **
POS_CEDO t+1					-0.568	-6.56 ***
NSPI_DO t+1					0.244	3.61 ***
ACCt	-0.155	-2.19 **	-0.154	-2.74 ***	-0.191	-2.98 ***
OCFt	-0.092	-2.49 **	-0.091	-3.57 ***	-0.137	-2.02 **
ROAt	-0.013	-0.07	-0.027	1.57	0.026	0.29
RESTt	0.165	0.23	0.251	1.32	0.216	1.19
SIZEt	-0.011	-0.65	-0.015	-0.45	-0.019	-1.23
BMt	-0.001	-0.31	-0.001	-0.68	0.000	-1.42
Intercept	0.181	0.92	0.235	1.19	0.290	1.38
Fixed Effects	year industry firm		year industry firm		year industry firm	
R^2	0.216		0.231		0.233	

*, **, *** Indicate significance at the 10, 5, and 1 percent levels, respectively. All the test results use a two-tailed t-test except *DO t*, *NEG_DO t*, *POS_DO t*, *NEG_CEDO t*, *POS_CEDO t*, *NSPI_DO t*,, *DO t+1* , *NEG_DO t+1*, *POS_DO t+1*, *NEG_CEDO t+1*, *POS_CEDO t+1*, *NSPI_DO t+1*, *DO_POS t+1*, *and NSPI_DO t+1* (use a one-tailed t-test). Discontinued operations (*DO*) are scaled by sales multiplied by(-1); [Discontinued Operations×(-1)]/SALES. Negative discontinued operations (*NEG_DO*) scaled by sales and multiplied by(-1), when reported discontinued operations are income-decreasing, and 0 otherwise. Positive discontinued operations (*POS_DO*) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-increasing, and 0 otherwise. All other variables are as defined in Apendix Ⅰ.

APPENDIX A

Variable	Definition
CE_t	= core earnings, calculated as [Sales - Cost of Goods Sold - Selling, General and Administrative Expenses – Net income from Discontinued operations] / Sales;
ΔCE_t	= change in core earnings, calculated as CEt − CEt-1;
ATO_t	= asset turnover ratio, defined as Salest /{(NOAt + NOAt-1) / 2};
NOA_t	= net Operating Assets = Operating Assets - Operating Liabilities = [Total Assets – Cash, Inventory, Sequrities and Short-term loans receivable] - [Total Assets - Total Debt - Book Value of Capital stock and Preferred Equity - Minority Interest] ;
ΔATO_t	= change in asset turnover, calculated as ATOt – ATOt-1;
ACC_t	= operating accruals, calculated as [Net Income before Special Items and Discontinued Operations – Cash Flow from Operations (Nikkei Adjusted)]/Sales Special Items = Impairment loss, restrucuring loss, gains and loss from sale of fixed assets and long-term securities, other extraordinary losses and gains;
$\Delta SALES_t$	= percentage change in sales, calculated as [SALESt - SALESt-1] / SALESt-1;
ΔNEG_SALES_t	= percentage change in sales (ΔSALESt) , if ΔSALESt is less than zero, and 0 otherwise.
UE_CE_t	= unexpected core earnings in year t
$UE\_\Delta CE_{t+1}$	= unexpected change in core earnings in year t+1
DO_t	= income from Discontinued Operations, calculated as [income from discontinued operations – capital gains and losses for sale / Sales]
NEG_DO_t	= negative discontinued operations (NEG_DO) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-decreasing and 0 otherwise.
POS_DOS_t	= positive discontinued operations (POS_DO) are scaled by sales and multiplied by (-1) when reported discontinued operations are income-increasing and 0 otherwise.
NEG_CEDO_t	= negative core earnings of discontinued operations are scaled by sales and multiplied by (-1) when reported core earnings of discontinued operations are income-decreasing and 0 otherwise.
POS_CEDO_t	= positive core earnings of discontinued operations are scaled by sales and multiplied by (-1) when reporting core earnings of discontinued operations are income-increasing and 0 otherwise.
$NSPI\_DO_t$	= negative special items of discontinued operations are scaled by sales and multiplied by (-1) when reported special items or non - core earnings of discontinued operations are income-decreasing and 0 otherwise.
$SIZE_t$	= firm size, calculated as Natural log of total assets
BM_t	= ratio of book value to market value, calculated as [Book value / Market value]
OCF_t	= operating cash flow scaled by lagged total assets, calculated as [Cash Flow from Operations (Nikkei Adjusted) / TAt-1(Total Assets)
ROA_t	= net income divided by average total assets, calculated as [Net Income before Special Items and Discontinued Operations / ((TAt+TAt-1)/2)]
$REST_t$	= restrcuring losses

Chapter 6: Earnings Quality on Income Statements Under Japanese GAAP and IFRS

ABSTRACT

This study investigates the quality of stepwise earnings on income statements, such as operating income, ordinary income, and net income, which includes income from continuing operations, under Japanese GAAP (J-GAAP) and IFRS. A sample of Japanese firms adopting J-GAAP or IFRS is used to compare multiple attributes of J-GAAP versus IFRS earnings, including their closest J-GAAP equivalent similar to ordinary income by adjusting IFRS earnings. The evidence reveals that J-GAAP earnings are superior to IFRS earnings in terms of persistence, predictability, smoothness, value relevance, and timeliness, while IFRS earnings are only superior to J-GAAP earnings in conservatism. This result does not support the adoption of IFRS in Japan as a whole. However, the results also reveal that 'pseudo-ordinary' income in the IFRS sample is ultimately better than GAAP-based IFRS earnings and equivalent to the J-GAAP earnings in persistence, predictability, smoothness, and value relevance, implying that non-GAAP earnings that are similar to J-GAAP ordinary income for IFRS firms are useful in Japan.

1. Introduction

This study investigates earnings quality on the income statement under Generally Accepted Accounting Principles in Japan (J-GAAP) and International Financial Reporting Standards (IFRS). Japan allows listed firms to voluntarily choose their accounting standards from J-GAAP, US GAAP, pure IFRS, and Japan's Modified International Standards (JMIS). Currently, 224 listed firms (6%) have adopted pure IFRS in Japan as of early 2020, which includes those that have expressed an intent to adopt[51]. The Japanese market's total market capitalization for IFRS-applied firms alone amounts to 2.2 trillion USD, or 33% of the total market capitalization of Tokyo Stock Exchange-listed companies. However, significant differences still exist between J-GAAP and IFRS, even after a convergence project between the Accounting Standards Board of Japan (ASBJ) and the International Accounting Standards

[51] In the firms that have adopted IFRS, 203 firms shifted from J-GAAP to IFRS and 21 firms newly listed.

Board (IASB). Therefore, as the IFRS' impact has increased over the years, the comparability between both standards has decreased. While J-GAAP accounting quality is thought to have remained the same as that of IFRS, it is unknown whether substantial harm has occurred to financial statement users in Japan. Given the limited IFRS sample in Japan, empirical research has rarely compared the quality of both standards. It has been 10 years since Japan first permitted listed firms to use IFRS in 2010; considering that the number of IFRS-applied companies is increasing, it is necessary to determine which standard is better for Japan. Additionally, Japan's data environment only includes information to compare to major economic-growth countries, in which domestic GAAP and IFRS samples co-exist officially in a single country. Therefore, the current work provides a significant opportunity to impact the current discussion on earnings quality by empirically comparing the accounting quality between J-GAAP and IFRS. In doing so, this study contributes to current policy debates for standard-setters in Japan to discern whether all listed companies should fully adopt IFRS.

Regarding prior research that compares accounting amounts based on IFRS and domestic standards, Barth et al. (2008) discover that the accounting quality of firms applying IFRS in multiple countries other than the United States is generally higher than that of firms using national standards. Barth et al. (2012) also find that non-US firms' application of IFRS has generated a better accounting system that is more value-relevant and comparable with that used by US firms when IFRS firms adopt IFRS rather than national standards. Given these results, it can be anticipated that IFRS-applied Japanese companies will exhibit higher accounting quality than those adopting J-GAAP. However, prior research also reveals that IFRS does not always improve accounting quality in countries with weak enforcement (e.g., Barth et al., 2012; Gordon and Hsu, 2018). As IFRS is based primarily on financial accounting standards developed in the United Kingdom and the United States in common-law countries, code law and low-enforcement countries may have weaker enforcement than common law and high-enforcement countries (Ball et al., 2000, 2003). Generally, Japan tends to be classified as a weaker enforcement country due to its code law and low-enforcement system, which leads to the expectation that IFRS will not improve accounting quality in Japan. Therefore, this work posits that both accounting standards could be better for Japan without a specific hypothesis in this study[52].

[52] Most previous studies address the comparability of standards in multiple countries, which allows for the investigation of institutional settings across countries. However, if firms are not all confronted with the same incentives, enforcement, regulations and litigation environment, any analysis of their accounting standards' comparability will be inaccurate (Lang et al., 2006). A comparison of accounting standards by domestic companies implicitly controls factors other than accounting standards (Barth et al., 2012). One significant

This study uses earnings quality to measure accounting quality, as ample evidence exists consistent with the literature on earnings quality influencing standard-setters (Dechow et al., 1996; DeFond et al., 2002; Hanlon et al., 2008). High-quality earnings successfully reflect the characteristics of a firm's financial performance, and thus, provide more valuable information to users (Dechow et al., 2010). Earnings quality has been considered in examining a range of attributes. Regarding works by Dechow et al. (2010) and Ribeiro et al. (2019), the earnings quality attributes in this study include earnings persistence, predictability, smoothness, value relevance, timeliness, and conservatism. Prior research on earnings quality has primarily focused on net income or adjusted net income by excluding extraordinary or special items. Additionally, this work compares subtotals of incomes—such as operating and ordinary income and income from continuing operations—as the income statement's presentation significantly relies on the view of income. The current income statement presentation under J-GAAP is unique, as it is presented in a more traditional form when US GAAP is used. The most notable feature is 'ordinary income,' which is a subtotal line in the statement separating special items from net income[53]. In other words, special items are segregated in the Japanese income statement; even operating income is also characteristic due to this segregation and does not include any special items, unlike US GAAP and IFRS.

When comparing earnings quality between J-GAAP and IFRS, it is indispensable to compare the separate income affected by its unique presentation in Japan. As IFRS does not have a specific subtotal for special items to distinguish operating and ordinary income, this study delineates IFRS firms' ordinary income as the closest J-GAAP by reclassifying and calculating special items. This enables an analysis of these firms' virtual J-GAAP earnings, supposing a situation in which IFRS firms disclose J-GAAP earnings. This approach has the advantage of comparing two different metrics for the same firm-year in which the underlying business and economic environment are the same. Therefore, the difference between IFRS and earnings closest to J-GAAP reflects the way in which these earnings are calculated under the same business conditions or economic factors. If IFRS firms' closest J-GAAP earnings exhibit a higher quality than GAAP-based IFRS earnings, then the presentation form under J-GAAP can be more useful for users. This evidence will compel standard-setters to consider disclosing additional information about ordinary income under J-GAAP or regulated and audited core

advantage of this study is its exploration of earnings quality in a single country, as any differences in institutional settings between countries can be disregarded.

[53] Ordinary income under J-GAAP can be calculated backwards as the net income before tax, with negative special items added and positive special items subtracted.

earnings through footnotes, at least among Japanese firms applying IFRS. This study also contributes to current policy debates for international standard-setters to discern non-GAAP disclosures.

2. Background

2.1. Presentation of Income Statement under J-GAAP

Japan has traditionally valued a historical accounting system; the conceptual framework issued by the ASBJ in 2006 emphasizes that the most primary component in the financial statement is net income (ASBJ, 2006). Japan emphasizes net income because this is the most value-relevant earnings measurement in the conceptual framework, as net income reflects the result of investments through realization (ASBJ, 2006). Therefore, the concept of earnings realization and matching principles is still deeply dominant in accounting practice, even after the convergence towards international accounting standards. This peculiar Japanese accounting philosophy has also influenced the form of the income statement, reflecting such stepwise earnings subtotals as operating and ordinary income due to the separation of non-recurring gains and losses, considered 'special items.' The reason why Japan underscores operating and ordinary income that excludes non-recurring gains and losses is based on the perspectives of 'persistence,' 'predictability' and 'smoothness,' which collectively define usefulness in accounting. Nonetheless, both operating and ordinary income are expected to occur regularly in the near future due to the exclusion of special items. This traditional accounting system is entirely reasonable for Japanese economic environments and is one reason why Japan still permits listed companies to continue using J-GAAP. While firms have a choice of accounting standards to reflect the desire to provide useful disclosures, this particular approach sacrifices comparability between the two standards.

2.2. Presentation of Income Statement under IFRS

The early International Accounting Standard (IAS) 1 involving the presentation of financial statements required the separate disclosure of operating income, the gain and loss from ordinary activities and extraordinary items in the income statement (International Accounting Standards Committee—IASC, 1997). However, the 1993 edition of IAS 8 states that extraordinary items rarely occur, and almost all income and expense items included in the calculation of profit or loss for the period are considered to arise from the course of the entity's

ordinary activities (IASC, 1993). The 2003 edition of IAS 1 ceased to define operating activities as previously indicated, and did not require the disclosure of income from operating activities (IASB, 2003). Subsequently, operating and ordinary income and extraordinary items were abolished from the list of what should be stated in the main body of the income statement (IASB, 2003). However, operating income can be voluntarily disclosed if firms deem it necessary. Extraordinary items, in particular, are specified as 'an entity shall not present any item of income or expense as an extraordinary item in either the income statement or the notes' (IASB, 2003). The IASB also explains that even if excluding extraordinary items from operating activities is a traditional accounting practice; it would mislead financial statement users and reduce the comparability of such statements; further, they also emphasize the benefit of eliminating the category of the extraordinary item altogether (IASB, 2003).

Although extraordinary items were omitted as an international trend originating in the United States, the 'discontinued operations' line item represents the portion of the firm's income and cash flows that are or will be discontinued from the firm's continuing operations. The disclosure of such operations became a global accounting rule except in J-GAAP, as IAS 35 ('*Discontinuing Operations')* was implemented in 1998 (IASC, 1998a). The 2004 revision added information on non-current assets held for sale, resulting in the current IFRS 5: '*Non-Current Assets Held for Sale and Discontinued Operations*' (IASB, 2004) as a movement toward convergence with US GAAP. Therefore, the discontinued operations line item is the only substantial classified presentation form in IFRS that J-GAAP does not have.

2.3. Ordinary Income as GAAP-Based Earnings

This study focuses on the importance of ordinary income, which is the most specific item in the J-GAAP income statement, while comparing the quality of stepwise earnings in the presentation of income statements under J-GAAP and IFRS. The ordinary income under J-GAAP is highly similar to non-GAAP earnings, such as the core or pro forma earnings that are voluntarily reported by firms applying US GAAP and IFRS. The difference between ordinary income under J-GAAP and non-GAAP earnings is that while ordinary income in the former is regulated by GAAP and officially audited, non-GAAP earnings in international accounting practice are not regulated as such and are excluded from the range of an official audit as merely voluntary and arbitrary information from managers to investors. Therefore, ordinary income, as disclosed through J-GAAP, is more comparable and reliable but can be less useful, in that it is difficult to disclose inside information due to the regulation of managers' discretion.

Alternatively, non-GAAP earnings can be more informative in terms of their flexibility to more adequately and accurately reflect firms' performance and managers' future foresees.

2.4. Prior Research on Earnings Quality

Francis et al. (2004) examine the relationship between the cost of equity capital and earnings attributes: accrual quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism. They observe that firms with the most favorable values for each attribute tend to have higher capital costs than those without the most favorable values. Earnings quality research has recently increased in response to each country's acceptance of international accounting standards, and such research can contribute to the IASB's aim to develop a set of 'high-quality' accounting standards. This is primarily a significant concern for countries in which both domestic standards and IFRS co-exist, such as Japan. Additionally, widespread IFRS adoption worldwide has increased interest in international research comparing accounting practices in different countries, allowing researchers to study changes in factors that may affect earnings quality (DeFond, 2010). For example, Ribeiro et al. (2019) sample several earnings press releases from Australian companies to compare multiple attributes of non-GAAP earnings measurements to the closest IFRS equivalent. They discover that while non-GAAP earnings are inferior in terms of conditional conservatism and timeliness compared to their closest GAAP equivalent earnings, they are smoother and more persistent, value relevant, and predictive. This result indicates a reversal of the trade-off between the valuation and stewardship roles of accounting inherent in accounting standards, as non-GAAP earnings are more useful to users in evaluating firm values, while GAAP earnings are more conservative.

Dechow et al. (2010) comprehensively review research on the quality of earnings to note several insights from literature; specifically, two major problems exist in capturing earnings quality. First, proxies for earnings quality are based on reported accrual-based earnings numbers, and are affected by both the firm's underlying earnings process and the measurement of that process. Second, all proxies based on reported earnings are affected by both unobservable processes and measurements, while proxies are not equally affected by these two factors. Thus, proxies do not measure the same underlying structure, but different aspects of decision-usefulness.

This study addresses these research problems regarding earnings quality by devising the following research design: First, GAAP earnings under IFRS are compared with the closest J-

GAAP earnings from IFRS-applied firms and in the same financial period. Given the comparison's results, this comparative test should provide control for financial reporting incentives by holding constant the often uncertain business environment (Dechow et al., 2010; Ribeiro et al., 2019). Second, any unobservable firm-specific influence is excluded by adopting fixed-effects model regressions, which are used in panel datasets to address any correlated, omitted variables.

2.5. Prior Research on Non-GAAP Earnings

Previous studies have accumulated substantial evidence to suggest that non-GAAP earnings are more useful to investors than GAAP earnings (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003; Doyle et al., 2003; Lougee and Marquardt, 2004; Choi et al., 2007; Ribeiro et al., 2019). These positive results of non-GAAP earnings are fundamentally caused by excluding non-recurring and special items from operating income, which is the same concept as ordinary income under J-GAAP. International GAAP had primarily prohibited ordinary income disclosures in the past due to concerns with 'classification shifting,' or inflating core earnings by shifting operating expenses to special items. Ironically, McVay (2006) and Fan et al. (2010) reveal that classification shifting still frequently occurs in the United States by targeting 'non-GAAP earnings' after abolishing GAAP-based core earnings. This implies that abolishing GAAP-based core earnings was useless in addressing classification shifting concerns. If these concerns are common under both GAAP and non-GAAP earnings, disclosing ordinary income as GAAP earnings—as with J-GAAP—is a practical solution to satisfy users by providing useful information and reducing the chance of earnings manipulation through regulations and auditing. This study attempts to simulate hypothetical disclosures similar to the J-GAAP ordinary income in IFRS firms and anticipates that pseudo-ordinary income in the IFRS sample will be of higher quality than GAAP-based IFRS earnings.

3. Research design

This study investigates not only net income under J-GAAP and IFRS, but also each type of stepwise earnings, such as operating income, ordinary income, and income from continuing operations, with a focus on the difference in presentation form. Therefore, the regression model sets stepwise earnings, including net income, as both independent and explanatory variables. Additionally, given the study's focus on lines, or particularly special items that beget greater

differences in the presentation form, net income is separated into various components using special items in the research design. As a measurement of earnings quality, this study follows work by Francis et al. (2004) and Ribeiro et al. (2019) to use persistence, predictability, smoothness, value-relevance timeliness, and conditional conservatism.

3.1. Earnings Persistence

Earnings persistence is relevant to stock prices and useful to investors (Collins and Kothari, 1989; Kormendi and Lipe, 1987; Easton and Zmijewski, 1989). Therefore, earnings that will be more persistent in the future imply higher earnings quality (Penman and Zhang, 2002). Following prior literature, this study directly investigates the persistence of J-GAAP and IFRS earnings to compare earnings quality. Following previous research (e.g., Lev, 1983; Ali and Zarowin, 1992; Francis et al., 2004; Ribeiro et al., 2019), this study measures earnings persistence as the slope coefficient from a regression of current earnings on one-year ahead earnings:

$$NI_{i,t+1} = J\text{-}GAAP*(\alpha_0+\alpha_1 NI_{i,t})+ IFRS*(\beta_0+ \beta_1 NI_{i,t})+ \upsilon_{i,t} \quad (1a)$$

$$OPIN_{i,t+1} = J\text{-}GAAP*(\alpha_0 + \alpha_1 OPIN_{i,t})+ IFRS*(\beta_0+ \beta_1 OPIN_{i,t})+ \upsilon_{i,t} \quad (1b)$$

$$ORNI_{i,t+1} = \alpha_0+ \alpha_1 ORNI_{i,t} + \upsilon_{i,t} \quad (1c)$$

$$ERAN_{i,t+1} = \beta_0+ \beta_1 ERAN_{i,t} + \upsilon_{i,t} \quad (1d)$$

$$NI_{i,t+1} = J\text{-}GAAP*(\alpha_0+\alpha_1 ORNI_{i,t}+\alpha_2 SPI_{i,t})+ IFRS*(\beta_0+\beta_1 ERAN_{i,t}+\beta_2 SPI_{i,t})+ \upsilon_{i,t} \quad (1e)$$

$$NI_{i,t+1} = \beta_0 + \beta_1 CONIN_{i,t} + \beta_2 DISIN_{i,t} + \upsilon_{i,t} \quad (1f)$$

$$CONNI_{i,t+1} = \beta_0 + \beta_1 ERAN_{i,t} + \beta_2 SPI_{i,t} + \beta_3 DISNI_{i,t} + \upsilon_{i,t} \quad (1g)$$

where:

$NI_{i,t}$ = firm *i*'s net income under J-GAAP or IFRS in year *t*;

$OPIN_{i,t}$ = firm *i*'s operating income under J-GAAP or IFRS in year *t*;

$ORIN_{i,t}$ = firm *i*'s ordinary income in J-GAAP (= net income before tax + negative special items – positive items) in year *t*;

$SPI_{i,t}$ = firm *i*'s net special items under J-GAAP or IFRS in year *t*; IFRS special items are calculated as the same items of special gains and losses as under J-GAAP by hand-collecting through annual reports, such as impairment losses, restructuring charges, gains

and losses of sales from subsidiaries' and affiliates' stocks, gains and losses on sales of long-lived assets, and losses related to natural disasters or abnormal valuation;

$ERAN_{i,t}$ = firm i's closest earnings to J-GAAP ordinary income in year t, calculated as ($NI_{i,t} - SPI_{i,t} + TAX_{i,t}$); $TAX_{i,t}$ denotes firm i's tax expenses;

$CONIN_{i,t}$ = firm i's income from continuing operations under IFRS in year t; and

$DISIN_{i,t}$ = firm i's income from discontinued operations under IFRS in year t.

Subsequently, two different parts of these equations are tested: the association with current and one-year future earnings, following net income, operating income, ordinary income and income from continuing operations, or Equations (1a) to (1d); then, the components of net income, assuming the difference in presentation form, or Equations (1e) to (1g). If the earnings are common with both J-GAAP and IFRS, the two equations are then combined. While the coefficient represents that of the J-GAAP sample in the equation, the coefficient represents that of the IFRS sample. Although most prior research calculates earnings divided by the weighted average number of outstanding shares, all variables in this test are standardized by the beginning of the total assets, as the current study tests the formal characteristic of earnings persistence as accounting numbers, regardless of the number of stocks.

3.2. Earnings Predictability

Earnings predictability is defined as how past earnings are a good estimate of current earnings (Lipe 1990). Earnings predictability is high when past earnings are reasonably good estimates of current earnings because the returns-earnings relation depends on the relative ability of earnings versus alternative information to predict future earnings as well as the time-series persistence of earnings (Lipe 1990). Graham et al. (2005) reveal that earnings predictability is a major concern among CFOs in their survey of more than 400 US executives. Similarly, sell-side analysts are believed to prefer relatively predictable earnings indicators. Lougee and Marquardt (2004) find some evidence that non-GAAP earnings excluded special items for the current period has no predictive power for future GAAP earnings, but the benefits that non-GAAP earnings have for forecasting purposes. This result can be evidence that supports the usefulness of ordinary income in Japan because the ordinary income is calculated, excluding non-recurrent income. This study follows work by Lougee and Marquardt (2004) and Ribeiro et al. (2019) as well as Lipe's (1990) earnings predictability perspective. Specifically, the methodology follows Ribeiro et al. (2019) to regard earnings predictability as

a major proxy for earnings quality; earnings predictability is derived by regressing year-ahead earnings on current-year earnings, including the closest ordinary income under J-GAAP:

$$EPS_{i,t+1} = J\text{-}GAAP*(\alpha_0+\alpha_1 EPS_{i,t})+ IFRS*(\beta_0+ \beta_1 EPS_{i,t})+ \upsilon_{i,t} \quad (2a)$$

$$OR\_PS_{i,t+1} = \alpha_0+\alpha_1 OR\_PS_{i,t} +\alpha_2 SPI\_PS_{i,t} + \upsilon_{i,t} \quad (2b)$$

$$EARN\_PS_{i,t+1} = \beta_0+\beta_1 EARN\_PS_{i,t} +\beta_2 SPI\_PS_{i} + \upsilon_{i,t} \quad (2c)$$

where:

$EPS_{i,t}$ = earnings per share, calculated as firm *i*'s net income under J-GAAP (income from continuing operations under IFRS) divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year *t*;

$OR\_PS_{i,t}$ = ordinary income per share, calculated as firm *i*'s ordinary income under J-GAAP divided by the outstanding shares of its average common stock in year *t*;

$SPI\_PS_{i,t}$ = net special items per share, calculated as firm *i*'s $SPI_{i,t}$ divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year *t*; and

$EARN\_PS_{i,t}$ = the closest earnings to J-GAAP ordinary income per share, calculated as IFRS firm *i*'s $EARN_{i,t}$ divided by the outstanding shares of its average common stock in year *t*.

EPS is GAAP earnings per share under J-GAAP or IFRS, while *EARN_PS* is non-GAAP earnings for IFRS per share. A significant coefficient on *EARN_PS* and higher R^2 indicates that non-GAAP earnings under IFRS have predictive ability for future profitability and supports the superior J-GAAP ordinary income to IFRS GAAP earnings. The treatment of net income under IFRS is noted by using income from continuing operations under IFRS, if available. Hereafter, when an IFRS firm does not disclose discontinued operations, income from continuing operations is the same as net income.

3.3. Earnings Smoothness

Income smoothing is an action by managers to reduce the reported volatility of earnings using acceptable accounting methods (Buckmaster, 2001). Further, Fudenberg and Tirole (1995) define income smoothing as "the process of manipulating the time profile of earnings or earnings reports to make the reported income stream less variable, while not increasing reported earnings over the long run." Earnings smoothness was once considered a form of earnings management in which managers opportunistically smoothed reported income to

provide a stable earnings stream by allocating intertemporal gains and losses (Beidleman, 1973). For example, Healy (1985) reveals that managers opportunistically smooth income to attempt to mislead earnings for executive compensation. Several studies document evidence that earnings smoothness is associated with predicted determinants of low earnings quality, such as low-quality country GAAP, less enforcement, or weak shareholder rights (Leuz et al., 2003; Lang et al., 2006; Francis and Wang, 2008).

However, investors consider smoothed earnings to be less risky and an easier method to forecast future earnings. Income smoothing reduces firms' capital costs, as investors perceive these firms as having stable returns and less risk (Graham et al., 2005; Trueman and Titman, 1988). Additionally, analysts and other stakeholders may experience difficulty in predicting earnings with larger positive and negative earnings surprises. As such, consistent smoothing earnings trends increase earnings predictability (Kirschenheiter and Melumad 2002). A stable earnings trend is supported by the fact that stock prices positively relate to earnings leveling, which leads to increased shareholder wealth (Yang and Zhu, 2014). Smoothness measures are based on the volatility of earnings relative to some benchmarks, such as cash flows (Leuz et al., 2003; Francis et al., 2004). Prior research reveals that earnings smoothness positively relates to earnings quality, under the assumption that management uses personal information about future profitability to smooth out temporary variations and thereby achieve a more representative and useful earnings figure (Francis et al., 2004). Moreover, previous studies reveal that managers positively deliver personal information about a firm's future earnings through income smoothing, and thus, a positive relationship exists between earnings levels and stock market responses (Chaney and Lewis, 1995; Ronen and Sadan, 1981; Tucker and Zarowin, 2006). Therefore, earnings smoothness is positively associated with earnings quality, subject to the assumption that managers use their private information about future profitability to smooth transitory variations, consequently achieving more representative, useful earnings figures (Francis et al., 2004). In addition to a market influence, smoothed earnings can benefit both investors and enterprises if managers want to avoid breach-of-debt contracts (Carlson and Bathala, 1997). Given this discussion, this study takes earnings smoothness as a proxy for the measurement of earnings quality. This study simply considers less volatility means well-smoothed earnings following Francis et al. (2004) and Ribeiro et al. (2019), using the equations for income smoothness defined as follows:

$$Smoothness_{i,t}=\sigma(IFRS\_NI_{i,t})/\sigma(J\text{-}GAAP\_NI_{i,t}) \quad (3a)$$

$$Smoothness_{i,t}=\sigma(IFRS\_OP_{i,t})/\sigma(J\text{-}GAAP\_OP_{i,t}) \quad (3b)$$

$$Smoothness_{i,t}=\sigma(IFRS\_EARN_{i,t})/\sigma(J\text{-}GAAP\_OR_{i,t}) \quad (3c)$$

where earnings smoothness *Smoothnessi,t* is the ratio of firm *i*'s standard deviation of J-GAAP earnings divided by beginning total assets to its standard deviation of IFRS earnings divided by beginning total assets. Analyzing based on F-test, a ratio of earnings smoothness greater than one indicates that IFRS earnings are less volatile than J-GAAP earnings. In Equation (3c), *IFRS_EARNi,t* indicates the closest J-GAAP ordinary income in the IFRS firms.

3.4. Value Relevance

Value relevance is the most basic accounting quality attribute in meeting financial reporting objectives, in that it provides information to users intending to invest in the securities market. Value relevance is often measured as the ability of earnings to explain variations in stock prices or returns (Francis et al., 2004). Further, value relevance research investigates the relationship between market value and accounting summary measures, such as net income or book value. Barth et al. (2001) define value relevance as an accounting amount with a predicted association with equity market values, and offer a value relevance research perspective and investigate not only how well accounting amounts reflect the information used by equity investors but also provide insights into questions of interest to standard-setters.

The current study tests for differences in the R-squared value of regressions using both J-GAAP and IFRS earnings: bottom-line earnings, and namely net income, as well as stepwise earnings, which are included in relative association studies. The estimation with higher explanatory power (the adjusted R-square) is considered more value-relevant. Moreover, IFRS earnings are compared to their adjusted earnings, similar to J-GAAP earnings with the same firms, evoking incremental association studies. This study then tests whether their estimated regression coefficients significantly differ from zero.

This study employs a pricing model based on Ohlson's (1995) work, which considers the book value of equity and earnings as relevant valuation attributes[54]. The estimation with higher

[54] I attempted a return-based model which is used following Collins et al. (1997), Francis and Schipper (1999), and Francis et al. (2004), in which a measure of value relevance is based on the explained variability from the regression of returns on the level and change in earnings as shown below ((4c) and (4d)). However, I could not find expected significant results from the model even though a return-based model is appropriate for value relevant research in Japan when considering the abnormal volatility of market price. For the note, this study highly relies on the research model of Ribeiro et al. (2019), which does not use a return-based model for value-relevant tests.

$$RET_{i,t} = JGAAP*[\alpha_{0,i}+\alpha_1(NI/P_{t-1})_{i,t} + \alpha_2(\Delta NI/P_{t-1})_{i,t}] + IFRS*[\beta_{0,i}+\beta_1(NI/P_{t-1})_{i,t} + \beta_2(\Delta NI/P_{t-1})_{i,t}] + \varepsilon_{i,t} \quad (4c)$$

explanatory power (the R-square) and the difference in coefficient values are regarded as more value-relevant (Cramer, 1987):

$$P_{i,t} = J\text{-}GAAP*(\alpha_0+\alpha_1 EPS_{i,t}+\alpha_2 BPS_{i,t}) + IFRS*(\beta_0+\beta_1 EPS_{i,t}+ \beta_2 BPS_{i,t})+ \varepsilon_{i,t} \quad (4a).$$

$$P_{i,t} = J\text{-}GAAP*(\alpha_0 +\alpha_1 OP\_PS_{i,t}+\alpha_2 SPI\_PS_{i,t}+\alpha_3 BPS_{i,t}),$$

$$+IFRS*(\beta_0+\beta_1 EARN\_PS_{i,t}+\beta_2 SPI\_PS_{i,t}+\beta_3 BPS_{i,t})+ \varepsilon_{i,t} \quad (4b)$$

where:

$P_{i,t}$ = firm *i*'s stock price at the fiscal year-end closing in year *t*;

$EPS_{i,t}$ = earnings per share, calculated as firm *i*'s net income under J-GAAP (income from continuing operations under IFRS) divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year *t*;

$BPS_{i,t}$ = firm *i*'s book values per share, calculated as a firm's book value of equity divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year *t*;

3.5. Timeliness and Conditional Conservatism

Basu (1997) regards conservatism as earnings that 'reflect bad news more quickly than good news.' Ball et al. (2000) identify earnings conservatism as the asymmetry of perceptions regarding good and bad news; conditional conservatism corresponds to these notions of conservatism. This asymmetric reporting of gains and losses is expected to reduce corporate capital costs by increasing the accuracy of bad news reporting, which consequently reduces information uncertainty. Therefore, the recognition of increasingly frequent losses is interpreted as evidence of higher earnings quality given the extent to which recognized losses

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$$RET_{i,t} = JGAAP*[\alpha_{0,i}+\alpha_1(ORIN/P_{t-1})_{i,t} + \alpha_2(\Delta ORIN/P_{t-1})_{i,t}] + IFRS*[\beta_{0,i}+\beta_1(EARN/P_{t-1})_{i,t} + \beta_2(\Delta EARN/P_{t-1})_{i,t}]+ \varepsilon_{i,t} \quad (4d)$$

Where

$RET_{i,t}$= firm *i*'s 12-month return ending three months after the end of fiscal year *t*;

$(NI/P_{t-1})_{i,t}$ = net income per stock price, calculated as net income divided by firm i's beginning stock price at the fiscal year-end closing in year *t*;

$(ORIN/P_{t-1})_{i,t}$ = ordinary income per stock price, calculated as ordinary income under J-GAAP divided by the beginning of firm i's stock price at the fiscal year-end closing in year *t*; and

$(EARN/P_{t-1})_{i,t}$ = the closest earnings per stock price, calculated as the closest earnings to J-GAAP ordinary income divided by the beginning of firm *i*'s stock price at the fiscal year-end closing in year *t*.

reflect the timely recognition of underlying negative economic shocks (Basu, 1997; Ball et al., 2003; Watts, 2003). This study anticipates that earnings respond to negative economic news distinctly and asymmetrically from positive economic news (Ball and Shivakumar, 2005; 2006). The following equation is used to compare the timeliness and conditional conservatism of J-GAAP and IFRS earnings, including the closest ordinary J-GAAP-equivalent income, following Basu (1997) and Ribeiro et al. (2019):

$$NI\_PS_{i,t} = J\text{-}GAAP*(\alpha_0 + \alpha_{1,i}NEG_{i,t} + \alpha_{1,i}RET_{i,t} + \alpha_{2,i}NEG_{i,t} * RET_{i,t}).$$
$$+ IFRS*(\beta_0 + \beta_{1,i}NEG_{i,t} + \beta_{1,i}RET_{i,t} + \beta_{2,i}NEG_{i,t} * RET_{i,t}) + \varsigma_{i,t} \quad (5a)$$

$$OP\_PS_{i,t} = J\text{-}GAAP*(\alpha_0 + \alpha_{1,i}NEG_{i,t} + \alpha_{1,i}RET_{i,t} + \alpha_{2,i}NEG_{i,t} * RET_{i,t}).$$
$$+ IFRS*(\beta_0 + \beta_{1,i}NEG_{i,t} + \beta_{1,i}RET_{i,t} + \beta_{2,i}NEG_{i,t} * RET_{i,t}) + \varsigma_{i,t} \quad (5b)$$

$$OR\_PS_{i,t} = J\text{-}GAAP*(\alpha_0 + \alpha_{1,i}NEG_{i,t} + \alpha_{1,i}RET_{i,t} + \alpha_{2,i}NEG_{i,t} * RET_{i,t}) + \varsigma_{i,t} \quad (5c)$$

$$EARN\_PS_{i,t} = IFRS*(\beta_0 + \beta_{1,i}NEG_{i,t} + \beta_{1,i}RET_{i,t} + \beta_{2,i}NEG_{i,t} * RET_{i,t}) + \varsigma_{i,t} \quad (5d)$$

where:

$NI\_PS_{i,t}$ = net income per share (= $EPS_{i,t}$) calculated as firm i's net income under J-GAAP (income from continuing operations under IFRS) divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year t;

$RET_{i,t}$ = A firm's 12-month stock return ending three months after the fiscal year-end

$NEG_{i,t}$ = an indicator variable equalling one if $RET_{i,t}$ is negative, and zero otherwise; and

$NEG_{i,t} * RET_{i,t}$ = an intersection term obtained by multiplying $NEG_{i,t}$ and $RET_{i,t}$.

The R-squared value is then compared as explanatory power from each estimate to assess the differences in earnings timeliness. The regression coefficient α_2 (β_2) provides a measure of conditional conservatism. The higher the value of β_2, the greater the conditional conservatism.

Except for the earnings smoothness test in Equations (3a) to (3c), the estimated coefficients for each variable are robust *t*-statistics based on standard errors clustered at the firm level and fiscal year. When using panel data, controlling fixed effects is crucial; the year- and industry-fixed effects are included in the result. Hausman's test (Hausman and Taylor, 1981) is necessary to control for firm-specific effects. This test is undertaken to establish whether a random-or fixed-effects model is more suitable for the panel data. The Hausman's test results in this research favor the fixed-effects model, and thus, the panel datasets adopt this

model to address all correlated omitted variables.[55]

4. Sample and Descriptive statistics

This study's sample consists of 13,225 firm-year observations representing 1,610 firms from 2009 to 2019, including J-GAAP and IFRS reporters in Japan. The NEEDS-FinancialQUEST Nikkei databases are used to obtain financial statement data. As the NEEDS database does not include detailed data on goodwill impairments, such data was collected from annual reports in Japan. Further, the NEEDS database does not include special item data from IFRS firms, and thus, special item data was also hand-collected for IFRS firms, such as impairment and restructuring losses. Due to the effectiveness of hand-collection work and the requirement for adopting IFRS in Japan, firms with total assets of less than 500 million USD were deleted from the sample selection[56].

Financial business firms were excluded—such as banks, securities, insurance, and other financial firms—because they have a substantially different financial reporting framework. Further, observations were excluded with fiscal periods that did not equal 12 months. The sample data were winsorized at the upper and lower one percent levels for all explanatory variables by industry, and any observations with missing data were deleted. Of the resulting sample, 12,446 observations (1,412 firms) are J-GAAP firms, and 779 observations (198 firms) are IFRS firms. Table 1 presents the sample-selection process, while Table 2 provides the composition of the industry classification based on Nikkei Middle Industry codes.

[Table 1 about here]

[Table 2 about here]

Table 3 displays the descriptive statistics for each of the J-GAAP and IFRS explanatory variables, including their mean, median, standard deviation, minimum, and maximum. The

[55] The greatest merit of the fixed-effects model is that the individual (firm) effect cannot be made variable, and does not affect the estimated value; this is because each firm's individuality is completely eliminated in calculating the fixed-effects estimation. In pooling the regression analyses using panel data, the estimates are far from appropriate, as the unobserved heterogeneity biases the estimates.

[56] It is mandatory for firms to have systems to ensure their consolidated financial statements' appropriateness in adopting IFRS. Gray and Street (2000) argue that firms complying with IFRS disclosure requirements tend to be listed in the United States or abroad and must be audited by a large auditor. Additionally, firm size can affect the quality of profits (Ball and Foster, 1982; Doyle et al., 2007). As firms that apply IFRS are considered to be relatively large in Japan, the current work's eliminating of smaller J-GAAP firms is reasonable for a comparison to IFRS firms.

IFRS firms' earnings performance and volatility are significantly higher than those of J-GAAP firms.

[Table 3 about here]

5. Empirical results

5.1. Persistence

Table 4 presents the results of the models in Equations (1a) to (1f), which test the persistence of earnings under J-GAAP and IFRS and include the dependent variable of each firm's prior-year earnings. All the estimated coefficients for each stepwise earnings value under J-GAAP are more persistent than those under IFRS. Additionally, the difference between the estimated coefficients of J-GAAP and IFRS for net income (*NI*) and operating income (*OPIN*) are significant, given the *t*-test results. This is because operating income under IFRS includes special items; moreover, the net income under IFRS is still less persistent than that under J-GAAP, even after including all special items, implying that net income under J-GAAP is relatively smooth. However, the R-squared value as an indicator of persistence is not evident, in that J-GAAP earnings are significantly more predictable overall than IFRS earnings. Regarding the division between the income from continuing and discontinued operations under IFRS, the latter does not relate to future continuing operations, suggesting the usefulness of separately disclosing discontinued operations.

Notably, the closest J-GAAP ordinary income equivalent for IFRS firms (*EARNi,t*) is superior to GAAP-based IFRS earnings. The difference between the estimated coefficients of J-GAAP and IFRS in ordinary income (*ORIN*) and pseudo-ordinary income (*EARN*) is not significant. Therefore, J-GAAP ordinary income is useful even under IFRS in terms of earnings persistence.

[Table 4 about here]

5.2. Predictability

Table 5 presents the results of the models in Equations (2a), (2b), and (2c) that test the predictability of earnings under J-GAAP and IFRS, in which the dependent variable is the prior year's earnings per share (EPS). The estimated coefficient for the current EPS (*EPSi,t*) under IFRS is superior to that under J-GAAP, while the R-square as an indicator of predictability indicates that J-GAAP earnings are more predictable than EPS under IFRS earnings. The

difference between the estimated coefficients of J-GAAP and IFRS in EPS is not significant from the *t*-test results, implying that no significant difference exists between J-GAAP and IFRS in the EPS' predictability. Further, the estimated coefficient for IFRS firms' closest J-GAAP ordinary income equivalent per share (*EARN_PSi,t*) and special items per share (*SPI_PSi,t*) is as functional as ordinary income under J-GAAP. This evidence indicates that J-GAAP ordinary income and the separate presentation of special items are beneficial even under IFRS in terms of earnings predictability.

[Table 5 about here]

5.3. Smoothness

Table 6 presents the results of the models in Equations (3a), (3b), and (3c) that test the smoothness of earnings under J-GAAP and IFRS, in which the *t*-test confirms the ratio of J-GAAP and IFRS of the standard deviation representing each earnings variation. As anticipated, the smoothness of J-GAAP earnings is considerably superior to that of IFRS earnings in terms of GAAP earnings. A *t*-test also denotes the significant difference between them; notably, the volatility of the IFRS firms' closest J-GAAP ordinary income equivalent σ(*IFRS_EARNi,t*) is similar to that of J-GAAP ordinary income. Therefore, J-GAAP ordinary income can contribute to enhancing smoothness under IFRS.

[Table 6 about here]

5.4. Value Relevance

Table 7 presents the results of the models in Equations (4a) and (4b) that test the value relevance of earnings under J-GAAP and IFRS, in which the dependent variables are market price ($P_{i,t}$). Turning first to J-GAAP and IFRS net income-based, I obtain the evidence of value relevance with a positive and significant coefficient of 1.374 under J-GAAP and 1.704 under IFRS, which is significantly higher than J-GAAP earnings. However, the adjusted R-square of J-GAAP and IFRS (0.714 vs. 0.558) indicates J-GAAP earnings are more value relevant than IFRS earnings. Next, when IFRS earnings are replaced by closest J-GAAP ordinary income equivalent (*EARN_PSi,t*) comparing J-GAAP ordinary income (*OR_PSi,t*), the coefficient on *EARN_PSi,t* is 3.462, which is also significantly higher than the coefficient on *OR_PSi,t* 1.231 of J-GAAP earnings. However, the adjusted R-square of J-GAAP and the closest J-GAAP

ordinary income equivalent of IFRS (0.778 vs. 0.761) indicates J-GAAP ordinary income are more value relevant than the IFRS firms' closest J-GAAP ordinary income equivalent.

Given these results, J-GAAP earnings in both net income and ordinary income are more value relevant than both IFRS net income and pseudo-ordinary income of IFRS as long as the judging from the explanation power. It is notable that the pseudo-ordinary income of IFRS is more value relevant than IFRS GAAP earnings when comparing the coefficient and adjusted R-square, implying that non-GAAP earnings that are similar to J-GAAP ordinary income is useful in Japan.

[Table 7 about here]

5.5 Timeliness and Conditional Conservatism

Estimations of timeliness and conservatism are reported in Table 8. Turning first to timeliness for net income-based, I find that the adjusted R-square from estimating equation (5a) using net income J-GAAP earnings is significantly higher compared to estimations IFRS earnings (0.162 vs. 0.085), suggesting that J-GAAP earnings are more timely than IFRS earnings. Next, I also observe that the adjusted R-square from estimating equation (5b) using operating income J-GAAP earnings is slightly higher compared to estimations IFRS operating income (0.048 vs. 0.041), suggesting that J-GAAP operating income are more timely than IFRS operating income. Interestingly, when comparing J-GAAP ordinary income and the pseudo-ordinary income of IFRS in the equation ((5c) and (5d)), the adjusted R-square of the pseudo-ordinary income of IFRS 0.113 is higher than that of J-GAAP ordinary income 0.056, implying that non-GAAP earnings that are similar to J-GAAP ordinary income for IFRS firms are useful in Japan. Overall, J-GAAP earnings are superior to IFRS earnings in terms of timeliness.

When I focus on the measure of conservatism in this study, the results provide mixed evidence in which GAAP earnings are more conservative. For GAAP earnings net income-based, the coefficient associated with stock returns restricted only to negative values (i.e., the incremental responsiveness to a measure of bad economic new) is 0.020 under IFRS, which is higher than that for J-GAAP earnings (0.013). However, results of operating income-based indicate that the coefficient of J-GAAP operating income 0.014 is slightly higher than that of IFRS operating income 0.013 (as well as J-GAAP ordinary income-based 0.018 vs. the pseudo-ordinary income of IFRS 0.014), which implies J-GAAP operating income could be more conservative. However, considering most losses regarding conservativeness related to special items such as impairment losses, the result of IFRS earnings net income-based indicates that IFRS earnings are more conservative.

Overall, the results are mixed in which earnings are more timely and conservative; while J-GAAP earnings are more timely, IFRS earnings are more conservative.

[Table 8 about here]

6. Conclusion

This study investigates the stepwise earnings quality on income statements, such as those involving operating, ordinary and net income, under J-GAAP and IFRS, including their closest J-GAAP equivalent by adjusting IFRS earnings. It is discovered that J-GAAP earnings are superior to those from IFRS in terms of their persistence, predictability, smoothness, value relevance, and timeliness, while IFRS earnings are superior to J-GAAP earnings in their conservatism. These results illuminate the two standards' specific earnings attributes. First, J-GAAP earnings are more advantageous in that smoothness is attributed to earnings persistence. This can be explained by the existence of a line-separated presentation of the income statement under J-GAAP due to the 'special item' box that was previously considered to be a major international issue. Alternatively, earnings under IFRS are more advantageous, given their more conditional conservatism, which can be explained by the IFRS impairment standard that further differs from J-GAAP (Gordon and Hsu, 2018). Further, J-GAAP does not provide a specific accounting standard for special items, such as restructured or discontinued operations, in contrast to IFRS (IASC, 1998b; IASB, 2004). While it is difficult to explicitly judge which earnings are higher quality due to their different characteristics, J-GAAP earnings are collectively better in terms of the superiority of earnings associations with the market and in considering the common objectives of accounting reports as indicated in the Conceptual Framework commonly in both J-GAAP and IFRS (ASBJ 2006; IASB 2010). Besides, as the current work uses the income from continuing operations if available instead of the net income under IFRS, these results indicate the benefit from separately disclosing discontinued operations. Therefore, the ASBJ should adopt a rule to classify discontinued operations because it is inexpensive to introduce them in practice.

Notably, this study reveals that the closest J-GAAP equivalent, similar to ordinary income in the IFRS sample, is ultimately superior to GAAP-based IFRS earnings. This 'pseudo-ordinary income' is equivalent to J-GAAP earnings in its persistence, predictability, smoothness, and value relevance. The comparison of IFRS earnings attributes with pseudo-earnings that are the closest to J-GAAP ordinary income reflects the demand for value-relevant measures of financial performance beyond GAAP-based IFRS earnings. Further, this study's results do not support the adoption of IFRS in Japan. Recently, non-GAAP earnings have become more useful among US GAAP and IFRS practices, while GAAP earnings' usefulness

has declined (Ribeiro et al., 2019). As non-GAAP earnings, such as core or pro forma earnings, are essentially calculated by excluding special items, earnings quality relies heavily on how these special items are treated. This is proven by the usefulness of the closest J-GAAP ordinary income equivalent in this study; however, non-GAAP earnings are merely a voluntary disclosure and exhibit severe comparability and operability issues due to a lack of regulations and auditing. Considering the costs and benefits in this comparison, IASB should require the compulsory disclosure of 'ordinary income (or core earnings)' as GAAP earnings that require regulations and statutory auditing to solve the current policy debates in discerning non-GAAP disclosures.

Table 1: Sample Selection

Year	JGAAP	IFRS	Total
2009	999	1	1,000
2010	990	3	993
2011	1,014	5	1,019
2012	1,039	15	1,054
2013	1,065	25	1,090
2014	1,112	52	1,164
2015	1,179	77	1,256
2016	1,231	113	1,344
2017	1,267	148	1,415
2018	1,323	185	1,508
2019	1,227	155	1,382
Total	12,446	779	13,225
Sample Firms	1,412	198	1,610

Table 2: Industry Composition

Industry	JGAAP	IFRS	Industry	JGAAP	IFRS
Food	525	30	Fisheries	48	
Fiber	187	1	Mining	43	
Pulp and paper	113		Construction	785	
Chemicals	951	44	Trading	1,162	73
Medical supplies	316	71	Retailer	983	19
Oil	61	4	Other financial services	263	26
Rubber	113	14	Real estate	382	13
Glass and ceramic	241	16	Rail and bus	264	
Steel industry	258	10	Land transportation	186	10
Metal products	434	12	Sea transportation	80	
Machinery	944	37	Air transportation	28	
Electrical equipment	1,141	101	Warehouse transportation	129	
Shipbuilding	40		Communication	177	24
Automobile	563	70	Electric	124	
Transportation equipment	104		Gas	97	
Precision machine	189	36	Service	1,173	168
Other manufacturing industries	342		Total	12,446	779

Table 3: Descriptive Statistics

	JGAAP					IFRS				
Variables	Mean	Median	S.D.	Min.	Max.	Mean	Median	S.D.	Min.	Max.
$NI_{i,t}$	0.033	0.030	0.038	-0.201	0.287	0.050	0.044	0.050	-0.221	0.268
$OPIN_{i,t}$	0.058	0.050	0.058	-0.567	0.749	0.083	0.077	0.151	-0.647	0.888
$ORIN_{i,t}$	0.058	0.051	0.048	-0.201	0.451	-	-	-	-	-
$EARN_{i,t}$	-	-	-	-	-	0.077	0.066	0.066	-0.194	0.459
$NSPI_{i,t}$	-0.005	-0.002	0.015	-0.121	0.125	-0.010	-0.003	0.023	-0.119	0.058
$CONI_{i,t}$	-	-	-	-	-	0.050	0.044	0.050	-0.201	0.268
$DISIN_{i,t}$	-	-	-	-	-	0.000	0.000	0.001	-0.006	0.005
$EPS_{i,t}$	193.6	72.4	1,845.0	-34,056.7	64,023.3	166.5	116.4	185.8	-456.9	1,593.2
$BPS_{i,t}$	2,806.5	1,194.5	19,516.7	32.2	73,061.2	1,902.4	1,274.3	1,503.1	32.2	9,272.2
$P_{i,t}$ (JPY)	3,186.7	1,153.0	2,129.7	48.0	68,600.0	2,923.3	1,877.0	3,204.7	106.0	42,650.0
$RET_{i,t}$	0.212	0.046	0.998	-0.997	13.333	0.187	0.030	0.835	-0.984	9.228

There are 13,225 firm-year observations (12,446 firm-year observations are under J-GAAP, 779 firm-year observationsare under IFRS). All variables are winsorized at 1 and 99 percent. See variable definitions in Appendix A.

Table 4: Fixed-Effects Regressions of Persistence under J-GAAP and IFRS

Eq.	Variable: Dependent	Variable: Explanatory	JGAAP	IFRS	JGAAP vs IFRS
(1a)	$NI_{i,t+1}$	$NI_{i,t}$	0.190 ***	0.159 **	0.031 **
			5.94	1.96	2.91
		(R^2)	(0.301)	(0.441)	
(1b)	$OPIN_{i,t+1}$	$OPIN_{i,t}$	0.466 ***	0.256 ***	0.210 ***
			10.22	2.63	17.60
		(R^2)	(0.653)	(0.757)	
(1c)	$ORIN_{i,t+1}$	$ORIN_{i,t}$	0.403 ***		0.013
			11.76		1.67
		(R^2)	(0.657)		($ORNI_{i,t}$ - $EARN_{i,t}$)
(1d)	$EARN_{i,t+1}$	$EARN_{i,t}$		0.391 ***	
				2.96	
		(R^2)		(0.674)	
(1e)	$NI_{i,t+1}$	$ORIN_{i,t}$	0.295 ***		-0.033
			8.20		-0.99
		$SPI_{i,t}$	-0.164 ***		($ORNI_{i,t}$ - $EARN_{i,t}$)
			-5.01		
		(R^2)	(0.412)		
(1f)	$CONIN_{i,t+1}$	$EARN_{i,t}$		0.328 ***	
				4.31	
		$SPI_{i,t}$		-0.210 ***	
				-3.27	
		$DISNI_{i,t}$		0.028	
				0.23	
		(R^2)		(0.546)	
Fixed Effect		*INDUSTRY*			
		YEAR	Include	Include	
		FIRM			

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. The result of "JGAAP vs IFRS" is based on the Chow test, the difference of estimated coefficient between JGAAP and IFRS.
All variables are defined in Appendix A.

Table 5: Fixed-Effects Regressions of Predictability under J-GAAP and IFRS

Eq.	Variable: Dependent	Variable: Explanatory	JGAAP	IFRS	JGAAP vs IFRS
(2a)	$EPS_{i,t+1}$	$EPS_{i,t}$	0.428 ***	0.536 ***	-0.108
			3.61	7.41	0.99
		(R^2)	(0.676)	(0.508)	
(2b)	$EPS_{i,t+1}$	$OR\_PS_{i,t}$	0.218 ***		-0.069
			5.92		0.61
		$SPI\_PS_{i,t}$	-0.479 ***		($OR\_PS_{i,t}$ -
			-2.59		$EARN\_PS_{i,t}$)
(2c)	$EPS_{i,t+1}$	$EARN\_PS_{i,t}$		0.287 ***	
				4.54	
		$SPI\_PS_{i,t}$		-1.848 ***	
				-7.63	
		(R^2)	(0.581)	(0.583)	
Fixed Effect		*INDUSTRY*			
		YEAR	Include	Include	
		FIRM			

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. The result of "JGAAP vs IFRS" is based on the Chow test, the difference of estimated coefficient between JGAAP and IFRS. All variables are defined in Appendix A.

Table 6: T-Test of Earnings Smoothness under J-GAAP and IFRS

Eq.	Variable	JGAAP	IFRS	σ(IFRS)/ σ(JGAAP)
(3a)	$\sigma(IFRS\_NI_{i,t})/\sigma(JGAAP\_NI_{i,t})$	0.023	0.034	1.434 ***
				3.07
(3b)	$\sigma(IFRS\_OP_{i,t})/\sigma(JGAAP\_OP_{i,t})$	0.025	0.059	2.321 ***
				5.82
(3c)	$\sigma(IFRS\_EARN_{i,t})/\sigma(JGAAP\_OR_{i,t})$	0.024	0.028	1.138
				1.06

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Results represent a t-test, based on the test of a significant difference between the means of JGAAP and IFRS earnings volatility (smoothness). All variables are defined in Appendix A.

Table 7: Fixed-Effects Regressions of Value Relevance under J-GAAP and IFRS

	Variable							
Eq.	Dependent	Explanatory	**JGAAP**		**IFRS**		**JGAAP vs IFRS**	
(4a)	$P_{i,t}$	$EPS_{i,t}$	1.374	**	1.704	***	-0.330	*
			1.97		9.45		2.30	
		$BPS_{i,t}$	0.756	***	0.771	*		
			8.92		1.81			
		(R^2)	(0.714)		(0.558)			
(4b)	$P_{i,t}$	$OR\_PS_{i,t}$	1.231	**			-2.231	***
			2.30				4.81	
		$EARN\_PS_{i,t}$			3.462	***	(OR_PSi,t -	
					14.56		$EARN\_PSi,t$)	
		$SPI\_PS_{i,t}$	-2.555	**	-8.039	***		
			-2.17		-9.05			
		$BPS_{i,t}$	0.689	***	0.347	*		
			4.61		1.92			
		(R^2)	(0.778)		(0.761)			
Fixed Effect		*INDUSTRY*						
		YEAR	Include		Include			
		FIRM						

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. The result of "JGAAP vs IFRS" is based on the Chow test, the difference of estimated coefficient between JGAAP and IFRS.
All variables are defined in Appendix A.

Table 8: Fixed-Effects Regressions of Timeliness and Conditional Conservatism under J-GAAP and IFRS

Eq.	Variable: Dependent	Variable: Explanatory	JGAAP	IFRS	JGAAP vs IFRS
(5a)	$NI\_PS_{i,t}$	$NEG_{i,t}$	-0.011 ***	-0.015 **	
			-5.13	-2.02	
		$RETi_{,t}$	-0.070 ***	-0.083 *	
			-3.34	-1.76	
		$NEG_{i,t} * RET_{i,t}$	0.013 ***	0.020 ***	-0.006 ***
			8.27	2.93	8.56
		(R^2)	**0.162**	0.085	
(5b)	$OP\_PS_{i,t}$	$NEG_{i,t}$	-0.037 **	-0.013 ***	
			-1.97	-5.27	
		$RETi_{,t}$	-0.218 **	-0.069 ***	
			-2.02	-3.80	
		$NEG_{i,t} * RET_{i,t}$	0.014 **	0.013 ***	0.001 ***
			2.04	8.61	9.34
		(R^2)	**0.048**	0.041	
(5c)	$OR\_PS_{i,t}$	$NEG_{i,t}$	-0.018 ***	-0.014 ***	
(5d)	$(EARN\_PS_{i,t})$		-3.04	-6.89	
		$RETi_{,t}$	-0.118 **	-0.074 ***	
			-2.38	-4.13	
		$NEG_{i,t} * RET_{i,t}$	0.018 ***	0.014 ***	0.004 ***
			2.85	8.39	8.86
		(R^2)	0.056	**0.113**	
	Fixed Effect	*INDUSTRY*			
		YEAR	Include	Include	
		FIRM			

***, **, and * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. The result of "JGAAP vs IFRS" is based on the Chow test, the difference of estimated coefficient between JGAAP and IFRS.
All variables are defined in Appendix A.

Appendix: Variable definition and measurement

Variable	Definition and Measurement
Table 4:	
Earnings persistence	
$NI_{i,t}$	firm *i*'s net income either under J-GAAP or IFRS in year *t*
$OPIN_{i,t}$	firm *i*'s operating income either under J-GAAP or IFRS in year *t*;
$ORIN_{i,t}$	firm *i*'s ordinary income in J-GAAP in year *t* (= Net income before tax + negative special items – positive special items)
$SPI_{i,t}$	firm *i*'s net special items under J-GAAP or IFRS in year *t*; IFRS special items are calculated as the same items of special gains and losses as under J-GAAP by hand-collecting through annual reports, such as "impairment losses, restructuring charges, gains and losses of sales from subsidiaries' and affiliates' stocks, gains and losses on sales of long-lived assets, and losses related to natural disasters or abnormal valuation;
$ERAN_{i,t}$	firm *i*'s closest earnings to J-GAAP ordinary income in year t, calculated as ($NI_{i,t} - SPI_{i,t} + TAX_{i,t}$); $TAXi,t$ denotes firm *i*'s tax expenses;
$CONIN_{i,t}$	continuing operations under IFRS in year *t*;
$DISIN_{i,t}$	discontinued operations under IFRS in year *t*
Table 5:	
Earnings predictability	
$EPS_{i,t}$ ($=NI\_PS_{i,t}$)	earnings per share, calculated as firm *i*'s net income under J-GAAP (income from continuing operations under IFRS) divided by the outstanding shares of its average common stock under either J-GAAP or IFRS in year *t*
$OR\_PS_{i,t}$	ordinary income per share is calculated as a firm *i*'s under J-GAAP ordinary income divided by the outstanding shares of its average common stock in year *t*
$SPI\_PS_{i,t}$	net special items per share is calculated as a firm *i*'s $SPI_{i,t}$ divided by the outstanding shares of its average common stock either under J-GAAP or IFRS in year *t*

$EARN\_PS_{i,t}$	the closest earnings to J-GAAP ordinary income per share is calculated as an IFRS firm *i*'s $EARN_{i,t}$ divided by the outstanding shares of its average common stock in year *t*

Table 7: Value relevance

$P_{i,t}$	a firm *i*'s stock price at the fiscal year-end closing year *t*
$BPS_{i,t}$	a firm *i*'s book values per share is calculated as a firm is the book value of equity divided by the outstanding shares of its average common stock either under J-GAAP or IFRS in year *t*
$RET_{i,t}$	a firm *i*'s 12-month return ending three months after the end of fiscal year *t*;

Table 8: Timeliness and conditional conservatism

$NEG_{i,t}$	indicator variable equal to 1 if $RET_{i,t}$ is negative and 0 otherwise
$NEG_{i,t}$* $RET_{i,t}$	intersection term as multiplying $NEG_{i,t}$ and $RET_{i,t}$

Chapter 7: Earnings Management using Other Comprehensive Income Recycling: Evidence from Japan[57]

ABSTRACT

This study investigates the use of other comprehensive income recycling (OCIR) as an earnings management tool for classification shifting under Japanese GAAP (J-GAAP) and examines whether adopting IFRS prevents earnings management, and tests 'meeting or beating benchmarks,' 'big bath' and 'income smoothing' hypotheses on whether firms use OCIR to influence current earnings using regression analysis using a fixed-effect model on a sample of Japanese firms adopting J-GAAP or IFRS. The results show that a positive association exists between income-increasing OCIR and meeting or beating zero earnings, prior year's earnings, and managers' forecasts for J-GAAP firms, but not for IFRS firms, except for meeting or beating prior year' net income. Moreover, J-GAAP (but not IFRS) firms with pre-recycled net income below zero use negative OCIR to reduce current earnings and magnify losses, consistent with the big bath hypothesis. However, there is no evidence for the income smoothing hypothesis. Therefore, permitting OCIR entirely under J-GAAP encourages Japanese firms to engage in earnings management using OCIR, while adopting IFRS can prevent this practice.

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1. Introduction

Using a Japanese sample, this study investigates whether other comprehensive income (OCI) recycling is used to shift classification for earnings management purposes under Japan's generally accepted accounting principles (J-GAAP) and International Financial Reporting Standards (IFRS). OCI recycling (OCIR) substantially differ between J-GAAP and IFRS. The Accounting Standards Board of Japan (ASBJ) accepted the Accounting Standard for Presentation of Comprehensive Income (ASBJ Statement No. 25) as part of the convergence project between J-GAAP and IFRS in 2010; thus, Japanese listed firms disclose comprehensive income in addition to net income. However, while J-GAAP requires full recycling to emphasize net income in the income statement, IFRS fundamentally prohibits OCIR due to earnings management concerns. There is an ongoing debate on whether to prevent OCI recycling. Historically, the topic of OCIR has been controversial. That OCIR can be used to manage earnings is a major concern, as expressed by the Financial Accounting Standards Board (FASB) members (FASB, 1993). Prior literature provides evidence that eliminating OCIR helps control earnings management (Rees and Shane, 2012). Previous studies in the United States investigate the opportunistic use of OCIR, focusing on a single industry (e.g., banks or insurance companies) and specific OCI items (Barth et al., 2014; Graham et al., 2005; Lee et al., 2006). By contrast, this study considers earnings management for all recyclable items across industries (except for banks, insurance, and securities companies) in the context of J-GAAP.[58]

Following the research structure of Arthur et al. (2017), I analyze whether OCIR is associated with meeting or beating benchmark measures and whether OCIR is associated with 'income smoothing' or 'big bath behavior.' The results are consistent with meeting or beating model predictions, indicating that OCIR is used to meet or beat zero earnings, prior year's earnings, and managers' forecasts under J-GAAP. These results are consistent with those of Graham et al. (2005). However, I do not find significant evidence under IFRS, except for meeting or beating a prior year's net income. Consistent with Barth et al. (2014) and the big bath hypothesis, under J-GAAP, I also reveal that managers use income-decreasing OCIR to reflect more losses when a firm's pre-managed earnings are below zero. Meanwhile, Barth et al. (2014) find income smoothing behavior using OCIR in the United States, and so do Arthur et al. (2017) in Australia. However, this study does not obtain significant results about income smoothing, both under J-GAAP and IFRS, which is inconsistent with Barth et al. (2014). Moreover, it finds that permitting OCIR entirely under J-GAAP encourages Japanese firms to engage in earnings management using OCIR, while adopting IFRS can successfully prevent classification shifting using OCIR.

This study is the first to investigate earnings management using OCIR under J-GAAP and

[58] I exclude financial business firms such as banks, securities, insurance, and other financial firms because they have a substantially different financial reporting framework.

IFRS in Japan and has four major contributions. First, unlike previous studies investigating a specific industry and a single OCI item, this study provides extensive evidence of the relevance of earnings management to a wide range of OCIR items across different industries. Second, identifying this new type of earnings management method, 'using OCIR,' contributes primarily to the literature stream that considers accrual-based and real activity-based approaches as a typical means of earnings management. Specifically, while recycling is basically triggered by actual activities (e.g., selling assets or closing deals), the expected impact is aimed 'above the line,' thus shifting OCI to net income from comprehensive income, which is similar to classification shifting. However, some OCI items rely heavily on a manager's estimation when OCI is to be reclassified, consistent with accrual-based earnings management. OCIR has a mixed nature of earning management forms that are activity-based and accrual-based. Third, I find that OCIR under IFRS is not positively related to earnings management, suggesting that restricting recyclable OCI items under IFRS can prevent earnings management. This finding is relevant to current international debates among standard setters. J-GAAP permits all OCI items to be recycled, while IFRS restricts recycling for certain items. For J-GAAP, this study supports adopting IFRS, as it provides evidence that J-GAAP-based OCIR is used as a means of earnings management. Therefore, Japanese accounting standard setters are encouraged to re-examine the current standard relating to OCIR to eliminate it as a means of earnings management. Meanwhile, the International Accounting Standards Board (IASB) has revised its conceptual framework (IASB 2018), but the current recycling guidance does not provide clear rules on what items should be included in the income statement or the statement of OCI (IASB 2018, par. 7.36). Therefore, future standards need to address this issue. In light of this study's finding that OCIR tends to be used as a method of management's discretionary earnings management, and consistent with the IASB's previous concerns, IASB should emphasize the need to restrict the existing recycling standard. Finally, the findings here are useful for investors, analysts, and other stakeholders when assessing the performance of firms because using OCIR can influence the bottom line, and financial statement users are more likely to consider OCIR information and make more informed decisions.

2. OCI Regulation and Prior Research

2.1. OCI Regulation in IFRS

In 1997, the International Accounting Standards Committee (IASC) issued IAS 1 *Presentation of Financial Statements*. The revised IAS 1 in 2003 requires reporting of comprehensive income, and states that OCI should be reported in a statement of total comprehensive income or another OCI statement. In IAS1, OCI is defined as items of income and expenses (including reclassification adjustments) that are not recognized in profit or loss

as required or permitted by other IFRSs (IAS1, par.7).[59] 'Reclassification adjustments are amount reclassified to profit or loss in the current period that were recognized in other comprehensive income in the current or previous period (IAS1, par.7). 'Reclassification adjustments' and 'recycling' have the same meaning, but 'recycling' is used here because of its familiarity. OCI is basically calculated as the portion of the change in net assets (excluding capital transactions) that is not included in net income during an accounting period. Accounting standards enumerate specific examples of OCI items. OCIR, reported as earnings without the change in net assets, used to be comprehensive income based on the change in net assets in the past. At first recognition, the designated gain or loss in the standard is included as a component of OCI, and when recycled, the gain or loss is included in the earnings that influence net income. OCI includes items that can eventually be transferred to profit or loss and items that cannot be transferred to profit or loss until the end, in accordance with other IFRS provisions. The statement of comprehensive income must show what can and cannot be recycled separately (IAS1, 82A).

OCI items have changed over time. Initially, the mark-to-market difference of available-for-sales financial assets (AFS) is classified as OCI and then recognized as profit when profit is realized upon the sale of the financial assets. IAS 1 in the 2003 edition permitted or required the recognition of certain profits directly in equity (changes in a revaluation surplus (IAS 16) and defined benefit pension plan (IAS 19)), and recycling of OCI (sale of financial assets (IAS 39) and foreign currency translation (IAS 21)). However, the IASB is critical towards OCIR (IASB, 2005) because the profit or loss component should be recorded only once in total comprehensive income. In 2006, the IASB's exposure draft of the proposed amendments to IASB 1 indicated that reclassification would be prohibited (IASB, 2006). Since the amendment of IAS 1 in 2007, the IASB has set up a discussion paper seeking broad comments on whether OCI items should be presented in the income statement by way of recycling or an OCI statement. Based on these discussions, the 2011 version of IAS 1 allows recycling gains and losses on foreign currency translation (FX), AFS securities, and cash flow hedges (CFH; IASB2011 IAS1, par. 95) while prohibiting recycling gains and losses on revaluation surplus (REV) and changes and actuarial gains or losses of defined benefit pension plans (DBP; IASB2011 IAS1, par. 96). Furthermore, the current IFRS 9 *Financial Instruments* puts more

[59] Other comprehensive income includes the following items (IAS1, par.7), such as (a) changes in revaluation surplus relating to tangible property, plant and equipment, and intangible assets; (b) re-measurement of defined benefit plans for retirement benefits; (c) gains and losses arising from translating the financial statements of a foreign operation; (d) gains and losses arising from investments in equity instruments designated at fair value through other comprehensive income in accordance with paragraph 5.7.5 of IFRS 9 Financial Instruments; (d) gains and losses on financial assets measured at fair value through other comprehensive income in accordance with paragraph 4.1.2A of IFRS 9; (e) the effective portion of gains and losses on hedging instruments in a cash flow hedge; (f) for particular liabilities designated as at fair value of options when separating the intrinsic value and time value of an option contract and designating as a hedging instrument only the change in the intrinsic value; (g) changes in the time value of options; and (h) changes in the value of forward contracts and changes in the value of foreign currency-based spreads on financial instruments.

restrictions on OCIR, adding specific AFS to be prohibited. IFRS 9 does not allow OCIR for equity investments financial assets measured at fair value through other comprehensive income (FVTOCI), or where the fair value option has been exercised in any circumstance for a financial asset or financial liability (IASB 2014, IFRS 9, par. 4.4.1). Furthermore, in accordance with IFRS 9, OCIR does not arise if a cash flow hedge or the accounting for the time value of an option results in amounts that are removed from the cash flow hedge reserve or a separate component of equity (IASB2014, IAS1, par. 96). There are major restrictions on the OCI items that can be recycled under IFRS, and they are significantly different from the Japanese standard that insists on fully recycled OCI items with no exceptions. This significant difference in regulations for OCIR leads to expectations that firms applying IFRS will suppress earnings management using OCIR.

2.2. OCI Regulation in J-GAAP

Japan has traditionally valued historical accounting system. The conceptual framework issued by ASBJ in 2006 (ASBJ 2006) emphasizes that the main component of the financial statement is 'net income' (ASBJ 2006, Ch.3 par.18). Japan emphasizes net income because it is the most value-relevant earnings measurement in the Japanese Conceptual Framework (J-FW) since net income reflects the result of investments through the realization concept (ASBJ 2006, Ch1 par.3; Ch.3 par.9). If income is reported before it is realized, this means that the investment has not produced a result yet, thus conveying uncertain information to investors about firms' performance. Regarding the treatment of net income, the concept of earnings realization still deeply dominates accounting practice in Japan, despite convergence with international accounting standards. This peculiar Japanese accounting philosophy influences the elements of financial statements and the form of the income statement as well. First, comprehensive income (CI) is at the lowest position in J-FW. The purpose of the CI in J-FW is twofold: (1) harmonization of international FW and (2) its harmlessness. CI in J-FW, provided merely as a supplement to net income, makes J-FW more global on the surface and serves as a potential earnings measurement that may turn out to be useful in the future (ASBJ 2006, Ch.3 par.22). Second, the treatment of OCI recycling is exceedingly significant in J-FW because of the prominent position of net income. As long as net income is at the highest position in J-FW, OCI recycling is considered essential for calculating the results of investment adequately through realization and for keeping the 'clean-surplus relationship' between net income and owners' equity (ASBJ 2006, Ch.1 par.3, and Ch.3 pars.9,12). Therefore, there is no exceptional OCI recycling treatment; all OCI items must be recycled whenever investment is realized.

In 2010, Japan finally accepted the regulation of CI as a GAAP and issued '*ASBJ Statement No.25 Accounting Standard for Presentation of Comprehensive Income* (ASBJ,

2010)'. Unlike US GAAP and IFRS, Japan is not very positive in introducing accounting standards for CI, as mentioned in the J-FW above. The purpose of the CI standard in Japan is to respond to the convergence project (ASBJ 2010, par.20). Furthermore, the position of CI in this standard is to achieve another 'clean-surplus relationship' between CI and net assets and provide useful information to users as complementary information to net income (ASBJ 2010, par.21).

Japan's relentless commitment to full recycling is reflected in the Japanese version of the revised IFRS. Japan's modified IFRS, officially called Japan's Modified International Standards (JMIS), refers to the IFRS in which Japan has some exceptions, mainly the presentation of net income, application of compulsory OCI recycling, and goodwill amortization.[60] Japan claims that OCI recycling can consistently represent the cumulative net income and cumulative net cash flow of a firm during its operating period (ASBJ, 2015a). Eventually, OCI recycling enhances the usefulness of income statement information as an overall indicator of business performance (ASBJ, 2015b). Therefore, OCI recycling is an iconic accounting procedure that reflects the characteristic of Japanese GAAP, that is, 'net income is the most important accounting measurement in the financial statement.'

2.3. Prior Research on OCI Recycling

There is limited empirical research on the relationship between OCIR and earnings management. As an early study, Hirst and Hopkins (1998) show that by clearly displaying comprehensive income and its components in a separate income statement, earnings management became more transparent for outsiders, which allows analysts to process AFS securities-related information and use it correctly in their valuations. For analysts who are unaware of earnings management using AFS securities, evidence indicates that they overlook lower reporting quality and lower prospects for future performance. However, specific earnings-based benchmarks are not the primary objective of their study. Jones and Smith (2011) argue that managers' discretion over investment choices and the timing of realization encourage earnings management concerns regarding OCIR. Graham et al. (2005) conduct a survey in the United States on whether respondents consider the benefits of selling investments and other assets to meet or beat prior year's earnings, and find that 20.2 percent of CFOs either 'agree' or 'strongly disagree.' This result indicates that managers are motivated to engage in earnings management using OCIR. Lee et al. (2006) reveal that U.S. insurance company managers engage in 'cherry-picking' to timely coordinate the realization of security gains or losses to manage earnings. Barth et al. (2014) provide further supporting evidence for this finding. They reveal that U.S. banks engage in income smoothing and big bath accounting

[60] Japan insists on goodwill amortisation because it is suitable for the historical cost accounting system and consistent with cost allocation and the matching principle (ASBJ 2003, No.21, par.105).

through the sale of AFS securities.

The abovementioned previous studies mainly deal with the sale of AFS financial assets as a means of OCIR. Another relevant area is cash flow hedge accounting. If an asset or liability is recognized as a result of a hedging transaction, the manager has the discretion to recycle once recognized hedge gain or loss as a tool of reclassification adjustment from the OCI statement to the income statement. Chiorean et al. (2017) examine whether U.S. firms engage in OCIR earnings management using cash flow hedge accounting. Their findings reveal that managers opportunistically reclassify the OCI of cash flow hedges and strategically designate and de-designate derivatives in cash flow hedges to achieve earnings benchmarks such as analysts' forecasts, prior period return on assets (ROA), and zero earnings in the current period. Furthermore, they find that adopting the revised standard (ASU 2011-05) regarding OCIR does not eliminate earnings management but reduces it significantly. Arthur et al. (2017), based on a sample of Australian firms, find that there is a positive link between OCIRs that increase revenue and meeting or exceeding both last year's revenue and analyst forecasts. However, there is no evidence of using OCIR to avoid losses. In addition, they show that companies whose OCIR-managed earnings far exceed revenue benchmarks used OCIRs to reduce earnings. This is consistent with the income smoothing hypothesis. Finally, they suggest that OCIR and discretionary accrual complement each other rather than compete with each other, providing additional evidence of a significant positive association between OCIR and discretionary accruals.

Rees and Shane (2012) examine whether the demand for OCIR stems from the importance of EPS calculations. If investors emphasize EPS based on net income, and OCIR recognizes all realized cumulative transactions through OCI in the net income, EPS will be calculated more favorably than without OCIR (Rees and Shane, 2012). As long as net income is highlighted in the income statement, OCIR keeps net income a key performance indicator (Detzen, 2016). However, Frendy and Semba (2016) investigate the usefulness of OCI recycling in Japan and reveal that unlike ASBJ's expectations that recycling enhances the usefulness of net income, the inclusion of recycling reduces sustainability and increases net income volatility.

3. Hypothesis Development

Following the research structure of Arthur et al. (2017), I analyze whether OCIR is associated with meeting or beating the benchmark measures and whether OCIR is associated with income smoothing or big bath behavior in the J-GAAP context. In addition, I compare IFRS firms to J-GAAP firms in terms of whether the strict regulation for OCIR under IFRS can successfully prevent earnings management using OCIR. In accordance with Arthur et al. (2017), I develop hypotheses concerning benchmarks, income smoothing, and big bath accounting.

3.1. Meeting or Beating Zero Earnings

Arthur et al. (2017) state that psychologically, negative numbers are more difficult to interpret than positive numbers; the natural behavior of avoiding losses is explained by human psychological influences (Barrow, 1992; Patel and Zeckhauser, 1999). Past earnings management studies have shown evidence of near-zero discontinuity in the earnings distribution. There are firms with small positive earnings distributed at an unusually high frequency and an unusually low distribution for firms with small negative earnings (e.g., Burgstahler and Dichev, 1997; Degeorge et al., 1999; Hayn, 1995). Hayn (1995) indicates that a significant difference between the observations just above and below zero implies earnings management behavior that helps to reveal loss-making firms across the 'red line.' However, he does not specify exactly how this benchmark can be achieved. Extending this early study, Burgstahler and Dichev (1997) and Degeorge et al. (1999) examine meeting or beating prior-year earnings and analysts' forecasts as earning-based benchmarks. They conclude that the main goal of U.S. managers is to meet or beat zero earnings. In Japan, Suda et al. (2006) investigate earnings distribution and reveal that Japanese firms also engage in earnings management to avoid reducing gains and losses.

Other U.S. studies investigate whether the impact of benchmarks could be due to earnings management. Some studies explain that discontinuities are caused by other factors such as sample selection bias, such as an income scaling mechanism, and the effects of income taxes, which indicates that future studies should be considered when interpreting the earnings discontinuity in the context of earnings management (Beaver et al., 2007; Durtschi and Easton, 2005). Many previous studies show that managers tend to reach the break-even point using discretionary transitory earnings elements or special items (e.g., Collins et al., 1995; Givoly and Hayn, 1992; Marquardt and Wiedman, 2004). Marquardt and Wiedman (2004) show that companies that avoid zero returns tend to be extremely under-reported for unexpected negative special items. This evidence further suggests that firms treat a special item (i.e., gain or loss that differs from operating income) as an earnings management tool. Meeting or beating zero earnings is considered one of the most important earnings-based benchmarks in the accounting literature (Burgstahler and Dichev 1997; Degeorge et al., 1999; Hayn, 1995). Since OCI has the nature of the loss or gain similar to special items, it leads to the following hypothesis that firms realize the gains of OCI items to avoid losses as described above, given that OCIR may facilitate managers the opportunity to achieve this benchmark.

H1a: The use of positive OCI recycling increases the likelihood of meeting or beating zero earnings.

3.2. Meeting or Beating Prior Year's Earnings

Another possible earnings-based benchmark is meeting or beating a prior year's earnings (Burgstahler and Dichev, 1997; Degeorge et al., 1999), which is a heuristic cut-off for zero earnings changes and an index that allows a reasonable comparison for management evaluations (Graham et al., 2005; Marquardt and Wiedman, 2004). Generally, managers believe that if their firm misses targets, the market will punish the firm (Graham et al., 2005). Another evidence reveals that investors are interested in whether managers outperform the previous year's earnings when assessing firms' value (Beatty et al., 2002), suggesting capital market incentives. Therefore, managers may engage in earnings management to avoid a negative impact on the company's stock price.

The concept of OCI is arguably difficult to interpret because of the complexity associated with an OCI item's components, such that nonprofessional investors generally tend to ignore comprehensive income much less use it (Durocher and Fortin, 2015). Tarca et al. (2008) conduct experiments with financial analysts and professional accountants as professional users and MBA students as non-professionals. They obtain evidence that OCIR further complicates OCI descriptions, and non-recycling is easier to understand for all sophisticated levels of users to extract and interpret OCI information. When analysts and investors do not have a clear understanding of OCIR rules and related accounting standards, earnings management behavior using OCIR is more difficult to detect externally (PwC, 2012). This provides insiders a means for earnings management.

Prior literature shows that compared with private U.S. banks, public U.S. banks are unlikely to report a slight decrease in earnings through the use of public banks' discretionary provisions for loan loss provisions and the recognition of securities gains and losses (Beatty et al., 2002). This implies that some of the OCI items (AFS securities) could be used to achieve or exceed the prior year's earnings. There is a relationship between avoiding declines in earnings and OCIR, which leads to the following hypothesis:

H1b: The use of positive OCI recycling increases the likelihood of meeting or beating a prior year's earnings.

3.3. Meeting or Beating Managers' forecasts

In the United States, researchers use analyst forecasts as earnings-based benchmarks because of their popularity and importance, and studies show that meeting or beating analyst forecasts are important goals (Carvajal et al., 2015; Chu et al., 2015; Herrmann et al., 2011). U.S. managers also use accruals to increase earnings and exceed analyst expectations (Callao and Jarne, 2006; Barua et al., 2015; Matsumoto, 2002).

In addition to analysts' forecasts, managers' forecasts are a mandatory disclosure for listed firms in Japan. Ota (2002) reveals that in Japan, managers' forecasts are more valued than analyst's forecasts. Ota (2011) also shows that analyst forecasts, published after managers' forecasts, are biased by managers' forecasts. Considering the discussion above and the finding that OCIR provides managers with the opportunity to manage earnings, the following hypothesis is proposed:

H1c: Positive OCI recycling increases the likelihood of meeting or beating managers' forecasts.

3.4. Income Smoothing

While Buckmaster (2001) simply explains that income smoothing occurs when managers what to reduce the volatility of reported earnings using acceptable accounting methods, Fudenberg and Tirole (1995) define income smoothing as 'the process of manipulating the time profile of earnings or earnings reports to make the reported income stream less variable, while not increasing reported earnings over the long run.' Earnings smoothness, where managers opportunistically smoothed out reported income to provide a stable earnings stream by allocating intertemporal gains and losses, was once considered a form of earnings management (Beidleman, 1973). For example, Healy (1985) reveals that managers opportunistically smooth income in an attempt to garble earnings for executive compensation. Several studies document that earnings smoothness is associated with the determinants of low earnings quality such as low-quality country GAAP, less enforcement, or weak shareholder rights (Leuz et al., 2003; Lang et al., 2006; Francis and Wang, 2008). However, investors might consider smoothed earnings as less risky and as facilitating earnings forecasts. Income smoothing reduces firms' cost of capital because investors view such firms as having stable returns and lower risk (Graham et al., 2005; Trueman and Titman, 1988). In addition, analysts and other stakeholders have difficulty in predicting the earnings of firms that have large positive or negative earnings surprises. As such, consistently smoothed earnings trends increase the predictability of firms' earnings (Kirschenheiter and Melumad, 2002). A smoothed earnings trend is supported by the fact that earnings stability is positively related to the stock price, which leads to an increase in shareholder wealth (Yang and Zhu, 2014). Moreover, previous studies reveal that through income smoothing, managers deliver positive information about a firm's future earnings; thus, there is a positive relationship between levels of earnings and stock market responses (Davis and Lewis, 1995; Ronen and Sadan, 1981; Tucker and Zarowin, 2006). Therefore, earnings smoothness signifies earnings quality, assuming that managers achieve representative and useful earnings figures to project future profitability (Francis et al., 2004). Moreover, smoothed earnings can benefit both investors and enterprises if managers want to avoid breaching debt

contracts (Carlson and Bathala, 1997).

Prior research shows that management primarily uses accruals and actual earnings management, but there is some evidence that OCIR is used to manage earnings. Beaver et al. (2003) find that the most profitable firms exaggerate their loss reserves significantly, stating that this provides evidence of income smoothing. Lee et al. (2006) provide evidence that managers in U.S. property-liability insurance firms manage earnings through the discretionary realization of profits or losses on AFS financial assets. Moreover, Barth et al. (2014) report that a sample of U.S.-listed banks engage in income smoothing by increasing the loss of AFS financial assets when pre-managed earnings are sufficiently large. While previous studies focused on specific OCI items (Barth et al., 2014; Lee et al., 2006; Chiorean et al., 2017), I focus on all OCI components from different industries in the Japanese context.

As mentioned above, complexity remains in all components of OCI items, which creates an opportunity for income smoothing. Following Bath et al. (2014) and Arthur et al. (2017), this study argues that firms with negative (positive) income managed by OCI realize more profit (loss) in OCI items, as expressed in the following hypothesis:

H2: The level of OCI recycling is negatively related to pre-OCI-managed earnings levels.

3.5. Big Bath Accounting

Kinney and Trezevant (1997) show that when a firm suffers an irreversible loss, the market reaction is not much different from slightly or significantly overlooking the target; therefore, managers prefer to make the loss even worse. The perception is that if the results are poor, worsening the results by 'cleaning up the table' does not further harm the firms' reputation. Firms taking a big bath are likely to achieve significant future earnings growth through 'inter-period transfer' (Burgstahler et al., 2002) and restructuring (Cready et al., 2012), with future prospects perceived by investors as low risk. Thus, big bath accounting brings benefits to both firms and managers (Jordan and Clark, 2011). Watts and Zimmerman (1986) also indicate that managers have an incentive to take a big bath to further reduce current earnings during periods when managers are not eligible to receive bonuses, thereby increasing the likelihood of future bonuses. In the long run, pursuing the maximum bonus fits with the firm's best interests; thus, managers are motivated to engage in earnings management.

Regarding big bath accounting, empirical studies indicate that managers manage earnings through discretionary accruals and real earnings management (Kinney and Trezevant, 1997; Velury and Kane, 2012). Levitt (1998) states that when a company decides to reorganize, it typically incurs significant restructuring costs, allowing it to 'clean up' its balance sheet. This is also considered a big bath accounting. Jordan and Clark (2011) reveal that SFAS No. 142,

which requires yearly testing of goodwill impairment, encourages managers to implement big bath strategies through significant impairment of goodwill. Barth et al. (2014) find evidence that banks with negative earnings realize losses by selling AFS to take a big bath when they do not have enough accumulated unrealized gains that offset negative earnings. Considering the complexity of OCIR, prior literature likely has not sufficiently revealed all OCI items. I expect similar incentives for earnings management across industries when pre-managed income is below zero. Thus, the following hypothesis is proposed:

H3: The level of OCI recycling is positively related to negative pre-OCI-managed earnings.

For the earnings smoothing hypothesis, the relationship between pre-managed earnings and OCIR is expected to be negative, assuming that profits and losses offset each other. For the big bath hypothesis (H3), it is expected to be positive, assuming that the pre-management earnings are negative and the income-decreasing OCIR promotes even larger losses.

3.6. The Effect of Adopting IFRS on OCIR

In a previous study comparing accounting amounts based on IFRS and national standards, Barth et al. (2008) find that the accounting quality of firms using IFRS in countries other than the United States is generally higher than that of firms using local accounting standards. Besides, Barth et al. (2012) also reveal that IFRS adoption by non-US firms helps improve accounting systems and enhances value relevance and comparability of reports with US firms. OCIR is strictly restricted under IFRS, differing in the (1) actuarial gains or loss on defined benefit pension plan (DBP) and (2) equity investment financial assets measured at FVTOCI. As such, compared with J-GAAP firms, IFRS firms are unlikely to engage in earnings management using OCIR. The fourth hypothesis is as follows:

H4: IFRS firms do not engage in earnings management using OCI recycling.

4. Research Design

4.1. Models for Meeting or Beating Prior Year's Earnings

Following Arthur et al. (2017), the basic functional form of meet or beat models to test H1a, 1b, and 1c are as follows:

$$MBZE_{i,t} = \alpha_0 + \alpha_1(D\_POCIR)_{i,t} + \alpha_2 Controls_{it} + \varepsilon_t \ldots(1)$$

$$MBPY_{i,t} = \beta_0 + \beta_1(D\_POCIR)_{i,t} + \beta_2 Controls_{it} + \vartheta_t \ldots(2)$$

$$MBMF_{i,t} = \gamma_0 + \gamma_1(D\_POCIR)_{i,t} + \gamma_2 Controls_{it} + \mu_t \ldots(3)$$

The analysis using this model assumes that firms are more likely to be involved in earnings management if their earnings are positive (Davis et al., 2007). First, I set a binary variable *MBZE* denoting 'Meet or Beat Zero Earnings,' which equals 1 if a firm whose net income scaled by total assets at the beginning of the year distributes just above zero and the difference between net income and zero is within five percent,[61] a 'suspected' firm barely avoiding losses, and is zero otherwise to narrow down the target firms.

Second, to measure whether a firm meets or beats prior year's earnings, this study simply uses as a proxy the difference between current and previous years' earnings scaled by total assets at the beginning of the year. A change greater than zero (positive sign) signifies meeting or beating prior year's earnings. I use a binary variable *MBPY* denoting 'Meets and Beats Prior Year's Earnings,' which equals 1 if the change in earnings divided by total assets is greater than zero and the difference between current earnings and prior earnings is within one percent, and zero otherwise.[62] Regarding the types of income compared here, J-GAAP has stepwise earnings in the income statement—operating, ordinary, and net income. The impact of recycled earnings differs according to the type of OCI item. DBP influences operating income because retirement benefit expenses are operating expenses. AFS, CFH, and OCIR using the equity method for affiliated firms affect ordinary income. If the gains and losses from OCIR are unusual, they are treated as special items under J-GAAP. By contrast, recyclable OCI items under IFRS influence either operating income or net income, depending on the firm because of IFRS flexibility (no specific standard). Therefore, I set operating, ordinary, and net income under J-GAAP and operating and net income under IFRS to compare earnings for *MBPY*.

Third, I use a binary variable *MBMF* denoting 'Meets or Beats Managers' Forecasts,' which equals 1 when the forecast error is greater than zero and the difference between current

[61] If I do not narrow the "Meet or Beat Zero Earnings" firms which means the income is above 0, I obtain the number of *MBZE* (=1) is 8,310 to the total number of J-GAAP sample 8,806. In this case, most of the firms sample that meet or beat zero earnings would be used for this analysis. When I use 5 percent threshold to narrow down the suspected firms, the number of *MBZE* (=1) is 886 to 8,806. However, there is no specific reason why I should use 5 percent to narrow down the suspective firms in this study. This is one of the limitations of this study.

[62] The number of *MBPY* (=1) is 532 to 8,806 when I use 1 percent threshold to narrow down the suspective firms. However, this method is also a limitation of this study because of the lack of a reason.

earnings and the managers' forecasts is within five percent, and zero otherwise.[63] Forecast error is calculated as the difference between actual earnings and the latest managers' earnings forecasts, including operating, ordinary, and net income, and EPS.[64] The latest forecasts are the most accurate and often the target of earnings management; the closer they are to the announcement date, the more informative (Habib and Hossain, 2008). Therefore, I use the latest manager's forecasts. If a firm's actual earnings equals or exceeds managers' forecasts, it is classified into the 'Meets or Beats Managers' Forecasts' (*MBMF*) group. In addition, I set various managers' forecasts for operating, ordinary, and net income, and EPS because a variety of managers' forecasts are available in Japan. Considering the different impacts on stepwise earnings based on the type of OCI items, I compare operating, ordinary, and net income, and EPS as managers' forecasts.

Because the dependent variables of the meet or beat model are binary (*MBZE*, *MBPY*, and *MBMF*), logistic regression is applied. Using panel data, I implement fixed-effects logistic regression and also include year and industry effects. Using binary independent variables in the said model in the event that firms recognize income-increasing OCI to increase earnings to meet or beat earnings benchmarks, I employ a binary independent variable indicating a positive OCIR (*D_POCIR*), which equals 1 if OCIR is greater than zero and zero otherwise. Following Arthur et al. (2017), to test Hypotheses 1a, 1b, and 1c, the following logistic regressions are estimated:

$$MBZE_{i,t} = \alpha_0 + \alpha_1(D\_POCIR)_{i,t} + \alpha_2 BTM_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 \Delta OCF_{i,t} + \alpha_6 VOL_{i,t} + \alpha_7 ACMOCI_{i,t} + \varepsilon_t \ldots (1)$$

$$MBPY_{i,t} = \beta_0 + \beta_1(D\_POCIR)_{i,t} + \beta_2 BTM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 \Delta OCF_{i,t} + \beta_6 VOL_{i,t} + \beta_7 ACMOCI_{i,t} + \vartheta_t \ldots (2)$$

$$MBMF_{i,t} = \gamma_0 + \gamma_1(D\_POCIR)_{i,t} + \gamma_2 MB_{i,t} + \gamma_3 SIZE_{i,t} + \gamma_4 LEV_{i,t} + \gamma_5 \Delta OCF_{i,t} + \gamma_6 VOL_{i,t} + \gamma_7 ACMOCI_{i,t} + \mu_t \ldots (3)$$

The dependent variable, *MBPY*, basically compares net income (*MBPY_NI*) under both J-GAAP and IFRS. I also use various dependent variables, including operating income (*MBPY_OP*) and ordinary income (*MBPY_OR*) under J-GAAP, and *MBPY_OP* under IFRS because the impact of recycled earnings differs based on the type of OCI items. Similarly, the dependent variable, *MBMF*, also includes net income (*MBMF_NI*), operating income (*MBMF_OP*), ordinary income (*MBMF_OR*), and EPS (*MBMF_EPS*) under J-GAAP, or

[63] The number of *MBMF* (=1) is 891 to 8,806 when I use 5 percent threshold to narrow down the suspective firms. However, this method is also a limitation of this study because of the lack of a specific reason.
[64] However, there is no ordinary income under IFRS. Operating income, net income, and EPS are available for IFRS firms in this study.

MBMF_NI, *MBMF_OP*, and *MBMF_EPS* under IFRS. Proxies used in this study for controlling other earnings management opportunities include book to market ratio (*BTM*), firm size (*SIZE*), change of operating cash flow (*ΔOCF*), leverage (*LEV*), market volatility (*VOL*), and accumulated OCI beginning of the year (*ACMOCI*).

The book to market ratio (*BTM*) controls for the firm's growth opportunities, which may affect earnings management behavior (Skinner and Sloan, 2002; Gunny, 2010; Bartov et al., 2002). To control for political costs, I use the control variable *SIZE*, which is measured as the natural log of a company's market capitalization at the beginning of the year (Watts and Zimmerman, 1978; Gunny, 2010; Payne, 2008). The natural log of market capitalization is used to remove any skewness that may be associated with a firm's market value. Leverage (*LEV*) is set based on previous findings that firms have incentives to manage earnings to avoid debt violations and deterioration of debt ratings (Bowen et al., 2008). Another study also suggests that highly leveraged firms are likely to meet or beat analyst expectations (Davis et al., 2007). The change of operating cash flow (*ΔOCF*) measurements are included in the meet or beat model based on the significant relationship between high cash flow levels and earnings management opportunities (Bowen et al., 2008; Minutti–Meza, 2013). Market volatility (*VOL)* is a measure of volatility with regard to firm and asset values, calculated as the average annual price movement from average to high and low. Prior research indicates that the higher the volatility, the more difficult it is for managers to predict future performance (e.g., Lim, 2001; Duru and Reeb, 2002; Givoly et al., 2009). Therefore, higher volatility representing a higher risk in a firm may increase the probability of earnings management. Finally, since OCI items are initially retained in the statement of financial position as cumulative OCI and then classified as earnings after recycling, firms with large accumulated OCI have a better chance of using OCIR to achieve benchmarks. Therefore, the amount of OCI accumulated at the beginning of the year (*ACMOCI*) is expected to be positively related to meeting or beating the benchmarks in this context.

I perform hypothesis testing using three meet or beat models: zero earnings, prior year earnings, and managers' forecasts. The dependent variable represents firms that achieve or miss various benchmarks. If the coefficient of *D_OCIP* ($\alpha 1, \beta 1, \gamma 1$) is positive and significant, this indicates that income-increasing OCIR is associated with meeting or beating benchmarks, supporting hypotheses 1a to 1c.

4.2. Models for Income Smoothing and Big Bath Accounting

Bath et al. (2014) argues that when net income is negatively related to realized gains or losses on AFS securities, evidence indicates that income smoothing is conducted. Following

Bath et al. (2014) and Arthur et al. (2017), I test the income smoothing hypothesis by examining the relationship between OCIR and net income before OCIR. Previous studies, such as Walsh (1991), Kirschenheiter and Melumad (2002), and Jordan and Clark (2011), show that big baths tend to happen throughout the year and reduce earnings. Therefore, investigating the relationship between OCIR and negative net income before OCIR enables me to consider whether the manager adopts big bath accounting with negative OCIR. The fixed effect regressions (testing H2 and H3) to be estimated and employed are as follows:

$$OCIR_{i,t} = \delta_0 + \delta_1 PTNI_{i,t} + \delta_2 IROA_{i,t} + \delta_3 SIZE_{i,t} + \delta_4 LEV_{i,t} + \delta_5 OCF_{i,t} + \delta_6 ACMOCI_{i,t} + \delta_7 MB_{i,t} + \delta_8 TAX_{i,t} + \delta_9 QRATIO_{i,t} + \delta_{10} RED_{i,t} + \delta_{11} COM_{i,t} + \tau_t \ldots (4)$$

$$OCIR_{i,t} = \theta_0 + \theta_1 D\_PNI_{i,t} + \theta_2 P\_NI_{i,t} + \theta_3 N\_NI_{i,t} + \theta_4 IROA_{i,t} + \theta_5 SIZE_{i,t} + \theta_6 LEV_{i,t} + \theta_7 OCF_{i,t} + \theta_8 ACMOCI_{i,t} + \theta_9 MB_{i,t} + \theta_{10} TAX_{i,t} + \theta_{11} QRATIO_{i,t} + \theta_{12} RED_{i,t} + \theta_{13} COM_{i,t} + \varphi_t \ldots (5)$$

$$NOCIR_{i,t} = \rho_0 + \rho_1 N\_NI_{i,t} + \rho_2 IROA_{i,t} + \rho_5 SIZE_{i,t} + \rho_6 LEV_{i,t} + \rho_7 OCF_{i,t} + \rho_8 ACMOCI_{i,t} + \rho_9 MB_{i,t} + \rho_{10} TAX_{i,t} + \rho_{11} QRATIO_{i,t} + \rho_{12} RED_{i,t} + \rho_{13} COM_{i,t} + \omega_t \ldots (6)$$

These models refer to Arthur et al. (2017). As the dependent variables in the income smoothing and big bath models are continuous variables, fixed effect regressions are implemented on a pooled sample because the individuality of each firm is completely eliminated in the calculation of the fixed effect estimation in the case of pooling regression analysis using panel data. To avoid mechanical correlations between pre-recycled net income (PRNI) and ROA, I use the difference between the firm's ROA and adjusted ROA by its industry median (*IROA*). The median of industry returns on assets, which measures the profitability of the industry to which a firm belongs, is included to control for industry-specific performance and macroeconomic factors, and it is a proxy for the average profitability of firms. Bartov et al. (2002) and Minutti–Meza (2013) show a significant relationship between higher ROA and meeting or beating analysts' forecasts. For the meet and beat models above, I designate leverage (*LEV*), operating cash flow (*OCF*), market to book ratio (*MB*), firm size (*SIZE*), and accumulated OCI at the beginning of the year (*ACMOCI*) as control variables. Besides, I also include a quick ratio (*QRATIO*) as a control variable based on the evidence regarding financial structure and liquidity that there is a significant and positive relation between firm liquidity and OCIR (Barth et al., 2014). I set tax expenses (*TAX)* to control for tax incentives because managers might sell assets to reduce tax expenses. Dividends from retained earnings (*RED*) and management compensation (*COM*) are included to control both motivations because OCIR increases current net income.

In Equation (4), the sign of the coefficient on *PRNI* is predicted to be negative if

supporting income smoothing or positive if supporting the big bath hypothesis. Equation (5) simultaneously tests the earnings smoothing (H2) and big bath (H3) hypotheses, focusing on the coefficients for positive and negative pre-management earnings, respectively. A significant negative coefficient for *P_NI* means that the OCIR signs are contrary to the pre-management income and offset each other's earnings, thereby supporting the income smoothing hypothesis (H2). Meanwhile, a positive significant coefficient of *N_NI* means that the OCIR is positively associated with negative net income, thereby supporting the big bath hypothesis (H3). Equation (6) is modeled specifically to test directly big bath behavior using negative *PRNI* and income-decreasing OCIR, expecting coefficient ρ_1 to be positive to support H3.

All variables (see Appendix A) are scaled by the total assets at the beginning of the year (except for indicator variables) and winsorized by industry at the one and 99 percent levels to minimize the influence of any potential outliers. The estimated coefficients for each variable are robust *t*-statistics based on standard errors clustered at the firm level and fiscal year. Since I use panel data in this study, controlling for fixed effects is crucial. The year- and industry-fixed effects are included in the results. To control for firm-specific effects, the 'Hausman test' is necessary (Hausman et al., 1981). This test is undertaken to establish which model between a random effect model and a fixed-effects model is more suitable for the panel data. The result of the Hausman test favors the fixed effects model; thus, it is adopted in the panel datasets to deal with correlated omitted variables.[65]

5. Sample Selection Descriptive Statistics

My sample consists of 9,353 firm-year observations representing 1,343 firms that adopt J-GAAP or IFRS from 2011 to 2019 in Japan because Japan has adopted the OCI accounting standard under J-GAAP since 2011. I use the NEEDS-FinancialQUEST Nikkei databases to obtain financial statement data. I exclude financial business firms such as banks, securities, insurance, and other financial firms because they have a substantially different financial reporting framework. I delete observations whose fiscal periods are not equal to twelve months and observations with missing data. I also drop the firm-observation whose accumulated OCI on the financial position statement at the beginning of the year is zero because there is no chance to reclassify OCI items without it. Moreover, firm size can affect the quality of earnings (Ball and Foster, 1982; Doyle et al., 2007). Therefore, firms that apply IFRS are considered to be relatively large; thus, firms with total assets of less than 500 million USD are deleted in this study. In the sample, 8,806 observations (1,222 firms) are J-GAAP firms, and 547 observations (73 firms) are IFRS firms. Table 1 provides the sample selection. Table 2 presents the composition of the industry classification based on the Nikkei-Middle-Industry Classification

[65] The greatest merit of the fixed-effect model is that the individual (firm) effect, which cannot be made a variable, does not affect the estimated value because the individuality of each firm is completely eliminated in the calculation of the fixed effect estimation. In pooling regression analysis using panel data, the estimates are far from appropriate because the unobserved heterogeneity biases the estimates.

codes.

[Insert Table 1 here]

[Insert Table 2 here]

Table 3 shows the descriptive statistics for each of the J-GAAP and IFRS explanatory variables, including mean, median, standard deviation, minimum, and maximum. The mean *MBZE* is 0.1006 under J-GAAP (0.0475 under IFRS), implying that firms adopting under J-GAAP are more densely distributed near-zero earnings. The mean of meeting or beating prior-year (*MBPY*) for stepwise earnings between under J-GAAP and IFRS is similar, implying both standards firms are interested in the prior earnings as benchmarks. The higher ratio of meeting or beating managers' forecasts under IFRS indicates that it is more sensitive benchmarks for IFRS firms to meet or beat managers' forecasts due to the global firms. The average of OCIR under IFRS is higher than J-GAAP indicates that firms under IFRS have more opportunity to reclassify OIC items even with the OCIR restrictions under IFRS. The mean of *D_OCIP* is 0.3924 under J-GAAP (0.3144 under IFRS), which implies that 40 percent (32 percent) of firm-year observations use positive OCIR. The difference between the median of industry ROA and firm ROA (*IROA*), *MB*, and *OCF* show that the observed sample has positive profitability, higher market price compared to book value, and positive cash flows on average consistent to Arthur et al. (2017).

[Insert Table 3 here]

Before showing the results of the regressions, the Pearson correlation matrix for the dependent and explanatory variables is reported in Table 4. Panel A shows variables under the hypothesis 1a to 1c while Panel B under the hypothesis 2 and 3. The upper (lower) row presents a Pearson correlation matrix under IFRS (J-GAAP). I test the variance inflation factor (VIF) as an index to detect multicollinearity between independent variables. The VIF in all models is less than 10, suggesting that there is no collinearity problem.

[Insert Table 4 here]

6. Regression Results

The following sections report and analyze the results of the fixed-effect regression for testing the hypotheses. Table 5 presents the results of the fixed-effect logit regression for the meet or beat hypotheses (H1a to H1c). Panel A (B) presents J-GAAP (IFRS). Additionally, Table 6 indicates the results of the fixed-effect regressions for the income smoothing and big bath hypotheses (H2 and H3) under both J-GAAP and IFRS.

H1a, H1b, and H1c propose that income-increasing OCIR is used by managers to achieve earnings benchmarks. Hypotheses 1a, 1b, and 1c are supported if the coefficient for dummy independent variables, *D_POCI*, is positive, as firms with positive OCIR are more likely to achieve earnings benchmarks. Except for regarding net income benchmarks such as *MBPY_NI*, *MBMF_NI*, and *MBMF_EPS* under J-GAAP, the results show that all coefficients for *D_POCI* are positively significant under J-GAAP, supporting hypotheses 1a, 1b, and 1c. Meanwhile, there is no significant result under IFRS, except for meeting or beating prior year net income (*MBPY_NI*), suggesting that the results are not sufficient to confirm the hypotheses under IFRS.

[Insert Table 5 here]

H2 proposes that OCIR is related to earnings smoothing behavior, assuming that profitable firms recognize income-decreasing OCIR and intentionally reduce their earnings. By contrast, loss-making firms recognize income-increasing OCIR and increase their earnings. Therefore, H2 is supported when the coefficient on PRNI in Equation (4) is negative and significant. H2 is also supported when the coefficient of *P_NI* or *N_NI* in Equation (5) is negative and significant.

Similarly, H3 proposes that OCIR is related to big bath behavior, assuming that firms with negative earnings recognize income-decreasing OCIR and amplify more losses. Therefore, H3 is supported when the coefficient on PRNI in Equation (4) is positive and significant. H3 is also supported when the coefficient of *N_NI* in equation (5) is positive and significant. This means that firms with negative pre-OCIR earnings are positively associated with income-decreasing OCIR. More specifically, the relationship between the coefficient of *N_NI* in Equation (6) and negative OCIR (*NOCIR*) as a dependent variable can test directly big bath behavior, and a positive estimated coefficient is expected to support H3.

Table 6 in the first column shows that the estimated coefficient on *PRNI* from Equation (4) under both J-GAAP and IFRS is significantly positive, indicating a positive relationship between pre-recycled net income (PRNI) and the level of OCIR. This result suggests two possibilities. One is that income-increasing OCIR occurs when PRNI and OCIR are positive, consistent with the meeting or beating benchmarks hypothesis. The other is that income-

decreasing OCIR occurs when PRNI is negative, which is consistent with the big bath hypothesis while simultaneously rejecting the income smoothing hypothesis.

The results for the decomposed net income model from Equation (5) are reported in Table 6 in the second column. These show that the estimated coefficients for *P_NI* and *N_NI* are significantly positive both under J-GAAP and IFRS, thereby supporting the big bath hypothesis, while the income smoothing hypothesis is not supported. Thus, it is possible that both J-GAAP and IFRS firms conduct big bath accounting using OCIR.

The results for the specific big bath model focusing on loss-making firms and negative OCIR from Equation (6) are reported in Table 6 in the third column. The result shows that the estimated coefficient for *N_NI* is significantly positive only under J-GAAP, suggesting the negative OCIR occurs when a firm's pre-OCIR net income is negative under J-GAAP. This result supports big bath behavior using negative OCIR. Meanwhile, for IFRS firms, I fail to find a significant result to support the big bath hypothesis, leading the confirmation of the evidence under IFRS is slightly reduced.

[Insert Table 6 here]

In summary, the significant and positive coefficients for *PRNI* (Equation (4)) and *P_NI* (Equation (5)) indicate that firms realize more gains when (positive) earnings increase both under J-GAAP and IFRS. The results do not support the income smoothing hypothesis (H2), which is consistent with the meeting or beating hypothesis (H1). The significant and positive coefficients for *PRNI* (Equation (4)) and *N_NI* (Equation (5)) indicate that firms with negative earnings realize more losses in OCI items. The results from Equation (6) provide evidence that big bath accounting is adopted by managers when firms have losses, which supports H3. Barth et al. (2014)'s results are only relevant to U.S. firms in the financial industry; meanwhile, this study reveals big bath behavior using OCIR under J-GAAP, extending prior studies by showing this behavior is relevant to firms across industries. In contrast to J-GAAP firms, I do not find significant results in IFRS firms, suggesting that requiring firms not to recognize all OCI items in a separate statement of OCI can reduce earnings management behavior and prevent earnings management.

7. Additional test

The results of testing H1a-H1c in the Equation from (1) to (3) for the meeting or beating earnings benchmarks indicate firms under J-GAAP tend to manage earnings by using positive OCIR. I test additionally using Equation (4) for testing income smoothing and big bath behavior and the firms that meet or beat earnings benchmarks under J-GAAP. I set Equation

(7), adding a binary variable "meeting or beating benchmarks firms," as *MEETBEAT,* which equals to 1 if a firm-year observation meets or beats a benchmark, zero otherwise. *MEETBEAT* represents either each benchmark, such as a meeting or beating zero earnings, prior year's earnings, and management's forecasts. Then, I make an interaction term *PTNI_MEETBEAT*, by multiplying MEETBEAT and pre-OCIR net income. I presume that firms meeting or beating benchmarks use incremental positive OCIR compare to the other firms because they have more intentions to achieve goals by using positive OCIR. Therefore, the coefficient on PTNI_MEETBEAT is expected to significantly positive.

$$OCIR_{i,t} = \sigma_0 + \sigma_1 PTNI_{i,t} + \sigma_2 MEETBAET_{i,t} + \sigma_3 PTNI\_MEETBEAT_{i,t} + \sigma_4 IROA_{i,t} + \sigma_5 SIZE_{i,t} + \sigma_6 LEV_{i,t} + \sigma_7 OCF_{i,t} + \sigma_8 ACMOCI_{i,t} + \sigma_9 MB_{i,t} + \sigma_{10} TAX_{i,t} + \sigma_{11} QRATIO_{i,t} + \sigma_{12} RED_{i,t} + \sigma_{13} COM_{i,t} + \pi_t \ldots (7)$$

Table 7 shows the results of this additional test. The estimated coefficients on PTNI_MEETBEAT is significantly positive except for meeting or beating managers' forecasts case, implying that meeting or beating firms are likely to use more income-increasing OCIR than other firms.

[Insert Table 7 here]

8. Conclusion

This study investigates OCIR as a classification shifting tool for earnings management and whether IFRS adoption prevents classification shifting using OCIR by comparing firms under J-GAAP and IFRS. Based on a sample of Japanese firms, I find a positive association between income-increasing OCIR and meeting or beating zero earnings, prior year's earnings, and management's forecasts among J-GAAP firms, but not for IFRS firms, except in the case of meeting or beating prior year's net income. Additionally, I investigate the relationship between OCIR and PRNI to test the hypothesis of big bath and income smoothing (i.e., whether firms use OCIR to influence current earnings). The result shows that firms with PRNI below zero use OCIR to reduce current earnings and magnify losses under J-GAAP, consistent with the big bath hypothesis, while no supportive evidence is obtained under IFRS. However, for the income smoothing hypothesis, I do not obtain evidence that firms with PRNI above zero use OCIR to reduce current income. Therefore, permitting OCIR entirely under J-GAAP encourages Japanese firms to engage in earnings management using OCIR, while adopting IFRS can successfully prevent classification shifting using OCIR.

However, there is some limitation of this research. Firstly, the lack of particular reasons

for the method to narrow the suspective earnings management sample from firms that meet or beat benchmarks decreases the credibility of the result. Secondly, I use OCI as a total amount and do not pay attention to individual items of OCI. It could be a different opportunity depending on the items of OCI, such as foreign currency translation, cash flow hedges, and available for sale financial securities. Thirdly, I just observe the positive and negative relationship between OCIR and PRNI for the evidence of earnings management. There is no guarantee that the firm exactly use OCIR for earnings management with some motivations.

It is important for accounting standard setters to recognize that the current J-GAAP-based OCIR provisions potentially give managers an opportunity to manage earnings. In addition, the findings are important for financial statement users, analysts, and other external stakeholders who assess a firm's performance by scrutinizing the amount of revenue presented in J-GAAP financial reporting. Expanding previous benchmark studies that focus on accrual or actual activity management, this study provides evidence that OCI is another earnings management tool. Users of financial statements need to pay more attention to the potential earnings management opportunity of OCIR, causing manipulations and inaccurate information about the performance of the firm when interpreting net income figures under J-GAAP. Significantly, the results show that limiting recyclable OCI items can contribute to higher-quality earnings by preventing earnings management using OCIR. While it is impossible to completely eliminate opportunistic behavior, standard setters need to eliminate earnings management tools to improve the quality of accounting standards. This study reveals that OCIR is likely to be misused by managers; thus, the ASBJ should review its current stand of full OCIR support and reconsider recyclable OCI items when adopting international standards.

Tables

Table 1: Sample selection

Year	JGAAP	IFRS	Total
2011	891	4	895
2012	912	10	922
2013	944	16	960
2014	962	37	999
2015	991	49	1,040
2016	1018	75	1,093
2017	1042	108	1,150
2018	1055	131	1,186
2019	991	117	1,108
Total	**8,806**	**547**	**9,353**
Sample Firms	1,222	73	1,343

Table 2: Industry composition

Industry	JGAAP	IFRS	Industry	JGAAP	IFRS
Food	393	26	Fisheries	37	
Fiber	140		Mining	32	
Pulp and paper	86		Construction	621	
Chemicals	720	42	Trading	847	44
Medical supplies	185	39	Retailer	759	17
Oil	42	4	Other financial services	194	8
Rubber	74	11	Real estate	268	11
Glass and ceramic	167	13	Rail and bus	214	
Steel industry	171	6	Land transportation	144	9
Metal products	314	11	Sea transportation	63	
Machinery	698	33	Air transportation	24	
Electrical equipment	692	81	Warehouse transportation	101	
Shipbuilding	33		Communication	108	13
Automobile	367	69	Electric	47	
Transportation equipment	81		Gas	77	
Precision machine	118	21	Service	721	89
Other manufacturing industries	268		Total	8,806	547

Table 3: Descriptive statistics

	JGAAP					IFRS				
Variables	mean	median	standard deviation	min.	max.	mean	median	standard deviation	min.	max.
OCIR	0.0007	0.0000	0.0044	-0.0400	0.1284	0.0010	0.0000	0.0065	-0.0184	0.0867
POCIR	0.0010	0.0000	0.0040	0	0.1284	0.0013	0.0000	0.0063	0	0.0867
NOCIR	-0.0003	0.0000	0.0016	-0.0400	0	-0.0003	0.0000	0.0012	-0.0184	0
D_POCIR	0.3925	0.0000	0.4883	0	1	0.3144	0.0000	0.4647	0	1
D_NOCIR	0.2178	0.0000	0.4128	0	1	0.2742	0.0000	0.4465	0	1
MBZE	0.1006	0.0000	0.3008	0	1	0.0475	0.0000	0.2130	0	1
MBPY_NI	0.0604	0.0000	0.2383	0	1	0.0622	0.0000	0.2417	0	1
MBPY_OP	0.0402	0.0000	0.1964	0	1	0.0347	0.0000	0.1833	0	1
MBPY_OR	0.0376	0.0000	0.1902	0	1	-	-	-	-	-
MBMF_NI	0.1012	0.0000	0.3016	0	1	0.1353	0.0000	0.3423	0	1
MBMF_OP	0.1304	0.0000	0.3367	0	1	0.1627	0.0000	0.3694	0	1
MBMF_OR	0.1175	0.0000	0.3221	0	1	-	-	-	-	-
MBMF_EPS	0.0968	0.0000	0.2956	0	1	0.1261	0.0000	0.3323	0	1
BTM	1.1123	1.0135	0.5949	0.0814	6.0255	0.8054	0.7357	0.4878	0.0814	3.2434
SIZE	12.1887	11.9045	1.0668	10.8270	16.7570	13.2347	13.2680	1.5735	8.3180	16.8720
LEV	0.5209	0.5178	0.2050	0.0258	1.9289	0.5410	0.5187	0.2145	0.0658	1.9289
ΔOCF	-0.0019	-0.0013	0.0504	-0.3174	0.3441	-0.0025	-0.0022	0.0403	-0.1966	0.1525
VOL	0.1117	0.0584	0.3353	-0.7020	4.5499	0.0988	0.0325	0.3932	-0.5799	2.2913
ACMOCI	0.0146	0.0071	0.0418	-0.1373	0.5224	0.0171	0.0122	0.0427	-0.1116	0.1935
PRNI	0.0361	0.0326	0.0325	-0.1307	0.2448	0.0510	0.0452	0.0434	-0.1151	0.2448
IROA	0.0019	-0.0003	0.0300	-0.1533	0.2152	0.0091	0.0034	0.0413	-0.1601	0.2152
OCF	0.0654	0.0651	0.0498	-0.3824	0.3189	0.0850	0.0848	0.0524	-0.1126	0.3189
TAX	0.0197	0.0163	0.0153	-0.0013	0.2026	0.0230	0.0186	0.0193	0.0000	0.1681
QRATIO	1.5876	1.2726	1.3242	0.0903	23.7058	1.5474	1.2993	1.0512	0.3184	8.3187
RED	0.0108	0.0087	0.0088	0.0000	0.0785	0.0159	0.0131	0.0121	0.0000	0.0785
COM	0.0008	0.0001	0.0016	0.0000	0.0160	0.0018	0.0009	0.0033	0.0000	0.0250

There are 9,353 firm-year observations. All variables are winsorized at 1 percent and 99 percent. See variable definitions in Appendix A.

Table 4: Pearson correlation matrix (Upper row IFRS; Lower row J-GAAP)

Panel A: Benchmark Hypothesis

JGAAP/IFRS	*OCIR*	*D_POCIR*	*D_NOCIR*	*MBZE*	*MBPY_NI*	*MBPY_OP*	*MBPY_OR*	*MBMF_NI*	*MBMF_OP*	*MBMF_OR*	*MBMF_EPS*	*BTM*	*SIZE*	*LEV*	*ΔOCF*	*VOL*	*ACMOCI*
OCIR	1	0.331	-0.197	-0.037	0.009	-0.038	-0.018	-0.057	0.042	0.036	-0.045	-0.125	0.025	-0.016	-0.085	0.051	0.079
D_POCIR	0.358	1	-0.416	0.071	0.054	-0.043	-0.024	0.008	0.022	-0.043	0.039	-0.087	0.190	0.019	-0.028	0.071	0.116
D_NOCIR	-0.265	-0.424	1	0.036	-0.023	0.040	-0.006	0.068	0.029	0.013	0.038	0.000	0.221	0.057	0.014	-0.062	-0.040
MBZE	0.019	0.017	-0.006	1	0.120	0.052	0.082	-0.038	-0.075	-0.053	-0.033	0.154	0.026	0.149	0.011	-0.072	0.024
MBPY_NI	-0.003	-0.022	0.005	0.101	1	0.241	0.738	-0.013	-0.073	-0.044	-0.029	0.124	-0.041	0.155	0.092	0.088	-0.090
MBPY_OP	0.000	-0.017	-0.013	0.057	0.453	1	0.358	0.100	0.052	0.058	0.078	0.061	0.009	0.055	0.066	0.050	0.003
MBPY_OR	-0.002	-0.019	-0.018	0.069	0.504	0.634	1	0.024	-0.043	0.011	0.003	0.103	-0.046	0.129	0.082	0.033	-0.024
MBMF_NI	-0.002	0.017	-0.008	-0.030	-0.014	0.006	0.013	1	0.231	0.331	0.896	-0.098	0.082	-0.002	0.041	0.048	-0.031
MBMF_OP	0.014	0.036	-0.009	-0.045	-0.030	-0.023	-0.009	0.224	1	0.467	0.220	-0.164	0.011	-0.032	-0.029	0.047	-0.035
MBMF_OR	-0.004	0.027	-0.028	-0.045	-0.017	-0.005	0.000	0.287	0.442	1	0.298	-0.143	-0.054	-0.054	0.014	0.029	0.008
MBMF_EPS	-0.003	0.024	-0.015	-0.028	-0.017	0.007	0.012	0.894	0.210	0.274	1	-0.092	0.081	-0.017	0.059	0.043	-0.055
BTM	-0.050	-0.100	0.038	0.155	0.094	0.069	0.063	-0.076	-0.112	-0.079	-0.074	1	0.007	0.036	-0.016	-0.312	-0.016
SIZE	0.012	0.160	0.110	0.034	-0.021	-0.005	-0.011	0.050	0.067	0.043	0.051	-0.229	1	0.200	0.014	-0.037	0.169
LEV	-0.037	0.015	0.063	0.159	0.071	0.059	0.049	-0.027	-0.020	-0.027	-0.023	-0.058	0.258	1	0.006	0.155	-0.197
ΔOCF	-0.001	0.000	0.012	-0.019	0.077	0.061	0.065	-0.010	-0.013	0.013	-0.005	-0.025	-0.007	0.009	1	0.148	-0.003
VOL	-0.014	0.036	0.022	-0.071	0.063	0.017	0.025	-0.012	0.005	-0.005	-0.004	-0.299	-0.010	0.098	0.111	1	-0.068
ACMOCI	0.168	0.141	-0.081	0.046	-0.049	-0.030	-0.033	-0.004	0.009	-0.017	-0.002	-0.084	-0.025	-0.052	0.003	-0.053	1

There are 9,353 firm-year observations. All variables are winsorized at 1 percent and 99 percent. See variable definitions in Appendix A.

Panel B: Income smoothing and Big bath Hypothesis

JGAAP/IFRS	*OCIR*	*POCIR*	*NOCIR*	*PRNI*	*P_NI*	*N_NI*	*IROA*	*SIZE*	*LEV*	*OCF*	*ACMOCI*	*BTM*	*TAX*	*QRATIO*	*RED*	*COM*
OCIR	1	0.983	0.233	0.230	0.255	0.017	0.123	0.025	-0.016	-0.001	0.079	0.188	0.186	0.070	0.159	-0.024
POCIR	0.933	1	0.050	0.221	0.244	0.022	0.120	0.032	-0.006	-0.002	0.075	0.197	0.187	0.063	0.161	-0.029
NOCIR	0.410	0.053	1	0.081	0.093	-0.024	0.033	-0.033	-0.055	0.005	0.030	-0.020	0.023	0.052	0.013	0.019
PRNI	0.152	0.133	0.084	1	0.952	0.427	0.966	-0.108	-0.344	0.625	0.004	0.416	0.737	0.284	0.646	0.159
P_NI	0.160	0.151	0.063	0.923	1	0.187	0.925	-0.166	-0.353	0.606	-0.021	0.463	0.786	0.319	0.652	0.224
N_NI	0.011	-0.011	0.059	0.459	0.191	1	0.429	0.160	0.020	0.253	0.109	-0.008	0.113	-0.125	0.163	-0.117
IROA	-0.008	-0.011	0.007	0.918	0.841	0.451	1	-0.060	-0.282	0.602	-0.025	0.360	0.709	0.242	0.583	0.134
SIZE	0.012	0.024	-0.028	-0.044	-0.042	-0.001	0.006	1	0.200	-0.081	0.169	-0.229	-0.242	-0.235	-0.044	-0.674
LEV	-0.037	-0.037	-0.009	-0.310	-0.313	-0.053	-0.220	0.258	1	-0.423	-0.197	0.053	-0.322	-0.534	-0.367	-0.057
OCF	-0.010	-0.011	-0.039	0.468	0.466	0.153	0.430	0.004	-0.245	1	-0.003	0.279	0.585	0.211	0.429	0.040
ACMOCI	0.168	0.153	0.078	-0.014	-0.031	0.030	-0.085	-0.025	-0.052	-0.084	1	-0.042	-0.043	0.184	-0.063	-0.117
BTM	0.042	0.043	0.008	0.398	0.427	0.028	0.346	0.150	0.069	0.304	0.076	1	0.460	0.123	0.375	0.293
TAX	0.044	0.041	0.019	0.714	0.738	0.126	0.662	-0.060	-0.299	0.474	-0.108	0.401	1	0.269	0.581	0.213
QRATIO	-0.002	-0.003	0.001	0.214	0.224	0.013	0.167	-0.125	-0.601	0.055	-0.033	0.021	0.182	1	0.271	0.180
RED	0.048	0.050	0.007	0.643	0.660	0.123	0.557	-0.045	-0.464	0.396	-0.096	0.437	0.630	0.355	1	0.105
COM	0.007	0.008	-0.001	0.096	0.094	0.024	0.087	-0.252	-0.048	0.053	-0.036	0.007	0.138	0.031	0.093	1.000

There are 9,353 firm-year observations. All variables are winsorized at 1 percent and 99 percent. See variable definitions in Appendix A.

Table 5: Fixed effects logistic regressions of Meet and Beat benchmarks Test

Panel A: J-GAAP Firms

Dependent Variable:	*MBZE*	*MBPY_NI*	*MBPY_OP*	*MBPY_OR*
D_POCIR	**0.2057** **	0.0692	**0.2900** *	**0.3720** **
	1.97	0.53	1.88	2.28
BTM	1.2054 ***	0.9703 ***	0.5563 ***	0.3737 *
	7.90	5.60	2.91	1.86
SIZE	0.2505	-3.6188 ***	-3.8836 ***	-3.8045 ***
	0.59	-6.98	-6.16	-6.00
LEV	0.4693	4.9106 ***	4.7419 ***	4.0227 ***
	0.64	5.89	4.81	3.82
Δ*OCF*	-0.9068	5.0577 ***	4.5891 ***	5.3649 ***
	-1.03	5.35	4.17	4.61
VOL	0.0085	1.4039 ***	0.7037 ***	0.8019 ***
	0.05	8.16	3.65	3.95
ACMOCI	-1.6090	2.7174	-3.9184	3.0768
	-0.61	0.87	-0.98	0.78
Fixed Effect	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*
Pseudo R^2	0.047	0.154	0.141	0.152

Dependent Variable:	*MBMF_NI*	*MBMF_OP*	*MBMF_OR*	*MBMF_EPS*
D_POCIR	0.0366	**0.1546** *	**0.2110** **	0.1352
	0.39	1.83	2.36	1.39
BTM	-0.2173	-0.3765 **	-0.1906	-0.4002 **
	-1.20	-2.31	-1.17	-2.19
SIZE	0.3722	0.6139 **	0.7009 **	0.6619 **
	1.12	2.09	2.21	1.89
LEV	-1.0382 *	-1.5225 ***	-0.7743	-0.8334
	-1.59	-2.69	-1.28	-1.27
Δ*OCF*	-1.0458	-1.0992	1.1974	-0.6948
	-1.28	-1.48	1.55	-0.84
VOL	-0.3312 **	-0.2776 **	-0.3965 ***	-0.3290 **
	-2.25	-2.18	-2.83	-2.22
ACMOCI	-0.4753	5.3320 ***	-2.3075	-1.6689
	-0.20	2.48	-1.05	-0.69
Fixed Effect	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*
Pseudo R^2	0.011	0.018	0.013	0.011

This table presents the results of H1a-H1c using fixed effect logit model regressions.

***, **, * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Robust p-value of the coefficients for all variables are two tailed reported in parentheses. All variables are defined in Appendix

Panel B: IFRS Firms

Dependent Variable:	*MBZE*	*MBPY_NI*	*MBPY_OP*
D_POCIR	-0.1520	**1.6455** **	-1.3230
	-0.17	1.92	-1.08
BTM	3.8533 *	0.7229	1.4811
	1.68	0.76	0.29
SIZE	1.7684	-1.3388	-4.8590 **
	0.25	-0.45	-2.16
LEV	-3.8517	2.2890	-7.1604
	-1.11	0.86	-0.87
Δ*OCF*	-6.1441	11.5301 *	8.5105
	-0.63	1.83	0.99
VOL	0.9239	0.9582	6.0642 *
	0.53	1.50	1.80
ACMOCI	5.6211 *	-2.3771	2.7135
	1.65	-1.12	0.14
Fixed Effect	*FIRM INDUSTRY YEAR*	*FIRM INDUSTRY YEAR*	*FIRM INDUSTRY YEAR*
Pseudo R^2	0.156	0.050	0.048

Dependent Variable:	*MBMF_NI*	*MBMF_OP*	*MBMF_EPS*
D_POCIR	0.2794	-0.0062	0.4664
	0.68	-0.02	1.10
BTM	-2.9909 **	-1.2621	-3.9233 ***
	-2.29	-1.39	-2.69
SIZE	0.3500	0.2946	0.4507
	0.24	0.22	0.31
LEV	0.1547	2.2679	-0.5517
	0.07	1.21	-0.22
Δ*OCF*	2.5644	-2.6117	4.6272
	0.68	-0.72	1.18
VOL	-0.3395	-0.1418	-0.6797
	-0.58	-0.30	-1.21
ACMOCI	-8.7586	1.8386	-9.0170
	-1.12	0.32	-1.08
Fixed Effect	*FIRM INDUSTRY YEAR*	*FIRM INDUSTRY YEAR*	*FIRM INDUSTRY YEAR*
Pseudo R^2	0.041	0.081	0.076

This table presents the results of H1a-H1c using fixed effect logit model regressions. ***, **, * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust p-value of the coefficients for all variables are two tailed reported in parentheses. All variables are defined in Appendix A.

Table 6: Fixed effects regressions of Income Smoothing and Big Bath Test

Dependent Variable: *OCIR* (*NOCIR* (Eq.(6))	JGAAP			IFRS		
	Equation (4)	Equation (5)	Equation (6)	Equation (4)	Equation (5)	Equation (6)
PRNI	**0.0987** ***			**0.4251** ***		
	3.76			3.26		
D_PNI		0.0009 **			-0.0012	
		2.13			-0.80	
P_NI		**0.1427** ***			**0.4481** ***	
		3.56			3.40	
N_NI		**0.0524** ***	**0.0059** **		**0.3658** ***	-0.0050
		2.94	2.17		3.44	-0.96
IROA	-0.0996 ***	-0.1091 ***	-0.0015	-0.4376 ***	-0.4360 ***	0.0036
	-3.76	-3.55	-1.50	-3.24	-3.34	1.43
SIZE	-0.0022 ***	-0.0021 ***	-0.0002 ***	-0.0067 **	-0.0070 **	0.0001
	-3.4	-3.38	-2.91	-1.93	-2.05	0.19
LEV	0.0021 *	0.0014	0.0002	-0.0022	-0.0015	-0.0002
	1.66	1.24	1.19	-0.68	-0.52	-0.33
OCF	-0.0051 ***	-0.0051 ***	0.0003	-0.0283 **	-0.0271 **	-0.0076
	-3.43	-3.4	0.64	-2.36	-2.36	-1.36
ACMOCI	0.0293 ***	0.0265 ***	0.0026 ***	0.0261 *	0.0281 **	-0.0005
	7.01	6.77	3.84	1.84	1.95	-0.26
MB	0.0001	0.0004 ***	-0.0001	-0.0006	-0.0003	-0.0001
	0.95	2.46	-1.04	-0.59	-0.34	-0.64
TAX	0.0159	-0.0212	0.0015	0.0003	-0.0293	0.0036
	0.99	-0.97	0.98	0.01	-0.80	0.52
QRATIO	-0.0002 **	-0.0003 ***	-0.0001	-0.0006	-0.0007	0.0000
	-1.90	-2.72	-1.52	-0.92	-1.10	0.41
RED	-0.0736 ***	-0.1210 ***	-0.0022	-0.0581	-0.0561	0.0094
	-2.54	-3.5	-0.54	-1.09	-1.05	0.69
COM	-0.3038 ***	-0.3333 ***	-0.0260	-0.3796	-0.5328	0.0202
	-2.50	-2.81	-1.04	-0.94	-1.00	0.3
Constant	0.0239 ***	0.0217 ***	0.0025 ***	0.0780 *	0.0816 **	-0.0007
	3.23	3.07	2.72	1.78	1.91	-0.15
Fixed Effect	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*
R^2	0.144	0.182	0.060	0.489	0.510	0.063

This table presents the results of the tests for H2 and H3 using fixed effect model regressions. ***, **, * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient.

Table 7: Fixed effects regressions of Additional test for Meeting or Beating Firms

Dependent Variable: *OCIR*	JGAAP		
	MBZE	*MBPY*	*MBMF*
PRNI	0.0918 ***	0.0986 ***	0.0985 ***
	3.62	3.78	3.82
MEETBEAT	-0.0037 ***	-0.0008 ***	-0.0001
	-8.43	-3.88	-0.25
PRNI_MEETBEAT	**0.4073** ***	**0.0269** ***	0.0010
	8.98	3.27	0.08
IROA	-0.0926 ***	-0.1024 ***	-0.0997 ***
	-3.59	-3.89	-3.79
SIZE	-0.0019 ***	-0.0022 ***	-0.0022 ***
	-2.94	-3.36	-3.45
LEV	0.0020 *	0.0019	0.0020
	1.62	1.50	1.54
OCF	-0.0047 ***	-0.0053 ***	-0.0052 ***
	-3.12	-3.47	-3.46
ACMOCI	0.0290 ***	0.0295 ***	0.0293 ***
	7.04	7.05	6.99
MB	0.0001	0.0001	-0.0001
	0.12	0.12	-0.01
TAX	0.0136	0.0168	0.0154
	0.84	1.02	0.96
QRATIO	-0.0002 *	-0.0002 *	-0.0003 **
	-1.85	-1.83	-1.91
RED	-0.0586 **	-0.0783 ***	-0.0756 ***
	-2.06	-2.65	-2.51
COM	-0.3307 ***	-0.3228 ***	-0.3059 ***
	-2.63	-2.64	-2.52
Constant	0.0205 ***	0.0241 ***	0.0240 ***
	2.77	3.23	3.34
Fixed Effect	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*	*FIRM* *INDUSTRY* *YEAR*
R^2	0.186	0.147	0.144

This table presents the results of the additional test based on the fixed effect model regressions. ***, **, * indicate two-sided statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Estimated coefficients for each variable are presented with robust t-statistics based on standard errors clustered at the firm level below the estimated coefficient. *MBZE* equals 1 if a firm meets or beats zero earnings, *MBPY* equals 1 if a firm meet or beat either prior year's earnings such as net income, operating income or ordinary income, and MBMF equals 1 if a firm meet or beat either managers' forecasts such as net income, operating income, ordinary income or EPS.

Appendix A

Variable definitions

Variable	Definitions
OCIR	The sum of recycled OCI
NOCIR	Income decreasing (negative) OCIR
D_POCIR	An indicator variable that equals 1 if OCIR is greater than zero, zero otherwise.
MBZE	An indicator variable 'Meet or Beat Zero Earnings,' which equals 1 if a firm whose net income scaled by total assets at the beginning of the year distributes just above zero and the difference between net income and zero is within five percent.
MBPY	An indicator variable 'Meets and Beats Prior Year's Earnings,' which equals 1 if the change in earnings divided by total assets is greater than zero and the difference between current earnings and prior earnings is within one percent, and zero otherwise.
MBMF	An indicator variable *MBMF* 'Meets or Beats Managers' Forecasts,' which equals 1 when the forecast error is greater than zero, and the difference between current earnings and managers' forecasts is within five percent, and zero otherwise.
IROA	The difference between the firm's ROA and the adjusted ROA by its industry
BTM	Book Ratio to Market, measured as (Book value of equity / Market value of equity)
MB	Market to Book Ratio, measured as (Market value of equity / Book value of equity)
SIZE	Firm Size, measured as (Natural logarithm of total assets)
OCF	Operating Cash flow (Nikkei adjusted operating cash flow in the database "NEEDS-FinancialQUEST")
ΔOCF	The change of *OCF* (Operating Cash flow)
LEV	Total liabilities
VOL	Market volatility
ACMOCI	Accumulated OCI beginning of the year
PTNI	Net earnings before tax and OCIR
QRATIO	Quick ratio, measured as (current assets-inventories)/current liabilities
TAX	Tax expenses
PRNI	Pre-recycled net income (= net income before OCIR)
N_NI	Negative earnings before OCIR
P_NI	Positive earnings before OCIR
D_PNI	An indicator variable that equals 1 if *PRNI* is greater than zero, and zero otherwise
RED	Dividends from retained earnings
COM	Management compensation (hand-collected through annual reports)
MEETBEAT	An indicator variable "meeting or beating benchmarks firms," which equals to 1 if a firm-year observation meets or beats a benchmark, zero otherwise. *MEETBEAT*

	represents either each benchmark, such as a meeting or beating zero earnings, prior year's earnings, and management's forecasts. *MBZE* equals 1 if a firm meets or beats zero earnings, *MBPY* equals 1 if a firm meet or beat either prior year's earnings such as net income, operating income, or ordinary income, and *MBMF* equals 1 if a firm meet or beat either managers' forecasts such as net income, operating income, ordinary income or EPS.

Chapter 8: Findings and Future improvement

1. Findings

The findings of this study are that an impairment loss reported under IFRS and OCI recycling are superior to those of J-GAAP overall; however, there are some advantages of J-GAAP earnings. Regarding reporting separately discontinued operations, which are IFRS-specific income statement components, have mixed results; while I reveal the earnings management behavior through classification shifting, which is the first evidence of earnings management using discontinued operation under IFRS, I also find the advantage of that separated presentation of continued and discontinued income. Figure 1 shows a summary of the major findings in this paper.

Figure 1: A summary of the major findings in this paper

Chap.	Subject	Findings
2	The predictive value of GW impairment loss for future OCF under J-GAAP and IFRS	・GW impairments reported under IFRS are more negatively related to changes in future OCF than those under J-GAAP ・The GW impairment of firms that switched their accounting standard from J-GAAP to IFRS is also negatively associated with changes in future operating cash flows after shifting the standard. ・GW impairments under IFRS are more informative and timelier than those under J-GAAP, even in the case of voluntarily shifting to IFRS.
3	The quality of tangible long-lived asset (LLA) impairment loss under J-GAAP and IFRS from two aspects: (1) the determinants of impairments (2) the predictive value for future OCF	・IFRS impairments relate more to macroeconomic factors consistent with the one-step impairment model expected to capture declines in profitability in a more timely manner, while J-GAAP impairments further relate to macroeconomic factors. ・J-GAAP impairments are associated with reporting incentives more than IFRS impairments. ・LLA impairments reported under IFRS are negatively associated with changes in future OCF, while those under J-GAAP are not

4	The tendency of IFRS firms in Japan that reverse their impairment losses	・There is a unique trend in specific firms and industries in reversing impairment losses in Japanese IFRS firms. ・The types of assets with impaired losses that can be reversed are slightly more intangible fixed assets than tangible fixed assets. ・There is a difference in performance between the reversal firm and no-reversal firm, indicating a significant difference in both net income and OCF in the medical product and food industries, which have a high rate of reversing impairment losses on intangible assets ・The significant difference in business performance disappeared as the industry reversed more tangible fixed assets.
5	Classification shifting using discontinued operations and impact on core earnings	・Firms shift operating expenses of continuing operations to discontinued operations to increase core earnings ・Firms employ the classification shifting using negative non-core earnings (negative special items) of discontinued operations, invested by desegregating reported discontinued operations into core and non-core earnings. ・Income-increasing discontinued operations negatively influence both current and future core earnings, while income-decreasing discontinued operations do not.
6	Earnings Quality on Income Statements Under J-GAAP and IFRS	・J-GAAP earnings are superior to IFRS earnings in terms of persistence, predictability, smoothness, value relevance, and timeliness, while IFRS earnings are superior in conditional conservatism. ・Pseudo-ordinary income in the IFRS sample is better than GAAP-based IFRS earnings and equivalent to the J-GAAP earnings in persistence, predictability, smoothness, and value relevance ・The results do not support the adoption of IFRS in Japan to improve earning quality while support IFRS firms to disclose compulsorily “ordinary income (or core earnings)” as GAAP earnings.
7	Earnings management using OCI recycling under J-GAAP and IFRS	・A positive association between income-increasing OCIR and meeting or beating zero earnings, prior year’s earnings, and managers’ forecasts among J-GAAP firms while earnings management behaviors using OCIR disappear in the firms under

		IFRS except for meeting or beating management's forecast of EPS. ・Firms with net income before OCIR (PRNI) below zero use OCIR to reduce current earnings and magnify losses under J-GAAP, consistent with the Big Bath hypothesis, while there is no supportive evidence under IFRS. ・Fail to obtain the evidence both under J-GAAP and IFRS for the income smoothing hypothesis that firms with PRNI above zero use OICR to reduce current earnings. ・Permitting OCIR entirely under J-GAAP encourages Japanese firms to engage in earnings management using OCIR while adopting IFRS can successfully prevent classification shifting.

This paper clarifies the pros and cons of J-GAAP and IFRS by highlighting a fundamental problem. Specifically, the results in chapter 6 indicate that "pseudo-ordinary" income in the IFRS sample is ultimately better than GAAP-based IFRS earnings and equivalent to the J-GAAP earnings in persistence, predictability, smoothness, and value relevance. The comparison of IFRS earnings attributes with pseudo-earnings that are the closest to J-GAAP ordinary income reflects the demand for value-relevant measures of financial performance beyond GAAP-based IFRS earnings. Therefore, this study is innovative in that it proposes a more desirable style by incorporating the positive aspects of both parties beyond the existing framework of Japanese standards and IFRS.

Firstly, goodwill impairment loss under IFRS has more predictive value for future operating cash flows than that under J-GAAP, suggesting it is more informative and timelier than those under J-GAAP, even in the case of voluntarily shifting to IFRS. The same result is obtained in the tangible long-lived assets, which are more negatively related to changes in future operating cash flows. Moreover, IFRS impairments relate more to macroeconomic factors to capture declines in profitability in a timelier manner. By contrast, J-GAAP impairments further relate to macroeconomic factors resulting in the delayed recognition. These results also indicate that J-GAAP impairments are associated with reporting incentives more than IFRS impairments. This difference also is explained by the permitted impairment reversals under IFRS because the recognition of impairment is more related to fair value evaluation of assets. This study also reveals the usefulness of impairment reversals. Given these,

impairment losses under IFRS are advantageous to J-GAAP impairment losses. Assuming an impairment loss is the most significant item in the gains and losses, there is a possibility that the quality of the overall income statement is influenced by the difference in such losses.

Regarding earnings quality attributed to the treatment of gains and losses in the income statement, the consequence provides mixed messages indicating strengths and weaknesses in terms of earnings under both standards. By comparing subtotal incomes in the presentation, such as operating income, ordinary income, and income from continuing operations, the results reveal that the earnings quality on the income statement under J-GAAP is superior to IFRS in terms of persistence, predictability, smoothness, value relevance, and timeliness while IFRS earnings are superior in conditional conservatism. J-GAAP earnings are considered to be collectively better in terms of the superiority of earnings associations with the market due to the common objectives of accounting reports, as indicated in the Conceptual Framework in both J-GAAP and IFRS. Therefore, the results of this study do not support the adoption of IFRS in Japan to improve the earnings quality. Further, this study reveals the advantage of J-GAAP ordinary income even in the IFRS firms. Therefore, it could be better for firms that adopt IFRS to disclose compulsorily "ordinary income (or core earnings)" as GAAP earnings that require regulation and statutory auditing.

Regarding gains and losses of presentation in the income statement, discontinued operations is the specific regulation of IFRS. This study clarifies the classification shifting using discontinued operations, which impact on core earnings, suggesting their practical problems and usefulness. However, considering the permission of line separation in the income statement always comes with a potential risk of classification shifting, it is not available and depends on the audit quality or corporate governance. Because the merit of disclosing discontinued operations is more significant, it is possible for Japan to adopt a rule to classify discontinued operations.

Lastly, another classification shifting using OCI recycling is observed in the J-GAAP-based sample while not in the IFRS sample, suggesting permitting OCI recycling entirely under J-GAAP encourages Japanese firms to engage in earnings management using it while adopting IFRS can successfully prevent classification shifting using OCI recycling. This result fundamentally stems from the restriction of OCI recycling, but under-evaluation of net income under IFRS may also contribute to the prevention. As long as J-GAAP emphasizes net income, I assume classification shifting using OCI recycling is still an attractive tool of earnings management even though it accelerates the regulation.

In summary, this study underwrites the significance of the impairment accounting standard under IFRS for J-GAAP. Besides, the result supports disclosing discontinued operations separately to highlight continuing operations for J-GAAP. Meanwhile, this study sheds light on the superiority of J-GAAP over IFRS, proposing to disclose J-GAAP style ordinary income. It could be a better way for Japan to shift from emphasizing net income to income from continuing operations by separate disclosure of discontinued operations because such income is advantageous to net income while sustaining the concept of net income. Given this, I propose the ideal convergence for Japan to adopt the standard of gains and losses under IFRS and for IFRS to adopt J-GAAP style ordinary income as additional disclosure through footnote as a part of GAAP earnings.

2. Future improvement

2.1. Chapter 2.

Chapter 2 describes the examination of the predictive value of goodwill impairment for future operating cash flows under J-GAAP and IFRS. I focus on two differences in the goodwill impairment method between J-GAAP and IFRS: (1) non-systematic amortization and (2) annual impairment test. This study takes these differences together and develops a research design assuming that the two differences bring the delayed impairment recognition under J-GAAP. However, it may be necessary to distinguish them because systematic amortization under J-GAAP is influenced by the manager's estimation for the depreciation period, while the goodwill impairment highly depends on the amount of acquisition. Although excessive acquisition costs induce inappropriate goodwill impairment, this study does not control the goodwill as assets due to the inability to estimate expected acquisition costs. Moreover, previous research on the goodwill impairment test focuses on the earnings management incentives, while the current study does not consider any opportunistic motivations for impairment.

2.2. Chapter 3.

This chapter investigates the quality of tangible long-lived asset impairments under J-GAAP and IFRS based on two different studies. I intend to avoid survivorship bias and analyze the quality of impairment losses from multiple angles by using two models. However, it may be unusual to use two sample sets to test the determinants of impairments and the predictive value for future operating cash flows, respectively. Furthermore, as with the investigation of

goodwill impairment in chapter 2, I could not obtain the expected results of the firms voluntarily shifting IFRS sample and the relationship between past cash flows and current impairment.

2.3. Chapter 4.

This chapter surveys the reversing impairment losses of firms applying IFRS in Japan. Unlike other chapters, this investigation does not include hypothesis and research model, but compares the basic statistic difference of the type of assets or industries. I used models based on previous research to test the predictive value, determinations, or earnings management incentives. However, I could not obtain significant results due to the limited impairment reversal sample. Since the reversal of impairment loss is an accounting treatment peculiar to IFRS, it is necessary to investigate it from the viewpoint of its usefulness for future forecasts as the standard describes or earnings management that pointed out in previous studies.

2.4. Chapter 5.

Using reported discontinued operations among Japanese firms adopting IFRS, this chapter investigates whether managers engage in earnings management through classification shifting to manage core earnings. This survey is highly reliant on the expected core earnings model. The accumulated research papers are necessary to build better models in the future. Furthermore, there are a limited number of cases of discontinued operations in Japan. Since these are items that are frequently recorded in an uncertain business environment, it is necessary to investigate them in the context of restructuring along with impairment losses.

2.5. Chapter 6.

This chapter presents the examination of the quality of stepwise earnings on income statements, such as operating income, ordinary income, and net income, under J-GAAP and IFRS. I could not obtain significant results using the return model in the value-relevant test. There are many measurements of earnings quality in the literature. A multi-angled survey on earnings quality using various indicators is needed to compare J-GAAP and IFRS earnings. Furthermore, unlike in the U.S. or Europe, because core earnings are not commonly and compulsory disclosed as complementary information to investors in Japan, I did not refer to any non-GAAP earnings disclosure cases of Japanese IFRS firms. However, some firms voluntarily report core earnings by adjusting mainly special items. A survey on non-GAAP

earnings disclosure in Japan will be essential in the future to compare GAAP-based IFRS earnings.

2.6. Chapter 7.

This chapter presents the investigation of other comprehensive income recycling (OCIR) as a tool for classification shifting for earnings management and whether adopting IFRS prevents classification shifting using OCIR by comparing J-GAAP and IFRS. Previous research focuses on specific industries, such as banks, securities, and insurance companies. Insufficient databases for such specific industries regarding OCIR prevents the investigation of these industries in Japan, which are assumed to have more motivation for earnings management using OCIR because they have a high amount of OCI attributed to the special and technical business environments.

3. Main caveats

First, while the main results are informative enough to support the hypothesis, I could not provide multifaceted evidence due to the limited sample of IFRS firms. The lack of additional tests may not be robust to various sensitivity checks. Specifically, IFRS firms include voluntarily shifting their accounting standard from J-GAAP and newly listed adopting IFRS at the beginning. These firms may have different motivations for adopting IFRS. Due to the limited IFRS sample, this study could not adequately distinguish these firms in the additional tests. I will attempt more in-depth investigations regarding the difference in attributes of IFRS firms in the future. However, the major motivation for shifting standard firms is thought to be "avoiding systematic amortization of goodwill." Chapter 2 successfully reveals that the impairment test under IFRS is valid among shifting standard firms.

Next, I could not find expected significant results with the fixed effects model regarding the test for the predictive value of long-lived assets in chapter 3, suggesting that inability to be consistent. One of the notable characteristics of this study is the use of a fixed-effects model to obtain more appropriate results in the panel dataset. Considering the individual effect that cannot be made variable but affects a firm's behavior is crucial when using panel data. The results obtained in chapter 3 may be far from appropriate because the unobserved heterogeneity biases the estimates. However, the results are consistent with previous research.

Lastly, most of the models I use and modify are based on previous research. This makes the contribution of this study weak due to the lack of innovations. Because Japan lags behind

in the field of IFRS research, more accumulated literature using Japanese IFRS firms is needed. This study is the first comprehensive empirical analysis of Japanese IFRS firms regarding gains and losses and is just a trailblazing research at the moment.

4. Potentials for future research

First, I did not test market reaction for any studies on impairment losses, discontinued operations, and OCI recycling in this paper. If the quality of impairment losses is better, in the meaning of capturing the future decline of firms' performance, the market might react in accordance with the reported impairments. Future research on comparing impairment losses under J-GAAP and IFRS will take market reaction into consideration. Likewise, when earnings management behavior is observed in the discontinued operations or OCI recycling, it is reasonable to test the market reaction whether and how the opportunistic behavior influence on the market.

Second, prior studies on IFRS pay attention to the relationship between earnings quality and institutional factors such as legal tradition, investor protection, enforcement, etc. (Ball et al. 2000; Leuz et al., 2003; Kinsey et al., 2008; Ahmed et al., 2010; Clarkson et al.,2011; Houqe et al., 2012). This study investigates the comparability of IFRS to J-GAAP using a Japanese sample, a single country. Since the quality of impairment losses could be affected by institutional factors (Gordon and Hsu, 2018, 2019), it is more appropriate to consider them in the research model when analyzing impairment losses.

Third, it is known that corporate governance could affect the accounting behavior and earning quality that has been examined in prior studies on IFRS (Dou et al. 2016; Bonetti et al. 2016). This aspect provides answers to the question about what is the difference between accounting quality and accounting practices when adopting IFRS in Japan. Therefore, taking corporate governance into consideration in the research model in this paper must be more suitable.

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