Goodwill Impairment and Future Cash Flows Under Japanese GAAP and IFRS

Shu Inoue[♣]

Faculty of Economics, Kanagawa University, Yokohama, Japan

ABSTRACT

This study investigated whether the difference in the predictive value of goodwill (GW) impairment for future cash flows is caused by the discrepancies between recognition and GW amortization under the Generally Accepted Accounting Principles in Japan (J-GAAP) and the International Financial Reporting Standards (IFRS). Results showed that GW impairments reported under IFRS, which require an annual impairment test with a GW non-amortization, were more negatively related to changes in future operating cash flows than those under J-GAAP, which required a two-step impairment test with a GW amortization. Subsequent evidence suggested that the GW impairment of firms that switched their accounting standard from J-GAAP to IFRS was also negatively associated with changes in future operating cash flows. This result implies that GW impairments under IFRS are more informative and timelier than those under J-GAAP, even if shifting to IFRS is voluntary, which examines GW impairments over a long period and in a single country, allowing an examination of ignoring the difference of institutional settings across countries.

Keywords: Goodwill Impairment, Impairment Test, Amortization, Japanese GAAP, IFRS

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[♣] Corresponding Author: Shu Inoue; Kanagawa University, 3-27-1 Rokkakubashi, Yokohama, Kanagawa, Japan; Email: inoueshu@kanagawa-u.ac.jp; Tel: +81-(0)45-481-5661, +6285771294838

INTRODUCTION

The current standard of goodwill (GW) impairment has been debated internationally due to the complexity and delay recognition. One improvement measure is thought to be the reintroduction of systematic amortization based on useful life. However, the reintroduction of GW amortization was not adopted because there is no convincing evidence that amortizing GW would significantly improve the information provided to investors (International Accounting Standards Board [IASB], 2020). Since Japan is the only country that implements systematic GW amortization, using a Japanese sample can verify the validity of the judgment of standard setters by comparing the GW amortization with the impairment-only approach based on the IASB decision. This study investigated the predictive value of GW impairment for future operating cash flows (OCF) under the Generally Accepted Accounting Principles in Japan (J-GAAP) and the International Financial Reporting Standards (IFRS), focusing on the sample difference in whether GW should be systematically amortized or non-amortized.[1]

In 2014, the Accounting Standards Board of Japan (ASBJ), the European Financial Reporting Advisory Group (EFRAG), and the Italian Standards Setter (Organismo Italiano di Contabilità; OIC) published a discussion paper, "Should goodwill still not be amortised? Accounting for and disclosure of goodwill" (ASBJ et al., 2014). The research group concluded that it would be appropriate to reintroduce GW amortization based on a survey conducted through a questionnaire, and most respondents agreed with the proposed view that GW amortization should be reintroduced (ASBJ et al., 2015).[2]

Furthermore, the Financial Accounting Standards Board (FASB) issued new guidelines for simplified GW impairment testing because the current GW impairment test is complicated and strict (FASB, 2017), and ways to improve the current GW impairment tests (IASB, 2018) in accordance with the United States (U.S.) movement. Recently, IASB (2020) mentioned the possibility of reintroducing systematic amortization of GW because the current impairment test is not robust enough to recognize GW impairment losses in a timely manner based on the feedback from the "Post-implementation Review of IFRS 3 Business Combinations (IASB, 2015)." Supporting that view is based on the fact that many participants

[1] Japan allows listed firms to voluntarily choose accounting standards among Japanese GAAP, U.S. GAAP, pure-IFRS, and Japan's Modified International Standards. As of 2021, a total of 231 listed firms have adopted pure-IFRS in Japan (7% of listed firms), including those to be applied; 217 firms have already shifted from J-GAAP to IFRS.

[2] The ASBJ is actively and internationally communicating its views on GW amortization and the impairment test (ASBJ, 2015). In addition, the 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 requiring that the current IAS 36 impairment-only model or the amortization and impairment model be the accounting policy managers consider useful in fulfilling its accountability.

believed that there appears to be a "lag" between the occurrence of an impairment and the recognition in the financial statements. However, IASB did not adopt the reintroduction of GW amortization due to the lack of significant proof to support it (IASB, 2020). Interestingly, as the impairment standards under J-GAAP and IFRS are not uniform even after convergence projects deeply proceeded in Japan, the GW impairment procedure under J-GAAP, which requires GW amortization and recognition criteria similar to other asset impairments, is entirely contrary to international rules. Therefore, it is a great opportunity to contribute to the emerging discussion on GW impairment and systematic amortization by empirically comparing J-GAAP and IFRS. This study can contribute to the IASB's recent discussion on improving GW impairment testing. As this study showed, systematic amortization under J-GAAP brings about even more "recognition lag," and therefore, cannot be supportive evidence for the reintroduction of systematic amortization discussed internationally.

LITERATURE REVIEW

GW Impairment Standard Under J-GAAP and IFRS

Both J-GAAP and IFRS consider GW impaired whenever events or changes in circumstances indicate that the asset's carry amount (CA) may not be recoverable (Business Accounting Council of Japan [BACJ], 2002b, par. 3-1; IASB 2004, IAS 36, par. 59); however, impairment accounting differs in the 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 applied in a two-step approach, similar to other long-lived assets. First, firms assess the possibility of impairment by comparing CA to the sum of the undiscounted expected future OCF. The firm must move to the second step if the CA is higher than the undiscounted expected future OCF. Second, firms compare an asset's CA to its recoverable amount (RA), which is defined as the difference between value-in-use (VIU) and fair value less costs of disposal (BACJ, 2002a, par. 2-2). If the RA is lower than the CA, the impairment loss is reported as the difference between the RA and CA. The two-step test approach is prudent when comparing an asset's CA with its undiscounted future cash flows to avoid recognizing excessive impairment losses by considering probability. However, prudent treatment of GW impairment 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 the systematic amortization of GW, unlike U.S. GAAP and IFRS. Traditionally, in Japan, systematic amortization is considered reasonable and conservative in dealing with the uncertainty of future predictions and the difficulty of GW evaluation. Moreover, it is suitable for a historical cost accounting system, consistent with cost allocation and matching principles (ASBJ, 2003, No. 21, par. 105).[3] From the perspective of accounting usefulness, the ASBJ believes that reflecting the allocation cost of earnings for each reporting period through systematic amortization provides 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, but the international trend for GW impairment has recently returned to the past. Based on a questionnaire survey, the ASBJ, EFRAG, and OIC proposed that GW amortization be reintroduced for the sake of GW impairment based on a questionnaire survey (ASBJ et al., 2014, 2015).

Regarding the recognition trigger, the systematic amortization results showed that the CA of GW was smaller than that of non-amortization. Additionally, comparing an asset's CA to undiscounted future OCF under a two-step impairment test makes GW impairment more unlikely to be recognized than non-amortization because of the higher threshold. As long as the impairment standard under J-GAAP considers that future OCF recognizes impairment triggers by comparing current assets' CA, investigating the predictive value of GW impairment for future OCF is a related research topic to determine whether GW should be amortized.

Conversely, IFRS (IASB, 2004, IAS 36) uses a one-step recognition approach and an annual strict impairment test. The one-step approach under the IFRS is employed by directly evaluating the asset's CA to its RA; when the CA is greater than its RA, impairment loss is recognized. Furthermore, IFRS prohibits the systematic amortization of GW.[4] Instead, IFRS requires annual or more frequent impairment tests whenever changes or events in a business environment indicate asset impairment. The IASB argues that the impairment mechanism under IFRS successfully reflects the underlying economic attributes of GW (IASB, 2004; IAS, 36; BC131G). Thus, GW impairment under IFRS is expected to be more informative and timelier than the two-step test approach with GW amortization under J-GAAP. Furthermore, IFRS requires the non-amortization of GW, increasing systematic assets' CA, and decreasing the recognition threshold, thus implying greater sensitivity to recognition. Therefore, GW impairment under IFRS is more likely to be recognized than amortized CA under J-GAAP.

Goodwill Impairment Accounting Research

Previous studies provide empirical evidence that GW amortization over an arbitrary period produces noise, making it more difficult for users to predict future performance than to provide useful information, suggesting that GW amortization is

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

[4] In 2004, the 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).

not useful in decision-making (Jennings et al., 2001; Moehrle et al., 2001).[5] While some literature indicated significant flaws in both the amortization-and-impairment and impairment-only methods of subsequent accounting for GW (Hellman & Hjelström, 2023; Linsmeier & Wheeler, 2021), most GW amortization in prior research was negative and unfavorable.[6] Nguyen (2019), using a sample of Asia-Pacific countries, found that countries that adopted an IFRS-based impairment approach were more value-relevant than those that did not adopt an IFRS-based impairment approach (accounting for GW with amortization). Ferramosca and Allegrini (2021) also indicated that about two-thirds of a global sample of 352 chief financial officers still preferred GW impairment testing to the amortization process. Bagna et al. (2023) showed that the information conveyed to market investors would not be value-relevant, with the amortization itself added back to the multiple by simulating an alternative accounting scenario for GW amortization. This result supports the current accounting framework and suggests that there is no need for the reintroduction of GW amortization.

In addition to the argument about systematic amortization, GW impairment testing was discussed after the FASB issued SFAS 121 (FASB, 1995). Riedl (2004) found that economic factors were less associated with write-offs of fixed assets, but reporting incentive factors were more related to impairments after the implementation of SFAS No. 121, suggesting that the quality of financial reporting has deteriorated due to changes in accounting standards. Further studies have focused on GW impairment following the application of SFAS 142 (FASB, 2001). Henning and Shaw (2004) showed that firms do not engage in earnings management regarding the amount and timing of impairments after adopting SFAS 142. Lee (2011) posited that eliminating systematic amortization and taking a fair value estimate contribute 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) indicated that managers use the discretionary guidelines provided by the revised SFAS 142 to delay GW impairment, causing a temporary increase in earnings and stock prices. Ramanna and Watts (2012) focused on verifying managers' estimation of GW fair value under SFAS 142. Their results suggested that managers tend to opportunistically engage in

[5] Churyk and Chewning (2003) showed that in the initial abolishment of systematic GW amortization in the U.S., only weak support for GW impairment was found. However, strong evidence of subsequent impairment was found later, thus supporting the decision of regulators to eliminate GW amortization. Some empirical studies investigating GW amortization in Japan (e.g., Yamaji & Miki, 2011) implied that earnings before amortization are more relevant than earnings after amortization. Jennings et al. (2001) and Moehrie et al. (2001) revealed that the value relevance of net income before the deduction of amortization of GW and net income after deduction does not necessarily differ significantly. On the contrary, Henning et al. (2000) noted that the equity market may not see goodwill as an expense because the amortization of GW is not necessarily negatively evaluated in the equity market.

[6] While few views support a systematic amortization, Wang et al. (2011) suggested that a prescribed amortization approach coupled with periodic impairment testing may best indicate a decline in the value of GW.

individual reporting incentives, as outlined in SFAS 142, rather than communicating internal information regarding future foresight.[7] Some investigations under IFRS also noted the same issues in the current impairment test (e.g., André et al., 2015; Carlin & Finch, 2010; Caruso et al., 2016; D'Alauro, 2013; Saastamoinen & Pajunen, 2016).

However, other studies have supported the benefits of the current impairment tests. Stokes and Webster (2010) showed that the IFRS-based GW impairment reflects the underlying economic conditions of firms under the circumstances where the enforcement and implementation of IFRS are ensured with higher audit quality by large audit firms. Chalmers et al. (2011) found that GW impairment losses, as the 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 United Kingdom. They provided evidence that reported GW impairment was significantly and negatively associated with market value. This implies that investors adequately recognize the decline in GW value through impairment and incorporate it into their assessment of firm value. Using an international sample, Karampinis and Hevas (2014) found that GW impairment under IFRS had enhanced timeliness but was less reliable in predicting future OCF than impairment of tangible, long-lived assets.[8]

Investigating the literature on the GW impairment test, most studies captured the native aspect of GW impairment testing in U.S.-based research, where they had mixed conclusions (both native and positive) in IFRS-based research. Since the GW impairment test between SFAS 142 and IFRS had not been fully unified, the differences may be due to institutional factors that significantly affected the quality of accounting reporting (Barth et al., 2012; Burgstahler et al., 2006; Gordon & Hsu, 2018; Lang et al., 2006; Leuz et al., 2003). Therefore, it is worth considering the effectiveness of IFRS-based GW impairment tests in Japan, which is becoming a large IFRS-user country.

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[7] Contrary to criticism of the impairment test, Jarva (2009) found 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 must be impaired.

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

Impairment and Future Cash Flow

Jarva (2009), one of the few authors showing the positive aspects of SFAS 142 implementation regarding its association with future OCF, found that GW impairment under SFAS 142 was related to one and two years of future OCF required by the standard but revealed no compelling evidence that non-impaired firms opportunistically avoided impairment. However, there were signs that GW impairment lags economic impairment when firms undergo contemporaneous restructuring due to agency-based motivation. Cready et al. (2012) also indicated that GW impairment negatively correlated with future OCF. They decomposed negative special items such as restructuring charges, asset impairment losses, and GW impairment losses into subtypes and investigated the predictable and variable impacts on future performance. These results suggested that negative special items contain information contributing to future earnings and cash flow forecasts.

Gordon and Hsu (2018), the most influential study in this field, focused on the difference in impairment standards between U.S. GAAP and IFRS. Unlike IFRS, U.S. GAAP accepts the "probability criterion," which requires a two-step impairment test and adopts a fair value measurement of impairments. They probed the predictive value of impairments in tangible, long-lived assets for future changes in OCF under U.S. GAAP and IFRS.[9] The impairment reported under IFRS was negatively related to changes in future OCF but not under U.S. GAAP. Furthermore, IFRS impairments were predictable in highly enforceable countries. However, they did not find that the value in use (VIU) measurement attributes permitted under the IFRS provoked impairment under-reporting. Therefore, no significant difference existed in the impairment measurements between the VIU and fair values. Because their research did not focus on GW impairment but on tangible fixed assets, this study examined GW impairment as a major accounting indicator that contributes to the predictability of future OCF regarding the usefulness of accounting information.

HYPOTHESIS DEVELOPMENT

Differences in Recognition and GW Amortization

Similar to 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 flows because OCF recovers investments in assets. Therefore, an impairment loss is recognized when the expected future OCF is estimated to decline to a threshold, indicating that investment in the asset cannot be recovered by future OCF.

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[9] Before Gordon and Hsu (2018), prior research investigated whether current earnings, accruals, and cash flows are informative for future OCF (e.g., Barth et al., 2001; Dechow, 1994). Barth et al. (2001) disaggregated accruals and investigated how the accrual components contributed to the predictability of changes in future OCF. As GW impairment is an accrual component, this study extends prior literature.

However, the quality of impairment reporting differs owing to differences in recognition criteria and GW amortization, giving the hypothesis based on the differences in the relation between the recognition of impairments and the timing when future OCF declines due to features of the accounting standards. GW impairment under IFRS should have an incremental predictive value beyond that under J-GAAP. The combination of a two-step model and amortization as the GW impairment premises suggests that GW impairment is delayed and less informative under J-GAAP relative to IFRS. During the period between economic GW impairment and delayed recognition of GW impairment, the related cash flow has already declined or is independent of economic impairment. As GW impairment is reported after a decrease in cash flows, future changes in OCF are unpredictable or difficult to adequately predict, given the nature of GW, namely that a decrease in cash flows can continue for a certain period.

In contrast, 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 the annual impairment test. Furthermore, the non-amortization of GW, raising asset CA, and lowering the recognition threshold are more likely to recognize GW impairment. Hulzen et al. (2011) indicated that GW impairment leads to more timely accounting information than the amortization approach based on the sample consisting of European companies that adopted the new method of GW accounting following the required adoption of the IFRS. In this study, timely recognition was meant to be the predictive value of future CF supposing that impairments reported under IFRS were negatively associated with changes in future operating cash flows according to Gordon and Hsu (2018). Considering the differences in impairment standards between J-GAAP and IFRS led to the following hypothesis:

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

GW Impairment and Past OCF

The two-step impairment test and GW amortization aim to be more prudent regarding uncertainty in exchange for delayed impairment losses. Following Gordon and Hsu (2018), this study examined the relationship between GW impairment and changes in past OCF. Given the differences in loss recognition between J-GAAP and IFRS, GW impairment under J-GAAP was more likely to be both related to and negatively related to changes in past OCF. By contrast, GW impairment under IFRS was unlikely to be related to or positively related to changes in past OCF. Focusing on past cash flows led to the second hypothesis.

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).

Adopting IFRS and Accounting Quality

The prior research on the comparability of international accounting standards had begun in the U.S. to compare the accounting quality of U.S. GAAP to IAS as non-U.S. GAAP (Barth et al., 2008; Barth et al., 2012; Harris & Muller, 1999; Lang et al., 2006). After the position of IASB rose in European countries when IFRS was adopted as a national accounting standard in place of the domestic standard, studies on the compatibility of IFRS with U.S. GAAP were gradually conducted among the U.S. and each European country (Bradshaw & Miller, 2008; Hughes & Sander, 2008). When more countries decided to adopt IFRS, more international research using global data was conducted, including in Asian and African countries.

Ismail et al. (2013) revealed that IFRS adoption was associated with higher quality of reported earnings in Malaysia. The other Asian countries also successfully made accounting quality improve after adopting IFRS (Wahyuni et al., 2020; Key & Kim, 2020; Adhikari et al., 2021; Ma et al., 2022). Gu (2021) indicated that voluntary IFRS adoption in Japan can improve accounting quality. Gray et al. (2019) investigated what factors motivated Japanese firms to adopt IFRS voluntarily. They found that Japanese firms were motivated to better communicate with global capital market participants through using IFRS. Thus, the GW impairment of firms that switched from J-GAAP to IFRS will be more informative and timelier after shifting to IFRS. The third hypothesis was as follows.

H3: The 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.

RESEARCH DESIGN

This study's model was based on research documenting current earnings, cash flows, and accruals, which were informative about future OCF (Barth et al., 2001; Dechow, 1994). Furthermore, disaggregated accruals contribute to the predictability of changes in future OCF (Barth et al., 2001). 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 current OCF (Barth et al., 2001; Gordon & Hsu, 2018; Jarva, 2009).

$$\sum(\mathrm{OCF}_{i,t+y} - \mathrm{OCF}_{i,t+y-1}) = \alpha_0 + \alpha_1 \mathrm{OCF}_{it} + \alpha_2 \mathrm{ACC}_{it} + \alpha_3 \mathrm{IFRS}_i + \alpha_4 \mathrm{GWIM}_{it} + \alpha_5 \mathrm{IFRS}_i * \mathrm{GWIM}_{it} + \alpha_6 \mathrm{IROA}_{it} + \alpha_7 \Delta \mathrm{OFC}_{it} + \alpha_8 \mathrm{CAPX}_{it} + \alpha_9 \mathrm{REST}_{it} + \varepsilon_{it} \quad \cdots \quad (1)$$

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

where

$\sum(OCF_{i,t+y} - OCF_{i,t+y-1})$ is 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} is firm *i*'s accrual components excluding impairment 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} is the firm *i*'s reported long-lived asset impairment (shown as a positive value).

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

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

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

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

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

DEP_{it} is firm *i*'s depreciation and amortization expenses;

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

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

ΔOFC_{it} is change in firm *i*'s net operating cash flow;

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

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

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

In Equation (1), earnings were disaggregated into current operating cash flows (OCF_{it}),[10] accruals excluding impairments (ACC_{it}), GW impairments ($GWIM_{it}$), and restructuring losses ($REST_{it}$). Both GW impairment and restructuring losses were coded as positive. An indicator variable for reporting under the IFRS and an interaction term for GW impairment reported under the IFRS, $IFRS_i*GMIM_{it}$, were included. The estimated coefficient of GM impairment was expected to be significantly negative, as impairment should be related to future declines in OCF. The interaction term was expected to be significantly negative if $IFRS_i*GMIM_{it}$ had an incremental predictive value. Following Cready et al. (2012), the dependent variable was examined one year ahead and the cumulative change in OCF two and three years ahead because the timing and pattern of future OCF declines were unknown, and future OCF was expected to decrease persistently over multiple periods.

Restructuring firms frequently reported GW impairment; thus, restructuring losses from aggregate accruals were excluded as additional control factors (Gordon & Hsu, 2018). $REST_{it}$, restructuring losses were expected to be positively associated with future cash flows. The median industry returns on assets, $IROA_{it}$, was included to control for industry-specific performance and macroeconomic factors. According to Jahmani et al. (2010), return on assets (ROA) is an indicator of GW impairment, providing strong evidence that most firms whose return on assets is 2 percent or less for two years do not report GW impairment. Next, the current changes in cash flows, ΔOCF_{it}, were included to control for the firm-specific relationship between current and future cash flows. The firm's capital expenditure, $CAPX_{it}$, was included to control its implementation of investment activities, which was expected to positively affect future cash flows (Gordon & Hsu, 2018).

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

[10] In this study, the Nikkei adjusted operating cash flow in the database NEEDS-FinancialQUEST is used.

All the J-GAAP and IFRS samples were compared in the research design described above. However, firms that voluntarily changed their accounting standards from J-GAAP to IFRS may have the motivation to switch the standard. Prior research on voluntary IFRS adoption indicated the motivations or determinants of earlier IFRS adoption may influence disclosure quality (e.g., Christensen et al., 2015; Iatridis, 2012; Kim & Shi, 2012a, 2012b). To deal with endogeneity, the sample of firms using only J-GAAP were dropped, and the sample of firms that voluntarily switched their accounting standards were retained. Assuming all firms that shifted IFRS had a certain motivation, such as avoiding GW amortization costs, comparing the pre- and post-IFRS of the same firm sample can offset the common incentive.

The estimated coefficients for each variable were robust *t*-statistics based on standard errors clustered at the firm and fiscal year levels. Controlling for the fixed effects is crucial when using panel data. Year- and industry-fixed effects were included in the results.

SAMPLE AND DESCRIPTIVE STATISTICS

The sample in this study included 9,995 firm-year observations representing 1,222 firms from 2007 to 2019[11], including J-GAAP and IFRS firms in Japan. This period was selected because the sample of IFRS firms was available from 2009 onwards. Furthermore, it was necessary to collect continuous data over multiple periods for firms and for firms that shifted their accounting standards from J-GAAP to IFRS at least two years prior to analyzing H2. The NEEDS-FinancialQUEST Nikkei database was used to obtain financial statement data. The NEEDS database does not contain detailed data on GW impairment. Therefore, GW impairment data from annual reports in Japan were collected manually. Furthermore, the NEEDS database does not include special item data on IFRS firms, such as impairment and restructuring charges; thus, these data were collected manually. Due to the effectiveness of manual collection and the conditions required to adopt IFRS in Japan, firms with total assets of less than 500 million USD were excluded from the sample.[12]

[11] The data period is until 2019 in this paper because it is reasonable to avoid the sample in 2020 and 2021 to avoid the impact of COVID-19. This study uses a sample containing at least three ahead of consecutive fiscal years to investigate the relationship between current GW impairment and future cash flow in the three-year future. The latest sample year is 2019 (= 2016 plus 3 years).

[12] According to the regulation for adopting IFRS in Japan, firms must 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 are listed in the U.S. or abroad and must be audited by a large auditor. Additionally, firm size can affect profit quality (Ball & Foster, 1982; Doyle et al., 2007). Firms that apply IFRS are considered relatively large in Japan; thus, this study considers it reasonable to eliminate small J-GAAP firms compared to IFRS firms in this study.

Financial operating firms such as banks, securities, and insurance companies were excluded because of their significantly different financial reporting frameworks. Sample observations with fiscal periods longer than 12 months were excluded. The data at the upper and lower 1 per levels for all explanatory variables by industry were winsorized, and observations with missing data were deleted. In the sample, 9,736 observations (1,192 firms) are J-GAAP firms, and 259 observations (30 firms) were IFRS firms. Table 1 presents the sample selection.

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 shows the descriptive statistics for each J-GAAP and IFRS explanatory variable, adding GW and net income (*NI*) as references, including the mean, median, standard deviation, minimum, and maximum. Both the average ratios of GW and GW impairment to total assets at the beginning of the year were higher in IFRS firms than in J-GAAP firms. Regarding firm performance, both *NI* and OCF in IFRS firms were, on average, higher than those in J-GAAP firms because large global firms tended to adopt IFRS in Japan.

Table 2: Descriptive Statistics

	J-GAAP					IFRS				
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 3: Pearson Correlation Matrix (upper row IFRS; lower row J-GAAP)

J.GAAP/IFRS					)*GWIM*	*OCF*	*ΔOCF*	*ACC*	*CAPX*	*REST*	*IROA*	*ΔAR*	*ΔAP*	*ΔINV*	*DEP*	*OTHER*
	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
	-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
	-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
	-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.

Before showing the regression results, Table 3 reports Pearson's correlation matrix for the dependent and explanatory variables. The upper and lower rows represent the Pearson correlation matrices for the IFRS and J-GAAP. The accumulated current and the changed OCF tended to have a strong relationship. The negative correlation between GW impairment (*GWIM*) and future OCF suggested that GW impairment may be informative and timely. Multicollinearity caused by variance inflation factors (VIF) in the multivariate analysis was tested, resulting in a mean VIF of 1.54, confirming that it was not a problem.

EMPIRICAL RESULTS

Panel A in Table 4 represents the results of the models in Equation (1), and Panel B represents Equation (2), where the dependent variable is the sum of the changes from one- to 3-year-ahead OCF. The estimated coefficients of GW impairment, $GWIM_{it}$, were samples under J-GAAP. Except for the 2-year-ahead OCF, the estimated coefficients $GWIM_{it}$ of 0.0626 (1) and 0.0823 (2) with the changes in 1-year-ahead OCF, and the estimated coefficients $GWIM_{it}$ of 0.2877 (1) and 0.3481 (2) with the sums of changes in 3-year-ahead OCF were insignificant in both Models (1) and (2), respectively. However, the estimated coefficients $GWIM_{it}$ of −0.1499 (1) and −0.1954 (2) with the sum of the changes in the 2-year-ahead OCF were negatively significant. This result implied that J-GAAP GW impairment could be timely and informative about future OCF; however, it would not be sufficient.

However, the estimated coefficients on the interaction term, $IFRSi*GWIM_{it}$, of −0.7024 and −0.5607 in Models (1) and (2), respectively, were negatively and significantly associated with a change in 1-year-ahead OCF, suggesting that GW impairments under IFRS had incremental predictive value. Furthermore, the estimated coefficient of $IFRSi*GWIM_{it}$ of −2.3588 was negatively significant in Model (1), with the sum of the changes in 2-year-ahead OCF, and −1.9878 and −1.8326 were negatively significant in Models (1) and (2), respectively, with the sum of the changes in 3-year-ahead OCF. Additionally, the sums of the estimated coefficients of $GWIM_{it}$ and $IFRSi*GWIM_{it}$ were significantly different from zero at the 0.05 and 0.10 levels in Models (1) and (2), respectively, implying that IFRS impairments had predictive value.

Finally, the results under IFRS that estimated the coefficients on the interaction term, $IFRSi*GWIM_{it}$, were all negatively and significantly associated with a change in future OCF, implying that GW impairment under IFRS had a higher predictive value than J-GAAP and supporting H1.

Table 4: Fixed Effects Regressions of Future Operating Cash Flows on Goodwill Impairment

(i) Panel A Reports The Results Of Models In Equation (1)

		Model （1）		
Dependent Variable:				
	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
⊿OCF	?	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
Test for *GWIM* + *GWIM*IFRS* = 0				
p-value		<0.05	<0.1	<0.1

***, **, * 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 and fiscal year below the estimated coefficient. Coefficients are estimated based on revised Models (1) with the indicator $IFRS_i$ to identify firms adopting IFRS. All variables are defined in Appendix A.

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

Dependent Variable:	Exp. Sign	Model（2） 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	
⊿OCF	?	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	
⊿AR	+	-0.2636	***	0.1344	***	0.0574	
		-4.28		2.6		1.16	
⊿AP	-	-0.4661	***	-0.2035	***	-0.0557	
		-10.48		-4.79		-1.33	
⊿INV	+	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	
Test for *GWIM* + *GWIM*IFRS* = 0							
p-value		<0.05		<0.1		<0.1	

***, **, * 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 and fiscal year below the estimated coefficient. Coefficients are estimated based on revised Models (2) with the indicator *IFRSi* to identify firms adopting IFRS. All variables are defined in Appendix A.

Table 5 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, $GWIM_{it}$, of −1.1583, and −1.3439 in Models (1) and (2), respectively, were negative and significant in both models, suggesting that GW impairments under J-GAAP were related to a decrease in past OCF. The negative relationship was consistent with both reporting delays as a measure of GW impairment and previous cash flow declines. The estimated coefficients on the interaction term, $IFRSi*GWIM_{it}$, of 2.1874 and 2.5389 in Models (1) and (2), respectively, were positive and significant with changes in the prior year OCF, implying that GW impairments under IFRS did not delay reporting GW impairments and were timelier to recognize GW impairments than J-GAAP. These results supported H2.

Table 5: Fixed Effects Regressions of Past Operating Cash Flows on Goodwill Impairment

Dependent Variable:	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	
Test for *GWIM* + *GWIM*IFRS* = 0				
p-value	<0.01		<0.01	

***, **, * 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 and fiscal year 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 $IFRS_i$ to identify firms adopting IFRS. All variables are defined in Appendix A.

Table 6 reports the investigation results on firms voluntarily changing their accounting standards from J-GAAP to IFRS. None of the estimated coefficients on GW impairments under J-GAAP, $GMIM_{it}$, were significant in either Model (1) or (2), suggesting that GW impairments of the shifting firms under J-GAAP were not timely and informative. Conversely, all estimated coefficients on the interaction term, $IFRSi*GWIM_{it}$, were negative and significant with changes in future OCF, except for the change in the 2-year-ahead OCF in Model (2). Further, the sums of estimated coefficients on $GWIM_{it}$ and $IFRSi*GWIM_{it}$ were significantly different from zero at the 0.01 level in Model (1) and 0.05 or 0.10 level in Model (2), implying that IFRS impairments had predictive value. These results suggested that GW impairments become timelier and more informative after adopting IFRS, supporting H3.

Table 6: IFRS Shifting Firms Fixed Effect Regressions of Past And Future Operating Cash Flows on Goodwill Impairment

Dependent Variable:				
		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
Test for *GWIM* + *GWIM*IFRS* = 0				
p-value	<0.05	<0.01	<0.01	<0.01
		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
Test for *GWIM* + *GWIM*IFRS* = 0				
p-value	<0.05	<0.1	<0.05	<0.1

***, **, * 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 and fiscal year 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.

CONCLUSION

This study investigated the predictive value of GW impairment for future OCF under J-GAAP and IFRS using a Japanese sample because the accounting standard of GW impairment is one of the most controversial accounting issues (ASBJ et al., 2014; 2015; IASB, 2020) and differs significantly between J-GAAP and IFRS (ASBJ, 2015; 2016; 2017). Furthermore, this study explored whether the difference in the predictive value of GW impairment was due to distinctions in recognition and GW amortization under both impairment standards. The results showed that GW impairment reported under IFRS, which requires an annual impairment test with GW non-amortization, was more negatively related to changes in future OCF than those under J-GAAP, which required a two-step impairment test and GW amortization.

In Japan, IFRS firms include voluntarily shifting from domestic accounting standards and newly listed adopting IFRS at the beginning. These firms may have different motivations for adopting IFRS. One of the major motivations for shifting accounting standard firms is thought to be "avoiding systematic GW amortization." This study revealed that the impairment test under IFRS was valid among shifting accounting standard firms. The evidence suggested that the GW impairment of firms that shifted their accounting standards from J-GAAP to IFRS was negatively associated with changes in future OCF after the shift. This result implied that GW impairment under IFRS was more useful and timelier than that under J-GAAP, even in the case of voluntary shifting to IFRS. Given these results, adopting the non-amortization of GW and annual impairment tests could improve accounting reports in Japan regarding the predictive value of GW impairment for future OCF. The findings provide evidence of the adequacy of GW non-amortization and the effectiveness of GW impairment tests under IFRS from a viewpoint consistent with the objective written in the accounting standard of impairment losses.

This study's contributions are three-fold. First, it extends the literature on GW impairments by examining the relation between GW impairments and changes in future OCF. The main tests provide evidence that GW impairments under IFRS, but not under J-GAAP, were negatively associated with changes in future OCF. Second, it extends prior studies on the predictive content of earnings components to show that GW impairments under IFRS were more informative about future performance and timely about loss recognition. Third, the author examined GW impairments over a long period and in a single country, allowing an examination that ignored the difference in institutional settings across countries. However, while the implications of this research are insightful, there are still some limitations. First, based on the relationship between impairment losses in the current period and future cash flows, the analysis results are not direct evidence of whether the standards are implemented as described in the standard, even though this survey was based on the intention of the accounting standards as the criteria for judgment. Second, because this investigation did not incorporate market reactions or returns into its analytical model, it cannot provide direct evidence as to whether accounting standards affect their usefulness to financial statement users. Third, the systematic amortization method under J-GAAP was influenced by the manager's estimation for the depreciation period, while the GW impairment highly depended on the level of acquisition. Although high acquisition costs induce inappropriate GW impairment, this study did not control the GW as assets due to the inability to estimate expected acquisition costs. Finally, previous research on the GW impairment test focused on the earnings management incentives, while the current study did not consider any opportunistic motivations for impairment.

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APPENDIX

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).