Persistence of Asset Impairment Losses and their Predictability of Future Operating Performance

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Abstract: Using financial data from Korean listed firms from 2011 to 2023, this study investigates the persistence and predictive value of impairment losses on tangible and intangible assets. The analysis shows that impairment losses occur frequently and persist over time. Firms that recognize impairment losses in a given year are significantly more likely to do so in subsequent years. Moreover, impairment losses are negatively associated with future operating cash flows, operating income, and operating profit margins. When we divide impairment losses into normal and abnormal components, normal impairment losses are significantly negatively associated with future performance, while abnormal impairment losses exhibit no significant association. These findings lend support to the recent introduction of IFRS 18, which proposes the inclusion of impairment losses in the calculation of operating profit. This study offers robust empirical evidence relevant to standard setters, investors, and analysts in assessing the financial implications of impairment recognition.

Keywords: Impairment losses; Operating income; IFRS 18; Persistence; Predictive value

1. Introduction

A recent development in accounting standards triggered a debate on the definition of operating income and the economic properties of income statement line items. K-IFRS No. 1001 *Presentation of Financial Statements*, which corresponds to IAS 1 *Presentation of Financial Statements*, states how to calculate operating income. Specifically, Paragraph 138.2 of K-IFRS No. 1001 and its related Implementation Guidance (12-1) define operating profit as revenue less cost of sales, and selling and administrative (SG&A) expenses. They also require the entities to present this measure in the statement of profit or loss. The seemingly straightforward definition of operating profit under K-IFRS poses a critical challenge: the standard does not clearly define a company's main operating activities. This ambiguity gives managers considerable discretion in deciding which transactions to categorize as operating profit. For instance, managers must exercise judgment in classifying items as operating or non-operating —a decision often based on whether activities are recurring or non-recurring.

However, in April 2024, the International Accounting Standards Board (IASB) issued IFRS 18 *Presentation and Disclosure in Financial Statements*. IFRS 18 classifies income and expenses in the statement of profit or loss into three categories: operating, investing, and financing. Under this framework, all income and expense items not classified as investing or financing are included in the operating category, which serves as the basis for calculating operating profit. This *residual* approach aims to address the difficulty of assessing whether each line item should be classified as operating activities and whether the nature of such items is recurring or non-recurring.[1]

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[1] BC89 The IASB decided to require an entity to classify in the operating category all income and expenses included in profit or loss that are not classified in the investing, financing, income taxes or discontinued operations categories. As a result, the operating category is the 'default' category. (abbreviated)

(a) an entity's operations include, but are not limited to, an entity's main business activities. For example, income and expenses from supporting activities, which might not generate revenue directly, nonetheless arise from activities conducted in the course of an entity's operations.

(b) income and expenses should be included in the operating category regardless of whether they are volatile or unusual in some way. The IASB acknowledged that such income and expenses might not have predictive value. However, in the IASB's view, predictive value is not a characteristic that determines whether to include income or expenses in the operating category or in another category. An entity's operations can be volatile; therefore, such income and expenses arise from an entity's operations. Moreover, excluding volatile or unusual income or expenses from operating

Effective in 2027, IFRS 18 will replace K-IFRS No. 1001, superseding previous definition of operating income. There has been a lot of discussion on which the income statement line items should be included in operating profit after the introduction of IFRS 18. For instance, an article in *The Chosun Ilbo* reported preparers' concerns that "if temporary and non-recurring items are included in operating profit, the stability and predictability of earnings may become weaker" (May 14, 2024).[2] Despite these concerns, there has been limited evidence about whether the items being reclassified under IFRS 18 are, in fact, temporary or non-recurring.

To provide direct empirical evidence on this issue, this study examines the persistence and operating relevance of asset impairment losses — an expense item currently classified as non-operating items under K-IFRS. In other words, we gauge whether asset impairment losses satisfy the necessary conditions, as articulated in the above news article, for inclusion in operating income even before the adoption of IFRS 18.

Our sample comprises consolidated financial data of firms listed in Korean stock markets from 2011 to 2023, the period after the mandatory adoption of K-IFRS in South Korea. We find that asset impairment losses are economically significant. Impairment losses are, on average, 0.67% of beginning total assets and 23% of the reported operating profit. In addition, we find that the recognition of impairment losses is widespread in our sample. About 50% of observations report such losses during the sample period. 21% of observations report impairment losses on tangible assets and 42% report those on intangible assets. The high frequency of impairment losses suggests that these may not be strictly one-time events, hinting that impairment losses could be a recurring feature of a firm's ongoing operations.[3]

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profit would not faithfully represent the results of an entity's operations for the period. For example, if equipment is used to produce goods or services, it is necessary for the operating category to include all income and expenses, including depreciation and impairment, relating to that equipment to provide a complete picture of the results from its operations for the period. The income and expenses would not arise without the operating decisions to purchase the equipment and decide how to use it in its operations.

[2] This can be verified at the following link:
https://biz.chosun.com/stock/stock_general/2024/05/14/NVYYTREZJRCWTD5RI6WPIZ7UYI/?utm_source=naver&utm_medium=original&utm_campaign=biz.

[3] As a point of reference, only 1.33% of firms in the sample reported positive inventory valuation losses—

It is important to distinguish between the *frequency* of an event and its *persistence*. The high frequency of impairment losses does not, by itself, prove that they are a persistent component of earnings. True persistence implies a predictable, time-series pattern. Specifically, certain line items would be highly persistent if they were recognized consistently over time. Conversely, line items with high volatility and little predictability would be considered transitory even if they appear frequently in a cross-sectional sample. To empirically test persistence, we examine the time-series properties of impairment losses. Results from correlation analysis and multivariate regression analysis show a significantly positive association between impairment losses across years up to three subsequent years. This suggests that impairment losses are persistent, rather than a purely transitory economic event (Cready et al. 2010).[4]

We next test whether asset impairment losses have predictive power for future operating profit. A significant association would indicate that impairment losses convey information about a firm's future operating performance. Conversely, a statistically insignificant association would suggest that impairment losses are unrelated to the core earnings generation process and therefore lack predictive value.

Consistent with prior studies such as Riedl (2004) and Gordon and Hsu (2018), we find that impairment losses have a significantly negative association with future operating performance up to three subsequent years. Specifically, while impairment losses were not significantly related to future sales revenue, they were significantly and negatively related to future operating profit margins. This suggests that firms may take a conservative approach, recognizing impairment losses in advance of an expected decline in operating profitability.

Additionally, we partition normal and abnormal components in impairment losses. Normal impairment losses refer to those arising from regular and objective assessments

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which are typically included in operating profit—during the sample period. This suggests that a firm's main operating activities cannot be identified based solely on recurrence or repetitiveness. Instead, such assessment should be made by considering a combination of factors, including the nature of the firm's core operations, the relevance of line item to firm value, and its connection to operating performance.

[4] As we explain later, these results could imply either insufficient timely recognition of impairment losses or frequent negative economic events leading to impairments.

of asset recoverability, such as declines in expected cash flows or fair value, consistent with accounting standards (e.g., IAS 36) and economic conditions. In contrast, abnormal impairment losses are characterized by unusually large, irregular, or discretionary write-downs that deviate from expected patterns and may reflect managerial opportunism or accounting error. Our results show a clear difference in the predictive values of those two components. Normal impairment losses are significantly negatively associated with future operating performance, while abnormal impairment losses show no significant association with future performance. These results indicate that only the normal portion of impairment losses contains meaningful forward-looking information about operating performance, but the abnormal portion may indeed be "noisy."

Taken together, our findings challenge the traditional classification of asset impairment losses as transitory or non-recurring. We provide systematic evidence that these losses are both persistent and predictive of future performance. In other words, asset impairment losses meet the "common" criteria to be included in operating income even before the adoption of IFRS 18. These results support the view that impairment losses are an integral part of a firm's ongoing operating performance, supporting the IASB's decision to include asset impairment losses in operating profit under IFRS 18. By incorporating these persistent and predictive costs, the new standard would result in an operating profit measure that more faithfully represents a firm's core performance and enhance investors' ability to forecast future earnings and cash flows.

2. Accounting Standards for Impairment Losses on Tangible and Intangible Assets

Prior to the mandatory adoption of K-IFRS, Korean accounting practice was governed by the domestic standards, Korean Generally Accepted Accounting Principles (K-GAAP). Under K-GAAP's Accounting Standard No. 5 *Property, Plant and Equipment*, impairment losses were recognized when the expected future cash flows from an asset are lower than its carrying amount. In such cases, the impairment losses were calculated as the difference between the carrying value and the recoverable amount, defined as the higher of fair value less costs to sell or value in use. Accounting Standard No. 3 *Intangible Assets* also provided similar guidance for intangible assets. For intangible assets other

than goodwill, if the recoverable amount was significantly lower than the carrying amount, the difference was recognized as an impairment loss. Goodwill was amortized over a period not exceeding 20 years. Although annual impairment testing was not required, the test had to be performed if there were signs of impairment, with any resulting loss recognized accordingly. For both tangible and intangible assets, if the recoverable amount increased after the recognition of impairment losses, they could be reversed up to the amount previously recognized.

After the adoption of IFRS, K-IFRS No. 1036 *Impairment of Assets* provides general guidance for all types of assets. Under K-IFRS No. 1036, an entity is required to evaluate at the end of each reporting period whether there are any indications that assets may be impaired. If such indications exist, the entity must perform an impairment test and estimate the asset's recoverable amount. Indications of impairment could include both external and internal information. External information may include a decline in market value or the deterioration of economic conditions, while internal information includes physical damage to the asset or changes in its intended use. However, goodwill and intangible assets with indefinite useful lives are required to be tested for impairment at least annually regardless of whether there is any indication of impairment. The recoverable amount is defined as the higher of fair value less costs of disposal or value in use. If the recoverable amount is lower than the asset's carrying amount, the difference is recognized as an impairment loss, which is recorded as an expense in the current period. We note that the impairment-only model for goodwill could mechanically incorporate both the economic decline in expected future benefits and the amortization-like reduction in unidentifiable synergies. This accounting structure may generate impairment losses that recur over time, even in the absence of discrete economic shocks. Accordingly, the persistence and predictability of impairment losses observed in this study should be interpreted in light of this impairment-only regime for goodwill.

In cases where the asset is part of the smallest identifiable group of assets that generates largely independent cash inflows, the recoverable amount is measured at the level of a cash-generating unit. After recognizing an impairment loss, if the recoverable amount increases and exceeds the impaired carrying amount, the previously recognized loss can

be reversed, up to the original amount of the impairment. This reversal is recognized as income in the current period.

3. Literature Review

Prior research on asset impairment losses can be broadly classified into three main streams: (1) studies examining the determinants of impairment losses, (2) studies exploring the relationship between impairment losses and earnings management, and (3) studies analyzing the value relevance of impairment losses.

Francis et al. (1996) and Riedl (2004) identify stock returns, past performance, industry trends, and macroeconomic growth as key determinants of impairment losses. Focusing on goodwill, Li et al. (2011) find that firms paying high acquisition premiums are subsequently more likely to recognize goodwill impairment losses. Kim et al. (2012) find that firms recognizing impairment losses on tangible and intangible assets exhibit higher debt ratios, lower equity ratios, and lower returns on total assets. Additionally, firms that report net losses in both the prior and current fiscal years are more likely to recognize impairment losses. Kim et al. (2015) also report that impairment losses on tangible and intangible assets contain useful information for predicting future operating cash flows and returns on total assets, suggesting that such losses reflect managers' expectations regarding future operating performance.

Meanwhile, Park and Lee (2020) analyze the quarterly reporting patterns of impairment losses on tangible and intangible assets among listed firms in Korea and find that these losses are most frequently recognized in the fourth quarter of the fiscal year. The authors suggest that firms may attempt to delay recognition throughout the fiscal year but face greater scrutiny and reduced discretion during the year-end audit process, resulting in a concentration of reported impairment losses in the fourth quarter.

Riedl (2004) identifies two key managerial incentives driving the recognition of impairment losses on tangible and intangible assets: big bath accounting —firms record large impairment losses during periods of poor performance to depress current earnings and enhance future results; and income smoothing —firms recognize impairment losses during profitable periods to reduce current earnings and maintain consistent performance

over time. A Korean study also finds that both big bath and income smoothing incentives are significant determinants of impairment losses (Sohn and Yum 2011). Kim (2022) further reports that firms employ impairment losses and discretionary accruals simultaneously to manage reported earnings toward a target level. Kwak and Baek (2018) find that, following the adoption of K-IFRS, some firms engage in both accrual-based and real earnings management to avoid recognizing goodwill impairment losses.

Several studies point out that K-IFRS No. 1036 may not fully achieve its intended objective of ensuring timely recognition of impairment losses and providing financial statement users with decision-useful and timely information. Noh et al. (2012) document a decline in the frequency of goodwill impairment recognition after the implementation of K-IFRS. Baek and Choi (2016) report a decrease in the timeliness of goodwill impairment recognition, and Jeong et al. (2015) document a weakened correlation between goodwill impairment losses and underlying economic variables in the post K-IFRS adoption period. Nam and Choi (2019) show that the association between goodwill impairment and managerial incentives—such as big bath accounting and income smoothing— is stronger after the adoption of K-IFRS.

In parallel, international studies have compared the accounting standards for impairment losses under IFRS and U.S. GAAP. Under U.S. GAAP, the accounting for impairment of long-lived assets with finite useful lives was originally established by SFAS No. 121 *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed of*, issued in 1995. This standard was later superseded by SFAS No. 142 *Goodwill and Other Intangible Assets* and SFAS No. 144 *Accounting for the Impairment or Disposal of Long-Lived Assets*, both issued in 2001. In 2009, the requirements of SFAS Nos. 142 and 144 were codified into ASC 360-10. Currently, the accounting for impairment of goodwill and intangible assets with indefinite useful lives is governed by ASC 350-20 and ASC 350-30, respectively.

Gordon and Hsu (2018) examine the association between impairment losses on tangible and intangible assets and future operating cash flows for firms reporting under IFRS and U.S. GAAP. Their findings indicate that, under U.S. GAAP, impairment losses are not significantly associated with future operating cash flows. In contrast, impairment

losses recognized under IFRS exhibit greater timeliness and are significantly and negatively associated with future operating cash flows. The relatively higher informational value of impairment losses under IFRS compared to U.S. GAAP can be attributed, in part, to the ability to reverse previously recognized impairment losses. Baugh et al. (2024), based on a cross-jurisdictional analysis of IFRS and U.S. GAAP-reporting firms, find that the option to reverse impairment losses under IFRS enhances the informativeness of impairment losses. This is because the reversal of impairment losses under IFRS allows firms to provide more information to investors than U.S. GAAP. Horton and Serafeim (2010) provide supporting evidence from the U.K. context, showing that goodwill impairment losses recognized under IFRS conveyed incrementally value-relevant information to investors.

4. Magnitude and Frequency of Impairment Losses on Tangible and Intangible Assets

This section examines the magnitude and frequency of impairment losses and reversals related to tangible and intangible assets among listed firms in Korea. The purpose of this analysis is to determine how frequently such impairment events occur and evaluate their economic materiality. The sample used for the empirical analysis consists of Korean listed firms from 2011—the year when the mandatory adoption of K-IFRS began—through 2023. The analysis is based on 14,999 firm-year observations obtained from the consolidated or separate financial statements of these firms.[5]

Table 1 and Figures 1 and 2 present the annual average values of impairment losses and reversals on tangible and intangible assets. To assess the relative magnitude of impairment losses and reversals, each value is scaled by the beginning amount of total

[5] The Korean International Financial Reporting Standards (K-IFRS) do not explicitly define separate financial statements. For firms with subsidiaries, financial statements prepared in accordance with K-IFRS No. 1110 are referred to as consolidated financial statements. For firms that prepare consolidated financial statements, the financial statements prepared in accordance with K-IFRS No. 1027—using the equity method, fair value method, or cost method for interests in subsidiaries, associates, and joint ventures—are referred to as separate financial statements. In practice, the term "separate financial statements" typically refers to financial statements prepared by firms that do not prepare consolidated financial statements but apply the equity method for interests in associates.

assets.[6]

[Insert Table 1 here]

The gross impairment losses (before netting with reversals) on tangible and intangible assets increased from 0.40% of total assets at the beginning of fiscal year in 2012 to 0.86% in 2019 and 0.84% in 2020. This increase was observed in both tangible assets (from 0.09% in 2012 to 0.35% in 2020) and intangible assets (from 0.31% in 2012 to 0.59% in 2019). Although gross impairment losses declined to 0.73% in 2023, they remain at a relatively higher level compared to the earlier period. The average gross impairment loss on tangible assets was 0.22%, whereas the average gross impairment loss on intangible assets was higher at 0.46%. In contrast, impairment reversals remained close to 0.00% or at immaterial levels in most years.

[Insert Figure 1 here]

[Insert Figure 2 here]

As we standardize impairment losses by the beginning amount of total assets, the magnitude of impairment losses may appear relatively modest; however, their impact becomes more noticeable when we scale them by operating profit. For example, on average, the net amount of impairment losses—calculated as impairment losses net of reversals—amounted to 0.66% of the beginning amount of total assets (=0.67%−0.01%), which represents 23% of operating profit (=0.66%/2.87%). Furthermore, in 2023, the net total impairment losses were 0.71% of beginning total assets (=0.73%−0.02%), accounting for 59.17% of operating profit for the year (=0.71%/1.20%). This finding suggests that including impairment losses in operating profit could significantly reduce reported operating profit.

Additionally, we analyze whether the observed upward trends in impairment losses and reversals were statistically significant. We construct a time trend variable, which is equal

[6] Henceforth, we note the sum of impairment losses from tangible and intangibles assets as *total* impairment losses.

to one in 2012 and increases by one each subsequent year. We then conduct regression analyses using this time trend variable as the independent variable and impairment loss variables as the dependent variables. Untabulated results show that the coefficient on the time trend variable is significantly positive when the dependent variable is gross or net impairment losses on tangible and intangible assets (at the 1% level). However, the coefficient on time trend was positive but not statistically significant when the dependent variable is intangible asset impairment losses. In the case of impairment reversals, a positively significant coefficient on the time trend variable has a very modest magnitude.

Table 2 presents the frequency of total impairment losses and reversals, as well as separately for tangible assets and intangible assets. For this analysis, we calculate the proportion of firms whose impairment losses and reversals exceed thresholds of 0%, 1%, and 3% of total assets at the beginning of fiscal year. Panel A reports the results for gross value of impairment losses, Panel B reports impairment loss reversals, and Panel C presents the net amount of impairment losses after deducting reversals. During the sample period, 49.68% of firms recognized impairment losses on tangible and intangible assets. This proportion increased from 43.91% in 2012 to 54.31% in 2020, before declining to 49.44% in 2023. These results indicate that approximately half of the sample firms recognized impairment losses on tangible and intangible assets. The proportion of firms with gross total impairment losses exceeding 1% increased from 8.93% in 2012 to 17.94% in 2019. Similarly, the proportion of firms with gross total impairment losses exceeding 3% rose from 3.07% in 2012 to 7.97% in 2019.

The higher frequency of intangible asset impairments than that of tangible asset impairments in Table 2 mirrors their greater economic significance in Table 1. We find that intangible asset impairments are reported at nearly twice the rate of tangible asset impairments. While 4.88% (1.80%) of firm-years report tangible asset impairments exceeding 1% (3%) of beginning total assets, the corresponding frequencies for intangible asset impairments are substantially higher at 9.40% (3.72%).

However, a time-series analysis reveals a divergent trend between impairments on the two asset classes. The frequency of tangible asset impairments has risen, more than

doubling from 10.82% in 2012 to 28.13% in 2023. In contrast, the rate for intangible asset impairments—while consistently higher in absolute terms—remained stable, moving from 40.31% in 2012 to 39.06% in 2023. The frequency of tangible asset impairments exceeding 1% of beginning total assets nearly tripled from 2.43% to 7.20% over the sample period, whereas equivalently material intangible impairments showed only a modest increase from 6.58% to 8.65%

Panel B of Table 2 presents the frequency of impairment loss reversals for tangible and intangible assets. Across the entire sample period, 8.35% of firms reported impairment loss reversals. This proportion increased from 2.98% in 2012 and peaked at 14.48% in 2021. Similar with impairment losses, impairment loss reversals occurred more frequently for intangible assets than for tangible assets. Panel C of Table 2 presents the annual distribution of net impairment losses, calculated as impairment losses minus reversals.

Figures 3 through 5 further illustrate the annual trends in the proportion of firms whose net impairment losses exceeded 0%, 1%, and 3%. Across the entire sample, 48.46% of firms reported positive net impairment losses—similar to the 49.68% reported in Panel A for gross impairment losses. This similarity is due to the relatively low frequency and small magnitude of impairment loss reversals. The proportion of firms with positive net impairment losses rose from 43.64% in 2012 to 52.57% in 2020, before declining to 47.43% in 2023. The proportion of firms whose net impairment losses exceeded 1% (3%) of beginning total assets increased from 8.75% (3.07%) in 2012 to 17.88% (7.97%) in 2019, and then slightly declined to 14.96% (6.08%) in 2023.

As we did with the magnitude of impairment losses, we regress the frequency of firms reporting positive net impairment losses on the time trend variable. Untabulated results indicate a statistically significant upward trend (at the 1% level) for both net total impairment losses and net tangible asset impairment losses. The estimated coefficients for the time trend variable were both significantly positive at 0.44% and 1.67%, respectively. In contrast, the coefficient for net intangible asset impairment losses was −0.27% and not statistically significant, suggesting that the overall upward trend in

impairment losses is primarily driven by tangible assets. This inference remains unchanged when we apply the thresholds of 1% or 3%. The estimated trend coefficient was 0.60% (0.51%) when the dependent variable is an indicator variable of net total impairment losses exceeding 1% (3%) of beginning total assets, and tangible asset impairments. For intangible asset impairments, the corresponding coefficients were positive but statistically insignificant.

In summary, the results from Table 2 and Figures 3 through 5 show that impairment losses are a frequently recognized item, with approximately half of the firms reporting them. Moreover, a significant proportion of firms reported material levels of impairment losses, and the frequency of such losses has shown a statistically significant increasing trend, particularly in relation to tangible assets.

[Insert Table 2 here]

[Insert Figure 3 here]

[Insert Figure 4 here]

[Insert Figure 5 here]

5. Concentration of Impairment Losses by Industry

This section examines whether impairment losses are concentrated within specific industries. Table 3 presents industry-level data of firms reporting net impairment losses on tangible and intangible assets exceeding 0%, 1%, and 3% of total assets at the beginning of fiscal year. We follow the Korean Standard Industrial Classification (KSIC) at the medium classification level. We discard industries with observations fewer than 150 firm-year observations. In Table 3, shaded cells indicate industries in which the proportion of firms with impairment losses exceeds the overall sample average. Publishing industry (62.18%), computer programming, consultancy and related activities (53.95%), and video and audio production and distribution (61.84%) report higher proportions of firms with positive net impairment losses than the sample average of 49.99%. Moreover, industries such as pharmaceutical manufacturing, medical, precision, and optical instruments manufacturing, wholesale and brokerage services, and programming and system integration services exhibit above-average proportions of firms

reporting impairment losses that exceed not only 0%, but also the 1% and 3% thresholds relative to beginning total assets. Notably, the publishing industry reports the highest proportions of firms with impairment losses exceeding 1% (27.16%) and 3% (11.29%), suggesting that large and frequent impairment losses are a defining characteristic of this sector. In contrast, traditional manufacturing sectors such as food manufacturing (41.67%), primary metal manufacturing (41.13%), and rubber and plastic products manufacturing (42.06%) display below-average proportions of firms recognizing impairment losses. In these industries, observations with impairment losses exceeding 1% or 3% of beginning total assets are relatively rare.

These findings suggest that impairment losses are not uniformly distributed across all sectors but are instead concentrated in specific industries. In particular, industries with a high proportion of intangible assets—such as pharmaceutical manufacturing, medical, precision, and optical instruments manufacturing, as well as media and program-related sectors—or those with asset structures that are highly sensitive to economic cycles, tend to exhibit a higher likelihood of recognizing impairment losses.

[Insert Table 3 here]

6. Persistence of Impairment Losses on Tangible and Intangible Assets

Given the previous finding that a substantial portion of firms report impairment losses on tangible and intangible assets, this section investigates whether firms tend to recognize impairment losses repeatedly, i.e., whether such losses exhibit recurrence or persistence—by employing two complementary approaches.

First, we examine the time-series correlation of impairment losses. Specifically, we correlate current-year net impairment losses with their values from the three preceding (lags) as well as three subsequent (leads) years. Table 4 presents the Pearson correlation matrix for our sample of 14,999 firm-year observations from 2012 to 2023. The results show that net impairment losses recognized in year t exhibit a positive and statistically significant correlation with impairment losses reported in both the three preceding ($t-3$

to *t−1*) and three subsequent years (*t+1* to *t+3*). This finding suggests that the recognition of impairment losses is not purely idiosyncratic or one-off but tends to recur over time. When the analysis is disaggregated by asset type, both tangible and intangible asset impairment losses display statistically significant positive serial correlations. Notably, the magnitude of the correlation is stronger for intangible assets, indicating greater persistence in impairment loss recognition for intangible assets than for tangible assets.

[Insert Table 4 here]

However, the results presented in Table 4 may be influenced by uncontrolled firm-specific, industry-specific, or macroeconomic factors. To address this concern, we conduct a regression analysis using the following Equation (1).[7] In Equation (1), the independent variable is the net impairment losses on tangible and intangible assets recognized in year *t*, while the dependent variable is the net impairment losses recognized in future periods. Specifically, the dependent variable is defined in three alternative ways: (i) impairment losses recognized in year *t+1*; (ii) the sum of impairment losses over years *t+1* to *t+2*; or (iii) the sum of impairment losses from year *t+1* to *t+3*. In all cases, the dependent variables are scaled by beginning total assets in year *t*. This approach enables us to examine whether impairment losses recognized in year *t* are associated with those not only in year *t+1*, but also over a longer horizon, up to year *t+3* (Gordon and Hsu 2018; Nissim 2023).[8] The control variables included in Equation (1) are selected based on prior studies such as Riedl (2004) and Gordon and Hsu (2018). Specifically, we control for: operating cash flow (*OCF*), capturing cash-based operating performance; accruals (*ACC*), representing accrual-based performance; industry-average return on assets (*ROA_IND*); capital expenditures (*CAPEX*), reflecting investment in tangible assets; and the macroeconomic growth rate (*GDP_CHG*).

[7] For all subsequent analyses, we employ the net amount of impairment losses, defined as total impairment losses less impairment reversals.

[8] Our inference remains unchanged when we estimate the Equation (1) with the annual amounts of impairment losses in year *t+2* or year *t+3*.

$$IMPAIR\_A(F,I)_{i,t+1,t+1\sim2,t+1\sim3} = \beta_0 + \beta_1\, IMPAIR\_A(F,I)_{i,t} + \beta_2\, OCF_{i,t} + \beta_3\, ACC_{i,t} + \beta_4\, ROA\_IND_{i,t} + \beta_5\, CAPEX_{i,t} + \beta_6\, GDP\_CHG_{i,t} + Ind\ FE + Year\ FE + e_{i,t+1} \quad (1)$$

Variable Definitions: $IMPAIR\_A_{i,t}$: Net impairment losses on tangible and intangible assets scaled by beginning total assets. $IMPAIR\_F_{i,t}$: Net impairment losses on tangible assets scaled by beginning total assets. $IMPAIR\_I_{i,t}$: Net impairment losses on intangible assets scaled by beginning total assets. $OCF_{i,t}$: Operating cash flow scaled by beginning total assets. $ACC_{i,t}$: Accruals, calculated as net income minus operating cash flow, scaled by beginning total assets. $ROA\_IND_{i,t}$: The average return on assets of firms in the same medium-level KSIC. Return on assets is calculated as net income divided by beginning total assets. $CAPEX_{i,t}$: Capital expenditures scaled by beginning total assets. $GDP\_CHG_{i,t}$: The annual GDP growth rate. *Ind FE*: Industry fixed effects. *Year FE*: Year fixed effects. *i* denotes firm and *t* denotes year.

Table 5 presents the results of the regression analysis based on Equation (1).[9] Columns (1)–(3) report results using net impairment losses on tangible and intangible assets (*IMPAIR_A*) as the independent variable; Columns (4)–(6) use net impairment losses on tangible assets (*IMPAIR_F*); and Columns (7)–(9) use net impairment losses on intangible assets (*IMPAIR_I*). Across all columns, impairment losses recognized in year *t* exhibit significantly positive coefficients. In particular, the magnitude of the coefficient increases substantially as the dependent variable expands from impairment losses in year *t+1* to cumulative impairment losses over years *t+1* to *t+2* and *t+1* to *t+3*. Specifically, the coefficient on *IMPAIR_A* is 0.516 in Column (3); the coefficients on *IMPAIR_F* on *IMPAIR_I* are 0.503 in Column (6) and 0.607 in Column (9), respectively. These results imply that reporting impairment losses on tangible and intangible assets is persistent in our sample, discarding the view that impairment losses are non-recurring items.

We note that the documented persistence of impairment losses for intangible assets including goodwill is consistent with the structural features of the impairment-only model. Because goodwill is not amortized, part of its carrying amount may effectively be reduced through impairment rather than through systematic amortization, contributing to recurrence patterns observed in the data. However, the statistically significant persistence

[9] The cumulative construction of the dependent variable over years *t+1* to *t+3* could mechanically lead to larger coefficient estimates, potentially resulting in the type I error. When we use non-cumulative annual values of impairment losses as the dependent variables, our inference remains largely unchanged.

of impairment losses for tangible assets alleviates the concern that the persistence solely arises from such a nature of goodwill accounting.

We note that the persistence of impairment losses could be explained in two ways. First, it could imply that firms do not recognize impairment losses in a timely manner even in the presence of negative news, resulting in the unnecessary repetition of impairment loss recognitions. This interpretation requires an assumption that firms prepare financial statements strategically, which is widespread in the accounting literature. Second, assuming unbiased accounting practice, the persistent recognition of impairment losses would indicate that negative economic events occur frequently. As we previously stated, previous studies support both views that impairment losses reflect negative economic events but seem to be recognized untimely.

The coefficients of control variables show that firm performance is an important determinant of impairment loss recognition. Specifically, the coefficients on operating cash flow (*OCF*) and accruals (*ACC*) are both significantly negative, indicating that firms exhibiting stronger cash-based and accrual-based operating performance are less likely to recognize impairment losses in subsequent periods. The coefficient on capital expenditures (*CAPEX*) is significantly positive, implying that firms engaging in higher levels of capital investment are more prone to incurring impairment losses in the future.[10]

[Insert Table 5 here]

7. The Impact of Net Impairment Losses on Future Operating Performance

Next, we estimate Equations (2) and (3) to investigate the impact of net impairment losses on tangible and intangible assets on future operating performance. In Equation (2), the dependent variable is future operating performance, proxied by operating cash flow scaled by beginning total assets (*OCF*). In Equation (3), the dependent variable is return on assets from operating income, calculated as operating income divided by beginning

[10] We avoid adding the fixed-effects in the Equation (1) because fixed-effects become less effective or even bias the empirical results in the dynamic model of panel data (Breuer and DeHaan 2024).

total assets (*OI*). Consistent with Equation (1), we use cumulative values for the dependent variables over three-time horizons: year *t+1*, years *t+1* to *t+2*, and years *t+1* to *t+3*.[11]

$$OCF_{i,t+1,t+1\sim2,t+1\sim3} = \beta_0 + \beta_1\, IMPAIR\_A(F,I)_{i,t} + \beta_2\, OCF_{i,t} + \beta_3\, ACC_{i,t} + \beta_4\, \Delta AR_{i,t} + \beta_5\, \Delta AP_{i,t} + \beta_6\, \Delta INVT_{i,t} + \beta_7\, ROA\_IND_{i,t} + \beta_8\, CAPEX_{i,t} + \beta_9\, \Delta OCF_{i,t} + \beta_{10}\, GDP\_CHG_{i,t} + Ind\ FE + Year\ FE + e_{i,t+1} \quad (2)$$

$$OI_{i,t+1,t+1\sim2,t+1\sim3} = \beta_0 + \beta_1\, IMPAIR\_A(F,I)_{i,t} + \beta_2\, OCF_{i,t} + \beta_3\, ACC_{i,t} + \beta_4\, \Delta AR_{i,t} + \beta_5\, \Delta AP_{i,t} + \beta_6\, \Delta INVT_{i,t} + \beta_7\, ROA\_IND_{i,t} + \beta_8\, CAPEX_{i,t} + \beta_9\, \Delta OCF_{i,t} + \beta_{10}\, GDP\_CHG_{i,t} + Ind\ FE + Year\ FE + e_{i,t+1} \quad (3)$$

Variable Definitions: $\Delta AR_{i,t}$: The change in accounts receivable from year *t-1* to year *t*, scaled by beginning total assets. $\Delta AP_{i,t}$: The change in accounts payable from year *t-1* to year *t*, scaled by beginning total assets. $\Delta INVT_{i,t}$: The change in inventory from year *t-1* to year *t*, scaled by beginning total assets. $\Delta OCF_{i,t}$: The change in operating cash flow from year *t-1* to year *t*, scaled by beginning total assets. $OI_{i,t}$: Operating income scaled by beginning total assets. *Ind FE*: Industry fixed effects. *Year FE*: Year fixed effects. *i* denotes firm and *t* denotes year.

Table 6 presents the regression results using operating cash flow as the dependent variable. The coefficient on net impairment losses on tangible and intangible assets (*IMPAIR_A*) is significantly negative in Columns (1) and (2), indicating that firms recognizing impairment losses tend to exhibit lower operating cash flow over the subsequent two years. However, the insignificant coefficient on *IMPAIR_A* in Column (3) suggests that this effect does not persist beyond two years. When we use net impairment losses on tangible assets (*IMPAIR_F*) as the independent variable (Columns (4)–(6)), none of their coefficients are statistically significant. In contrast, when we use net impairment losses on intangible assets (*IMPAIR_I*) (Columns (7)–(9)), their coefficients are consistently negative in Columns (7) and (8). These results suggest that intangible asset impairment losses are associated with significantly lower future operating cash flow, particularly within a two-year horizon.[12]

[11] Our inference remains unchanged when we estimate the Equations (2) and (3) with the annual values of future performance in year *t+2* or year *t+3*.

[12] Untabulated results show that the negative association between impairment losses and future operating income and profit margins is stronger and statistically significant for firms in industries with high Herfindahl indices. This suggests that in more concentrated industries—where firms tend to be larger, more capital-intensive, and face less competitive pressure—impairment losses may be more likely to reflect

[Insert Table 6 here]

Table 7 presents the regression results based on Equation (3), in which operating income serves as the dependent variable. In Columns (1)–(3), where net impairment losses on tangible and intangible assets (*IMPAIR_A*) are used as the independent variable, all coefficients on *IMPAIR_A* are significantly negative. In Columns (4)–(6), where we use net impairment losses on tangible assets (*IMPAIR_F*) as the independent variable, the coefficients are not statistically significant. In contrast, Columns (7)–(9), which net impairment losses on intangible assets (*IMPAIR_I*) are the independent variable, show that all coefficients on *IMPAIR_I* are significantly negative. These findings suggest that firms recognizing impairment losses on intangible assets experience a sustained decline in operating profitability over the subsequent three years.

[Insert Table 7 here]

Taken together, the results of Tables 6 and 7 indicate that the recognition of impairment losses is associated with a deterioration in future operating performance, measured by operating cash flow and operating income.[13]

To further explore this relation, we conduct a supplementary analysis by decomposing operating performance into two components: sales and operating income margin. Equation (4) uses the average of sales from year *t+1* to *t+3*, scaled by total assets at the beginning of year *t*, as the dependent variable. In Equation (5), we use the average operating income over the same future period as the dependent variable, aiming to assess profitability relative to sales. Accordingly, in Equation (5), all variables—including the dependent variable—are standardized by dividing them by sales in year *t*. The dependent variable in Equation (5) is thus analogous to the operating profit margin, defined as

underlying economic fundamentals and thus serve as more reliable signals of future performance.

[13] We note that the negative association between impairment loss and future performance in Tables 6 and 7 become statistically insignificant when we add firm-fixed effects in Equations (2) and (3). This signals that our finding on the association between impairment loss and future performance reflects the correlation rather than the causation, supporting the view that firms recognize the impairment losses with an anticipation of future performance deterioration (see Armstrong et al. 2022).

cumulative operating income (i.e., sales minus cost of goods sold and general, selling, and administrative expenses) divided by sales.

$$SALE_{i,t+1\sim3} = \beta_0 + \beta_1\, IMPAIR\_A(F,I)_{i,t} + \beta_2\, OCF_{i,t} + \beta_3\, ACC_{i,t} + \beta_4\, \Delta AR_{i,t} + \beta_5\, \Delta AP_{i,t} + \beta_6\, \Delta INVT_{i,t} + \beta_7\, ROA\_IND_{i,t} + \beta_8\, CAPEX_{i,t} + \beta_9\, \Delta OCF_{i,t} + \beta_{10}\, GDP\_CHG_{i,t} + Ind\ FE + Year\ FE + e_{i,t+1} \quad (4)$$

$$MARGIN_{i,t+1\sim3} = \beta_0 + \beta_1\, IMPAIR\_A(F,I)_{i,t} + \beta_2\, OCF_{i,t} + \beta_3\, ACC_{i,t} + \beta_4 \Delta AR_{i,t} + \beta_5 \Delta AP_{i,t} + \beta_6 \Delta INVT_{i,t} + \beta_7 ROA\_IND_{i,t} + \beta_8\ CAPEX_{i,t} + \beta_9\, \Delta OCF_{i,t} + \beta_{10}\ GDP\_CHG_{i,t} + Ind\ FE + Year\ FE + e_{i,t+1} \quad (5)$$

Variable Definitions: $IMPAIR\_A(F,\ I)_{i,t+1\sim3}$: The sum of asset impairment losses (net of reversals) on tangible and intangible assets (only tangible assets for *F*, and only intangible assets for *I*) from year *t+1* to *t+3*. This variable is scaled by total assets at the beginning of year *t* in Equation (4), and sales at year *t* in Equation (5). $SALE_{i,t+1\sim3}$: The sum of sales reported from year *t+1* to *t+3*, scaled by total assets at the beginning of year *t*. $MARGIN_{i,t+1\sim3}$: The sum of operating income reported by firm *i* from year *t+1* to year *t+3*, divided by sales in year *t*. *Ind FE*: Industry fixed effects. *Year FE*: Year fixed effects. *i* denotes firm and *t* denotes year.

Table 8 presents the regression results of Equations (4) and (5) to examine the impact of asset impairment losses on future sales and operating profit margins. Columns (1) through (3) report the results using average sales as the dependent variable. The coefficients on total asset impairment losses (*IMPAIR_A*) in these models are all statistically insignificant, suggesting no significant association between impairment losses and future sales levels. In Columns (4) through (6), where we use average operating profit margin as the dependent variable, the coefficient on *IMPAIR_A* in Column (4) is negative and statistically significant. While the coefficients on tangible asset impairment losses (*IMPAIR_F*) in Column (5) and intangible asset impairment losses (*IMPAIR_I*) in Column (6) are both negative, statistical significance is observed only in Column (6). This suggests that impairment losses on intangible assets are significantly associated with declines in future profitability.

These results suggest that past asset impairment losses do not have a statistically significant effect on future sales, but have a significant negative impact on future operating profit margins. In particular, impairment losses on intangible assets appear to

have a stronger adverse effect on future profitability than those on tangible assets.[14]

[Insert Table 8 here]

8. Supplementary Analysis

8.1. Normal vs. Abnormal Impairment Losses

To gain further understanding on our previous results, we conducted a supplementary analysis by decomposing total impairment losses into normal and abnormal components. Here, we refer normal impairment losses to write-downs resulting from regular and objective assessments of asset recoverability, based on expected future cash flows (value-in-use) or fair value less costs to sell, as outlined in IAS 36. In contrast, abnormal impairment losses are unusually large, discretionary, or irregular write-downs that deviate from standard impairment triggers.

The abnormal components of impairment losses could pose two economic explanations. First, firms may recognize the abnormal impairment losses due to accounting discretion or error, resulting in randomly distributed values separate from the firm's economic fundamentals. In this case, the abnormal impairment losses would not be significantly correlated with future performance. Second, firms may incur abnormal impairment losses to signal future performance. If abnormal impairment losses convey the management's view on future performance, they would have stronger correlation with future performance compared to normal impairment losses.

We estimate the Equation (6) and the expected values from the estimation is designated as normal impair losses (*NIMPAIR_A*) whereas abnormal impairment losses (*ABNIMPAIR_A*) is the residual values. We choose the economic and managerial determinants of impairment losses come from prior literature (Riedl, 2004; Gordon and Hsu, 2018). We control for firm performance (sales, ROA, cash flows, positive and

[14] We find that the gross amount of impairment losses have similar associations with future performance, while the amount of reversals do not have such predictive power on future performance. This indicates that the informational value of impairment loss reversals appears to be limited in the context of Korean listed firms. Interestingly, this is contrast to Baugh et al. (2024), who report that impairment loss reversals convey meaningful information.

negative profit indicator variables), macroeconomic shifts (GDP growth), and industry-level changes (industry ROA). We repeat this estimation to partition the tangible and intangible asset impairment losses into normal (*NIMPAIR_F* and *NIMPAIR_I*) and abnormal portions (*ABNIMPAIR_F* and *ABIMPAIR_I*).

$$IMPAIR_{i,t} = \beta_0 + \beta_1\, GDP\_CHG_{i,t} + \beta_2\, ROA\_IND\_CHG_{i,t} + \beta_3\, SALES\_CHG_{i,t} + \beta_4\, ROA_{i,t} + \beta_5\, OCF\_CHG_{i,t} + \beta_6\, DENEG_{i,t} + \beta_7\, DEPOS_{i,t} + Ind\ FE + Year\ FE + e_{i,t} \quad (6)$$

Variable Definitions: *GDP_CHG*: Annual GDP growth rate, which reflects macroeconomic conditions. A decline in this rate may indicate reduced asset recoverability. *ROA_IND_CHG*: Change in industry-average return on assets, based on the medium-level KSIC. It controls for industry-wide profitability trends. *SALES_CHG*: Year-over-year change in firm sales, captures shifts in revenue-generating capacity. *ROA*: Return on assets in year *t*, calculated as net income over beginning total assets; measures overall profitability. *OCF_CHG*: Change in operating cash flows from year $t-1$ to *t*, scaled by beginning total assets; a decline may reflect operational inefficiencies. *DENEG*: Dummy variable equal to 1 if the firm reports a net loss in year *t*. *DEPOS*: Dummy variable equal to 1 if the firm reports a positive net income in year *t.*

We then re-estimate Equations (2) and (3) using the normal and abnormal impairment losses. The results are presented in Table 9.[15] The analysis reveals a distinct contrast between the two types of impairments. Normal impairment losses are negatively and significantly related to future operating performance, while the coefficients on abnormal impairment losses are statistically insignificant. These indicate that our estimation of abnormal impairment losses capture a noisy and discretionary accounting choice without informational value upon future performance, rejecting the prediction that firms would use abnormal impairment losses to convey the private information on future performance.

We note that in Tables 6 and 7, the negative association between impairment losses and future performance is stronger for intangible assets than for tangible assets. Given that goodwill, which takes a substantial portion of intangible assets, is subject only to impairment with no amortization, the significant association between their impairments

[15] In untabulated results, we also estimate Equation (5), and the findings are consistent with those reported in Table 9. These results suggest that normal impairment losses are more predictive of firms' future performance than abnormal impairment losses.

and future performance may signal that our results are driven by the specific accounting model of goodwill. However, once we remove the discretionary component of impairment losses, impairment losses for tangible assets are also significantly associated with future performance in Table 9. Thus, we believe that the impairment-only model of goodwill accounting does not drive our findings.

[Insert Table 9 here]

8.2. Positive vs. Negative Net Income Subsample Analysis

We note that asset impairment loss could be a part of big bath accounting, an aggressive recognition of losses (Riedle 2004; Sohn and Yum 2011; Nam and Choi 2019). If a firm engages in big bath, its asset impairment loss is less likely to reoccur in near future because the early recognition of impairment loss drags down the book value of assets, reducing the probability that future carrying values could be higher than the recoverable amounts. Furthermore, the aggressive recognition of impairment losses could be associated with better future performance due to the reversal of those losses. Therefore, our previous findings could be less prevalent for loss-reporting firms.

When we partition the sample based on reporting positive or negative net income, untabulated empirical results are largely consistent with our expectation. For firms reporting positive net income, the persistence of impairment losses and the negative association between impairment losses and future performance are stronger. In contrast, for firms with negative net income, impairment losses are less persistent and their relation with future performance is statistically insignificant.

9. Conclusion

This study is motivated by a recent debate on income statement line items around an introduction of IFRS 18. As IFRS 18 defines operating income profit differently from incumbent K-IFRS No. 1001, certain items such as asset impairment losses will start to

be included in operating income. Some market participants have raised a concern on newly defined operating income by arguing that these items are non-recurring and temporary events. To verify this claim, this study explore the economic properties impairment losses as an example in the context of Korean listed firms applying K-IFRS, using firm-year data from 2012 to 2023.

We find that approximately half of the sample firms reported asset impairment losses during the sample period. Notably, the incidence of tangible asset impairment losses exhibited a statistically significant upward trend. Impairment loss reversals, though relatively infrequent, also showed an incremental increase. The magnitude of impairment losses is sufficiently large to be considered economically meaningful. Moreover, the analysis reveals that firms recognizing impairment losses in a given year are more likely to continue doing so in subsequent periods, particularly in the case of intangible asset impairments. These findings suggest that impairment losses are not merely one-off events but rather represent recurring elements of operating performance.

This study also finds a significant negative association between impairment losses and future operating performance, measured by operating cash flow and operating income. Specifically, impairment losses have a significantly negative relation with future operating profit margins, although their association with future sales is statistically insignificant. Impairment losses on intangible assets exhibit a stronger negative association with future profitability, compare3d to those on tangible assets.

Additional analysis distinguishes between normal and abnormal impairment losses. Normal impairments—those recognized through timely, economy-based assessments—exhibit a significantly negative relationship with future operating performance, suggesting that they reflect underlying economic deterioration. In contrast, abnormal impairment losses, which may stem from managerial discretion or opportunistic behavior, show no significant association with future profitability. This asymmetry indicates that only economically motivated impairments carry informational value, while opportunistic or noisy impairments are less relevant for predicting future performance.

The results of this study deliver important policy implications. The increasing trend and recurrence of impairment losses challenge the prevailing view that such items are non-recurring and non-operating in nature. Furthermore, the observed negative association between impairment losses and future firm performance supports the informational relevance of impairment reporting. These findings are consistent with the arguments of Nissim (2023), who contends that incorporating items traditionally excluded from operating income may enhance the predictive validity of financial performance measures. These contrast with the rationale behind opposition to IFRS 18, which proposes the inclusion of impairment losses in the operating income category.

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Table 1. Annual Averages of Operating profit, Gross Impairment Losses, and Reversals as a Percentage of Total Assets at the Fiscal Year Beginning

Year	Operating profit	Tangible and intangible assets		Tangible assets		Intangible assets	
		Impairment losses (gross)	Impairment reversals	Impairment losses (gross)	Impairment reversals	Impairment losses (gross)	Impairment reversals
2012	3.51%	0.40%	0.01%	0.09%	0.00%	0.31%	0.00%
2013	3.46%	0.59%	0.01%	0.12%	0.00%	0.47%	0.01%
2014	3.07%	0.49%	0.01%	0.11%	0.00%	0.38%	0.00%
2015	3.57%	0.59%	0.00%	0.14%	0.00%	0.44%	0.00%
2016	3.61%	0.60%	0.01%	0.17%	0.01%	0.42%	0.00%
2017	3.49%	0.63%	0.00%	0.14%	0.00%	0.49%	0.00%
2018	2.75%	0.71%	0.02%	0.20%	0.02%	0.51%	0.00%
2019	2.42%	0.86%	0.01%	0.27%	0.01%	0.59%	0.00%
2020	2.08%	0.84%	0.02%	0.35%	0.01%	0.49%	0.01%
2021	3.30%	0.75%	0.02%	0.33%	0.01%	0.42%	0.01%
2022	2.90%	0.68%	0.02%	0.24%	0.01%	0.44%	0.01%
2023	1.20%	0.73%	0.02%	0.28%	0.01%	0.45%	0.00%
Mean	2.87%	0.67%	0.01%	0.22%	0.01%	0.46%	0.00%

Figure 1. Annual Trend of Gross Impairment Losses as a Percentage of Total Assets at the Fiscal Year Beginning

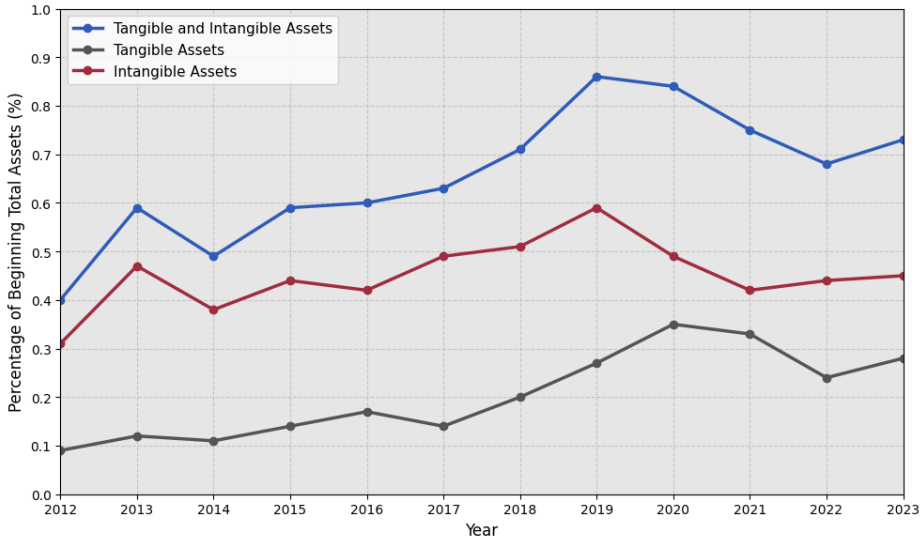

Figure 2. Annual Trend of Impairment Loss Reversals as a Percentage of Total Assets at the Fiscal Year Beginning

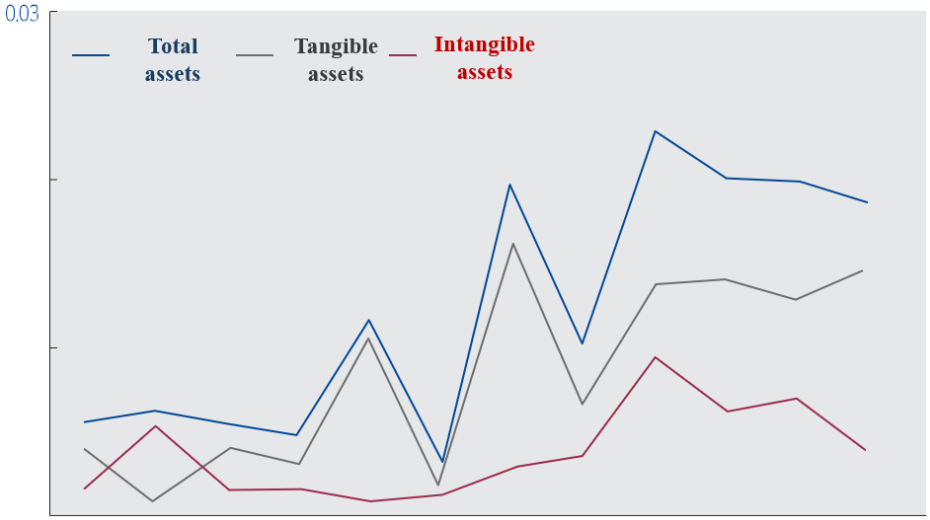

Table 2. Annual Frequency of Firms Reporting Impairment Losses and Reversals on Tangible and Intangible Assets

Panel A. Gross Impairment Losses as a Percentage of Beginning Total Assets

Year	Gross total impairment losses			Gross tangible asset impairment losses			Gross intangible asset impairment losses		
	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%
2012	43.91%	8.93%	3.07%	10.82%	2.43%	0.99%	40.31%	6.58%	1.89%
2013	48.42%	12.81%	5.26%	13.25%	2.46%	1.05%	44.21%	10.61%	4.30%
2014	46.43%	9.67%	3.87%	12.70%	1.93%	0.59%	43.06%	7.91%	3.20%
2015	48.61%	11.91%	4.08%	15.01%	3.34%	1.06%	43.96%	8.65%	3.10%
2016	48.78%	11.66%	4.95%	16.39%	3.66%	1.22%	42.99%	8.61%	3.89%
2017	46.69%	12.47%	5.06%	16.75%	3.14%	1.50%	41.48%	9.69%	3.71%
2018	50.24%	15.50%	6.36%	21.19%	4.27%	1.62%	42.99%	11.37%	4.54%
2019	53.57%	17.94%	7.97%	24.18%	6.43%	2.57%	45.59%	12.03%	4.89%
2020	54.31%	16.37%	7.19%	25.91%	6.94%	2.73%	44.82%	9.67%	4.34%
2021	49.97%	15.80%	6.64%	26.81%	7.00%	2.45%	38.54%	9.28%	3.65%
2022	52.02%	14.88%	6.00%	27.16%	6.29%	2.13%	42.45%	8.88%	3.34%
2023	49.44%	15.35%	6.08%	28.13%	7.20%	2.46%	39.06%	8.65%	3.29%
Average	49.68%	13.95%	5.71%	20.82%	4.88%	1.80%	42.36%	9.40%	3.72%

Panel B. Impairment Loss Reversals as a Percentage of Beginning Total Assets

Year	Total impairment loss reversals			Tangible asset impairment loss reversals			Intangible asset impairment loss reversals		
	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%
2012	2.98%	0.18%	0.00%	0.90%	0.18%	0.00%	2.07%	0.00%	0.00%
2013	3.95%	0.18%	0.09%	1.14%	0.00%	0.00%	2.81%	0.18%	0.09%
2014	6.90%	0.17%	0.00%	1.51%	0.17%	0.00%	5.38%	0.00%	0.00%
2015	5.06%	0.08%	0.00%	1.47%	0.08%	0.00%	3.92%	0.00%	0.00%
2016	5.18%	0.15%	0.08%	1.52%	0.15%	0.08%	4.12%	0.00%	0.00%
2017	6.06%	0.07%	0.00%	1.57%	0.07%	0.00%	5.06%	0.00%	0.00%
2018	7.18%	0.34%	0.14%	1.69%	0.27%	0.14%	6.09%	0.07%	0.00%
2019	9.13%	0.06%	0.06%	2.64%	0.06%	0.06%	7.07%	0.00%	0.00%
2020	10.91%	0.37%	0.19%	2.48%	0.25%	0.12%	8.93%	0.12%	0.06%
2021	14.48%	0.48%	0.06%	4.91%	0.48%	0.06%	10.89%	0.00%	0.00%
2022	10.27%	0.52%	0.23%	3.98%	0.35%	0.17%	7.27%	0.17%	0.06%
2023	12.22%	0.39%	0.06%	4.52%	0.33%	0.06%	8.93%	0.06%	0.00%
Average	8.35%	0.27%	0.08%	2.55%	0.21%	0.06%	6.41%	0.05%	0.02%

Panel C. Net Impairment Losses as a Percentage of Beginning Total Assets

Year	Net total impairment Losses			Net tangible asset impairment losses			Net intangible asset impairment losses		
	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%	> 0%	> 1%	> 3%
2012	43.64%	8.75%	3.07%	10.73%	2.34%	0.99%	40.22%	6.49%	1.89%
2013	47.54%	12.81%	5.26%	12.89%	2.46%	1.05%	43.42%	10.61%	4.30%
2014	45.42%	9.67%	3.78%	12.62%	1.93%	0.50%	42.05%	7.82%	3.20%
2015	47.96%	11.83%	4.08%	14.85%	3.26%	1.06%	43.39%	8.65%	3.10%
2016	48.02%	11.59%	4.95%	16.31%	3.66%	1.22%	42.61%	8.61%	3.89%
2017	45.69%	12.40%	5.06%	16.54%	3.14%	1.43%	40.48%	9.62%	3.71%
2018	49.63%	15.50%	6.30%	20.92%	4.27%	1.62%	42.32%	11.37%	4.47%
2019	52.28%	17.88%	7.97%	23.86%	6.37%	2.57%	44.57%	12.03%	4.89%
2020	52.57%	16.24%	7.19%	25.36%	6.88%	2.73%	42.90%	9.67%	4.34%
2021	48.00%	15.62%	6.58%	25.97%	6.82%	2.39%	36.92%	9.28%	3.65%
2022	50.46%	14.71%	5.94%	26.41%	6.17%	2.13%	41.58%	8.82%	3.34%
2023	47.43%	14.96%	6.08%	27.23%	6.92%	2.46%	37.28%	8.65%	3.29%
Average	48.46%	13.83%	5.69%	20.40%	4.80%	1.78%	41.32%	9.37%	3.71%

Figure 3. Annual Trend of Firms Reporting Positive Value of Net Impairment Losses

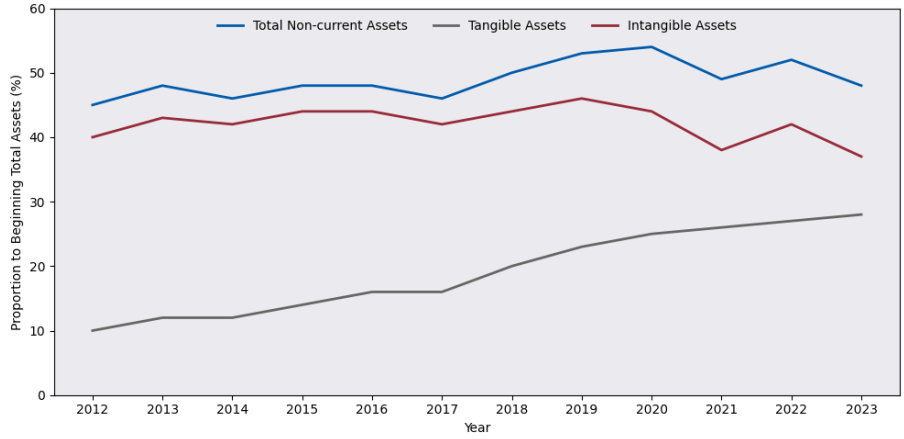

Figure 4. Annual Trend of Firms Reporting Net Impairment Losses Exceeding 1% of Total Assets at the Fiscal Year Beginning

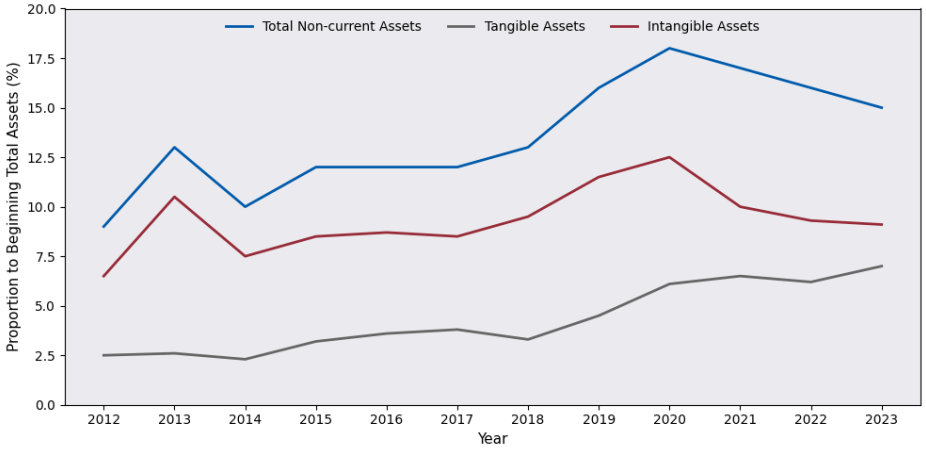

Figure 5. Annual Trend of Firms Reporting Net Impairment Losses Exceeding 3% of Total Assets at the Fiscal Year Beginning

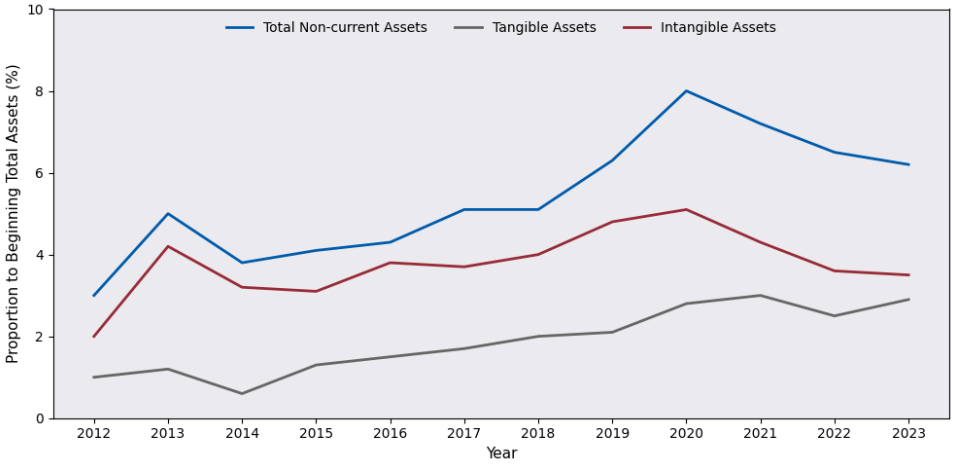

Table 3. Impairment Losses by Industry

Industry classification	Number of observations	% of firms with net impairment losses scaled by beginning total assets		
		> 0%	> 1%	> 3%
Food manufacturing	456	41.67%	4.82%	1.10%
Apparel manufacturing	214	41.12%	14.02%	7.01%
Paper products manufacturing	167	53.29%	13.77%	3.59%
Chemical products manufacturing	1,003	51.05%	12.66%	5.18%
Pharmaceutical manufacturing	798	51.25%	14.91%	7.14%
Rubber and plastic products manufacturing	428	42.06%	12.85%	5.61%
Non-metallic mineral products manufacturing	258	54.26%	8.53%	2.33%
Primary metal manufacturing	479	41.13%	5.22%	2.09%
Fabricated metal products manufacturing	253	45.85%	16.21%	8.30%
Electronic components, computers, and communication equipment manufacturing	1,910	48.06%	16.39%	6.91%
Medical, precision, and optical instruments manufacturing	496	55.44%	23.99%	10.28%
Electrical equipment manufacturing	464	45.26%	7.54%	1.94%
Other machinery and equipment manufacturing	1,159	47.02%	13.98%	4.92%
Motor vehicle manufacturing	831	45.61%	11.07%	3.25%
Other transportation equipment manufacturing	181	44.75%	15.47%	6.63%
General construction	292	48.97%	6.51%	1.03%
Wholesale and brokerage services	1,007	50.25%	17.08%	8.54%
Retail trade	290	48.97%	16.21%	7.59%
Publishing	788	62.18%	27.16%	11.29%
Motion picture, video, and audio production and distribution	228	61.84%	27.63%	15.35%
Computer programming, consultancy and related activities	215	53.95%	15.81%	7.44%
Information services	216	49.07%	15.74%	8.33%
Architectural, engineering, and other scientific and technical services	850	60.82%	9.41%	3.18%
Total	12,983	49.99%	14.45%	6.01%

Table 4. Correlations between Current Year's Net Impairment Losses and Those in Prior and Subsequent Years

Year	Net impairment losses on tangible & intangible assets in year *t*	Impairment losses on tangible assets in year *t*	Impairment losses on intangible assets in year *t*
t–3 year	0.156***	0.080***	0.161***
t–2 year	0.147***	0.093***	0.157***
t–1 year	0.226***	0.143***	0.250***
t year	-	-	-
t+1 year	0.260***	0.211***	0.290***
t+2 year	0.147***	0.093***	0.157***
t+3 year	0.156***	0.080***	0.161***

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level.*

Table 5. Regression Analysis of the Persistence of Net Impairment Losses on Tangible and Intangible Assets

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variable	*Net total impairment losses (IMPAIR_A)*			*Net impairment losses on tangible assets (IMPAIR_F)*			*Net impairment losses on intangible assets (IMPAIR_I)*		
	t+1	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*
INTERCEPT	0.001** (0.00)	0.002** (0.00)	0.000 (0.00)	0.001*** (5.73)	0.002*** (6.46)	0.000 (-1.30)	0.001*** (2.62)	0.002*** (3.50)	0.002*** (3.63)
IMPAIR_A	0.250*** (13.61)	0.396*** (12.00)	0.516*** (11.08)						
IMPAIR_F				0.225*** (10.53)	0.365*** (9.15)	0.503*** (9.02)			
IMPAIR_I							0.297*** (14.60)	0.474*** (12.67)	0.607*** (11.28)
OCF	-0.029*** (-11.94)	-0.063*** (-11.91)	-0.102*** (-11.49)	-0.009*** (-9.10)	-0.018*** (-0.88)	-0.026*** (-8.21)	-0.016*** (-9.24)	-0.038*** (-9.86)	-0.064*** (-9.57)
ACC	-0.021*** (-7.54)	-0.043*** (-8.08)	-0.071*** (-8.16)	-0.007*** (-6.71)	-0.013*** (-7.15)	-0.019*** (-7.16)	-0.012*** (-6.26)	-0.025*** (-6.5)	-0.042*** (-7.28)
ROA_IND	0.002 (0.34)	0.007 (0.64)	0.039** (2.51)	-3.000 (-1.26)	-0.003 (-0.88)	0.007 (1.60)	0.005 (1.00)	0.009 (1.08)	0.026** (2.16)
CAPEX	0.015*** (4.71)	0.034*** (5.78)	0.062*** (6.67)	0.005*** (3.86)	0.010*** (4.18)	0.018*** (4.75)	0.008*** (3.48)	0.020*** (4.67)	0.036*** (5.36)
GDP_CHG	0.000 (-0.36)	0.000 (0.24)	-0.001*** (-3.40)	0.000 (-0.43)	0.000 (1.40)	-0.001*** (-6.26)	0.000 (0.06)	0.000 (-0.46)	0.000 (-0.86)
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.126	0.162	0.190	0.087	0.114	0.130	0.126	0.162	0.190
N	14,999	12,964	11,105	14,999	12,964	11,105	14,999	12,964	11,105

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level. t-values are in the parenthesis.*

Table 6. Relation between Asset Impairment Losses and Future Operating Cash Flows

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable	*Operating cash flows (OCF)*			*Operating cash flows (OCF)*			*Operating cash flows (OCF)*		
	t+1	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*
INTERCEPT	-0.013***	-0.008***	-0.003***	-0.013***	-0.032***	-0.030	-0.013***	-0.032***	-0.029***
	(-6.60)	(-7.75)	(-4.78)	(-6.60)	(-7.89)	(-4.97)	(-6.74)	(-8.00)	(-4.79)
IMPAIR_A	-0.099*	-0.072**	-0.018						
	(-1.79)	(-2.50)	(-0.82)						
IMPAIR_F				-0.042	-0.110	0.053			
				(-0.38)	(-0.45)	(1.41)			
IMPAIR_I							-0.117*	-0.395**	-0.344
							(-1.85)	(-2.41)	(-1.26)
OCF	0.665***	0.334***	0.228***	0.669***	1.347***	2.065***	0.667***	1.337***	2.047***
	(38.54)	(34.22)	(30.27)	(38.96)	(34.88)	(31.05)	(39.13)	(34.68)	(30.49)
ACC	0.150***	0.066***	0.048***	0.153***	0.276***	0.444***	0.151***	0.267***	0.429***
	(10.46)	(8.57)	(7.93)	(10.78)	(9.11)	(8.39)	(10.60)	(8.69)	(7.99)
ΔAR	0.405***	0.153***	0.091***	0.405***	0.613***	0.819***	0.405***	0.614***	0.819***
	(14.00)	(12.11)	(12.54)	(14.00)	(12.08)	(12.52)	(13.99)	(12.11)	(12.54)
ΔAP	-0.323***	-0.103***	-0.060***	-0.324***	-0.416***	-0.544***	-0.323***	-0.413***	-0.541***
	(-8.96)	(-6.76)	(-6.27)	(-8.99)	(-6.80)	(-6.29)	(-8.97)	(-6.76)	(-6.26)
ΔINVT	0.205***	0.102***	0.052***	0.206***	0.412***	0.470***	0.207***	0.413***	0.467***
	(7.25)	(7.67)	(5.54)	(7.26)	(7.69)	(5.58)	(7.28)	(7.74)	(5.56)
ROA_IND	0.051	0.004	-0.042***	0.049	0.010	-0.381***	0.050	0.014	-0.375***
	(1.16)	(0.23)	(-3.41)	(1.13)	(0.16)	(-3.47)	(1.16)	(0.21)	(-3.40)
ΔOCF	-0.158***	-0.097***	-0.065***	-0.158***	-0.389***	-0.585***	-0.158***	-0.388***	-0.584***
	(-10.34)	(-14.86)	(-14.68)	(-10.36)	(-14.90)	(-14.69)	(-10.34)	(-14.85)	(-14.66)
CAPEX	0.037**	0.037***	0.033***	0.035**	0.145***	0.289***	0.036**	0.150***	0.295***
	(2.07)	(3.99)	(4.60)	(1.97)	(3.84)	(4.53)	(2.06)	(4.00)	(4.62)
GDP_CHG	-0.002***	0.000*	0.001**	-0.002***	-0.001*	0.006***	-0.002***	-0.001*	0.006***
	(-3.95)	(-1.87)	(2.53)	(-3.94)	(-1.85)	(2.64)	(-3.96)	(-1.87)	(2.59)
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.334	0.384	0.392	0.333	0.383	0.392	0.334	0.384	0.392
N	14,999	12,964	11,105	14,999	12,964	11,105	14,999	12,964	11,105

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level. t-values are in the parenthesis.*

Table 7. Relation between Asset Impairment Losses and Future Operating Return on Assets

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable	*Operating return on assets (OI)*			*Operating return on assets (OI)*			*Operating return on assets (OI)*		
	t+1	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*
INTERCEPT	0.024***	0.020***	0.020***	0.013***	0.013***	0.016***	0.013***	0.013***	0.016***
	(13.16)	(11.58)	(11.49)	(9.60)	(8.52)	(10.98)	(9.16)	(8.79)	(11.05)
IMPAIR_A	-0.138*	-0.167**	-0.134**						
	(-1.94)	(-2.42)	(-1.97)						
IMPAIR_F				-0.058	0.023	0.070			
				(-0.56)	(0.22)	(0.62)			
IMPAIR_I							-0.111*	-0.152**	-0.126*
							(-1.80)	(-2.25)	(-1.85)
OCF	0.765***	0.699***	0.659***	0.661***	0.601***	0.558***	0.659***	0.596***	0.553***
	(50.78)	(41.12)	(34.68)	(49.38)	(38.69)	(32.64)	(48.56)	(38.01)	(32.11)
ACC	0.387***	0.346***	0.330***	0.275***	0.243***	0.234***	0.273***	0.239***	0.229***
	(20.48)	(18.41)	(17.45)	(21.09)	(17.61)	(16.16)	(20.82)	(17.32)	(15.80)
ΔAR	0.150***	0.091***	0.062***	0.200***	0.146***	0.113***	0.201***	0.146***	0.113***
	(6.19)	(4.57)	(3.23)	(10.72)	(8.94)	(7.24)	(10.74)	(8.98)	(7.27)
ΔAP	-0.022	-0.007	0.000	-0.068***	-0.048**	-0.038*	-0.067***	-0.046**	-0.037*
	(-0.69)	(-0.30)	(0.02)	(-2.89)	(-2.26)	(-1.92)	(-2.86)	(-2.20)	(-1.87)
ΔINVT	0.086***	0.048**	-0.001	0.146***	0.106***	0.058***	0.146***	0.106***	0.057***
	(3.73)	(2.18)	(-0.03)	(7.75)	(5.78)	(3.15)	(7.78)	(5.78)	(3.13)
ROA_IND	-0.020	-0.083***	-0.137***	0.021	-0.048**	-0.104***	0.022	-0.046**	-0.102***
	(-0.53)	(-2.87)	(-4.37)	(0.75)	(-2.11)	(-4.29)	(0.79)	(-2.02)	(-4.21)
ΔOCF	-0.144***	-0.146***	-0.149***	-0.122***	-0.127***	-0.125***	-0.122***	-0.126***	-0.124***
	(-10.48)	(-11.95)	(-12.61)	(-11.000)	(-11.73)	(-11.94)	(-10.99)	(-11.72)	(-11.94)
CAPEX	-0.109***	-0.099***	-0.102***	-0.078***	-0.076***	-0.071***	-0.077***	-0.074***	-0.069***
	(-6.84)	(-6.39)	(-6.21)	(-6.12)	(-5.56)	(-4.60)	(-6.05)	(-5.44)	(-4.51)
GDP_CHG	-0.003***	-0.002***	0.000***	-0.002***	-0.002***	0.001*	-0.002***	-0.002***	0.001*
	(-7.77)	(-7.44)	(-0.55)	(-6.41)	(-7.90)	(1.93)	(-6.44)	(-7.92)	(1.92)
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.450	0.423	0.396	0.450	0.422	0.394	0.450	0.423	0.395
N	14,999	12,964	11,105	14,999	12,964	11,105	14,999	12,964	11,105

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level. t-values are in the parenthesis.*

Table 8. Relation between Asset Impairment Losses and Future Sales and Operating Profit Margin

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*Average sales (REV) from t+1 to t+3*			*Average operating profit margin (MARGIN) from t+1 to t+3*		
INTERCEPT	0.335*** (21.50)	0.333*** (21.42)	0.335*** (21.55)	0.062*** (14.24)	0.061*** (14.07)	0.062*** (14.27)
IMPAIR_A	-0.385 (-0.82)			-0.208*** (-2.63)		
IMPAIR_F		-1.088 (-0.98)			-0.503 (-1.63)	
IMPAIR_I			-0.778 (-1.24)			-0.286*** (-2.79)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.650	0.650	0.649	0.317	0.311	0.319
N	9,400	9,400	9,400	9,400	9,400	9,400

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level. t-values are in the parenthesis.*

Table 9. Supplementary Analysis: Normal vs. Abnormal Impairment Losses

Panel A. Relation between Asset Impairment Losses and Future Operating Cash Flows

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable	*Operating cash flows (OCF)*			*Operating cash flows (OCF)*			*Operating cash flows (OCF)*		
	t+1	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*
NIMPAIR_A	-0.723 (-1.31)	-2.799*** (-2.65)	-5.065*** (-2.66)						
ABNIMPAIR_A	-0.050 (-0.72)	-0.075 (-0.58)	0.275 (1.21)						
NIMPAIR_F				-2.025* (-1.73)	-5.388** (-2.21)	-9.857** (2.46)			
ABNIMPAIR_F				0.006 (0.09)	0.043 (0.34)	0.393 (1.47)			
NIMPAIR_I							-0.602 (-1.16)	-2.555*** (-2.65)	-3.674** (-2.16)
ABIMPAIR_I							-0.063 (-1.04)	-0.157 (-1.30)	-0.122 (-0.59)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.332	0.383	0.393	0.332	0.383	0.393	0.332	0.384	0.393
N	14,994	12,961	11,104	14,994	12,961	11,104	14,994	12,961	11,104

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level.*

Panel B. Relation between Asset Impairment Losses and Future Operating Return on Assets

COLUMN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent Variable	*Operating return on assets (OI)*			*Operating return on assets (OI)*			*Operating return on assets (OI)*		
	t+1	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*	*t+1*	*t+1~2*	*t+1~3*
NIMPAIR_A	-2.663***	-2.730***	-2.395***						
	(-4.68)	(-5.54)	(-5.20)						
ABNIMPAIR_A	0.068	0.051	0.065						
	(0.81)	(0.66)	(0.84)						
NIMPAIR_F				-5.854***	-5.704***	-4.891***			
				(-4.64)	(-4.85)	(-4.62)			
ABNIMPAIR_F				0.147	0.132	0.131			
				(1.13)	(1.32)	(1.20)			
IMPAIR_I							-2.385***	-2.550***	-2.249***
							(-4.65)	(-5.60)	(-5.14)
ABIMPAIR_I							0.060	0.050	0.062
							(0.81)	(0.71)	(0.95)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.390	0.409	0.405	0.389	0.408	0.404	0.389	0.408	0.405
N	14,994	12,961	11,104	14,994	12,961	11,104	14,994	12,961	11,104

*Note. ***indicates significance at the 1% level, **at the 5% level, and *at the 10% level.*

Appendix. List of Prior Studies Related to Asset Impairment Losses

Type	Author(s)	Year	Title	Key Independent Variable(s)	Key Dependent Variable(s)	Sample Period	Key Findings
Determinants	Francis, Hanna, Vincent	1996	Causes and effects of discretionary asset write-offs	Stock return, industry growth rate, CEO turnover, etc.	Recognition of impairment loss	674 cases of asset impairment losses from 1989 to 1992	Asset impairment losses are associated with firms' past stock price declines and deteriorating operating performance, and occur more frequently following management turnover.
Determinants	Kim, Jeon, Shin	2012	The effect of asset impairment recognition on firm characteristics and discretionary accruals	Leverage, equity ratio, return on assets, loss	Recognition of impairment losses	Korean listed firms from 2000 to 2009	Firms with higher debt ratios, lower equity ratios, lower return on total assets, and losses are more likely to recognize asset impairment losses.
Determinants	Kim, Kim, Cha	2015	Future performance prediction of impairments by asset type under K-IFRS	Asset impairment losses by type (PPE, intangible assets, and goodwill)	Future operating cash flows, future return on assets	Korean listed firms from 2013 to 2014	Asset impairment losses provide meaningful information for predicting future operating cash flows and return on total assets.
Determinants	Li, Shroff, Venkataraman, Zhang	2011	Causes and consequences of goodwill impairment losses	Goodwill impairment losses	Market response, future profitability	U.S. listed firms from 1996 to 2006	The market responds negatively to the recognition of goodwill impairment losses. Such impairment losses are associated with a decline in future profitability.
Determinants	Park, Lee	2020	Quarterly distribution of asset impairment losses	Firm size, big 4 auditor indicator, leverage ratio, etc.	Quarterly recognition of impairment losses	Korean listed firms from 2011 to 2018	Asset impairment losses are primarily recognized in the fourth quarter. Firms that recognize impairment losses in the first to third quarters tend to be larger, audited by Big 4 auditors, and exhibit strong cash flows.
Determinants	Riedl	2004	An examination of long-lived asset impairments	SFAS 121 adoption, and managerial reporting incentives (big bath, earnings smoothing)	Recognition of impairment loss	U.S. listed firms from 1992 to 1998	Following the adoption of SFAS 121, asset impairment losses became more closely associated with economic factors, while their association with managerial big bath and earnings smoothing behavior increased.
Determinants	Sohn, Yum	2011	The relation between investment asset impairment reversal and earnings management	Consecutive losses in two years, the change in earnings, and prior-year big bath dummy	Reversal of impairment loss on investment assets	Korean listed firms from 2001 to 2009	Firms with larger losses, greater declines in operating performance compared to the prior year, or a higher likelihood of having engaged in big bath accounting in the previous year tend to recognize impairment losses.
Determinants	Kim	2022	Effect of impairment accounting of tangible and intangible assets on management of reported earnings	Impairment losses and reversals on tangible and intangible assets	Discretionary accruals	Korean listed firms from 2011 to 2019	The larger the impairment losses, the stronger the association between discretionary accruals and upward earnings management.
Determinants	Kwak, Baek	2018	A study on the earnings management to delay or avoid goodwill impairment loss	Recognition of goodwill impairment losses	Discretionary accruals and real earnings management	Korean listed firms from 2011 to 2015	Firms suspected of delaying or avoiding the recognition of goodwill impairment losses exhibit a tendency to manage reported earnings upward by using discretionary accruals and real activities manipulation.
The adoption of K-IFRS	Baek, Choi	2016	The effect of K-IFRS adoption on goodwill impairment timeliness	K-IFRS adoption indicator	Goodwill impairment recognition	Korean listed firms from 2008 to 2011	Following the adoption of K-IFRS, firms exhibit greater delays in the recognition of goodwill impairment losses, accompanied by an increase in managerial discretion over accounting choices.
The adoption of K-IFRS	Jeong, Bae, Kim	2015	The effect of K-IFRS adoption on goodwill impairment	The adoption of K-IFRS and other firm-level factors	Goodwill impairment	Korean listed firms from 2009 to 2012	Following the adoption of K-IFRS, goodwill impairment losses appear to be less aligned with firms' underlying economic fundamentals.

The adoption of K-IFRS	Nam, Choi	2019	Change in value-relevance of goodwill and impairment charges surrounding the IFRS adoption	K-IFRS adoption dummy, big bath incentives, and earnings smoothing incentives	Goodwill impairment	Korean listed firms from 2007 to 2016	The adoption of K-IFRS is associated with a stronger link between goodwill impairment recognition and managerial discretionary incentives such as big bath accounting and income smoothing.
The adoption of K-IFRS	Noh, Yoo, Chang	2012	The adoption of K-IFRS: the effects of managerial discretion on goodwill impairment	K-IFRS adoption indicator	Goodwill impairment	Korean listed firms from 2009 to 2011	The adoption of K-IFRS is associated with a decline in the recognition of goodwill impairment losses relative to the pre-adoption period.
Goodwill impairment	Laurion, Robinson, Tice	2023	When do smaller-than-expected goodwill impairments reflect managers' positive private information?	Non-recognition of goodwill impairment loss dummy	Future stock price recovery, market reaction, and value relevance	U.S. listed firms from 2002 to 2019	The absence of goodwill impairment recognition may not be solely attributable to managerial opportunism but may also reflect managers' private information concerning anticipated recovery in firm value.
Goodwill impairment	Li, Sloan	2017	Has goodwill accounting gone bad	The adoption of SFAS 142	Goodwill impairment	U.S. listed firms from 1996 to 2011	Since the implementation of SFAS 142, the timeliness of goodwill impairment recognition appears to have diminished.
Goodwill impairment	Nissim	2023	Special items, implications for forecasting	Disclosure and types of special items (restructuring, goodwill impairment losses)	Future profitability	U.S. and Canadian listed firms from 2001 to 2020	Special items such as goodwill impairments are indicative of deteriorating profitability. Forecasting models yield greater accuracy when special items are added.
Goodwill impairment	Ramanna, Watts	2012	Evidence on the use of unverifiable estimates in required goodwill impairment	CEO compensation structure, and CEO tenure	Goodwill impairment	U.S. listed firms from 2003 to 2006	Under SFAS 142, the estimation of goodwill fair value depends substantially on managerial judgment, which may allow managers to adjust reported impairment losses in line with their private incentives.
Comparison between IFRS and U.S. GAAP	Baugh, Hong, Lamoreaux, Rykaczewski	2024	What makes the impairment rules Under IFRS better than U.S. GAAP? Insights from quarterly impairment and reversal data	Asset impairment losses and impairment reversals under IFRS or U.S. GAAP	Future operating cash flows and stock market reaction	Firms applying U.S. GAAP or IFRS from 2005 to 2023	While impairment losses recognized under IFRS are indicative of future declines in operating cash flows, similar losses under U.S. GAAP exhibit limited predictive power. The superior value relevance of IFRS-based impairments stems from impairment reversals.
Comparison between IFRS and U.S. GAAP	Gordon, Hsu	2018	Tangible long-lived asset impairments and future operating cash flows under U.S. GAAP and IFRS	Impairment losses on tangible and intangible assets, IFRS or U.S. GAAP dummy	The change in future operating cash flows	Firms from 26 countries applying U.S. GAAP or IFRS between 2005 and 2011	Impairment losses recognized under IFRS are negatively associated with subsequent operating cash flows, indicating a timely response to deteriorating firm performance. Conversely, under U.S. GAAP, goodwill impairment recognition appears to lack predictive relevance for future operating cash flows and is often characterized by delayed recognition.
Comparison between IFRS and U.S. GAAP	Horton, Serafeim	2010	Market reaction to and valuation of IFRS reconciliation adjustments: first evidence from the UK	IFRS reconciliation information (e.g., impairment losses)	Market reaction (e.g., value relevance)	U.K. listed firms in 2005	Following the adoption of IFRS, firms reporting earnings declines experienced stock price decreases at the time of disclosure, indicating that goodwill impairment losses under IFRS are highly value-relevant.