Financial Analyses and Corporate Evaluation on Sustainable Ability to Generate Excess Profit

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Abstract: This study empirically examined financial analyses and a market assessment on goodwill. Goodwill is not an individually identifiable asset but is recognized as an intangible asset because it is viewed as having future economic benefits from a business combination. The verification period for this study was from 2011 to 2019. The sample companies were 13,522 firms-years satisfying the selection criteria among listed companies in the Korean stock market. As a result of empirical analysis, it was found that goodwill is related to stock prices. Goodwill was shown to serve as useful accounting information by reflecting the economic realities of intangible assets called creating excess profitability and sustainable profit. For analysis, regression analysis was conducted by separating the companies listed on the KOSPI stock market and those listed on the KOSDAQ stock market. The results of the analysis were as follows. In the case of listed companies in the KOSPI stock market, goodwill was found to have a positive (+) stock price relationship as useful accounting information. These results suggested that goodwill is an asset that represents the ability to generate excess profit as a sustainable profit. The contributions of this study are as follows. First, this study verified that goodwill is related to stock prices even after the adoption of International Financial Reporting Standards (IFRSs). Second, it will be possible to induce rational decision-making regarding goodwill to accounting standards setters, supervisors, and users of financial information. Third, it recognized that the value of the financial market can be recognized only by providing reliable accounting information to the managers who prepare financial statements. This can lead managers to provide capital markets with more useful information.

Keywords: company assessment; sustainable excess profit; goodwill; financial analyses; financial reporting

1. Introduction

Korea adopted the International Financial Reporting Standards (IFRSs) in 2011 to enhance accounting transparency and international consistency of accounting standards. In the past, Korean local GAAP (K-GAAP) was a rule-based accounting standard, whereas IFRS is a principles-based accounting standard. Principles-based IFRSs are standards that reflect economic substance. In addition, the IFRSs allow financial statements to be prepared that are relevant for the purpose and enable faithful expression. However, there is a criticism that the discretion of management may be involved in the judgment of economic substance. K-GAAP required amortization of goodwill by a straight-line method for less than 20 years. This was a mechanical depreciation, ignoring the realities of the economic benefits creation and the feasibility of economic benefits, which can vary from company to company.

On the other hand, in IFRSs based on principles, goodwill is recognized through impairment tests every year. The mechanical amortization of goodwill is abolished and the damage test is conducted according to the economic substance. The impairment loss was recognized according to the damage test result. Through this process, it is intended to provide useful information that better reflects the economic reality of the company. In IFRSs, internally generated goodwill is recognized as an expense. Only goodwill acquired externally during the business combination process is recognized as

an intangible asset. IFRSs strictly limit the definition and recognition requirements of intangible assets because accounting for intangible assets includes a lot of discretion for managers.

According to previous studies, accounting information for intangible assets has a valued relationship with stock prices. In particular, since the adoption of IFRSs, it has been found that the value related to intangible asset accounting information has increased [1–4]. On the other hand, there have been previous studies reporting that the value relevance of intangible asset accounting information has become lower since the adoption of IFRSs. The results of research on the value relevance of intangible assets appear mixed [5].

Intangible assets have no physical substance, and uncertainty about future economic benefits is relatively high. Intangible assets are assets that can cause controversy over judgment and measurement of asset quality. There is much managers' discretion in accounting for intangible assets. Even if there are signs of impairment for intangible assets, it is highly likely that management will not recognize the impairment loss for intangible assets. Under this background, this study empirically examined whether goodwill is value-related with stock prices as useful accounting information.

The higher the credibility of goodwill, the higher the share price relevance to goodwill. This is because the capital market evaluates reliable information more positively. As such, the difference in the reliability of accounting information between the two groups may appear as a difference in the feasibility of sustainable profits. Therefore, this study analyzed the relevance of the stock price of goodwill into two groups, the KOSPI stock market and the KOSDAQ market. If the share price relevance of goodwill represents a difference between the KOSPI and the KOSDAQ, you can see that there is a difference in reliability of goodwill accounting information between the two markets. According to a previous study, the credit rating declined when a bad disclosure occurred, but the credit rating decline of KOSPI-listed companies was greater than that of KOSDAQ-listed companies. This means that KOSPI-listed companies have a larger impact than publicly listed companies. KOSPI-listed companies have many stakeholders and stricter government regulations. Therefore, it means that disclosure of KOSPI-listed companies is more important. In addition, KOSPI-listed companies were found to be more financially stable than KOSDAQ-listed companies. Under this background, the impact of goodwill on the share price between the KOSPI market and the KOSDAQ market is expected to differ, and the sample to be verified is divided into two groups.

The verification period for this study was from 2011 to 2019, when IFRSs were applied. The sample companies were 13,522 firms-years satisfying the selection criteria among listed companies in the KOSPI and KOSDAQ. As a result of empirical analysis, goodwill was found to be related to stock prices. Although the possibility of management's discretionary accounting for goodwill has increased, goodwill has been shown to play a role as useful accounting information by reflecting the economic reality of generating excess profitability. These results proved that goodwill is an asset that represents the ability to generate excess profit as a sustainable profit. This means that in the capital market, the valuation of corporate values is positive for sustainable profits. This suggests that more sophisticated and reliable accounting information is needed for sustainable profits, such as goodwill.

The sample was divided into two groups, the KOSPI and the KOSDAQ markets, and a regression analysis was performed. As a result of the analysis, it was found that goodwill was positively related to stock prices in the KOSPI as useful accounting information. However, in the KOSDAQ market, goodwill was found to have a significant negative (−) stock price relationship. This can be interpreted as investors reacting negatively to goodwill accounting information in the KOSDAQ market. This means that the reliability of goodwill in the KOSDAQ market was relatively low compared to that of the securities market. For this reason, users of financial information can be interpreted as making negative evaluations that deny the goodwill's assets.

The contributions of this study are as follows. First, it verified the relevance of goodwill's stock price in an accounting environment in which managers' discretion is more likely to judge goodwill. This verified the usefulness of goodwill accounting information. Second, it suggested that goodwill accounting information can be useful for decision-making to accounting standards setters, supervisors,

and financial information users. This will lead to rational decision-making related to goodwill in establishing accounting standards, supervising, and using investment decisions. Third, it presented the need to provide reliable goodwill accounting information to the managers who prepare financial statements. Only reliable goodwill accounting information can be recognized for its value in the capital market. It can encourage managers to provide capital markets with more useful information related to goodwill.

The composition of this paper is as follows. In Section 2, this paper reviews the intangible asset accounting standards and prior research and sets the research hypothesis. Section 3 describes the research method and sample selection, and Section 4 presents the empirical analysis results. Finally, Section 5 describes the summary, conclusion, and limitations.

2. Accounting Standards and Literature Review

2.1. IFRS 1038 Intangible Assets

According to IFRS 1038, intangible assets are non-monetary assets that have no physical substance but are identifiable. Intangible assets are individually identifiable and intangible assets acquired externally are recognized as assets because they meet the definition of an asset. However, intangible assets generated internally are not identifiable and are accounted for as expenses [6]. Goodwill is not an identifiable intangible asset. However, goodwill acquired externally during business combination is recognized as an asset. Goodwill is not an individually identifiable asset but is recognized as an intangible asset because it is viewed as having future economic benefits from a business combination.

An intangible asset with an indefinite useful life shall not be amortized. By IAS 36, an entity is required to test an intangible asset with an indefinite useful life for impairment by comparing its recoverable amount with its carrying amount (a) annually and (b) whenever there is an indication that the intangible asset may be impaired [6].

The useful life of an intangible asset that is not being amortized shall be reviewed each period to determine whether events and circumstances continue to support an indefinite useful life assessment for that asset. If they do not, the change in the useful life assessment from indefinite to finite shall be accounted for as a change in an accounting estimate by IAS 8. For IAS 36, reassessing the useful life of an intangible asset as finite rather than indefinite is an indicator that the asset may be impaired. As a result, the entity tests the asset for impairment by comparing its recoverable amount, determined by IAS 36, with its carrying amount, and recognizing any excess of the carrying amount over the recoverable amount as an impairment loss [6].

As such, IFRSs strictly limit the definition and recognition requirements of intangible assets. This is because managers' discretion exists in accounting for intangible assets, such as excessive recognition of assets, even if the definition and recognition requirements of intangible assets are not met. K-GAAP required amortization of goodwill by a straight-line method for less than 20 years. This was a mechanical depreciation, ignoring the realities of the economic benefits creation behavior and the feasibility of economic benefits, which can vary from company to company.

To solve this problem of mechanical amortization and to better reflect the economic realities of goodwill, IFRSs annually inspect goodwill for impairment and recognize the impairment loss. In IFRSs, the mechanical amortization of goodwill was abolished, and the impairment loss was recognized according to the economic substance. Through this, it was made to provide useful information that better reflects the economic reality of the company.

2.2. Prior Research and Hypothesis

Prior studies showing that the value relevance of intangible assets has increased since the adoption of IFRS are as follows. Prior research showed that software intangible assets are related to stock prices. In addition, it was found that software recognized as an intangible asset affects future profits [3]. The study verified that there is a significantly positive (+) relationship between voluntarily recognized

intangible assets and stock prices. In addition, it was verified that there was a significantly positive (+) relationship between voluntarily recognized intangible assets and future profits [4]. The prior study verified that the change from K-GAAP to IFRSs increases the value relevance of goodwill. However, it was found that intangible assets other than goodwill did not affect the value relevance [1]. The study found that the change from K-GAAP to IFRSs increased the book value of intangible assets. In addition, it was found that intangible assets have more information value in explaining stock prices and stock price returns [2].

As described above, the accounting information of intangible assets has a significant value relationship with the stock price after the application of IFRS. In addition, there was a significantly positive (+) relationship between intangible assets and future profits.

On the contrary, there have been previous studies reporting that the value related to intangible asset accounting information has become lower since the adoption of IFRS. A study showed that the value relevance of intangible assets exists regardless of whether K-GAAP or IFRSs are applied [5]. Rather, when applying IFRSs, it was found that the value relevance of intangible assets was lower than when applying K-GAAP. This is inconsistent with previous studies that showed that the value relevance of intangible assets became higher after the application of IFRSs [5]. As mentioned above, research results on the value relevance of intangible assets have been mixed since the adoption of IFRSs.

On the other hand, the following studies have verified the value relevance of goodwill among intangible assets. A prior study analyzed the relevance of goodwill to US companies. As a result of empirical analysis, goodwill was found to be related to stock prices. The authors argued that the share price relevance of goodwill is not significantly different from that of other assets [7]. Goodwill has a positive (+) correlation with stock prices. The study verified that the regression coefficient of goodwill is higher than that of tangible assets and that of other assets [8]. Another prior study analyzed the value relevance of intangible assets to Australian companies. Among the intangible assets, the more positive it is to bring future economic benefits, the stronger the tendency to recognize intangible assets in financial statements. It also suggests that giving management the option to recognize it as an intangible asset is a way to improve the quality of the statement of financial position rather than being forced to recognize it or not [9]. The prior study compared the relevance of goodwill recognized in financial statements to goodwill disclosed in comments. As a result of empirical analysis, it was empirically verified that both measures of goodwill have a significant positive correlation with the stock price and that the two goodwill regression coefficients are not significantly different [10].

Prior research verified the value relevance of goodwill for Korean companies. This is a study on the period in which goodwill was amortized using the straight-line method within 20 years according to K-GAAP. In other words, it is a study on the period during which mechanical amortization occurred, ignoring the realities of the economic benefits creation behavior and the feasibility of economic benefits, which can vary from company to company. As a result of empirical analysis, there was no relationship between goodwill and stock price. The reason for this result may be that the mechanical amortization was achieved while ignoring the realities of goodwill economic behavior and the feasibility of economic benefits [11].

Prior studies have shown that most companies reporting losses have not recognized impairment losses on goodwill. Prior studies have shown that managerial opportunistic discretion is used to selectively delay impairment of goodwill [12–14]. A prior study found that the impairment loss of goodwill has decreased since the adoption of IFRSs. The authors argued that this reduction in impairment loss recognition was the result of management's discretionary earnings management [15]. The study verified the effect of management's discretionary decision-making information on the recognition of impairment loss of goodwill since the introduction of IFRS in Korea. As a result of empirical analysis, it was found that, at the discretion of the manager, both the company that recognized the impairment loss of goodwill early and the company that recognized it as delayed had significantly lower value relevance between stock price and accounting information than the company that used normal decision-making [16].

The above intangible asset accounting standards and prior studies are summarized as follows. Intangible assets have the unique characteristic that there is no physical entity, and the uncertainty about future economic benefits is relatively high. Therefore, even though the definition and recognition requirements of intangible assets have not been met, there are a lot of implications for accounting, such as excessive recognition of assets. Since the adoption of IFRSs, the results of previous studies on the stock price relevance of intangible assets appear to be inconsistent.

Goodwill is not an identifiable intangible asset. However, goodwill acquired externally during business combination is recognized as an asset. Goodwill is not an individually identifiable asset but is recognized as an intangible asset because it is viewed as having future economic benefits from a business combination. An intangible asset with an indefinite useful life shall not be amortized. An entity is required to test an intangible asset with an indefinite useful life for impairment by comparing its recoverable amount with its carrying amount (a) annually and (b) whenever there is an indication that the intangible asset may be impaired. The useful life of an intangible asset that is not being amortized shall be reviewed each period to determine whether events and circumstances continue to support an indefinite useful life assessment for that asset. According to IFRSs, mechanical amortization of goodwill is prohibited, and only impairment losses should be recognized following economic substance. In the process of determining the impairment loss for goodwill, managers can use opportunistic discretion. Prior studies have shown that impairment losses on goodwill are being used as a means to adjust earnings.

IFRSs strictly limit the definition and recognition requirements of intangible assets. This is because managers' discretion exists in accounting for intangible assets. K-GAAP required amortization of goodwill by a straight-line method for less than 20 years. This was a mechanical depreciation, ignoring the realities of the economic benefits creation behavior and the feasibility of economic benefits. To solve this problem of mechanical amortization and to better reflect the economic realities of goodwill, IFRSs annually inspected goodwill for impairment and recognized the impairment loss. Through this, it was made to provide useful information that better reflects the economic reality of the company. Managers can use opportunistic discretion in the process of determining the impairment loss for goodwill. Prior studies have shown that impairment losses on goodwill are being used as a means to adjust earnings.

Previous research showed that the early effects of IFRSs adoption continue over time in companies listed in countries with common law systems, such as the United Kingdom (UK) and Australia, which provide powerful outside investor protection in capital markets. However, the early effects of IFRSs adoption do not continue over time in companies listed in Asian countries with statutory law systems, such as Korea and China, which have low levels of outside investor protection. The results show that there are differences in the sustained effects on accounting quality, even after the application of IFRSs due to the different social, economic, and cultural characteristics of countries [17].

To report high-quality, transparent, and comparable information in financial statements, there is a strong, visible trend towards the implementation and use of IFRSs. According to IFRSs, fair value has become a dominant measurement paradigm. Previous research showed that among the three levels of the fair value hierarchy, mark-to-model is most controversial because it is susceptible to manipulation and has poor verifiability. Previous research concluded that the implementation of asset impairment tests, that use the mark-to-model fair value measures, is not promising for increasing the quality and reliability of the information presented in financial statements [18].

Prior research examined whether IFRSs adoption improves earnings sustainability, focusing on emerging markets. Specifically, it tests the effect of IFRSs on earnings quality by comparing earnings management and financial statement comparability of Korean listed firms for the pre- and post-IFRSs periods. The results showed that firms report less managed earnings in the post-IFRSs period than in the pre-IFRSs period. Furthermore, the results suggested the enhancement of financial statement comparability in the post-IFRSs period compared to the pre-IFRSs period. This paper showed that the effect of IFRSs on sustainable accounting information is more pronounced in competitive industries.

The results showed that IFRSs adoption in Korea improves the overall sustainability of accounting information [19].

Therefore, this study aimed to verify the relationship between goodwill numbers and stock price 10 years after IFRSs was applied. This study analyzed the relevance of using goodwill as a proxy for the market price for stock. If goodwill information has a significant value relationship with stock prices, it can be interpreted that goodwill accounting information is used as useful information. This suggests that goodwill information is useful information even when management's voluntary involvement is involved in accounting for impairment loss of goodwill. Under the above background, the following hypothesis was set in this study.

Hypothesis 1. *Goodwill will have a value relevance with stock prices.*

3. Research Methodology

3.1. Research Model

In this study, we intended to empirically verify whether goodwill is related to stock prices as useful accounting information in which management's subjective judgment on goodwill accounting is high. To verify the hypothesis of this study, the following Equation (1) was established. The research model of this study was the Ohlson model (Ohlson, 1995), which has been used in many previous studies to verify accounting information and stock price relevance. Equation (1) uses the subtype of the Ohlson model, omitting non-accounting information. The Ohlson model (Ohlson, 1995) can be expressed as the following Equation (1) by simplifying the assumption of a clean surplus relation of net assets and self-regression of the time series form of excess profit [20–22].

$$P_t + D_t = \alpha_0 + \beta_1 BV_t + \beta_2 EPS_t + \epsilon_t \tag{1}$$

P_t: Price per share of common stock at the end of year t
D_t: Dividend per share for year t
BV_t: Capital per share at the end of year t
EPS_t: Earnings per share for t year
ϵ_t: Error term

To verify Hypothesis 1 of this study, Equation (1) was modified as follows. First, the price of common stock at the end of year t (P) was the common stock price at the end of March of year $t + 1$, and the dependent variable was used. Financial statements at the end of December are disclosed by the end of March of the following year. Therefore, the stock price at the end of March was used as the stock price at the end of year t. In Korea, almost all previous studies used the stock price at the end of March as a proxy for the stock price at the end of December. The dividends included in the dependent variable in Equation (1) are minimal. Therefore, many previous studies using the Ohlson model (Ohlson, 1995) did not include dividends in the dependent variable, so the dividends were also excluded from Equation (2) of this study. Second, the net asset book value (BV) was divided into the following three categories: equity capital (BVIA) excluding intangible assets, intangible assets excluding goodwill (IAGW), and goodwill (GW). Third, the year dummy variable (YD) for each year and the industry dummy variable (ID) for each industry were added, and the effect of other non-accounting information was replaced by the intercept and error term.

Under this background, the following Equation (2) is estimated to verify Hypothesis 1 of this study. Hypothesis 1 of this study was to verify whether goodwill has a value relevance with stock prices as useful accounting information.

$$P_{t+1} = \alpha_0 + \beta_1 BVIA_t + \beta_2 IAGW_t + \beta_3 GW_t + \beta_4 EPS_t + \beta_5 YD_t + \beta_6 ID_t + \epsilon_t \tag{2}$$

P$_{t+1}$: Price of common stock at the end of March of year $t + 1$

BVIA$_t$: Net assets per share excluding intangible assets at the end of year t

IAGW$_t$: Intangible assets per share excluding goodwill at the end of year t

GW$_t$: Goodwill per share at the end of year t

EPS$_t$: Earnings per share for year t

YD$_t$: Dummy variables by year

ID$_t$: Dummy variables by industry

ϵ_t: Error term

Equation (2) was set to verify the value relevance of goodwill (GW) accounting information in explaining the share price at the time financial information is disclosed. If the regression coefficient of goodwill (GW) shows a significantly positive (+) value in the empirical analysis results, Hypothesis 1 of this study is supported

3.2. Sample and Data

The study period was from 2011 to 2019 when IFRSs were mandatory. The sample companies were listed on the KOSPI and KOSDAQ markets—companies that can use financial data from the KIS Value DB during the study period. The specific sample selection criteria were as follows:

① all firms-years observations from the Korean Stock Exchange market during the period of 2011 to 2019,
② excluding non-December firms,
③ excluding financial institutions, and
④ excluding issues for the administration.

Financial companies were excluded from the sample companies because the financial statements are different from the manufacturing companies. An issue for administration is one that is specifically designated among stocks that are subject to the abolition criteria of sovereignty by the securities exchange rules. An issue for administration is mainly designated for reasons such as suspension of banking transactions due to bankruptcy, the commencement of the company reorganization process, inadequacy of audit opinions or rejection of opinions for three consecutive years, or suspension of business activities for three years. In addition, when the holding ratio of one major shareholder exceeds 51% of the total number of issued stocks, it can be designated as a managed item even if the number of stocks that can be traded is less than 10/100 of the number of floating stocks.

As the final procedure for the selection of samples, extreme samples with a distribution of 1% above and below the selected sample were excluded. Based on the independent variable, 1% above and below of the sample was removed. This prevented the study results from being distorted by extreme samples. The final sample selected by these criteria is shown in Table 1, as below.

Table 1. Sample selection.

Selection Criteria	Number of Firms-Years
All firms-years observations from the listed markets during the period of 2011 to 2019 (excluding non-December firms, managed firms, and financial institutions)	17,007
Less: Firms-years with insufficient data	(3022)
Less: Outliers (firms-years in the top and bottom 1% of independent variables distribution)	(463)
Final Sample	13,522

4. Results

4.1. Descriptive Statistics

Panel A of Table 2 shows descriptive statistics for variables used in the empirical analysis. In the full sample, the common stock price (P) averaged 20,082 Korean won and the median was 6345 Korean won. The average of equity (BVIA) excluding intangible assets was 16,064 Korean won and the median was 5362 Korean won. The average earnings per share (EPS) was 876 Korean won and the median was 224 Korean won. All of these variables showed that the mean was rather large compared to the median. This seems to be because the share price, equity capital, and earnings per share of some of the large companies were significantly higher than others. The average of intangible assets excluding goodwill (IAGW) was 459 Korean won and the median was 102 Korean won. The average goodwill (GW) was 160 Korean won, with a median of 0 Korean won.

Panel B of Table 2 shows the Pearson correlation between variables used in the empirical analysis. It was found that equity capital (BVIA) excluding intangible assets, intangible assets excluding goodwill (IAGW), goodwill (GW), and earnings per share (EPS) were all positively correlated with the stock price (P). This was consistent with the results of previous studies.

Table 2. Descriptive statistics and correlation of variables.

Panel A: Descriptive statistics of variables					
Variables	**Mean**	**Std. Dev.**	**Min**	**Median**	**Max**
P	20,082	48,481	62	6345	1,158,000
BVIA	16,064	33,349	−12,632	5362	330,194
IAGW	459	1633	0	102	56,792
GW	160	2060	0	0	82,001
EPS	876	2772	−14,432	224	31,751
Panel B: Pearson correlation					
Variables	**P**	**BVIA**	**IAGW**	**GW**	**EPS**
P	1				
BVIA	0.611 ***	1			
IAGW	0.372 ***	0.411 ***	1		
GW	0.112 ***	0.077 ***	0.221 ***	1	
EPS	0.597 ***	0.632 ***	0.324 ***	0.094 ***	1

(1) Variables definitions are as follows (unit: Korea won): P_{t+1}: Price of common stock at the end of March of year $t + 1$; $BVIA_t$: Net assets per share excluding intangible assets at the end of year t; $IAGW_t$: Intangible assets per share excluding goodwill at the end of year t; GW_t: Goodwill per share at the end of year t; EPS_t: Earnings per share for year t. (2) *** denote the significance at 1% (5%, 10%) level (two-tailed).

4.2. Regression Results

The following Table 3 is the result of verifying that goodwill among intangible assets has useful stock information and value relevance. As a result of empirical analysis, the values of regression coefficients of equity capital (BVIA) excluding intangible assets, intangible assets excluding goodwill (IAGW), and goodwill (GW) were all positive (+) regression coefficient values.

Goodwill (GW) was found to have value relevance as useful accounting information. Intangible assets excluding goodwill (IAGW) were also use accounting information and were found to have value relevance. The value of the regression coefficient of the intangible assets (IAGW) excluding goodwill was 3.366, which was higher than the value of the regression coefficient of goodwill (GW) of 0.600. The regression coefficient of earnings per share (EPS) also showed a positive (+) value, showing results consistent with previous studies.

Despite the increased possibility of management's discretion in accounting for goodwill, it indicated that goodwill was useful accounting information with value relevance as an intangible asset that

generates excess returns. In addition, it can be interpreted that the goodwill representing excess profitability was recognized positively in the market by acknowledging it is an asset.

IFRSs strictly limit the definition and recognition requirements of intangible assets. This is because managers' discretion exists in accounting for intangible assets, such as excessive recognition of assets, even though the definition and recognition requirements of intangible assets are not met. K-GAAP required amortization of goodwill by a straight-line method for less than 20 years. This was a mechanical depreciation, ignoring the realities of the economic benefits creation behavior and the feasibility of economic benefits, which can vary from company to company. To solve this problem of mechanical amortization and to better reflect the economic realities of goodwill, IFRS has annually inspected goodwill for impairment and recognized the impairment loss. The mechanical amortization of goodwill was abolished, and the impairment loss was recognized according to the economic substance. These results indicated that goodwill accounting of IFRS reflects the real substance.

These results showed that goodwill was an asset that represented the ability to generate excess profit as a sustainable profit. This means that in the capital market, the valuation of corporate values is positive for sustainable profits. This suggests that more sophisticated and reliable accounting information is needed for sustainable profits, such as goodwill. The variance inflation factor (VIF) was 1.097~2.041, and there was no problem of multicollinearity between variables.

Table 3. The value relevance of goodwill accounting information (full samples).

Variable	Predicted Sign	Full Samples		
		Estimates (*t*-Value)		Variance Inflation Factor (VIF)
BVIA	+	0.525	(4.107) ***	2.041
IAGW	+	3.366	(15.80) ***	1.358
GW	+/−	0.600	(3.96) **	1.097
EPS	+	5.749	(40.39) ***	1.745
Year Dummies		Included		
Industry Dummies		Included		
Adjusted R^2		0.4869		
F Value		292.65 ***		
N		13,522		

(1) Variables definitions are as follows; BVIA$_t$: Net assets per share excluding intangible assets at the end of year *t*; IAGW$_t$: Intangible assets per share excluding goodwill at the end of year *t*; GW$_t$: Goodwill per share at the end of year *t*; EPS$_t$: Earnings per share for year *t*. (2) *** (**) means the significance level of 1% (5%, 10%) when the two-sided test for whether the regression coefficient is significantly different from '0'.

4.3. Additional Analysis

According to a previous study, the credit rating declined when a bad disclosure occurred, but the credit rating decline of KOSPI-listed companies was greater than that of KOSDAQ-listed companies. This means that KOSPI-listed companies have a larger impact than the publicly listed companies [23]. KOSPI-listed companies have many stakeholders and stricter government regulations. Therefore, it means that disclosure of KOSPI-listed companies is more important. In addition, KOSPI-listed companies were found to be more financially stable than KOSDAQ-listed companies [24]. Previous studies have shown that the KOSPI market has higher quality and reliability of accounting information than the KOSDAQ market [25]. To verify this market difference, the sample was divided into the KOSPI market and the KOSDAQ market. Under this background, the impact of goodwill on the share price between the KOSPI market and the KOSDAQ market was expected to differ, and the sample to be verified was divided into two groups.

To verify the difference between the mean values of two groups between KOSPI firms and KOSDAQ firms, this paper analyzed the *t*-test. Table 4 shows that there was a significant difference between the mean of each variable. As a result of the *t*-test, all variables showed significant differences between the two groups. The characteristics of the samples between groups were examined by verifying whether the means between the two groups were significantly different.

Table 4. Differences in the mean value of the two groups (KOSPI and KOSDAQ).

Variables	KOSPI (N = 5347)	KOSDAQ (N = 8175)	*t*-Value	
P	33,716	11,164	23.07	***
BVIA	30,613	6549	36.24	***
IAGW	787	244	15.96	***
GW	338	43	6.63	***
EPS	1620	390	22.30	***

(1) Variables definitions are as follows (unit: Korea won); P_{t+1}: Price of common stock at the end of March of year $t + 1$; $BVIA_t$: Net assets per share excluding intangible assets at the end of year t; $IAGW_t$: Intangible assets per share excluding goodwill at the end of year t; GW_t: Goodwill per share at the end of year t; EPS_t: Earnings per share for year t. (2) *** means the significance level of 1% (5%, 10%) in the two-sided test of whether the difference between the two groups is significantly different from '0'.

Table 5 shows the results of the analysis by dividing the full sample into those listed on the KOSPI market and those listed on the KOSDAQ market. To check whether there was a difference in the value relevance of goodwill due to differences in size, industry, financial characteristics, and level of supervisory regulation, a regression analysis was performed by dividing into two groups.

As a result of empirical analysis, the results of regression analysis of listed companies in KOSDAQ were different from those of listed companies in the KOSPI market. As a result of the regression analysis, both groups showed significant positive (+) regression coefficients for equity capital (BVIA) excluding intangible assets and intangible assets excluding goodwill (IAGW). The regression coefficient of earnings per share (EPS) was also found to be positive (+) in both groups. These results are consistent with Table 4 (the results of testing the full sample).

However, in the KOSPI market, the regression coefficient of goodwill (GW) was found to have a significantly positive (+) value. However, in the KOSDAQ market, the regression coefficient value of goodwill (GW) was found to have a significant negative (−) value. These results can be interpreted as investors reacting negatively to goodwill in the KOSDAQ market. The credibility of the goodwill accounting information in the KOSDAQ market is relatively low compared to the KOSPI market. Therefore, it can be interpreted that investors respond to the goodwill accounting information of the KOSDAQ market as useful information, but rather make negative evaluations that deny asset quality. This differentiated response to sustainable profit-generating information was due to differences in the reliability of accounting information between the two groups. It was confirmed that the capital market reacted negatively when the reliability of the information was low, even if it could generate sustainable excess profits.

Table 5. The value relevance of goodwill accounting information (KOSPI and KOSDAQ).

Variable	Predicted Sign	Estimates (*t*-Value)							
		KOSPI			VIF	KOSDAQ			VIF
BVIA	+	0.510	(25.13)	***	2.034	0.643	(24.42)	***	2.124
IAGW	+	3.204	(9.18)	***	1.557	8.569	(22.44)	***	1.585
GW	+/−	0.563	(2.53)	***	1.132	−4.043	(−4.95)	***	1.378
EPS	+	5.780	(24.68)	***	1.725	4.665	(27.04)	***	1.969
Year Dummies		Included				Included			
Industry Dummies		Included				Included			
Adjusted R^2		0.4759				0.4656			
F Value		113.90 ***				162.88 ***			
N		5347				8175			

(1) Variables definitions are as follows; $BVIA_t$: Net assets per share excluding intangible assets at the end of year t; $IAGW_t$: Intangible assets per share excluding goodwill at the end of year t; GW_t: Goodwill per share at the end of year t; EPS_t: Earnings per share for year t. (2) *** (**, *) means the significance level of 1% (5%, 10%) when the two-sided test for whether the regression coefficient is significantly different from '0'.

In conclusion, in the case of listed companies in the KOSDAQ market, there is a lot of discretion in accounting for goodwill, and the overall reliability of goodwill accounting information is poor, such as impairment of goodwill not being recognized on time. For this reason, the reaction from the capital market to the goodwill of listed companies in the KOSDAQ market also appears negative.

5. Conclusions

Prior studies showed that the accounting information of intangible assets has a significant value relationship with the stock price after the application of IFRSs. The results showed that there was a significantly positive (+) relationship between intangible assets and future profits [1–4]. On the contrary, there have been previous studies reporting that the value related to intangible asset accounting information has become lower since the adoption of IFRSs [5]. The following studies have verified the value relevance of goodwill among intangible assets: references [7–11]. Prior studies have shown that managerial opportunistic discretion is used to selectively delay impairment of goodwill and the impairment loss of goodwill has decreased since the adoption of IFRSs. As a result of empirical analysis, it was found that, at the discretion of the manager, both the company that recognized the impairment loss of goodwill early and the company that recognized it as delayed had significantly lower value relevance [12–16].

Intangible assets have the unique characteristic that there is no physical entity, and the uncertainty about future economic benefits is relatively high. Therefore, even though the definition and recognition requirements of intangible assets have not been met, there are a lot of discretionary accounting, such as excessive recognition of assets. Since the adoption of IFRSs, the results of previous studies on the stock price relevance of intangible assets appear to be inconsistent. Goodwill acquired externally during business combination is recognized as an asset. Goodwill is not an individually identifiable asset but is recognized as an intangible asset because it is viewed as having future economic benefits from a business combination.

According to IFRSs, mechanical amortization of goodwill is prohibited, and only impairment losses should be recognized. In the process of determining the impairment loss for goodwill, managers can use opportunistic discretion. Prior studies have shown that impairment losses on goodwill are being used as a means to adjust earnings. Therefore, this study aims to verify the relationship between goodwill numbers and stock price 10 years after IFRSs are applied. If goodwill information had a significant value relationship with stock prices, it can be interpreted that goodwill accounting information is used as useful information.

In K-GAAP, goodwill among intangible assets is amortized using a straight-line method for less than 20 years. This was a mechanical depreciation, ignoring the realities of the economic benefits creation behavior and the feasibility of economic benefits, which can vary from company to company. However, the IFRSs applied since 2011 prohibit mechanical amortization of goodwill and recognize only impairment losses according to the economic substance. In the process of determining the impairment loss for goodwill, the managers will not recognize the impairment loss of goodwill promptly by using opportunistic discretion. As such, goodwill can be used as a means for earnings management.

In this study, we investigated whether goodwill was useful accounting information related to stock prices in an accounting environment in which managers' discretion is more likely to be judged. The verification period for this study was from 2011 to 2019, when IFRSs were mandatory. The sample companies were 13,522 firms-years satisfying the sample selection criteria among listed companies in the KOSPI market and KOSDAQ market.

As a result of empirical analysis, it was found that goodwill accounting information was related to stock prices. The results of this study showed that goodwill served as useful accounting information by reflecting the economic realities of intangible assets called creating excess profitability. These results showed that goodwill was an asset that represented the ability to generate excess profit as a sustainable profit. This means that in the capital market, the valuation of corporate values is positive for sustainable

profits. This suggests that more sophisticated and reliable accounting information is needed for sustainable profits, such as goodwill.

The sample companies were divided into the KOSPI market and the KOSDAQ market for analysis. In the KOSPI market, goodwill was useful accounting information and it was found that there was a positive (+) value relevance. However, in the KOSDAQ market, goodwill was found to have a significant negative (−) value relevance. These results can be interpreted as investors in the KOSDAQ market reacting negatively to goodwill accounting information. This means that the reliability of goodwill in the KOSDAQ market was relatively low compared to that of the KOSPI market. Therefore, it can be interpreted that financial information users also made negative evaluations that denied goodwill being an asset.

The contributions of this study are as follows. First, it verified the relevance of goodwill's stock price in an accounting environment in which managers' discretion is more likely to judge goodwill. This verified the usefulness of goodwill accounting information. Second, it suggested that goodwill accounting information can be useful for decision-making to accounting standards setters, supervisors, and financial information users. This will lead to rational decision-making related to goodwill in establishing accounting standards, supervising, and using investment decisions. Third, it presented the need to provide reliable goodwill accounting information to the managers who prepare financial statements. Only reliable goodwill accounting information can be recognized for its value in the capital market. It can encourage managers to provide capital markets with more useful information related to goodwill.

The limitation of this study is that the verification period of this study was somewhat short because the IFRSs were applied since 2011 in Korea. In the future, if financial information applying IFRSs is accumulated for a long period, more robust research results can be drawn. In recent years, the growth of the high-tech industry and the service industry have made intangible assets a significant part of corporate value. Nevertheless, intangible assets are reported very rarely in the current financial statements. The reason for this is that the measure of intangible assets is unreliable, and the future benefits are uncertain, so there is no value relevance. However, in the future, research will be needed to verify the value relevance of various possible measures of intangible assets and to strengthen the reporting of intangible assets based on this.

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