

## Article

# Does Tax Incentives Affect Future Firm Value for Corporate Sustainability?

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**Abstract:** This paper investigates how tax benefits for companies affect future firm value and current corporate performance. In addition, this paper also examines the relationship between tax benefits and future firm value for each major industry. The findings of this paper are as follows. First, tax benefits granted to companies improve current corporate performance. The effect of tax benefits that reduce corporate tax costs increases net income, which directly increases current corporate performance, such as ROA (returns on assets) and ROE (returns on equity). Second, tax benefits granted to firms reduce future firm value. Industries that receive tax benefits may have inherent taxation, which can lead to fiercer competition and ultimately lower pre-tax profit margins due to the entry of new companies or the increase in production facilities. In addition, tax benefits that cause temporary differences among the types of tax benefits for a company through deferred tax payments may be factors that hinder future improvements in corporate value. These causes result in the fact that tax benefits for a company can negatively affect its value in the long term. This paper has the following contributions. First, the findings of this paper imply that there is a limit to the positive impact of tax benefits on firms on improving corporate value in the long run. Second, through empirical analysis, this study provides objective information that the impact of tax incentives on corporate value may differ by industry.

**Keywords:** tax benefits; current corporate performance; future firm value; sustainability; inherent taxation



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## 1. Introduction

This paper investigates to analyze how tax benefits for companies affect their current performance and future value. Furthermore, this paper analyzes the association between tax benefits and future firm value for each major industry.

A corporate is obliged to pay corporate tax in proportion to its profits. However, companies can face various situations and have difficulties. To help companies grow stably through these difficulties, policy authorities should grant tax benefits to suit the corporate situation. These tax benefit schemes should be reasonable and help not only business growth but also national economic development. However, it is not right that tax benefits for companies are indiscriminately overused, and it is important to provide tax benefits in the proper conditions.

Granting tax benefits to a firm will reduce corporate tax costs and thus increase net income. In other words, tax benefits will improve current corporate performance. However, the question arises whether tax benefits can improve future firm value. Therefore, this study presents results through empirical analysis of the current corporate performance and future changes in firm value when tax benefits are provided to companies.

The sample period of this study is from 2011 to 2019, with KOSPI (Korea Composite Stock Price Index) and KOSDAQ (Korea Securities Dealers Automated Quotation) listed

companies being sampled. In this paper, we used ROA and ROE as proxies for current corporate performance, and Tobin's Q and market value to book value ratio as measures for future firm value.

The results of the paper show that tax benefits granted to companies improve current corporate performance. In other words, the effect of tax benefits that reduce corporate tax costs and increases net income, resulting in immediate improvement in current corporate performance, such as ROA and ROE. However, the tax benefits granted to a company have resulted in a reduction in future corporate value. This implies that industries with tax benefits may eventually lead to a decline in pre-tax profit margins as competition intensifies due to the entry of new companies or increased production facilities, which can negatively affect corporate value in the long term. In addition, these results are believed to have been derived because tax benefits that cause temporary differences through deferred corporate tax payments, other than tax deductions or tax breaks, can rather reduce future corporate value.

The results of this study provide the following implications: Tax incentives for companies suggest that there may be limitations for companies to grow sustainably in the long run. Tax benefits for businesses are necessary for early businesses and businesses in poor conditions. However, as a result of the empirical analysis of this paper, tax benefits for companies only can work in the short term, and their effects may be halved in the long term. Therefore, it is necessary to examine the current tax benefit system for companies and improve it so that it can positively affect long-term corporate value for their sustainability.

The composition of this paper is as follows. In Section 2, we derive the hypotheses from prior literatures related to the research topic of this paper. Section 3 describes research design methods for deriving hypotheses, and Section 4 presents research findings and discusses their implications. Finally, Section 5 concludes this paper.

## 2. Prior Researches and Hypothesis Development

Tax benefits to companies ease the burden on businesses to pay corporate tax expenses. Kim et al. [1] and Bornemann [2] explain that the existence of tax benefits would induce managers to account for conservatism by reducing corporate tax costs and pressure on reporting profits. Jung et al. [3] and Nicolaescu et al. [4] report that firms with tax benefits have less financial reporting pressure on achieving high net income, which improves the quality of accounting information. In other words, tax benefits can have a positive financial effect on a firm because they reduce the burden of cash outflows on the firm's corporate tax expense.

And tax benefits for companies have the effect of directly increasing net profit at this point because they reduce corporate tax costs. If tax benefit support is provided to companies, this effect will occur immediately in the year, which will improve current corporate performance. That is, in the short term, tax benefits to a firm are believed to increase the financial performance of the company. Therefore, the following hypothesis is derived:

**Hypothesis 1.** *As tax benefits increase, current corporate performance will increase.*

Although tax benefits for a firm may help its current performance in the short term, tax benefits may not help it improve its future value in the long term. In order for tax benefits to increase corporate value in the long run, investment for the future must be activated and ultimately corporate performance at a future point as tax benefits have paid less corporate tax costs at the present point.

Prior studies report conflicting results in the fact that tax incentives for businesses facilitate investment. Above all, some of prior studies report that tax benefits for companies promote corporate investment. Lee et al. [5] and Xie et al. [6] report that supporting tax benefits for companies would facilitate investment activities for firms. Choi and Seo [7] and Sampaio et al. [8] explain that tax breaks for companies have positive (+) relationship with the number of patent applications for companies. Seo and Lee [9] and Chen et al. [10]

mention that increasing tax benefits can increase R&D (research & development) investment. Lim and Yoon [11] and Hanlon et al. [12] present empirical results that tax benefits for firms increase investment.

On the other hand, other prior studies suggest that tax benefits for a company do not enhance investment. Lee and Kim [13] report that a reduction in corporate tax rates had no significant future corporate value. Bryant-Kutcher et al. [14] future firm value has negative relation with foreign effective tax rates. Park et al. [15] argue that it is difficult to say that tax benefits for a company significantly increase investment. Luo et al. [16] explain cancellation of preferential tax benefits has no effect on foreign investment. Choi and Kim [17] report that companies that receive high tax benefits have higher explanation of profit continuity than those that receive low tax benefits, but there is no significant difference in value relevance.

If tax benefits to a firm do not increase the investment activation of the corporate, future firm value may not increase. Many studies have been conducted so far on the effect of corporate tax on corporate value. Modigliani and Miller [18] demonstrate that the value of a company is maximized by financing debt in the presence of corporate tax that can pay interest on debt. Many firms present possess sub-optimal capital structures as they do not fully use the function of the debt tax [19].

In order to resolve this problem, Welch [20] focuses on leverage mis-measurement. Almeida and Philippon [21] examine costs mis-measurement. Graham and Tucker [22] focus on tax shelters and Huizinga et al. [23] emphasize the importance of international tax. DeAngelo et al. [24] explain that because most companies use short-term debt and they do not use long-term debt well, the capital structure of companies does not improve and this is the main reason for not improving corporate value. Kopecky et al. [25] report that the corporate value can be affected by the presence of takeover firms. Therefore, it can be hypothesized that tax incentives may do not affect future corporate value due to various and complex factors.

However, referring to the following previous studies, it is considered more reasonable to derive a hypothesis that tax incentives can reduce future corporate value. Jung [26] report that the effect of corporate tax reduction by tax benefits has the effect of reducing the value of the firm when it is replaced by reserves or reserves that are limited in disposal from retained earnings under the tax exemption management regulations. Lee and Lee [27] stated that there is a significant negative (−) relationship between tax benefits and pre-tax return on investment.

Actually, most of the types of companies that receive a lot of tax benefits are small and medium-sized enterprises or venture companies with poor financial conditions. In the case of small and medium-sized enterprises or venture companies, they will try to grow into mid-sized enterprises or large companies, but in reality, many small and medium-sized enterprises or venture companies stay in their current positions can disappear without further growth. In other words, tax benefits for companies in poor business conditions can immediately improve their current corporate performance, but there is a high uncertainty in improving future corporate value in the long run.

In some cases, the types of tax benefits for companies reduce corporate tax costs, such as tax deductions and tax cuts, but in some cases, deferred tax liabilities are generated by extending the corporate tax deadline. Tax benefits that cause these temporary differences are rather judged to be burdensome for future corporate values.

In addition, we think there could be reasons related to the fact that sometimes people prefer current gratification to the future gratification. Gordon [28] states that the realization of solid profits through current dividends is better than the realization of uncertain profits from future stock prices in the future. This means that small but certain profits are better than large amounts of uncertain profits. From this point of view, when tax incentives are granted to companies at this point, there may be companies that prefer to reduce current cash outflows rather than increase future corporate value by increasing investment at this point. Hence, therefore, the following hypotheses are derived:

**Hypothesis 2.** *As tax benefits increase, future corporate value will decrease.*

### 3. Research Design

#### 3.1. Sample Selection

The sample period of this study is from 2011 to 2019, and the sample targets are KOSPI and KOSDAQ listed companies. Since IFRS was introduced in 2011, the start of the sample period begins with 2011. In addition, since an abnormal economic situation occurred due to the COVID-19 pandemic from 2020, the end of the sample period is set to 2019.

Financial and insurance industries are excluded from the sample because of different accounting standards, and samples are selected only by companies whose settlement date was at the end of December. In addition, the financial data used in the analysis are obtained from KIS-VALUE of NICE credit rating information and TS-2000 of the Korea Council of Listed Companies. In other words, the firm's financial data used in this study consist of satisfying with all of the following conditions:

Condition 1: KOSPI-listed companies in the South Korea

Condition 2: Except from the banking industry, a corporate with a settlement month ending Dec.

Condition 3: The financial data can be obtained from TS-2000 of the Korea Council of Listed Companies (<http://www.klca.or.kr>) (accessed on 9 November 2021) and KIS-value of NICE credit rating information (<http://www.nicerating.com>) (accessed on 9 November 2021).

After selecting the samples by considering all of the above conditions, companies that did not have financial information are excluded from the samples. In addition, the upper and lower extremities of 1% of the variable values used in the analysis are adjusted the outlier of the sample. Given all these conditions, the final number of samples is 11,947 firm-year.

The specific information on the samples of this study is as follows. Table 1 presents the number of samples by year. In addition, Table 2 describes the calculation process of the final number of samples used in this study.

**Table 1.** The number of samples by year.

YEAR	2011	2012	2013	2014	2015	2016	2017	2018	2019
N	1055	1102	1164	1236	1342	1428	1494	1560	1566

**Table 2.** Sample selection criteria.

Criteria	N
Initial firm-years listed in KOSPI market from 2011 to 2019	20,926
Less: Financial industries (initial word of KIS-code started from 'K')	(381)
Less: Non-December fiscal-year end	(924)
Less: Unavailable financial data required from the database	(7647)
Final observations	11,947

#### 3.2. Descriptive Statistics and Correlation Analysis

The variables used for empirical analysis in this study are presented in the following Table 3. ROA [29] and ROE [30] are used as measures for current corporate performance, and Tobin's Q [31,32] and MB [33] are used as proxies for future firm value. In addition, TB is used as a proxy for tax benefits [34,35].

**Table 3.** Definition of variables.

Variables	Definition
TQ	A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets
MB	A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio
ROA	A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets
ROE	A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity
TB	A proxy for tax benefits [34,35]: average value of {(net income before tax expense × maximum corporate tax rate) – corporate tax rate} for the last three years ÷ total assets
LARGE	Largest shareholder’s equity ratio [36,37]
FORN	Foreign investors’ shareholder ratio [36,37]
SIZE	Natural logarithm of total assets [38]
LEV	Total liabilities to total assets [39]
OI	(Year-end operating profit – year-end operating profit) ÷ year-end operating profit [40]
GRW	(Year-end sales – year-end sales) ÷ year-end sales [40]
CFO	Current operating cash flows ÷ total assets at the beginning of the year [41]
ATOR	Current sales ÷ total assets at the beginning of the year [40]
BIG4	Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]

Descriptive statistics of the variables used in this study are presented in Table 4 below. The mean values of TQ and MB, which represent future corporate value, are 1.447 and 2.003, respectively, and the standard deviations are 1.053 and 2.427, respectively. The average values of ROA and ROE, which currently represent corporate performance, are 0.005 and 0.008, respectively, and the standard deviations are 0.109 and 0.222, respectively. The average value of TB, which means tax benefits, is –0.004, and the standard deviation is 0.020.

**Table 4.** Descriptive statistics.

Variables	N	Means	SD	Min	Q1	Medium	Q3	Max
TQ	11,947	1.447	1.053	0.457	0.854	1.109	1.620	6.798
MB	11,947	2.003	2.427	0.208	0.738	1.232	2.203	16.226
ROA	11,947	0.005	0.109	–0.504	–0.012	0.024	0.059	0.217
ROE	11,947	0.008	0.222	–1.059	–0.023	0.040	0.100	0.652
TB	11,947	–0.004	0.020	–0.104	–0.004	0.001	0.004	0.035
LARGE	11,947	28.324	15.000	4.490	17.360	25.390	36.270	77.680
FORN	11,947	7.141	10.817	0.020	0.810	2.470	8.600	55.008
SIZE	11,947	25.983	1.387	23.544	25.027	25.720	26.680	30.624
LEV	11,947	0.407	0.259	0.016	0.207	0.384	0.560	1.448
OI	11,947	0.217	3.517	–18.290	–0.282	0.153	0.725	17.922
GRW	11,947	0.084	0.440	–0.903	–0.079	0.029	0.146	3.412
CFO	11,947	0.045	0.098	–0.285	–0.001	0.043	0.093	0.435
ATOR	11,947	0.864	0.600	0.009	0.478	0.761	1.115	4.605
BIG4	11,947	0.516	0.500	0.000	0.000	1.000	1.000	1.000

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; ROE: A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense × maximum corporate tax rate) – corporate tax rate} for the last three years ÷ total assets; LARGE: Largest shareholder’s equity ratio [36,37]; FORN: Foreign investors’ shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit – year-end operating profit) ÷ year-end operating profit [40]; GRW: (Year-end sales – year-end sales) ÷ year-end sales [40]; CFO: Current operating cash flows ÷ total assets at the beginning of the year [41]; ATOR: Current sales ÷ total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42].

The results of correlation analysis among the variables used in this paper are presented in the following Table 5. TQ and MB, which represent future corporate value, have significantly positive (+) correlation. ROA and ROE, which represent current corporate performance, have also significantly positive (+) correlation.

Table 5. The result of correlation analysis.

Variables	TQ	MB	ROA	ROE	TB	LARGE	FORN	SIZE	LEV	OI	GRW	CFO	ATOR
MB	0.793 <0.0001												
ROA	−0.098 <0.0001	−0.025 0.007											
ROE	−0.067 <0.0001	−0.002 0.856	0.880 <0.0001										
TB	−0.170 <0.0001	−0.221 <0.0001	0.411 <0.0001	0.387 <0.0001									
LARGE	−0.083 <0.0001	−0.061 <0.0001	0.156 <0.0001	0.135 <0.0001	0.112 <0.0001								
FORN	0.074 <0.0001	0.054 <0.0001	0.202 <0.0001	0.178 <0.0001	0.110 <0.0001	0.031 0.001							
SIZE	−0.203 <0.0001	−0.121 <0.0001	0.235 <0.0001	0.209 <0.0001	0.213 <0.0001	0.097 <0.0001	0.474 <0.0001						
LEV	−0.055 <0.0001	0.206 <0.0001	−0.117 <0.0001	−0.101 <0.0001	−0.138 <0.0001	−0.006 0.506	−0.082 <0.0001	0.192 <0.0001					
OI	0.034 0.000	0.049 <0.0001	−0.055 <0.0001	−0.024 0.010	−0.091 <0.0001	−0.049 <0.0001	−0.020 0.028	−0.023 0.011	0.060 <0.0001				
GRW	0.111 <0.0001	0.210 <0.0001	0.140 <0.0001	0.165 <0.0001	−0.060 <0.0001	0.009 0.346	0.024 0.008	0.017 0.060	0.162 <0.0001	0.072 <0.0001			
CFO	−0.005 0.621	0.011 0.250	0.496 <0.0001	0.470 <0.0001	0.291 <0.0001	0.109 <0.0001	0.203 <0.0001	0.151 <0.0001	−0.088 <0.0001	−0.012 0.179	0.133 <0.0001		
ATOR	−0.048 <0.0001	0.053 <0.0001	0.257 <0.0001	0.263 <0.0001	0.097 <0.0001	0.104 <0.0001	0.042 <0.0001	0.050 <0.0001	0.320 <0.0001	0.003 0.762	0.243 <0.0001	0.254 <0.0001	
Big4	−0.057 <0.0001	−0.056 <0.0001	0.126 <0.0001	0.113 <0.0001	0.121 <0.0001	0.154 <0.0001	0.260 <0.0001	0.412 <0.0001	0.031 0.001	−0.025 0.006	0.012 0.185	0.118 <0.0001	0.081 <0.0001

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; ROE: A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense × maximum corporate tax rate) − corporate tax rate} for the last three years ÷ total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit − year-end operating profit) ÷ year-end operating profit [40]; GRW: (Year-end sales − year-end sales) ÷ year-end sales [40]; CFO: Current operating cash flows ÷ total assets at the beginning of the year [41]; ATOR: Current sales ÷ total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42].

TQ has significantly negative (–) association with ROA. In addition, TQ has also significantly negative (–) relationship with ROE. However, MB shows no significant correlation with ROA and ROE.

TB, which means tax benefits for companies, has significantly negative (–) relationship with TQ and MB. Yet, TB has significantly positive (+) correlation with ROA and ROE.

### 3.3. Research Model

#### 3.3.1. Research Model for Hypothesis 1

This study uses a regression analysis to test hypotheses. The research model for verifying hypothesis 1 of this study is as follows:

$$\begin{aligned} ROA_t/ROE_t = & \beta_0 + \beta_1 TB_t + \beta_2 LARGE_t + \beta_3 FORN_t + \beta_4 SIZE_{t-1} + \beta_5 LEV_{t-1} \\ & + \beta_6 OI_t + \beta_7 GRW_t + \beta_8 ATOR_t + \beta_9 BIG4_t + \beta_{10} CFO_t \\ & + \beta_{11} Year\ fixed\ effects + \beta_{12} Industry\ fixed\ effects + \varepsilon_t \end{aligned} \quad (1)$$

ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; ROE: A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense × maximum corporate tax rate) – corporate tax rate} for the last three years ÷ total assets; LARGE: Largest shareholder’s equity ratio [36,37]; FORN: Foreign investors’ shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit – year-end operating profit) ÷ year-end operating profit [40]; GRW: (Year-end sales – year-end sales) ÷ year-end sales [40]; CFO: Current operating cash flows ÷ total assets at the beginning of the year [41]; ATOR: Current sales ÷ total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42].

In Equation (1), the independent variable established TB [34,35], meaning tax benefits, and the dependent variable established ROA [29] and ROE [30], meaning current corporate performance. In the management field, most papers use ROI and ROE as proxies for present firm performance [43,44]. In addition, we employ Tobin’s q and MB as proxies for future firm value [45,46]. The reason for analyzing the current corporate performance first before analyzing the future corporate value in this study is to compare how the tax benefits given to companies affect the present and future, respectively.

In addition, the control variables used in the above model are as follows. First of all, to control corporate governance, LARGE, which means the largest shareholder share ratio, and FORN, which means the foreign investor share ratio, are designated as the control variables of the model [34,37]. To control the size of the firms, SIZE is used with a natural log on the total assets [38], and LEV, meaning debt ratio, is used to control financial risk [39].

To control the growth rate of the company, OI, which represents the growth rate of operating profit, and GRW, which represents the growth rate of sales, were used [40]. In addition, to control the effect of sales, ATOR is established [40], and BIG4 variable is established to control audit risk, meaning whether one of the Big4 accounting firms is audited [42]. Finally, CFO, the ratio of operating cash flows, is used to control the effects of operating cash flows [41]. In addition, Year Effect and Industry Effect are used to control annual and industry effects.

If TB’s coefficient  $\beta_1$  has a significantly positive (+) value, then tax benefits for a company are interpreted as having the effect of increasing current corporate performance, and vice versa, if  $\beta_1$  has a significantly negative (–) value, tax benefits for a firm are interpreted as having the effect of decreasing current corporate performance.

### 3.3.2. Research Model for Hypothesis 2

The research model to test Hypothesis 2 of this study is as follows:

$$\begin{aligned} TQ_t/MB_t = & \beta_0 + \beta_1 TB_t + \beta_2 ROA_t + \beta_3 LARGE_t + \beta_4 FORN_t + \beta_5 SIZE_{t-1} + \beta_6 LEV_{t-1} \\ & + \beta_7 OI_t + \beta_8 GRW_t + \beta_9 ATOR_t + \beta_{10} BIG4_t + \beta_{11} CFO_t \\ & + \beta_{12} Year\ fixed\ effects + \beta_{13} Industry\ fixed\ effects + \varepsilon_t \end{aligned} \quad (2)$$

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense  $\times$  maximum corporate tax rate) – corporate tax rate} for the last three years  $\div$  total assets; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit – year-end operating profit)  $\div$  year-end operating profit [40]; GRW: (Year-end sales – year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42].

In Equation (2) above, we set TB [34,35], which means tax benefits as independent variables, and TQ [31,32] and MB [43], which mean future corporate value as dependent variables. In addition the control variables used in the model to verify Hypothesis 2 are the same as those used in the model to verify Hypothesis 1.

If TB's coefficient  $\beta_1$  shows a significantly positive (+) value, then tax benefits for the firm are interpreted as having the effect of increasing future corporate value, whereas if  $\beta_1$  shows a significantly negative value, tax benefits for the company are interpreted as having the effect of decreasing future corporate value.

## 4. Research Results

### 4.1. Findings on Hypothesis 1

The results of validating Hypothesis 1 in this paper are presented in Table 6. When the dependent variable is ROA, the coefficient  $\beta_1$  of the independent variable TB is 1.277 and the t-value is 28.635, resulting in a statistically significant result under 1%. This result means that increasing tax benefits for a firm improves current corporate performance. In other words, it can be interpreted that a reduction in income tax expense resulting from tax benefits directly increases net income and thus improves current corporate performance.

Additionally, the Adj\_R\_square value is 40.100 and is found to have high inter-variable explanation power in the model. The t-value of the model's F value is 101.859, which is significant under 1%, indicating that the model is highly reasonable.

Table 7 shows empirical analysis results for hypothesis 1. When the dependent variable is ROE, the coefficient  $\beta_1$  of the independent variable TB is 2.579 and the t-value is 27.694, which is statistically significant under 1%. This result is the same as when the dependent variable is ROA, which means that increasing tax benefits for a company also increases current corporate performance. This can be interpreted as improving current corporate performance as net income increases due to a decrease in corporate tax costs due to tax benefits.

**Table 6.** Results for hypothesis 1 (dependent variable ROA).

Variables	$\beta$	t Value	VIF
Intercept	−0.309	−8.096 ***	0.000
TB	1.277	28.635 ***	1.255
LARGE	0.000	8.534 ***	1.119
FORN	0.000	3.592 ***	1.541
SIZE	0.011	14.281 ***	2.067
LEV	−0.063	−17.643 ***	1.402
OI	−0.001	−2.628 ***	1.024
GRW	0.021	11.365 ***	1.140
ATOR	0.033	20.530 ***	1.531
BIG4	−0.010	−5.423 ***	1.332
CFO	0.358	39.352 ***	1.313
Industry Effect		Included	
Year Effect		Included	
Adj_R_square		40.100	
F value		101.859 ***	

ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense  $\times$  maximum corporate tax rate) – corporate tax rate} for the last three years  $\div$  total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit – year-end operating profit)  $\div$  year-end operating profit [40]; GRW: (Year-end sales – year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*\*\* indicate significance at the 1% levels.

**Table 7.** Results for hypothesis 1 (dependent variable ROE).

Variables	B	t Value	VIF
Intercept	−0.574	−7.211 ***	0
TB	2.579	27.694 ***	1.255
LARGE	0.001	6.208 ***	1.119
FORN	0	1.766 *	1.541
SIZE	0.022	12.91 ***	2.067
LEV	−0.117	−15.729 ***	1.402
OI	0	0.861	1.024
GRW	0.053	13.356 ***	1.14
ATOR	0.071	21.201 ***	1.531
BIG4	−0.019	−5.043 ***	1.332
CFO	0.688	36.244 ***	1.313
Industry Effect		Included	
Year Effect		Included	
Adj_R_square		36.529	
F value		87.569 ***	

ROE: A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense  $\times$  maximum corporate tax rate) – corporate tax rate} for the last three years  $\div$  total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit – year-end operating profit)  $\div$  year-end operating profit [40]; GRW: (Year-end sales – year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*, \*\*\* indicate significance at the 10%, 1% levels, respectively.

The Adj R square value also shows 36.529, indicating a relatively high explanatory power between variables in the model. The model's t-value of F value is 87.569, which shows significant values under 1%, indicating that the model also has high validity.

Overall, hypothesis 1 of this study is supported, as the tax benefit variable for the corporate shows significantly positive (+) value of empirical analysis for the current corporate performance proxy variables ROA and ROE. In particular, the analysis results for

hypothesis 1 of this study are considered robust, as the tax benefit variables show consistent results for both ROA and ROE, which are measures of current corporate performance.

#### 4.2. Findings on Hypothesis 2

Table 8 presents the empirical analysis result for hypothesis 2. When the dependent variable is TQ, the coefficient  $\beta_1$  of the independent variable TB is  $-4.409$  and the t-value is  $-9.008$ , which is statistically significant under 1%. This result implies that increased tax benefits for the company will reduce future firm value.

**Table 8.** Results for hypothesis 2 (dependent variable TQ).

Variables	$\beta$	t Value	VIF
Intercept	7.011	17.275 ***	0.000
TB	$-4.409$	$-9.008$ ***	1.342
ROA	$-0.541$	$-5.548$ ***	1.669
LARGE	$-0.002$	$-2.752$ ***	1.126
FORN	0.017	18.073 ***	1.542
SIZE	$-0.157$	$-18.218$ ***	2.103
LEV	0.088	2.301 **	1.439
OI	0.001	0.512	1.024
GRW	0.174	8.667 ***	1.152
ATOR	0.048	2.774 ***	1.585
BIG4	$-0.005$	$-0.279$	1.335
CFO	0.637	6.208 ***	1.484
Industry Effect		Included	
Year Effect		Included	
Adj_R_square		27.247	
F_value		56.257 ***	

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; TB: A proxy for tax benefits [34,35]: average value of  $\{(\text{net income before tax expense} \times \text{maximum corporate tax rate}) - \text{corporate tax rate}\}$  for the last three years  $\div$  total assets; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI:  $(\text{Year-end operating profit} - \text{year-end operating profit}) \div \text{year-end operating profit}$  [40]; GRW:  $(\text{Year-end sales} - \text{year-end sales}) \div \text{year-end sales}$  [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*\*, \*\*\* indicate significance at the 5%, 1% levels, respectively.

Additionally, the Adj R\_square value shows 27.247, indicating a relatively high inter-variable explanation power in the model. The t-value of the model's F value is 56.257, which is significant under 1%, indicating that the model's validity is also very high.

These results mean that tax benefits reduce corporate tax costs in the short term, improving current corporate performance, but falling in future corporate value in the long run. As Lee and Lee [19] argue, there is an inherent tax on tax benefits, which in turn leads to a decline in pre-tax profit margins due to increased competition within industries with tax benefits, which can negatively affect future firm value in the long run.

Table 9 shows the results for hypothesis 2. When the dependent variable is MB, the coefficient  $\beta_1$  of the independent variable TB is  $-19.262$  and t-value is  $-17.082$ , which is statistically significant under 1%. This results are the same as when the dependent variable is TQ, which means that increasing tax benefits for a company reduces future corporate value.

**Table 9.** Results for hypothesis 2 (dependent variable MB).

Variables	$\beta$	t Value	VIF
Intercept	11.167	11.942 ***	0.000
TB	−19.262	−17.082 ***	1.342
ROA	1.666	7.423 ***	1.669
LARGE	−0.002	−1.621	1.126
FORN	0.035	16.035 ***	1.542
SIZE	−0.315	−15.861 ***	2.103
LEV	2.664	30.309 ***	1.439
OI	0.002	0.305	1.024
GRW	0.651	14.069 ***	1.152
ATOR	0.010	0.239	1.585
BIG4	−0.099	−2.258 **	1.335
CFO	1.246	5.273 ***	1.484
Industry Effect		Included	
Year Effect		Included	
Adj_R_square		27.360	
F_value		56.578 ***	

MB: A proxy for future firm value 2 [33]; market value of equity to book value of equity ratio; TB: A proxy for tax benefits [34,35]; average value of  $\{(net\ income\ before\ tax\ expense \times maximum\ corporate\ tax\ rate) - corporate\ tax\ rate\}$  for the last three years  $\div$  total assets; ROA: A proxy for current corporate performance 1 [29]; net income of the current term, all divided by the sum of total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI:  $(Year\ end\ operating\ profit - year\ end\ operating\ profit) \div year\ end\ operating\ profit$  [40]; GRW:  $(Year\ end\ sales - year\ end\ sales) \div year\ end\ sales$  [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*\*, \*\*\* indicate significance at the 5%, 1% levels, respectively.

The Adj R\_square value also appears to be 27.360, indicating a relatively high inter-variable explanation power in the model. The t-value of the model F value is 56.578, indicating that the model has a high validity as well as a significant value under 1%.

Overall, hypothesis 2 of this study is strongly supported, as tax benefit variables for the companies show consistently negative (−) results for TQ and MB, which are the measures of future corporate value. In particular, the empirical analysis results of hypothesis 2 in this study are considered highly reliable, as both the proxies TQ and MB of future firm value have the same results for tax benefit variables.

#### 4.3. Additional Test for Hypothesis 2

The focus of this study is to analyze the relationship between tax benefits and future firm value. That is, to ensure the validation of Hypothesis 2, this study classifies the samples by major industries, and then performs further analysis of Hypothesis 2 for each major industry. Since the environment is different for each industry, the analysis results are expected to vary for each industry.

Table 10 presents the industry samples used in the additional test. In further study, major industries are selected based on over 100 samples. For further analysis, the samples are classified into a total of seven major industries (Manufacturing industry/Construction industry/Wholesale and Retail Industry/Transportation and Warehouse Industry/Information and Communication Industry/Professional, scientific and technical services industries/Business facility management, business support, and rental service industry).

**Table 10.** Results of major industries for further analysis.

Variables	IND_A	IND_B	IND_C	IND_D	IND_E	IND_F	IND_G
N	7985	307	964	194	1213	735	119
Industry	Manufacturing industry	Construction industry	Wholesale and Retail Industry	Transportation and Warehouse Industry	Information and Communication Industry	Professional, scientific and technical services industries	Business facility management, business support, and rental service industry

Table 11 presents the results of an empirical analysis of the relationship between tax benefits and future corporate value for each industry when the dependent variable is TQ. The results of further analysis show that the coefficient value of the tax benefit variable TB is significantly negative (−) in all seven major industries, consistently with the results of the main analysis.

**Table 11.** Additional analysis results for hypothesis 2 (dependent variable TQ).

Variable	IND_A		IND_B		IND_C		IND_D		IND_E		IND_F		IND_G	
	β	t-Value												
Intercept	7.165	33.466 ***	6.928	32.275 ***	7.032	32.847 ***	6.994	32.479 ***	6.739	31.058 ***	7.049	33.116 ***	7.023	32.72 ***
TB	−6.392	−8.887 ***	−6.161	−11.611 ***	−5.372	−9.726 ***	−5.879	−11.185 ***	−6.112	−10.725 ***	−5.137	−9.712 ***	−5.720	−10.86 ***
TB × IND	1.863	2.007 **	6.035	2.292 **	−3.292	−2.403 **	5.072	0.987	2.417	2.036 **	−18.550	−8.226 ***	−4.182	−1.265
IND	−0.148	−7.482 ***	−0.267	−4.361 ***	0.008	0.225	−0.126	−1.693 *	0.245	7.816 ***	0.289	7.466 ***	0.131	1.356
ROA	−0.468	−4.474 ***	−0.493	−4.707 ***	−0.489	−4.661 ***	−0.497	−4.737 ***	−0.497	−4.746 ***	−0.524	−5.026 ***	−0.487	−4.637 ***
LARGE	−0.004	−5.897 ***	−0.004	−5.942 ***	−0.004	−5.912 ***	−0.004	−6.003 ***	−0.004	−5.882 ***	−0.003	−5.548 ***	−0.004	−5.937 ***
FORN	0.020	20.957 ***	0.020	20.844 ***	0.021	21.039 ***	0.021	20.935 ***	0.020	20.758 ***	0.021	21.384 ***	0.020	20.815 ***
SIZE	−0.218	−25.889 ***	−0.213	−25.097 ***	−0.217	−25.636 ***	−0.215	−25.308 ***	−0.207	−24.187 ***	−0.219	−26.063 ***	−0.217	−25.519 ***
LEV	0.021	0.519	0.017	0.420	0.010	0.255	0.013	0.322	0.012	0.294	0.033	0.817	0.008	0.198
OI	0.002	0.784	0.002	0.682	0.002	0.774	0.002	0.738	0.002	0.819	0.002	0.828	0.002	0.784
GRW	0.272	12.646 ***	0.279	12.966 ***	0.279	12.938 ***	0.278	12.926 ***	0.275	12.809 ***	0.254	11.783 ***	0.280	13.014 ***
ATOR	−0.077	−4.444 ***	−0.080	−4.612 ***	−0.085	−4.883 ***	−0.084	−4.849 ***	−0.072	−4.167 ***	−0.063	−3.583 ***	−0.085	−4.904 ***
BIG4	0.064	3.17 ***	0.076	3.78 ***	0.080	3.977 ***	0.079	3.919 ***	0.063	3.116 ***	0.059	2.939 ***	0.079	3.884 ***
CFO	0.569	5.223 ***	0.563	5.15 ***	0.576	5.251 ***	0.568	5.198 ***	0.495	4.518 ***	0.641	5.893 ***	0.559	5.11 ***
YEAR Effect	Included													
Adj_Rsq	13.693		13.447		13.240		13.225		13.632		14.211		13.227	
F-value	90.093 ***		88.223 ***		86.656 ***		86.544 ***		89.627 ***		94.065 ***		86.557 ***	

TQ: A proxy for future firm value [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense × maximum corporate tax rate) − corporate tax rate} for the last three years ÷ total assets; ROA: A proxy for current corporate performance [29]: net income of the current term, all divided by the sum of total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit − year-end operating profit) ÷ year-end operating profit [40]; GRW: (Year-end sales − year-end sales) ÷ year-end sales [40]; CFO: Current operating cash flows ÷ total assets at the beginning of the year [41]; ATOR: Current sales ÷ total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, 1% levels, respectively.

However, the level of negative (−) relationship change between tax benefits and firm future corporate value has been shown to vary by industry. First of all, when the dependent variable is TQ, the additional analysis results are as follows. IND\_A (manufacturing industry) shows that TB × IND has a coefficient of 1.863 and a t-value of 2.007, which is significant under 5%. This result shows that the negative (−) relationship between tax benefits and firm value is more relaxed in 'manufacturing industry'. In IND\_B (construction industry) presents that the coefficient value of TB × IND is 6.035 and t-value is 2.292, which is significant under 5%. This means that the negative relationship between tax benefits and corporate value is more relaxed in 'construction industry'. IND\_E (information and communication industry) also shows that TB × IND has a coefficient value of 2.417 and t-value of 2.036, which is significant under 5%. This result shows that the negative (−) association between tax benefits and firm value is further weakened in 'information and communication industry'. That is, in 'manufacturing industry', 'construction industry', and 'information and communication industry', we find that the negative (−) relationship between tax benefits and corporate value is more relaxed than in other industries.

Meanwhile, in IND\_C (wholesale and retail industry), TB×IND's coefficient value is −3.292 and t-value is −2.403, which is shown to be significant under 5%. This result implies a stronger negative (−) relationship between tax benefits and corporate value in wholesale

and retail industry. In addition, IND\_F (professional, scientific and technical services industries) presents that  $TB \times IND$  has a coefficient of  $-18.550$  and t-value of  $-8.226$ , which is significant under 1%. This result means a stronger negative (–) relationship between tax benefits and corporate value in professional, scientific and technical services industries. Namely, in ‘wholesale and retail Industry’ and ‘professional, scientific and technical services industries’, the negative (–) association between tax benefits and future firm value can be further strengthened compared to other industries.

Finally, in IND\_D (transportation and warehouse industry) and IND\_G (business facility management, business support, and rental service industry), the coefficients of  $TB \times IND$  are not statistically significantly derived. This can be interpreted as a minor additional change in the negative relationship between tax benefits and corporate value in ‘transportation and warehouse industry’ and ‘business facility management, business support, and rental service industry’.

Next, Table 12 shows the results of an empirical analysis of the relationship between tax benefits and future corporate value for each industry when the dependent variable is MB. When the dependent variable is in MB, the additional analysis results are as follows. IND\_A (manufacturing industry) shows that  $TB \times IND$  has a coefficient value of 6.976 and t-value of 3.344, which is significant under 1%. This result means that in ‘manufacturing industry’, the negative (–) relationship between tax benefits and corporate value is more relaxed. IND\_E (information and communication industry) also shows that  $TB \times IND$  has a coefficient value of 7.026 and t-value of 2.634 which is significant under 1%. This result implies that the negative (–) association between tax benefits and future firm value is further weakened in ‘information and communication industry’. That is, in ‘manufacturing industry’, and ‘information and communication industry’, we find that the negative (–) relationship between tax benefits and future corporate value is more relaxed than in other industries.

**Table 12.** Additional analysis results for hypothesis 2 (dependent variable MB).

Variable	IND_A		IND_B		IND_C		IND_D		IND_E		IND_F		IND_G	
	$\beta$	t-Value	$\beta$	t-Value	$\beta$	t-Value								
Intercept	12.317	25.603 ***	11.813	24.522 ***	12.111	25.203 ***	11.964	24.753 ***	11.569	23.731 ***	12.219	25.524 ***	12.154	25.224 ***
TB	−24.691	−15.276 ***	−22.228	−18.665 ***	−20.295	−16.371 ***	−21.620	−18.328 ***	−22.747	−17.765 ***	−20.902	−17.574 ***	−21.352	−18.058 ***
$TB \times IND$	6.976	3.344 ***	3.288	0.556	−10.187	−3.313 ***	−18.001	−1.561	7.026	2.634 ***	−24.179	−4.768 ***	−20.326	−2.740 ***
IND	−0.241	−5.418 ***	−0.856	−6.240 ***	0.065	0.819	−0.608	−3.652 ***	0.465	6.611 ***	0.716	8.223 ***	−0.007	−0.031
ROA	1.816	7.721 ***	1.767	7.516 ***	1.781	7.558 ***	1.744	7.408 ***	1.755	7.468 ***	1.703	7.259 ***	1.798	7.622 ***
LARGE	−0.006	−4.475 ***	−0.006	−4.566 ***	−0.006	−4.491 ***	−0.006	−4.597 ***	−0.006	−4.461 ***	−0.006	−4.146 ***	−0.006	−4.493 ***
FORN	0.041	18.511 ***	0.040	18.350 ***	0.041	18.592 ***	0.041	18.448 ***	0.040	18.377 ***	0.041	18.919 ***	0.041	18.547 ***
SIZE	−0.432	−22.828 ***	−0.419	−22.000 ***	−0.431	−22.678 ***	−0.425	−22.234 ***	−0.412	−21.445 ***	−0.439	−23.187 ***	−0.432	−22.697 ***
LEV	2.451	26.991 ***	2.443	26.920 ***	2.428	26.701 ***	2.434	26.780 ***	2.426	26.729 ***	2.472	27.280 ***	2.430	26.691 ***
OI	0.004	0.643	0.003	0.529	0.004	0.609	0.003	0.561	0.004	0.646	0.004	0.610	0.004	0.621
GRW	0.853	17.648 ***	0.863	17.867 ***	0.864	17.867 ***	0.863	17.842 ***	0.858	17.755 ***	16.862 ***	16.862 ***	0.867	17.926 ***
ATOR	−0.251	−6.430 ***	−0.247	−6.348 ***	−0.266	−6.78 ***	−0.258	−6.605 ***	−0.238	−6.1 ***	−0.208	−5.288 ***	−0.265	−6.785 ***
BIG4	0.042	0.914	0.057	1.264	0.070	1.541	0.066	1.457	0.035	0.770	0.022	0.477	0.066	1.450
CFO	1.120	4.573 ***	1.085	4.425 ***	1.152	4.681 ***	1.113	4.536 ***	0.981	3.988 ***	1.256	5.129 ***	1.115	4.538 ***
YEAR Effect	Included		Included		Included									
Adj_Rsq	18.034		18.012		17.790		17.781		17.995		18.387		17.744	
F-value	124.936 ***		124.751 ***		122.886 ***		122.806 ***		124.608 ***		18.387		17.744	

MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; TB: A proxy for tax benefits [34,35]: average value of  $\{(net\ income\ before\ tax\ expense \times maximum\ corporate\ tax\ rate) - corporate\ tax\ rate\}$  for the last three years  $\div$  total assets; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; LARGE: Largest shareholder’s equity ratio [36,37]; FORN: Foreign investors’ shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI:  $(Year-end\ operating\ profit - year-end\ operating\ profit) \div year-end\ operating\ profit$  [40]; GRW:  $(Year-end\ sales - year-end\ sales) \div year-end\ sales$  [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. \*\*\* indicate significance at the 1% levels.

Meanwhile, in IND\_C (wholesale and retail industry),  $TB \times IND$ ’s coefficient value is  $-10.187$  and t-value is  $-3.313$ , which is shown to be significant under 5%. This implies a stronger negative (–) association between tax benefits and corporate value in ‘wholesale and retail industry’. IND\_F (professional, scientific and technical services industries) presents that  $TB \times IND$  has a coefficient of  $-24.179$  and t-value of  $-4.768$ , which is significant under 1%. This means a stronger negative (–) relationship between tax benefits and future corporate value in ‘wholesale and retail industry’. In addition, IND\_G (business

facility management, business support, and rental service industry) presents that  $TB \times IND$  has a coefficient of  $-20.326$  and  $t$ -value of  $-2.740$ , which is significant under 1%. This result shows a stronger negative ( $-$ ) relationship between tax benefits and corporate value in 'wholesale and retail Industry'.

Finally, in  $IND\_B$  (construction industry) and  $IND\_D$  (transportation and warehouse industry), the coefficient value of  $TB \times IND$  is not statistically significantly derived. This can be seen in 'construction industry' and 'transportation and warehouse industry' as having a negative ( $-$ ) association between tax benefits and future firm value, but with relatively small changes in the negative ( $-$ ) relationship compared to other industries.

#### 4.4. The Results of 2 Stage Least Squares (2SLS) Analysis

To solve the endogeneity problem, we present the results as follows using the 2 stage least squares (2SLS) model. In the 1st stage, the Equation (3) for tax benefits (TB) is established as follows.

[1st stage]

$$TB = \beta_0 + \beta_1 SIZE_t + \beta_2 LEV_t + \beta_3 PPE_t + \beta_5 GRW_t + \beta_6 ATOR_t + \beta_7 BIG4_t + \beta_8 CFO_t + \beta_9 ROA_t + \beta_9 PPE_t + \varepsilon_t \quad (3)$$

TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense  $\times$  maximum corporate tax rate)  $-$  corporate tax rate} for the last three years  $\div$  total assets; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; GRW: (Year-end sales  $-$  year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]. ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; PPE: Tangible assets (excluding land and assets under construction) divided by total assets [47].

ROA and ROE which mean current corporate performance and TQ and MB which indicate future firm value are used as dependent variables in the 2nd stage model. The 2nd stage model is Equation (4) as follows.

[2nd stage]

$$ROA_t/ROE_t/TQ_t/MB_t = \beta_0 + \beta_1 TB_t + \beta_2 LARGE_t + \beta_3 FORN_t + \beta_4 SIZE_{t-1} + \beta_5 LEV_{t-1} + \beta_6 OI_t + \beta_7 GRW_t + \beta_8 ATOR_t + \beta_9 BIG4_t + \beta_{10} CFO_t + \beta_{11} Year\ fixed\ effects + \beta_{12} Industry\ fixed\ effects + \varepsilon_t \quad (4)$$

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; ROE: A proxy for current corporate performance 2 [30]: net income of the current term, all divided by the sum of equity; TB: A proxy for tax benefits [34,35]: average value of {(net income before tax expense  $\times$  maximum corporate tax rate)  $-$  corporate tax rate} for the last three years  $\div$  total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit  $-$  year-end operating profit)  $\div$  year-end operating profit [40]; GRW: (Year-end sales  $-$  year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42].

Table 13 presents the results of 2SLS analysis on the effect of tax incentives on current corporate performance and on future firm value. The results of the 2SLS model for controlling endogeneity problem are consistent with the results of the main analyses.

**Table 13.** 2SLS results (dependent variable ROA/ROE/TQ/MB).

Variable	1st Stage		2nd Stage (ROA)		2nd Stage (ROE)		2nd Stage (TQ)		2nd Stage (MB)	
	$\beta$	t-Value	$\beta$	t-Value	$\beta$	t-Value	$\beta$	t-Value	$\beta$	t-Value
(Intercept)	−0.064	−17.693 ***	−0.151	−2.816 ***	−0.125	−1.118	4.544	8.236 ***	10.205	7.942 ***
TB			3.379	7.904 ***	8.348	9.38 ***	−33.216	−7.521 ***	−29.609	−2.879 ***
LARGE	0.000	3.02 ***	0.001	9.629 ***	0.001	7.293 ***	−0.002	−2.872 ***	−0.003	−2.132 **
FORN	0.000	−7.323 ***	0.000	2.166 **	0.000	0.437	0.018	18.56 ***	0.037	16.784 ***
SIZE	0.002	16.168 ***	0.004	2.666 ***	0.002	0.657	−0.057	−3.358 ***	−0.265	−6.68 ***
LEV	−0.011	−14.843 ***	−0.036	−5.275 ***	−0.042	−2.966 ***	−0.308	−4.411 ***	2.469	15.194 ***
OI	0.000	−6.625 ***	0.000	1.278	0.003	4.916 ***	−0.011	−3.724 ***	−0.005	−0.714
GRW	−0.005	−12.52 ***	0.017	8.642 ***	0.043	10.687 ***	0.194	9.678 ***	0.737	15.831 ***
ATOR	0.002	5.426 ***	0.038	23.289 ***	0.083	24.061 ***	0.028	1.585	−0.032	−0.799
BIG4	0.001	1.739 *	−0.009	−5.132 ***	−0.018	−4.727 ***	−0.011	−0.570	−0.109	−2.449 **
CFO	0.021	10.894 ***	0.399	42.875 ***	0.766	39.511 ***	0.649	6.288 ***	0.916	3.815 ***
ROA	0.054	30.827 ***					−0.712	−7.531 ***	0.737	3.348 ***
PPE	0.005	6.534 ***								
IND Effect	Included		Included		Included		Included		Included	
YEAR Effect	Included		Included		Included		Included		Included	
Adj_Rsq	22.874		36.297		32.925		27.097		25.625	
F-value	51.785 ***		86.694 ***		74.687 ***		55.832 ***		51.756 ***	

TQ: A proxy for future firm value 1 [31,32]: the sum of the market value of equity and the book value of debt, all divided by the book value of total assets; MB: A proxy for future firm value 2 [33]: market value of equity to book value of equity ratio; ROA: A proxy for current corporate performance 1 [29]: net income of the current term, all divided by the sum of total assets; TB: A proxy for tax benefits [34,35]: average value of  $\{(\text{net income before tax expense} \times \text{maximum corporate tax rate}) - \text{corporate tax rate}\}$  for the last three years  $\div$  total assets; LARGE: Largest shareholder's equity ratio [36,37]; FORN: Foreign investors' shareholder ratio [36,37]; SIZE: Natural logarithm of total assets [38]; LEV: Total liabilities to total assets [39]; OI: (Year-end operating profit  $-$  year-end operating profit)  $\div$  year-end operating profit [40]; GRW: (Year-end sales  $-$  year-end sales)  $\div$  year-end sales [40]; CFO: Current operating cash flows  $\div$  total assets at the beginning of the year [41]; ATOR: Current sales  $\div$  total assets at the beginning of the year [40]; BIG4: Dummy variable; 1 if a company is audited by a large foreign accounting company called Big4, otherwise 0 [42]; PPE: Tangible assets (excluding land and assets under construction) divided by total assets [47]. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, 1% levels, respectively.

## 5. Conclusions

This paper investigates how tax benefits for companies affect current corporate performance and future firm value. In addition, this study examines the relationship between tax benefits and future firm value by industry through further analysis.

The sample period of this study is from 2011 to 2019, and we obtain the samples from KOSPI and KOSDAQ listed companies. In this study, we use ROA and ROE as measures for current corporate performance, and Tobin's Q and market value to book value ratio as proxies for future firm value.

The findings of this paper are as follows. First, tax benefits granted to a company have been shown to improve current corporate performance. The effect of tax benefits that reduce corporate tax costs increases net income, indicating a direct increase in current corporate performance, such as ROA and ROE.

Second, tax benefits granted to a corporate have been shown to reduce future firm value. Industries with tax benefits may become more competitive due to the entry of new companies or the increase in production facilities, and ultimately reduce pre-tax profit margins. In addition, among the types of tax benefits for the company, tax benefits that cause temporary differences through deferred corporate tax payments can be a factor that hinders the sustainable growth of a company in the long run. It is believed that these causes have resulted in an influence that tax benefits for companies can negatively affect future firm value in the long term.

Third, this study finds that the relationship between tax benefits and future corporate value shows different result by industry. In 'manufacturing industry' and 'information and communication industry', we find the negative (−) association between tax benefits and future firm value is more weakened than in other industries. Meanwhile, in 'wholesale and retail industry' and 'professional, scientific and technical services industries', we find the negative (−) relationship between tax benefits and future firm value can be further strengthened compared to other industries.

The results of this paper provide the following implications. Tax incentives for firms suggest that there can be limitations for corporates to grow sustainably in the long run. Tax benefits for businesses are important for early businesses and businesses in poor conditions. However, as a result of the empirical analysis of this study, tax benefits for companies only can have an effect in the short term, and their effects may be halved in the long term. Therefore, it implies that it is necessary to examine the current tax benefit system for firms and improve it in order to positively affect long-term firm value for their sustainability.

This paper has the following contributions. First, the results of this paper supply useful information that there is a limitation to the positive impact of tax benefits on firms on improving firm value in the long run. Second, through empirical analysis, this study provides objective information that the effect of tax incentives on corporate value may differ by industry. Therefore, the results of this study suggest that it is necessary to check and improve tax benefit policies for companies. In particular, it is important to make differences in tax benefits for each industry rather than uniformly granting tax benefits to all industries. For the sustainable growth of companies, it is significant that policy authorities implement appropriate tax benefits by each industry.

Limitation of the current study and future direction for research are as follows. This paper used KOSPI-listed companies in the South Korea as samples and examined the relationship between tax benefits and future corporate value by industry. In order to obtain more objective and accurate research results, it is necessary to secure more samples in future studies. In addition, it is expected that more useful research results can be presented by classifying the samples according to the size of the company or manager characteristics.

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