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The effects of accounting conservatism on investment decision: Evidence from listed companies in China

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Abstract: This study investigates the effect of accounting conservatism on corporate investment decisions in China. Specifically, we analyze how accounting conservatism affects a company's investment decision-making. Furthermore, we examine the difference in this effect of accounting conservatism on investment decision between public and private companies. The results of the analysis are as follows. First, accounting for conservatism can suppress the occurrence of inefficient investments. In a full sample, a public company sample and a private company sample, it shows a negative relationship between accounting conservatism and excessive investment. Second, the deterrent effect of accounting conservatism on corporate inefficient investment in public companies is weaker than in private companies. With these results, we can conclude that even in a special environment like China, accounting conservatism can affect the investment activities of companies and this effect is different depending on the type of the company.

Subjects: Corporate Finance; Business, Management and Accounting; Accounting

Keywords: Accounting conservatism; investment decision; public company; China

1. Introduction

Investment activities of firms are their capital-expending activities that are spent for the benefit of the firms. Various long-term assets generated by investment activities not only provide a material basis for a company's production and management activities, but also affect the company's management risk and intrinsic value at a certain level. The investment efficiency of a company directly affects the survival and development of the company, and in macroscopic terms, the investment efficiency of the entire company indirectly affects the status of resource allocation throughout society. However, inefficient investment is currently seen in most of the companies in many developed countries, and the specific aspects are overinvestment and underinvestment. Overinvestment can lead to waste of resources and factors of production, and can also lead to the risk of bad debt. Underinvestment causes companies to miss some quality investment items, hindering normal growth and development, while damaging investors' interests. Therefore, it is necessary to find a way to effectively increase the investment efficiency of companies, and several studies are being conducted on these problems.

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Accounting conservatism is to ensure that costs are recognized as soon as possible and revenues are recognized only when the realization and possible requirements are met. Basu (1997) defines conservatism as a tendency for accountants to require a higher level of verification when reflecting good news in their financial statements than when reflecting bad news. Conservative accounting information can be one of the corporate governance structures that complements the information asymmetry that exists between corporate managers and shareholders. This governance role of accounting conservatism also affects the cost of capital of the firm. García Lara et al. (2011) expect that the application of conservative accounting standards reduces uncertainty in information about companies and improves information asymmetry, and, as predicted, they find that conservatism improves the information environment of companies, reducing credit risk and ultimately reducing the cost of capital. Moreover, Hope and Thomas (2008) found that both the quality of accounting information and the quality of disclosure affect the investment efficiency of a company. The high-quality financial reporting system plays a very important role in alleviating the agency problem and reducing the information asymmetry problem of external investors. Research on accounting conservatism in China was initially focused on the existence of conservatism, and since then, it has focused on analyzing the influencing factors of corporate accounting conservatism. However, research on how accounting conservatism affects corporate investment efficiency is very insufficient.

With the rapid development of the Chinese economy and the diversification of investment channels, Chinese companies have more investment opportunities. However, due to various influences, Chinese listed companies are often seen to have low investment efficiency. Accordingly, the purpose of this study is to empirically analyze whether investment efficiency improves when listed companies strongly apply accounting conservatism, and to verify whether such conservative accounting application actually improves investment efficiency to suppress over-investment and under-investment in China.

In this context, this paper attempts to verify the following problems in detail. First, we investigate whether the accounting conservatism is an effective corporate governance system in China, which reduces agency costs between shareholders and whether it can enhance corporate investment efficiency by effectively suppressing opportunistic behavior by management. However, as the Chinese economy is still in the process of structural transformation, the role of the legal environment, banks and other creditors differs from other overseas markets, so it can be seen by verifying whether accounting conservatism can curb corporate underinvestment and overinvestment by easing agent problems and information asymmetry.

In addition, since Chinese companies have a special institutional background compared to advanced countries. Under the socialism, China has different structures and situations than markets in other countries. In China, there are public companies that have special characteristics. Chinese financial system is greatly influenced by the government because the relationship between "government—state-owned commercial banks—public companies" is formed. Public companies can easily receive funds with lower capital costs than private companies. State-owned commercial banks are not interested in the return on investment in loans to public companies. Therefore, it is necessary to examine whether theories generally applied in other countries or phenomena appearing in other countries will be similarly applied in China's situation or not. This paper aims to verify whether accounting conservatism differs on inefficient investment behavior by dividing them into public and private companies in consideration of the ownership characteristics of Chinese companies.

Whether the investment behavior of a company is efficient has a direct relationship with whether it can realize the maximum value of the company, and furthermore, it affects whether a company can make sustainable development in fierce market competition. A company's investment decision not only provides a material basis for the company's production and management but also affects the company's management risk and intrinsic value at a certain level. From this

point of view, this study is thought to have practical contribution points by examining whether accounting conservatism can be a solution to inefficient investment in a special environment like China.

The remainder of this paper proceeds as follows. In Chapter 2, previous studies are summarized and hypotheses are established, and in Chapter 3, research design for hypotheses is presented. Chapter 4 shows the results of verification of the research hypothesis, and finally, Chapter 5 presents conclusions.

2. Literature review and hypothesis

Accounting conservatism can be understood as reflecting expected losses in accounting figures rather than reflecting expected profits. Basu (1997) defines conservatism as a tendency for accountants to require a higher level of verification when reflecting good news in their financial statements than when reflecting bad news. Penman and Zhang (2002) view accounting conservatism as lower book value than market value in the long run, so they view the difference between these market values and book value as conservatism. This conservatism can be divided into conditional conservatism and unconditional conservatism according to the point of view. The biggest difference between these two types of accounting conservatism lies in the degree of dependence on news. In the case of conditional conservatism, bad news is reflected more timely than good news occurring in the market. In other words, it shows the characteristics of asymmetric timeliness in recognizing gains and losses. In contrast, unconditional conservatism refers to the implication of conservative accounting in accounting standards and methods, regardless of the type of information released in the market.

In recent years, the level of accounting conservatism has been further strengthened in terms of investor protection (Basu, 1997; Watts, 2003a). Nevertheless, accountants do not always have to underestimate the assets and profits of firms. As already mentioned, accounting conservatism is a kind of guide to avoiding inherent risks in uncertain markets. This can be regarded as a reasonable guideline at first glance to "be careful of overestimating corporate profits and assets," and also means that underestimating is safer than overestimating. Applying accounting conservatism is more effective when uncertainty is high. Accounting conservatism has a different role depending on the system or situation. Lobo and Zhou (2006) report that with the implementation of the Sarbanes-Oxley Act, discretionary accruals were lower than before, loss recognition was faster than profit, and conservative accounting was strengthened after the implementation of the Sarbanes-Oxley Act. Also, Kim et al. (2013) show that a greater degree of conservatism experience brings fewer negative market reactions to SEO announcements. They further find that this mechanism is due to mitigating the negative impact of information asymmetry.

On the other hand, because managers tend to maximize their private interests, they do not always prioritize investment decisions that increase investors' and shareholders' profits (Jensen & Meckling, 1976). Problems related to such moral hazard can lead to overinvestment or underinvestment depending on the amount of funds available to managers. Managers naturally have an incentive to overinvest, and if a company has sufficient funds, the investment efficiency of the firms decreases due to this incentive (Blanchard et al., 1994; Jensen, 1986). In addition, if external funders are aware of the incentives for overinvestment by managers in advance, they will reduce the funds provided to the companies, and then it may lead to underinvestment (Lambert et al., 2007; Stiglitz & Weiss, 1981).

In this way, information asymmetry between managers and investors causes overinvestment or underinvestment, so it results in investment inefficiency of companies. In other words, the decrease in investment efficiency is closely related to the agent problem that exists between information providers and information recipients. Several studies have suggested that the higher the quality of accounting information, the lower the information asymmetry that causes the moral hazard of managers and reverses selection problems, and thus the investment efficiency of

companies increases (Leuz & Verrecchia, 2000). Accounting information is not only an important source of information for investors (Holmstrom & Tirole, 1993) but also a representative method used by shareholders to monitor managers (Lambert, 2001). If the quality of accounting information is high, it becomes easier for shareholders to monitor managers' investment-related decisions, thereby reducing agent problems that reduce investment efficiency.

Most of the prior studies focus on agent problems in information asymmetry between managers and investors, and suggest that the quality of accounting information can reduce moral hazard and reverse selection problems by providing an effective influence on investment efficiency. Taken together, these preceding studies can analyze the impact of accounting conservatism on corporate investment efficiency in two aspects.

First, accounting conservatism can suppress excessive investment problems of companies. In fact, debt contracts are the main cause of the formation of corporate accounting conservatism. Controlling shareholders or managers perform excessive investment activities that sacrifice the interests of creditors to reach the goal of maximizing their own interests because there is information asymmetry between creditors and them. Therefore, creditors want to guarantee their rights and interests, by supervising and restraining the use of capital to avoid investment items with high risk. In this manner, recent studies have shown that the higher the degree of conservative accounting, the more mitigated the problem of managerial overinvestment (Ahmed and Duellman, 2011; Bushman et al., 2011; Francis & Martin, 2010). In addition, companies have to deliver sufficient information about possible risks, thereby avoiding items that have negative net present value. Ahmed et al. (2002) and Nikolaev (2010) find that the existence of debt covenants allows creditors to protect their profits through the demand for accounting conservatism and also limits shareholders' opportunistic behavior.

Second, accounting conservatism can encourage underinvestment. Due to the information asymmetry, the cost of capital is increased, so companies lack funds. Companies are forced to give up the investment even NPV plus items, resulting in underinvestment. Accounting conservatism emphasizes the confirmation of where losses can occur, thus companies may miss advantageous items due to their overly conservative tendencies when evaluating investment items. In addition, excessive conservatism may not properly convey the company's management situation, and external investors' confidence in the company will decrease.

China has a very large market and at the same time, it has a very special situation. Under the socialism characteristics, it has different structures and situations than markets in other countries. Therefore, it is necessary to examine whether theories generally applied in other countries or phenomena appearing in other countries will be similarly applied in China's situation or not. Chinese companies also have more investment opportunities due to the rapid economic development and diversification of investment channels. However, since Chinese listed companies are often seen with low investment efficiency, it is necessary to empirically analyze whether such accounting conservatism can help Chinese listed companies reduce the investment inefficiency, such as underinvestment or overinvestment that mentioned above. Thus, Hypothesis 1 is established as follows, expecting that accounting conservatism can play a role to some extent even under the market situation in China. We measure the investment inefficiency using underinvestment and overinvestment (excessive investment).

Hypothesis 1: Accounting conservatism has a negative (-) relationship with corporate investment inefficiency.

In the process of transforming China's economic system, public and private companies are facing different business environments. Public companies in China have weak debt constraints and multiple management goals, which can have a weak impact on accounting conservatism.

Chinese financial system is greatly influenced by the government because the relationship between "government—state-owned commercial banks—public companies" is formed. Public companies can easily receive funds with lower capital costs than private companies. State-owned commercial banks are not interested in the return on investment in loans to public companies and have low interest in accounting conservatism, which may weaken the role of constraints on overinvestment behavior of public companies.

Also, as a state-owned shareholder, the government not only considers the development of one company but also considers values such as GDP growth and employment rate, so the management goals of public companies are multiple. In many cases, funds are not immediately recovered from public companies in situations where any investment item is lost due to the bad economic conditions, so the restrictive role of accounting conservatism on overinvestment in public companies can be limited.

Since private companies are greatly influenced by politics and are generally small in size, it is common to see difficulties in loans even if they meet legal loan conditions at commercial banks. When lending from commercial banks, private companies are subject to stricter screening than public companies, and capital use is also more closely supervised, resulting in greater demand for accounting conservatism for private companies.

Therefore, as mentioned above, the restrictive role of accounting conservatism on overinvestment is lower in public companies because of their characteristics, and then, the negative relationship between accounting conservatism and investment inefficiency is weakened, and in the case of private companies, this negative relationship can be expected to be relatively strong.

Hypothesis 2: The negative relationship between accounting conservatism and investment inefficiency is weaker in public companies.

3. Research design

3.1. Research model

3.1.1. Measurement of investment inefficiency

This study uses the research model of Richardson (2006) as a measure of investment efficiency. Richardson's model measures the degree of inefficient investment in a particular company, a - particular year, by using the difference between the actual investment and the expected investment. Expected investment is determined by the company's growth opportunities, financial constraints, industries, and other factors.

Specifically, the investment efficiency of a company is measured using Richardson (2006)'s model as follows.

$$\begin{aligned} Inv_{i,t} &= \beta_0 + \beta_1 Growth_{i,t-1} + \beta_2 Lev_{i,t-1} + \beta_3 Cash_{i,t-1} + \beta_4 Age_{i,t-1} + \beta_5 Size_{i,t-1} \\ &+ \beta_6 RET_{i,t-1} + \beta_7 Inv_{i,t-1} + \sum Industry + \sum Year + e_{i,t} \end{aligned} \quad (1)$$

$Inv_{i,t}$: total investment in year t (= (fixed assets in year t—fixed assets in year t-1)/total assets in year t-1)

$Growth_{i,t-1}$: sales growth rate in year t-1 (= (sales in year t—sales in year t-1)/sales in year t-1)

$Lev_{i,t-1}$: ratio of liabilities to total assets in year t-1 (= total liabilities in year t-1/total assets in year t-1)

$Cash_{i,t-1}$: cash and cash equivalent in year t-1 (= cash and cash equivalent in year t-1/total assets in year t-1)

$Age_{i,t-1}$: total business years from listed date to year t-1

$Size_{i,t-1}$: natural log of total assets in year t-1

$RET_{i,t-1}$: stock price return in year t-1

Industry: industry dummy

Year: year dummy

$e_{i,t}$: residual

After performing the regression, the estimated t-year investment of each company can be obtained using the coefficient value predicted as a result and the actual value of the independent variables. The degree of inefficient investment of a company is measured by subtracting the expected investment obtained through the regression from the actual investment corresponding thereto and using the residual term. If the residual term is greater than 0, it is decided as excessive investment, and on the contrary, if it is less than 0, it is decided as underinvestment.

3.1.2. Measurement of accounting conservatism

This study measured accounting conservatism using the model of Khan and Watts (2009). Khan and Watts (2009)'s model presented C-Score, a measure of conditional conservatism by company-year. Equation (2) is a model of Basu (1997), and conservative accounting was measured to the extent that bad news of a company was recognized faster than good news. The index of timeliness of good news is β_2, the incremental timeliness of bad news is β_3, and the index of timeliness of bad news is $\beta_2 + \beta_3$. This Basu (1997) measurement can be measured cross-sectionally by industry-year, and the degree of conservatism accounting for a specific period of time by individual companies can be known in a time series. The industry-year measurement assumes that all companies in the same industry have the same conservative accounting, so the difference between individual companies is unknown, and the time-series measurement of individual companies can identify the difference in conservative accounting between companies at a specific time, but there is a limit. The measurements of Khan and Watts (2009) supplemented the limitations of these Basu (1997) measurements.

Basu (1997)'s model is used to derive the C-Score, a measurement of Khan and Watts (2009).

$$\frac{EPS_{i,t}}{P_{i,t-1}} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 R_{i,t} + \beta_3 DR_{i,t} * R_{i,t} + e_{i,t} \quad (2)$$

$EPS_{i,t}$: earnings per share in year t

$P_{i,t-1}$: stock price at the end of year t-1

$DR_{i,t}$: dummy variable equals to 1 if $R_{i,t} < 0$, and equals to 0 otherwise

$R_{i,t}$: stock price return in year t

$e_{i,t}$: residual

$$G - Score = \beta_2 = \mu_1 + \mu_2 Size_{i,t} + \mu_3 MB_{i,t} + \mu_4 Lev_{i,t} \quad (3)$$

$$C-\text{Score}=\beta_3=\lambda_1+\lambda_2 Size_{i,t}+\lambda_3 MB_{i,t}+\lambda_4 Lev_{i,t} \tag{4}$$

Equations (3) and (4) are substituted into Equation (2) to produce Equation (5) below.

$$\begin{aligned}\frac{EPS_{i,t}}{P_{i,t-1}}&=\beta_0+\beta_1 DR_{i,t}+\left(\mu_1+\mu_2 Size_{i,t}+\mu_3 MB_{i,t}+\mu_4 Lev_{i,t}\right)*R_{i,t}\\&+\left(\lambda_1+\lambda_2 Size_{i,t}+\lambda_3 MB_{i,t}+\lambda_4 Lev_{i,t}\right)*DR_{i,t}*R_{i,t}+\varepsilon_{i,t}\end{aligned} \tag{5}$$

$MB_{i,t}$: market-to-book ratio (=the market value of equity/book value of equity)

In the Khan and Watts (2009) model, C-Score, a measure of firm-year conservatism, is calculated using the characteristic variables of individual companies that affect accounting conservatism, such as company size (Size), market value to book value (MB), and debt ratio (Lev). Specifically, regression analysis is performed by year to obtain C-Score, a measure of firm-year conservatism, by substituting equations (3) and (4) into equation (2). C-Score refers to the incremental timeliness of losses compared to profits, and the C-Score value appears higher as the level of accounting conservatism increases. C-Score measured in this way can reflect time-series differences as well as differences in accounting conservatism between individual companies at a specific point in time.

3.1.3. Main research model

To test the hypothesis of this study, a model was established according to the studies of Richardson (2006), Khan and Watts (2009), and Xin et al. (2007).

$$\begin{aligned}\text{EXINV}_{i,t}&=\beta_0+\beta_1 C-score_{i,t}+\beta_2 Pay_{i,t}+\beta_3 LGcsR_{i,t}+\beta_4 FCF_{i,t}\\&+\sum Industry+\sum Year+\varepsilon_{i,t}\end{aligned} \tag{6}$$

In addition, the following model was established to verify Hypothesis 2.

$$\begin{aligned}\text{EXINV}_{i,t}&=\beta_0+\beta_1 C-score_{i,t}+\beta_2 State_{i,t}+\beta_3 C-Score_{i,t}*State_{i,t}+\beta_4 Pay_{i,t}\\&+\beta_5 LGcsR_{i,t}+\beta_6 FCF_{i,t}+\sum Industry+\sum Year+\varepsilon_{i,t}\end{aligned} \tag{7}$$

EXINV: excess investment, calculated through the investment decision model of Equation (1)

C − score: measure of accounting conservatism, presented by Khan and Watts (2009)

Pay: total pay of the top 3 managers

LGcsR: ownership of large shareholders (=shares held by large shareholders (common stocks)/ total shares outstanding(common stocks))

FCF: free cash flow (=net operating profit after-tax + depreciation expense—increase in operating capital—facility investment)

State: dummy variable equals to 1 if the firm is public company, and equals to 0 otherwise

Industry: industry dummy

Year: year dummy

ε: error

Equation (6) is used to verify the relationship between accounting conservatism and corporate investment inefficiency. As expected, if β_1 is negative, it can find that accounting conservatism inhibits excessive investment, and if β_1 is positive, it means that excessive investment behavior becomes severe when the level of accounting conservatism is high. Equation (7) is used to

investigate the effect of company type on the relationship between accounting conservatism and corporate investment inefficiency. If, as expected, β_1 is negative and β_3 is positive, it shows that the inhibition of excessive investment in accounting conservatism is weaker in public companies than private companies.

4. Data and empirical results

4.1. Data and sample characteristics

To avoid the impact of changes in accounting standards on accounting conservatism, this study organizes a sample of listed companies in China from 2008 to 2011, after the accounting standards were changed. Related financial data are collected from the CSMAR data system of China Association of Listed Companies. In addition, public company data are collected from the RESSET system. Among the overall companies, those in the financial industry and those other than the December settlement company are excluded. In addition, companies whose data on other variables required for regression analysis are not available are excluded from the sample. We obtain a final sample of 5,914 firm-year.

The descriptive statistics for each variable used in this study are presented in Table 1. In order to control the effect of the extreme value of the sample on the research results, the top and bottom 1% of all variables are winsorized. In Table 1, the average value of corporate investment is 0.0404, and 1,571 companies (26.56%) are larger than the average value of the companies included in the sample. The median value of a corporate investment is 0.0089 that is less than the average value. The average value of the accounting conservatism measure (C-Score) is 0.0252, and the median value is 0.0263, all indicating positive (+) values. Therefore, overall, we can find that Chinese listed companies have some accounting conservatism.

4.2. Empirical results

4.2.1. Measurement of investment inefficiency

Table 2 is the result of Pearson correlation analysis between major variables used in the investment decision model of Equation 1. The relationship between corporate investment (Inv) and each independent variable is mostly as expected. Except for the stock price return (Ret), it shows a significant relationship with six other variables, and it is reasonable which is an interpretation of the dependent variable as an independent variable selected. In addition, the correlation

Table 1. Descriptive statistics

Variable	N	Minimum	Maximum	Mean	Standard Deviation	Median
Inv	5914	−0.7850	3.5032	0.0404	0.1660	0.0089
C-Score	5914	−0.0898	0.1850	0.0252	0.0250	0.0263
EPS/P	5914	−1.3713	1.3535	0.0247	0.0658	0.0215
Size	5914	16.5195	27.7533	21.7724	1.2674	21.6819
MB	5914	−114.4628	128.0672	4.0277	6.5409	3.1946
Lev	5914	0.0071	9.2897	0.5430	0.3787	0.5254
Ret	5914	−0.9364	8.4985	0.4425	1.1509	0.0085
Cash	5914	0.0001	0.9309	0.1626	0.1173	0.1343
Growth	5914	−0.9997	9.4959	0.1816	0.5209	0.1304
LGcsR	5914	0.0050	0.8523	0.3543	0.1526	0.3334
Pay	5914	0.0015	1.6930	0.1262	0.1208	0.0938
Fcf	5914	−29.6299	63.6997	− 0.0018	2.0258	0.0170

Table 2. Pearson correlations between variables used in equation (1)

	Invi,t	Size	Lev	Ret	Cash	Growth	Invi,t-1	Age
Invi,t	1							
Size	0.187***	1						
Lev	−0.031**	−0.037***	1					
Ret	−0.014	−0.101***	0.024*	1				
Cash	−0.049***	−0.063***	−0.196***	−0.015	1			
Growth	0.077***	0.080***	0.040***	0.030**	0.014	1		
Invi,t-1	0.161***	0.226***	−0.023*	−0.015	−0.081***	0.116***	1	
Age	−0.074***	0.078***	0.095***	−0.105***	−0.068***	−0.025*	−0.103***	1

***: Correlation is significant at the 0.01 level (2-tailed).

**: Correlation is significant at the 0.05 level (2-tailed).

*: Correlation is significant at the 0.10 level (2-tailed).

coefficient between each independent variable is within an acceptable range, so the problem of multi-collinearity is not revealed in the model.

Table 3 shows the results of regression analysis for the investment decision model of Equation (1). The results show that the relationship of other independent variables except for the stock price return appeared as expected. Among them, investment in the current year and investment expenditure in the previous year show a significant positive value at the 1% level. Since corporate investment usually has continuity, new investment in the current year can be interpreted as showing a significant positive value from investment expenditure in the previous year. The relationship between investment in the current year and the growth rate of operating income in the previous year and the size of the company show a significant positive value at the 1% level. In addition, the relationship between the liabilities-to-assets ratio (Lev) and corporate investment shows a significant negative value at the 10% level. The higher the ratio, the greater the financial risk of a company, which restricts corporate investment expenditure because creditors also have more regulations on investment in companies.

Table 3. Regression results of **equation (1)**

	Coefficient	t-value	p-value	VIF
(Constant)	− 0.380 ***	− 9.564	0.000	
Size	0.022 ***	12.376	0.000	1.121
Lev	− 0.110 *	− 1.868	0.062	1.056
Ret	− 0.001	− 0.349	0.727	1.230
Cash	− 0.062 ***	− 3.369	0.001	1.072
Growth	0.017 ***	4.135	0.000	1.025
Invi,t t-1	0.120 ***	8.049	0.000	1.089
Age	− 0.024 ***	− 5.448	0.000	1.170
Industry	Included			
Year	Included			
Adjusted-R^2	0.159			
F-statistics	18.337			
N	5914			

***: Correlation is significant at the 0.01 level (2-tailed).

**: Correlation is significant at the 0.05 level (2-tailed).

*: Correlation is significant at the 0.10 level (2-tailed).

Table 4. Descriptive statistics of the residuals in the regression of **equation (1)**

	Maximum	Minimum	Mean	Median	N
Residual	25.955	−0.911	0.000	−0.028	5,914
Residual > 0	25.955	0.000	0.137	0.044	1,869(31.6%)
Residual < 0	0.000	−0.911	−0.063	−0.051	4,045(68.4%)

Referring to Table 4, out of a total of 5914 samples, the number of samples with residual >0 is 1,869 (31.6%), and the number of samples with residual <0 is 4,045 (68.4%). The ratio of excessive investment is smaller than that of underinvestment, and it can be seen that among listed companies in China, excessive investment is smaller than that of underinvestment.

4.2.2. Results of the regression model for Hypothesis 1

Table 5 present the Pearson correlations between variables used in the main research model. The dependent variables, EXINV and accounting conservatism (C-score), were found to have a significant negative (-) relationship at the 1% level. Through this, it can be predicted that conservative accounting will have a negative (-) effect on excess investment in regression analysis. In addition, excess investment (EXINV) showed significant positive values at the 1% level with the variables of surplus cash flow (FCF) and LGcsR.

Table 6 is the result of a regression analysis on the effect of accounting conservatism (C-score) on excessive investment (EXINV), a measure of a company's investment decision-making, to verify Hypothesis 1. According to the analysis results, there was a significant negative (-) relationship at the 1% level between accounting conservatism (C-Score) and investment inefficiency (EXINV). This

Table 5. Pearson correlation between variables used in main regression model **equation (6)**

	EXINV	C-Score	Pay	LGcsR	FCF
EXINV	1				
C-Score	−0.185***	1			
Pay	0.031**	−0.410***	1		
LGcsR	0.116***	−0.305***	0.024*	1	
FCF	0.057***	−0.051***	−0.054***	0.081***	1

***: Correlation is significant at the 0.01 level (2-tailed).

**: Correlation is significant at the 0.05 level (2-tailed).

*: Correlation is significant at the 0.10 level (2-tailed).

Table 6. Results for Hypothesis **1 equation (6)**

	Coefficient	t-value	p-value	VIF
(Constant)	0.049 ***	4.773	0.000	
C-score	− 1.262 ***	− 12.711	0.000	1.377
Pay	− 0.055 ***	− 2.831	0.005	1.254
LGcsR	0.066 ***	4.469	0.000	1.134
FCF	0.003 ***	3.033	0.002	1.015
Industry	Included			
Year	Included			
Adjusted-R^2	0.142			
F-value	44.573			
N	5,914			

Table 7. Results for Hypothesis 2 equation (7)

EXINV	Public company Sample	Private company Sample	Total Sample
(Constant)	0.074 ***(5.829)	−0.002(- 0.129)	0.053 ***(4.624)
C-score	−1.306 ***(−10.096)	−1.173 ***(- 7.075)	−1.334 ***(−8.498)
State			−0.006(−0.884)
C-Score*State			0.387 **(1.969)
Pay	−0.071 ***(−2.973)	−0.022(−0.636)	−0.056 ***(−2.850)
FCF	0.003 ***(3.097)	0.002 (0.496)	0.003 ***(3.049)
LGcsR	0.033 *(1.797)	0.139 ***(5.411)	0.068 ***(4.556)
Industry	Included	Included	Included
Year	Included	Included	Included
Adjusted-R^2	0.046	0.054	0.142
F-value	24.863 ***	21.133 ***	44.573 ***
N	3,813	2,101	5,914

is a result of supporting Hypothesis 1 that as accounting conservatism increases, corporate investment inefficiency decreases. In the case of the control variables, the salary (Pay) of the top managers shows a significant negative value, so the higher the wage of the top managers, the less inefficient investment phenomenon occurred. This can be interpreted as the fact that inefficient investment does not occur if top managers are paid sufficiently. Ownership of large shareholders (LGcsR) and free cash flow (FCF) variables show significant positive values at the 1% level. This indicates that the higher ownership of large shareholders or free cash flow of a company, the higher the possibility of inefficient investment.

4.2.3. Results of the regression model for Hypothesis 2

Table 7 presents the results of a regression analysis on the effect of state ownership on the relationship between accounting conservatism (C-Score) and investment decision measure (EXINV) to verify Hypothesis 2. To adopt Hypothesis 2, in the case of state ownership (public companies), the negative (-) effect of accounting conservatism on the investment inefficiency has to be reduced. In other words, it is expected that the interaction term (C-Score*State) between accounting conservatism and public company status will have a positive (+) value. According to the analysis results, the interaction term (C-Score*State) between accounting conservatism and public company status shows a significant positive (+) value at the 5% level. This is the result of supporting Hypothesis 2 because it means that accounting conservatism in public companies weakens the negative (-) effect on the company's inefficient investment decision-making. As a result of the above, even in the Chinese environment, accounting conservatism has a negative (-) influence on corporate investment inefficiency, but in the case of public companies, the effect is mitigated.

5. Conclusion

This paper examines a total of 5,914 samples of 1,223 listed companies on the Shanghai and Shenzhen stock exchanges in China from 2008 to 2011 to verify how accounting conservatism, one of the important principles of accounting, can affect corporate investment decisions. In addition, we further examined how the relationship between accounting conservatism and corporate investment can be affected by the type of company (public company vs. private company) in the special situation in China.

As a result of the analysis of this paper, as we expected, accounting conservatism has a negative (-) effect on corporate investment inefficiency, showing similar results to overseas prior studies. Through this, the degree of conservative accounting may vary from country to country, but it can

be concluded that accounting conservatism can suppress the occurrence of inefficient investment even in a special environment such as China. In addition, depending on the type of company, the effect of accounting conservatism on corporate investment decision-making is different. Specifically, it is found that public companies have a weaker negative (-) effect of accounting conservatism on investment inefficiency than private companies. Therefore, it can be said that state-owned property rights weaken the inhibition of inefficient excessive investment by accounting conservatism.

The contribution of this study is below. It is theoretically possible to predict the effect of conservative accounting on corporate investment efficiency, but in some cases, consistency is not maintained depending on the situation of each country. This study presents direct results on the effect of conservative accounting on corporate investment decisions using conditional conservatism measures for companies listed in China. These results are significant in demonstrating that the positive function of conservative accounting application reported in previous studies also appears in developing countries like China. Therefore, our results imply that investors need to consider the accounting conservatism when they look at the firm in the view of firm performance about the firm's investment efficiency. In addition, by verifying the effect of corporate ownership on the relationship between accounting conservatism and corporate investment decisions, it can be suggested that the role of accounting conservatism has different impacts on corporate investment decisions depending on the situation that the firms are faced. Thus, investors also consider these situations when they evaluate the firm's performance. These are the contributions to this line of research and practice.

The limitation of this study is that the impact of investment profitability is not considered in the process of determining whether corporate investment behavior is reasonable. The Richardson (2006) model used in this paper quantifies the rationality of corporate investment behavior only in terms of investment expenditure and does not consider the profitability of investment items. Strictly speaking, if the return on an investment item is more than the expenditure, it helps to increase the corporate value, and even if the actual investment expenditure of the item differs greatly from normal investment expenditure, and it is considered efficient. In terms of the distribution rate of investment expenditure and profitability, it is thought that a more detailed quantitative model is needed to study corporate investment behavior.

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