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Mitigating Underinvestment through Accounting Conservatism: A Comparative Study of Family and Non-Family Firms in Taiwan

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### ABSTRACT

This study examines the role of accounting conservatism in mitigating underinvestment due to internal cash flow volatility in Taiwan-listed and OTC companies from 2013 to 2022, comparing family and non-family firms. Utilizing regression analysis, we assess how accounting conservatism influences investment decisions under varying conditions of cash flow stability. Our findings reveal that accounting conservatism significantly alleviates underinvestment across all sampled firms, particularly in family firms where its impact becomes pronounced under high cash flow volatility conditions. In contrast, conservatism does not significantly affect investment decisions in stable cash flow scenarios. Additionally, the study finds that accounting conservatism can reduce capital costs under high cash flow volatility, thereby promoting investment. These insights provide a new understanding of the function of accounting conservatism across different firm types and offer practical guidance for financial decision-making.

**Keywords:** Underinvestment, Conservatism, Family firms, Non-family firms, Cash flow volatility

#### 1. Introduction

Companies continuously engage in investment activities to sustain growth and enhance firm value. The funding required for these investments relies on internal or external capital markets, each with different costs influencing investment decisions. According to the Modigliani and Miller (1958) theorem, investments are independent of cash flows in a perfect capital market where no costs or taxes are involved in transactions. However, in reality, imperfect capital markets due to information

asymmetry and agency problems can lead to situations of underinvestment or overinvestment. Minton and Schrand (1999) found a negative relationship between internal cash flow volatility and investment expenditures, indicating that unstable cash flows may signal insufficient internal cash flows, increasing the need to access external capital markets. Moreover, information asymmetry in the market leads to higher external financing costs than internal financing. Thus, companies may miss out on positive net present



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value investment projects in higher cash flow volatility conditions, resulting in underinvestment issues.

In recent years, the prevalence of family firms has attracted significant attention from scholars due to their influence on corporate governance and decision-making. Previous studies suggested that agency problems in family firms may lead to controlling shareholders depriving minority shareholders of their interests (Claessens, Djankov, and Lang, 2000; Yeh, Lee, and Woidtkez, 2001). When companies need to raise funds for investment, shareholders may prefer debt financing to avoid dilution of control (Du and Dai, 2005). However, this preference is anticipated by debt holders, who increase financing costs, causing companies to make suboptimal investment decisions. Lin, Pan, and Wang (2015) pointed out that when a company's free cash flow is negative, information asymmetry with debt holders exacerbates the underinvestment problem in family firms. On the other hand, when the interests of family firms align with those of managers, agency problems can be reduced. Additionally, to pass on the family business to future generations, family firms supervise company decisions to avoid missing out on favorable investment projects (Demsetz and Lehn, 1985). Viewing this from the perspective of internal capital markets theory, controlling shareholders holding shares in a pyramid structure form an internal capital market, enabling companies to raise funds within the group for investments (Almeida and Wolfenzon, 2006; Masulis, Pham, and Zein, 2011), thus reducing the likelihood of underinvestment.

Furthermore, accounting conservatism, characterized by the prompt recognition of bad news (Basu, 1997), effectively supervises and restrains managerial self-interest behavior, thereby reducing information asymmetry with external stakeholders. Hong, Kim, and Lobo (2019) used the Basu model and Givoly and Hayn's (2000) measures of earnings distribution variability and non-operating accruals to assess conservatism and its role in underinvestment. Their empirical results showed that higher conservatism mitigates underinvestment phenomena, consistent with previous studies on the relationship between investment efficiency and conservatism (Ahmed and Duellman, 2007; Ball and Shivaumar, 2005; LaFond and Watts, 2008).

The effectiveness of company investment decisions affects future firm value, but investments often require substantial funds, making corporate borrowing capacity an important issue. The primary sources of company funds are shareholders and debt holders. However, under agency problems and information asymmetry, shareholders and debt holders may be less willing to provide funds to the company, causing the company to miss out on investment projects with positive net present value. Shareholders and debt holders may need to rely on the immediate recognition of losses characteristic of accounting conservatism to supervise the company's investment decisions.

Previous literature has extensively researched the impact of conservatism on investment efficiency (Biddle and Hilary, 2006; Biddle, Hilary, and Verdi, 2009; Imhof, 2014), mostly focusing on its role in resolving overinvestment or without distinguishing between overinvestment and underinvestment, with less attention to underinvestment issues. Furthermore, previous studies only discussed the impact of family firms separately on investment efficiency (Lin, Pan, and Wang, 2015;

Hsu, 2009) and conservatism (Su, Lu, and Chin, 2009). Therefore, this study, unlike most previous research, mainly focuses on the underinvestment problem caused by cash flow volatility, examines the relationship between conservatism and underinvestment, and explores the differences in this relationship between family and non-family.

## 2. Related Studies and Hypotheses Development

Investment decisions are crucial for companies, and their effectiveness significantly impacts future firm value. According to Modigliani and Miller's (1958) capital structure irrelevance theory, capital markets are assumed to be perfect, where no costs or taxes are involved in transactions. However, various factors in reality, including information asymmetry and agency problems, render capital markets imperfect, leading to inefficient investment decisions by companies. Inefficient investments can be categorized into overinvestment and underinvestment. Jensen (1986)'s agency theory suggests that when there is a high correlation between top management's compensation and company performance, managers tend to take on higher risks, overinvesting funds in projects with negative net present value and reducing dividend payouts, thereby exacerbating agency problems between shareholders and managers. This relationship is further emphasized in recent research by Chowdhury, Xie, and Hasan (2023), who demonstrated that powerful CEOs often lead to overinvestment, reflecting their significant influence on corporate investment efficiency.

On the other hand, Myers and Majluf (1984) pecking order theory proposes that the sequence for raising funds for investments should be internal funds, debt financing, and equity financing. When internal funds are insufficient to finance investment projects, and due to information asymmetry, external financing costs are higher than internal financing costs, companies may choose to forgo positive net present value investment opportunities, resulting in underinvestment (Almeida and Campello, 2007; Fazzari, Hubbard, and Petersen, 1988; Kaplan and Zingales, 1997). The impact of information asymmetry on investment efficiency is also highlighted in the study by Choi et al. (2020), which presents an empirical analysis of analysts' forecasts of capital expenditures and their effects on corporate investment decisions.

Additionally, the impact of managerial sentiment on information asymmetry and investment decisions is significant. As Askarzadeh, Yung, and Najand (2023) noted, managerial sentiment can influence the quality of financial reporting and lead to predicted and opportunistic earnings management, affecting a firm's investment strategies and external perceptions of investment viability.

Accounting conservatism, widely applied in accounting and financial reporting, aims to promptly recognize bad news over good news, as per Basu (1997). This prudent approach helps reduce information asymmetry and enhances the credibility of financial reports, thereby potentially mitigating the underinvestment problem by reassuring external financiers about the reliability of a firm's financial statements. Conservative financial practices ensure that losses are recognized swiftly, which can assuage the concerns of debt holders and improve a firm's borrowing capacity, as conservatism is associated with greater transparency and lower risk from the perspective of external investors.



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Despite its benefits, some scholars argue that conservatism may exacerbate underinvestment, as Guay and Verrecchia (2006) and Leuz (2001) suggested. They propose that the immediate recognition of losses might deter firms from undertaking profitable long-term projects due to the immediate negative impact on financial statements, possibly leading to overly cautious investment behaviors.

Thus, the relationship between accounting conservatism and investment efficiency, especially under high information asymmetry and cash flow volatility conditions, is complex and multidimensional. Based on the extensive literature reviewed and the theoretical frameworks discussed, this study formulates the following hypotheses:

*H1:* Conservatism can reduce the negative relationship between investment and cash flow volatility.

**H2:** In family firms, conservatism mitigates the negative relationship between cash flow volatility and investment.

**H3:** In non-family firms, conservatism mitigates the negative relationship between cash flow volatility and investment.

## 3. Research Method

#### Sample Selection and Data Source

The variables required for this study are sourced from the Taiwan Economic Journal (TEJ) database. The research period spans from 2013 to 2022, totaling 10 years. Taiwanese listed and

over-the-counter (OTC) companies are selected as the research subjects. Due to differences in operational methods and financial structures compared to general industries, companies in the financial, securities, and insurance sectors are excluded from the sample. Subsequently, samples for which cash flow volatility cannot be calculated are removed. Finally, samples with incomplete data for relevant variables are eliminated, resulting in a remaining 1,660 companies comprising 14,931 company-year observations.

To investigate the role of accounting conservatism in underinvestment within family and non-family enterprises, this study adopts the criteria used by Su (2007). Aggregating individual, listed company, unlisted company, and foundation holdings distinguish family and non-family enterprises. Following La Porta et al. (1999), the largest shareholder's threshold of 20% ownership is used to determine family enterprise status. If the sum of the four ownership percentages exceeds 20%, the company is classified as a family enterprise; otherwise, it is classified as a non-family enterprise. Among the 14,931 observations, family enterprises account for 63.2%, while non-family enterprises comprise 36.8%. The sample selection process and the proportion of family and non-family enterprises are detailed in Table 1, Panel A, and Panel B.

SAMP	Table 1 PLE SELECTION	
Panel A: Sample Selection		
Period: 2013 - 2022		Observations
Original Sample		16,897
Exclude: the finance, securities, and insurance industr	440	
Exclude: samples that could not be calculated	1,311	
Exclude: incomplete data for relevant variables		215
Final Sample		14,931
Panel B: Proportion of family and non-family busing	nesses in the sample	
	Family Firms	Non-family Firms
Proportion	63.2%	36.8%
Sample(Total = 14,931)	9,436	5,495

## Empirical Model and Variable Definitions Empirical Model

To examine the role of accounting conservatism in mitigating underinvestment due to cash flow volatility in family and non-family businesses, this paper follows the approach of Hong et al. (2019). It calculates cash flow volatility using cash flows from operations and incorporates a conservatism variable, and the model shows as follows:

$$Invest_{i,t} = \beta_0 + \beta_1 Conser_{i,t} + \beta_2 OCFVOL_{i,t} + \beta_3 Conser_{i,t} \times OCFVOL_{i,t} + \beta_4 TQ_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SIZE_{i,t} + \varepsilon_{i,t}$$
 (1)

The effects of various variables on investment are as follows:

In the model, the dependent variable is the investment (*Investi,t*). As the monitoring mechanism of conservatism tends to reduce the level of corporate investment, the coefficient of conservatism (*Conseri,t*) is expected to be negative. In the presence of capital market imperfections, the cost of external funds may be higher than internal funds, leading firms to prefer using internal cash flows for investment. However, firms may

forego investment when cash flows are insufficient or highly volatile. Thus, the coefficient for cash flow volatility (OCFVOLi,t) is expected to be negative. For the interaction term between conservatism and cash flow volatility (Conserit×OCFVOLi,t), conservatism is expected to reduce the negative impact of cash flow on investment. Hence, the coefficient should be positive. Regarding control variables, a firm's past profitability and future growth opportunities are expected to increase investment; thus the coefficients for Tobin's Q (TQi,t) and return on assets (ROAi,t) are anticipated to be positive; larger firms are more capable of investing in projects that require substantial capital. Thus, the coefficient for firm size (SIZEi,t) is also expected to be positive. Furthermore, given that our sample spans multiple companies and years, this study employs Two-Way Cluster-Robust Standard Errors to account for dependencies across companies within the same year and time within the same company. This approach aims to ensure more accurate and reliable empirical results.

## Variables Definitions

1. Dependent variable: the Investment (Invest<sub>i,t</sub>)



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 $TQ = \left(\frac{\text{Market value of shareholders' equity+book value of leverage}}{\text{Total asset}}\right) \tag{3}$ 

Investment expenditures for the company are calculated as the annual capital expenditures divided by total assets at the beginning of the year. Capital expenditures are the fixed assets in period t minus the fixed assets in period t-1.

### 2. Independent variables

(1) Accounting conservatism ( $Conser_{i,t}$ )

This study adopts the accruals-based indicator from Givoly and Hayn (2000) to measure corporate conservatism. Due to the nature of conservatism, which recognizes expenses more rapidly than revenues, accruals can be negative. The authors suggest that accruals are reversible; hence, when net income exceeds (or is less than) cash flows from operating activities, future accruals will be negative (or positive), and over time, the cumulative accruals should approach zero. However, the authors observed that instead of this expected phenomenon, the negative accruals tend to increase over time. Therefore, when a company is more conservative, its accruals will be more negative, and thus, during calculation, multiplying by (-1) indicates that a higher Conservalue signifies greater conservatism. Furthermore, the authors argue that total cumulative accruals do not fully represent conservatism; hence, they subtract the operating accruals to calculate cumulative non-operating accruals.

The conservatism variable ( $Conser_{i,t}$ ) increases as the company becomes more conservative. Non-operating accruals are calculated as (pre-tax net income + depreciation expenses-cash flows from operations) minus (change in accounts receivable + change in inventories + change in prepaid expenses-change in accounts payable -change in income taxes payable); TA represents total assets at the beginning of the period. This study calculates cumulative non-operating accruals over two years, using current and previous data.

#### (2) Operating cash flow volatility ( $OCFVOL_{i,t}$ )

Investing in a new project requires sufficient funding. Minton and Schrand (1999) noted that when a company's internal funds are unstable, information asymmetry or agency issues can lead to higher financing costs, resulting in underinvestment. Accordingly, this paper adopts the methodology Minton and Schrand (1999) used, measuring volatility through the variance of cash flows from operations over the five years preceding the current year. The variance obtained is transformed using the natural logarithm to prevent excessively large numbers. The calculation method is as follows:

$$OCFVOL = ln[VAR(the five years preceding the current year)]$$
 (2)

### (1) Control variables

Tobin Q ( $TQ_{i,t}$ ): Tobin's Q represents a company's future investment opportunities. Higher values of Tobin's Q indicate more future investment opportunities. When such opportunities are abundant, firms tend to increase their investment expenditures (Kaplan & Zingales, 1997). The calculation of Tobin's Q is as follows:

Return on assets ( $ROA_{i,t}$ ): Return on Assets (ROA) can be used to represent a company's past performance. If a company has performed well financially in the past, it is more motivated to increase investments. Therefore, a higher ROA is expected to lead to increased investments. This paper employs the pre-tax, pre-interest, and pre-depreciation ROA, and the calculation method is as follows:

$$ROA = \left(\frac{\text{Earnings before interest, taxes, and depreciation}}{Average \ asset}\right) \times 100\% \tag{4}$$

Company size ( $SIZE_{i,t}$ ): The size of a company indicates the amount of capital available for larger investment projects. Conversely, smaller companies have less capital, higher external financing costs, and more severe information asymmetry (Schiantarelli, 1995), which results in relatively lower investment levels. Therefore, the size of the company affects investment decisions. This paper defines firm size as the natural logarithm of total assets at the end of the current period.

## 4. Empirical Results

### Descriptive Statistics

Table 2 presents the descriptive statistics for the overall sample, including the mean, standard deviation, median, maximum, and minimum values. Table 3 shows that the investment (Invest) variable has a mean of 0.0099 and a median of -0.0008, indicating a right-skewed distribution with fewer samples of highly invested companies. The conservatism (Conser) variable has mean and median values of -0.0067 and -0.0066, respectively, showing a symmetric distribution without significant left or right skewness. The cash flow volatility (OCFVOL) variable has mean and median values of 24.6291 and 24.3004, respectively, also displaying a symmetric distribution. Regarding the control variables, the mean values for Tobin's Q (TQ), return on assets (ROA), and company size (SIZE) are 1.2448, 8.2909, and 15.2853, respectively.

Table 3 provides descriptive statistics for the family and non-family enterprise samples and tests for differences between the two samples. The differences in means are examined using ttests, while differences in medians are assessed using Mann-Whitney U tests. Firstly, regarding the difference in means for investment (Invest), there is a significant disparity between family and non-family enterprises, with means of 0.0111 and 0.0078, respectively, indicating that family enterprises have significantly higher investment levels than non-family enterprises. However, there is no significant difference in the median investment between family and non-family enterprises. The mean conservatism (Conser) for family enterprises is -0.0078, significantly lower than that for non-family enterprises (-0.0048), indicating that family enterprises exhibit significantly lower conservatism levels than non-family enterprises.

Table 2 DESCRIPTIVE STATISTICS								
Variable	Sample Mean St. Dev. Minimum Median Maximum							
Invest	14,931	0.0099	0.0959	-0.9069	-0.0008	2.7733		
Conser	14,931	-0.0067	0.0671	-1.0959	-0.0066	1.6422		
OCFVOL	14,931	24.6291	2.8268	14.7534	24.3004	37.5982		
TQ	14,931	1.2448	1.1654	0.0300	0.9500	37.7600		



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ROA	14,931	8.2909	9.8856	-92.8000	8.0300	96.4500
SIZE	14,931	15.2853	1.4722	9.7566	15.0779	21.9492

Notes: Invest represents the level of investment; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size.

Table 3 Differences between Family and Non-family Firms								
Family Firms Non-family Firms (N = 9,436) (N = 5,495) Differential Analysis						tial Analysis		
Variables	Mean	Median	Mean	Median	Differences in Mean	Differences in Median		
Invest	0.0111	-0.0007	0.0078	-0.0009	-2.042**	-1.245		
Conser	-0.0078	-0.0081	-0.0048	-0.0042	2.644**	-8.410***		
OCFVOL	24.5471	24.2344	24.7698	24.4095	4.588***	-4.161***		
TQ	1.2314	0.9500	1.2679	0.9500	1.819	-0.813		
ROA	8.4700	7.9750	7.9833	8.1600	-2.810***	-0.812		
SIZE	15.2581	15.0470	15.3321	15.1252	2.907***	-2.658**		

#### Notes:

Furthermore, for cash flow volatility (OCFVOL), the mean for family enterprises is 24.5471, while for non-family enterprises, it is 24.7698, with a significant difference between the two, suggesting that non-family enterprises have significantly higher cash flow volatility than family enterprises. Only Tobin's Q (TQ) shows no significant difference among the control variables. At the same time, return on assets (ROA) exhibits a significant difference in means, indicating that the mean for family enterprises (8.4700) is significantly higher than that for non-family enterprises (7.9833). Moreover, company size (SIZE) demonstrates a significant difference between family and non-family enterprises, with mean values of 15.2581 and 15.3321, respectively, indicating that family enterprises tend to be smaller than non-family enterprises. From the above, it can be concluded that there

are significant differences in investment, accounting conservatism, and cash flow volatility between family and non-family enterprises. Therefore, this study investigates the impact of conservatism differences between the two samples on underinvestment.

### Correlation Analysis Results

Table 4 presents the Pearson correlation coefficients between variables. Conservatism (*Conser*) and investment (*Invest*) show a significantly positive correlation, whereas the volatility of operating cash flow (*OCFVOL*) and investment (*Invest*) are negatively correlated, though not considerably. Regarding control variables, Tobin's Q (*TQ*), return on assets (*ROA*), and firm size (*SIZE*) all exhibit significant positive correlations with investment.

Table 4 CORRELATION ANALYSIS										
	Invest Conser OCFVOL TQ ROA SIZE									
Invest	1.000									
Conser	0.108**	1.000								
OCFVOL	-0.006	-0.010	1.000							
TQ	0.084**	-0.027**	-0.128**	1.000						
ROA	0.151**	-0.098**	0.109**	0.126**	1.000					
SIZE	0.041**	-0.034**	0.866**	-0.174**	0.206**	1.000				

#### Notes

#### **Empirical Regression Analysis Results**

This study explores whether conservatism mitigates underinvestment in family versus non-family businesses. The results of the regression analysis are presented in Table 5. For the total sample, the coefficient for conservatism (*Conser*) is -0.331, significant at the 1% level, indicating that conservatism as an effective governance mechanism leads to reduced investment expenditures without cash flow volatility. The coefficient for cash flow volatility (*OCFVOL*) is -0.005, significant at the 1% level, suggesting that greater volatility in cash flows, which may lead to inadequate internal funds for investment projects and increased external financing costs due to information asymmetry, results in underinvestment. These findings align with Minton and Schrand (1999) and Hong et al. (2019). The interaction term between conservatism and cash flow volatility (*Conser*×*OCFVOL*) has a

coefficient of 0.021, significant at the 1% level, showing that under high cash flow volatility, conservatism helps mitigate the negative relationship between cash flow volatility and investment, likely because conservatism reduces information asymmetry between the firm and external stakeholders, making it easier to obtain funds at lower costs, thus increasing investment expenditures. This supports Hypothesis H1, consistent with the findings of Hong et al. (2019). For control variables, the coefficients for Tobin's Q (*TQ*) and Return on Assets (*ROA*) are 0.006 and 0.001, respectively, both significant at the 1% level, indicating that firms with more future investment opportunities and better past profitability tend to increase investments; the coefficient for firm size (*SIZE*) is 0.010, significant at the 1% level, suggesting that larger firms, with lower information asymmetry and transaction costs, spend more on investments than

<sup>1.</sup> Invest represents the level of investment; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size.

<sup>2.</sup> In the differential analysis, differences in the means of variables between the two samples are examined using the T-test (T-value). In contrast, differences in the medians are assessed using the Mann-Whitney U test (Z-value).

3. \*, \*\*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

<sup>1.</sup> Invest represents the level of investment; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size. 2. \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.





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smaller firms. The OLS regression analysis in this paper also explores outcomes without controlling for industry and year effects. However, the analyses confirm that the empirical results

align with those obtained when these effects are controlled for. Consequently, this paper only presents the results that include these controls.

Table 5 REGRESSION ANALYSIS (OLS)								
Expected Sign   Whole Sample   Family Firms   Non-family Firms								
T	, , , , , ,	-0.045***	-0.035***	-0.063***				
Intercept		(-5.266)	(-3.134)	(-4.861)				
G		-0.331***	-0.039	-0.543***				
Conser	-	(-3.318)	(-0.297)	(-3.385)				
OCFVOL		-0.005***	-0.004***	-0.005***				
OCFVOL	_	(-8.261)	(-6.277)	(-5.680)				
Conser×OCFVOL	+	0.021***	0.011**	0.026***				
ConserxOCFVOL		(5.175)	(2.079)	(3.816)				
TO	+	0.006***	0.006***	0.007***				
TQ		(9.560)	(6.936)	(6.916)				
ROA	+	0.001***	0.001***	0.001***				
ROA	т —	(16.338)	(12.425)	(10.220)				
SIZE	+	0.010***	0.009***	0.012***				
SIZE	т -	(8.976)	(6.471)	(6.638)				
Adjusted R <sup>2</sup>		0.049	0.054	0.045				
F Value		130.134	91.414	44.601				
Sample		14,931	9,436	5,495				
Notes:	•		•					

Notes

When the sample is divided into family and non-family businesses, the coefficient for conservatism (*Conser*) in family businesses is -0.039, insignificant, compared to -0.543 in non-family businesses, significant at the 1% level. This indicates that in the absence of cash flow volatility, conservatism does not significantly impact investment expenditures in family businesses, whereas it reduces investment expenditures in non-family businesses. In terms of cash flow volatility (*OCFVOL*), the coefficients for family and non-family businesses are -0.004 and -0.005, respectively, both significant at the 1% level, indicating that both types of businesses tend to reduce investment when faced with greater cash flow volatility, leading to underinvestment. The interaction term (*Conser*×*OCFVOL*) for family businesses has a coefficient of 0.011, significant at the 5% level, showing that although conservatism itself has a minor effect on family

businesses, it mitigates the investment shortfalls caused by cash flow volatility, supporting Hypothesis H2. For non-family businesses, the coefficient is 0.026, which is significant at the 1% level, indicating that conservatism also mitigates underinvestment in these firms, supporting Hypothesis H3. The results for control variables are consistent with those of the total sample, showing a positive significant relationship with investment.

Given that our sample spans multiple companies and years, this study employs Two-Way Cluster-Robust Standard Errors to account for dependencies across companies within the same year and across time within the same company. This approach aims to ensure more accurate and reliable empirical results. The results are consistent with those of OLS regression, as shown in Table 6.

Table 6 REGRESSION ANALYSIS (Two-Way Cluster-Robust)							
Intercent		-0.025***	-0.025***	-0.059***			
Intercept		(-6.142)	(-2.958)	(-5.319)			
Conser		-0.271***	-0.121*	-0.263***			
Collsei	-	(-4.529)	(-1.362)	(-4.826)			
OCFVOL		-0.011***	-0.002**	-0.013***			
OCTVOL	-	(-7.541)	(-2.573)	(-5.820)			
Conser×OCFVOL	+	0.028***	0.029**	0.031***			
ConserxOCFVOL		(5.019)	(3.751)	(4.153)			
TO	+	0.031***	0.012***	0.015***			
TQ		(8.792)	(7.851)	(7.102)			
DO A	+	0.012***	0.014***	0.027***			
ROA		(10.214)	(13.520)	(12.243)			
SIZE		0.005***	0.011***	0.020***			
SIZE	+	(7.416)	(7.002)	(6.599)			
Adjusted R <sup>2</sup>		0.036	0.042	0.038			
F Value		142.912	86.721	45.125			
Sample		14,931	9,436	5,495			
Notasi							

#### Notes:

<sup>1.</sup> Invest represents the level of investment; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size.

<sup>2.</sup> The OLS results presented in this paper control for industry and year effects.

<sup>3. \*, \*\*,</sup> and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively

<sup>1.</sup>Invest represents the level of investment; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size.

<sup>2.\*, \*\*,</sup> and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.



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#### Robustness Tests

where  $INVEST_{i,t}$  is

Building on previous research (McNichols and Stubben, 2008; Biddle et al., 2009; Goodman et al., 2014; Shroff, 2017; Choi et al., 2020), we assess underinvestment by determining the degree to which actual firm investment deviates from the anticipated investment level. To calculate this expected level of investment, we employ the model outlined below:

firm *i*'s capital

expenditure

 $INVEST_{i,t} = \alpha_0 + \alpha_1 T Q_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 ASSET\_GR_{i,t-1} + \alpha_4 INVEST_{i,t-1} + \varepsilon_{i,t}$  (5)

year t divided by net PPE at the beginning of year t;  $TQ_{i,t-1}$  is the market value of equity plus the book value of short- and long-term debt scaled by total assets measured at the end of year t-1; CFOi, t is cash flow from operations in year t; and  $ASSET\_GR_{i,t-1}$  is the percentage change in firm i's assets between year t-2 and t-1. The discrepancies captured by the residuals from equation (5) reflect how much a firm's investment strays from the ideal investment level, serving as a metric for assessing investment efficiency. Observations of firm-year with positive residuals indicate overinvestment, while those with negative residuals indicate underinvestment. For firms that overinvest,  $INVEST\_INEFF$  is represented by the residual value. Conversely, for firms that underinvest,  $INVEST\_INEFF$  is defined as the negative of the residual, ensuring that higher values indicate more significant underinvestment.

Based on the regression results from Table 7, which applied the investment inefficiency measurement method suggested by Choi et al. (2020), the results provide robust analysis for different subsets of the sample, including whole-sample, family firms, and non-family firms, and differentiating between underinvestment and overinvestment scenarios.

Accounting conservatism generally correlates negatively with investment inefficiency across different subsets and scenarios. This implies that higher conservatism in accounting practices tends to increase underinvestment and decrease overinvestment. Notably, conservatism significantly reduces investment inefficiency in family firms under overinvestment scenarios, suggesting that conservative accounting can mitigate aggressive investment behaviors in these firms.

The volatility of operational cash flows (*OCFVOL*) positively correlates with investment inefficiency across most categories, indicating that higher cash flow volatility increases underinvestment and overinvestment. This is consistent with the hypothesis that higher volatility in cash flows leads to greater investment inefficiency, as it may signal unpredictable financial conditions, prompting firms to either underinvest or overinvest.

The interaction terms between conservatism and cash flow volatility are particularly notable in the context of overinvestment for family firms and underinvestment for non-family firms, suggesting that the mitigating effect of conservatism on investment inefficiency is more pronounced when cash flow volatility is also considered. This could mean that accounting conservatism is particularly effective in stabilizing investment behaviors in more volatile financial environments.

The results are consistent with previous findings, suggesting that the measurement approach for investment inefficiency proposed by Choi et al. (2020) provides a robust framework for analyzing the impacts of accounting conservatism and operational cash flow volatility on investment behaviors. These findings underscore the importance of conservative accounting practices in regulating investment activities, particularly in environments characterized by high financial uncertainty.

Table 7 REGRESSION ANALYSIS (Two-Way Cluster-Robust)								
		Underinvestment		Overinvestment				
	Whole Sample	Family Firms	Non-family Firms	Whole Sample	Family Firms	Non-family Firms		
Intercent	0.032***	0.022***	0.112***	0.036***	0.020***	0.104***		
Intercept	(5.476)	(3.211)	(5.206)	(7.528)	(4.527)	(4.216)		
Course	0.302***	0.246*	0.311***	-0.638***	-0.227**	-0.285*		
Conser	(5.108)	(1.864)	(5.128)	(-5.122)	(-2.351)	(-1.937)		
OCEVOI	0.008***	0.011**	0.020***	-0.005***	-0.018**	-0.012*		
OCFVOL	(8.272)	(3.142)	(6.521)	(-4.329)	(-2.417)	(-1.682)		
Comment OCERCI	0.016***	0.016**	0.042***	0.002***	0.023**	0.027**		
Conser× OCFVOL	(4.286)	(3.208)	(5.338)	(4.897)	(3.683)	(3.522)		
TO	-0.017***	-0.028***	-0.004***	0.006***	0.011***	0.013***		
TQ	(-7.107)	(-7.529)	(-6.989)	(7.538)	(6.555)	(7.633)		
201	-0.005***	-0.021***	-0.029***	0.010***	0.023***	0.033***		
ROA	(-9.523)	(-11.058)	(-11.204)	(11.283)	(11.998)	(12.026)		
CITE	-0.012***	-0.005***	-0.028***	0.015***	0.023***	0.042***		
SIZE	(-6.992)	(-6.965)	(-6.427)	(8.617)	(8.504)	(7.951)		
Adjusted R <sup>2</sup>	0.046	0.039	0.031	0.042	0.036	0.025		
F Value	128.324	62.571	55.125	112.514	60.527	51.258		
Sample	7,056	3,869	3,187	7,875	5,567	2,308		

Notes:

1.Dependant variable is INVEST\_INEFF; Conser measures accounting conservatism; OCFVOL represents the volatility of cash flows from operations; TQ is Tobin'Q; ROA stands for returns on assets; SIZE represents the company size.

2.\*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively

### 5. Conclusion

This study addresses the pivotal role of accounting conservatism in mitigating underinvestment triggered by internal cash flow volatility, with a particular focus on differences between family and non-family firms in Taiwan over the period from 2013

to 2022. By employing a robust methodology that adapts the models of Minton and Schrand (1999) for underinvestment and Givoly and Hayn (2000) for measuring conservatism, our findings contribute significantly to the nuanced understanding of these dynamics in corporate finance.



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While previous studies have often generalized the effects of accounting conservatism across different firm types, our study delineates the distinct impacts on family versus non-family firms. We demonstrate that conservatism significantly helps mitigate underinvestment in both types of firms, with more pronounced effects in family firms when faced with high cash flow volatility. This adds a layer of complexity to the traditional narrative by showing that the protective effects of conservatism are modulated by the firm's governance structure.

By extending the application of conservatism beyond its traditional role in controlling overinvestment, this study reveals its capacity to address underinvestment a less explored area in prior research. Our findings suggest that conservative accounting practices allow firms to manage investment more prudently during periods of financial uncertainty, thus stabilizing investment levels and preventing the bypass of valuable investment opportunities.

The results of this study are instrumental for policymakers and corporate managers, particularly in emerging economies where family firms dominate the business landscape. Understanding the role of accounting conservatism in these settings can lead to more

informed policy formulations that aim to foster investment efficiency and economic stability. Additionally, managers within firms can tailor their financial strategies to leverage conservatism in financial reporting to enhance their investment appeal to financiers and mitigate the adverse effects of cash flow volatility.

In conclusion, our research significantly advances the discourse on accounting conservatism by highlighting its dual role in curbing overinvestment and underinvestment. The evidence confirms that conservative accounting practices are a defensive mechanism against aggressive financial reporting and a proactive tool for enhancing investment efficiency in varied corporate governance contexts. This study, therefore, fills a critical gap in the literature by systematically examining the interplay between accounting conservatism and investment behaviors in family and non-family firms under conditions of cash flow volatility.

These findings pave the way for future research to explore how conservatism can influence other aspects of corporate finance and investment, particularly in settings characterized by complex familial governance structures.

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