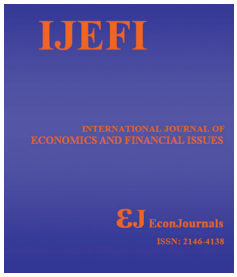

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Effect of Managers' Illusion of Control and Corporate Governance Structure on the Sensitivity of Investment Cash Flow

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ABSTRACT

This study examines publicly listed Taiwanese companies to explore the effect of managers' illusion of control on the sensitivity of investment cash flow, as well as the adjustment effects of different corporate governance structures. We constructed various proxy variables and found that non-operating income and expense has a significant positive impact on future capital expenditure ratios. As the company's operating risk increases, managers are more willing to invest, showing managers' confidence in their own expertise and their optimistic expectation to control future scenarios. The results related to corporate governance structures showed that co-governance and expert management governance mechanisms tend to mitigate managers' illusion of control, weakening the investment cash flow sensitivity. Government control models did not show a significant impact and there was no significant adjustment effect on the investment cash flow sensitivity. Firms with single-family governance may have agency problems and strengthen the investment cash flow sensitivity.

Keywords: Illusion of Control, Non-operating Income and Expense, Investment Cash Flow Sensitivity
JEL Classifications: G30, G31

1. INTRODUCTION

When information asymmetry occurs between internal managers and external investors or when agency problems caused by the equity structure exist, a company's investment funds become more dependent on producing cash. This creates a sensitivity of investment to the company's internal cash flow (Biddle and Hilary, 2006; Fazzari et al., 1988; Grossman and Hart, 1982; Hoshi et al., 1991; Hovakimian, 2009; Jensen, 1986; Myers, 1984).

Business revenue mainly comes from revenue generated by business operations and the collaboration of good corporate governance mechanisms. A sustained stable operating income will be the source of an ideal capital expenditure. Although most of the one-time or non-recurring income items can increase the net profit margin of the corporation, it can simultaneously introduce instability and non-recurrence to the firm's total revenue. In addition, an increase in non-operating income and expenses increases the volatility of a business' profitability and highlights the corporate risks. Moreover, a high level of non-operating income and expenses can lead investors to think that the business is not engaged in honest practices.

If investors believe that results are predictable, they tend to have more optimistic outlooks (Weinstein, 1980). March and Shapira's (1987) study showed that as managers have greater control over the company's operating performance, they tend to be even more optimistic. Illusion of control refers to an individual's overestimation in their likelihood of success. This indicates that individuals often overestimate their own abilities or control of the situation during a decision-making process. Overconfidence is an over-reliance on one's predictions. Therefore, illusion of control can be viewed as a manifestation of overconfidence (Hayward and Hambrick, 1997; Lin and Tang, 2007; Schwenk, 1986).

The rise and fall of the economy challenges a manager's visionary and decision-making capabilities. The health of a company's revenue is also an absolute performance indicator for a manager.

As an enterprise's short-term non-recurring surplus income increases, we believe that if managers increase the ratio of capital expenditure, then these managers are overconfident in their own abilities and the company's future performance. This then results in managers' illusion of control.

This study has two purposes: First, to explore whether a manager's investment decision is significantly affected by non-operating income and expense, which creates an illusion of control, and second, to determine whether differences in corporate governance structures have a significant adjustment effect on managers' illusion of control.

This study offers several contributions. First, we used managers' behavioral characteristics to explore their illusion of control during the investment decision-making process, as well as the impact on capital expenditure and cash flow sensitivity. Second, there is little research into managers' illusion of control, mostly due to the difficulty of quantifying behavioral characteristics. This study applies the characteristics of non-operating income and expenditure and linking it with illusion of control to illustrate decision-makers' illusion of control (optimistic tendency), which may have an adjustment effect to the sensitivity of investment to cash flow. Third, we determine whether differences in corporate governance structures have an adjustment effect on managers' illusion of control and investment cash flow sensitivity. This study attempts to bridge the current gap in existing research and provide reference value for corporate policy development and practical studies of business operations.

The remainder of this study is structured as follows. Section 2 presents the literature review, section 3 details out the research design, section 4 explains the empirical analysis results, and section 5 concludes.

2. LITERATURE REVIEW

Prior research assumed that the market was perfect and the capital structure was irrelevant (Modigliani and Miller, 1958). However, the real market is imperfect and forms an association between the company's investment and its capital structure.

Myers and Majluf (1984) found that information asymmetry occurs when inside operators have more information than external investors. Consequently, the company's investment funds will depend more on the cash generated, resulting in a higher sensitivity of capital investment the company's cash flow (Fazzari et al., 1988; Fazzari et al., 2000).

In stock diversified companies, the conflict of interest caused by inconsistent incentives between managers and owners can lead to the principal-agent problem. In companies with a higher level of ownership concentration, there may be a core agency problem of larger shareholders exploiting smaller shareholders (Claessens et al., 2000; Jensen and Meckling, 1976; Mitton, 2002; Porta et al., 1999; Porta et al., 1998; Yeh et al., 2001). All of these factors result in a higher sensitivity of the company's capital investment to cash flow.

Malmendier and Tate (2005) applied psychological factors or managers' personal characteristics instead of traditional corporate characteristics. They discovered that overconfident managers can strengthen the sensitivity of investment to cash flow. Heaton (2002) observed that optimistic managers often overestimate the value of the corporation and their future investments. Thus, their investments tend to have a higher sensitivity to cash flow. Lin et al., (2005, 2008) study showed that optimistic managers have higher investment cash flow sensitivity. Li (2006) empirical study showed that overconfident managers have a high degree of investment cash flow sensitivity when business conditions are relatively volatile.

When people believe that the results are predictable, they tend to become more optimistic (Weinstein, 1980). This study links the implication of non-operating income and expenditure with a manager's optimism to explore the influence of managers' illusion of control (optimistic tendencies) on investment cash flow sensitivity. The results echo previous research findings. For a practical application of the findings, this study further explored whether differences in corporate governance structures causes managers to adjust their investment cash flow sensitivity.

3. RESEARCH DESIGN

In 2000, the TWSE statistics showed that foreign investment transactions accounted for 3.63% of the total, which increased to 23.80% by the end of 2014. This indicated that Taiwan is a valuable market for foreign investors. Our study used quarterly tracking reports from the Taiwan stock exchange and over the counter companies from 2009 to 2015. We collected the financial data from the Taiwan Economic Journal Database and we classified governance based on the classification of corporate governance of the Taiwan Economic News Database. The study included a sample of 1,631 companies. We expanded on models proposed by Heaton (2002) and Lin et al. (2005), and applied the non-operating income and expenditure to measure managers' illusion of control. Model (1) used panel data analysis:

$$I_{i,t}=\beta_1+\beta_2 CF_{i,t-1}+\beta_3 O_{i,t-1}+\beta_4 O_{i,t-1}\cdot CF_{i,t-1}+\beta_5 LASSET_{i,t}+\beta_6 SA_{i,t}+\varepsilon_{it} \quad (1)$$

Model 1 assumes that the larger the non-operating income and expenditure rate $O_{i,t-1}$ is, the more the manager was willing to invest. The expected coefficient β_3 indicates a significantly positive impact on the current capital expenditure ratio. In addition, the interaction term of the extent of managers' illusion of control and the ratio of free cash flow ($O_{i,t-1}\cdot CF_{i,t-1}$) represent the tendency of managers' illusion of control and adjustment effects on investment cash flow sensitivity. The expected coefficient ($\beta 4$) indicates a significantly positive impact. We also tested whether the results were consistent with previous findings (Lin et al., 2005; Malmendier and Tate, 2005). Similarly, we added the control variables of company size $LASSET_{i,t}$ as the logarithm of total assets and the revenue growth rate ($SA_{i,t}$).

Model 2 added the dummy variable of governance type ($Group_{i,t}$). We first examined the "single family" governance structure in which the ultimate controller of the company is a group of individuals (natural persons) with the same interests and goals.

"Kinship" might exist amongst these individuals. Then, we explored the "co-governance" mechanism, where the ultimate controller of the company is two or more groups (which might be families, groups, or the government). In the absence of cooperation, these individual groups cannot unilaterally lead the company's operations and make important decisions. The third type of governance structure is "expert management," where the company has no significant major shareholder, or the major shareholders were not directly involved in business operations and the decision making process. Managers make the company's important decisions, who are the ultimate controller. In the fourth governance type, the company's ultimate controller is either a local or central government, which we refer to as "government led."

$$I_{i,t}=\beta_1+\beta_2 CF_{i,t-1}+\beta_3 O_{i,t-1}+\beta_4 O_{i,t-1} CF_{i,t-1}+\beta_5 GROUP_{i,t}+\beta_6 GROUP_{i,t} CF_{i,t-1}+\beta_7 GROUP_{i,t} O_{i,t-1}+\beta_8 GROUP_{i,t} O_{i,t-1} CF_{i,t-1}+\beta_9 LASSET_{i,t}+\beta_{10} SA_{i,t}+\varepsilon_{i,t} \quad (2)$$

In the interaction term of governance type and cash flow ratio ($GROUP_{i,t}\ CF_{i,t-1}$), the β_6 coefficient clarifies the relationships between the difference in governance structure, capital expenditure ratios, and cash flow. The interaction term of governance type and non-operating income and expenditure ($GROUP_{i,t}\ CF_{i,t-1}$), represented by (β_7), examined the impact of various types of governance on managers' illusion of control. The interaction term of governance type, non-operating income and expenditure, and cash flow ($GROUP_{i,t}\ O_{i,t-1}\ CF_{i,t-1}$) the β_8 examined the differences in governance types and the manager's illusion of control tendencies on the adjustment effect of the investment cash flow sensitivity.

4. EMPIRICAL ANALYSIS RESULTS

Table 1 reports the descriptive statistics for each variable. To clarify whether there is a high degree of collinearity between the independent variables, we use the variance inflation factor (VIF) as the index to measure collinearity. If further calculation shows that the VIF values do not add up to 10, then no collinearity exists between the independent variables.

In Table 2, Model 1, the coefficient of ($CF_{i,t-1}$) is 479.3 with a significance of 0.1%, indicating that the current capital expenditure ratio is positively and significantly affected by the previous period's free cash flow ratio. This finding confirmed the consistency of our results with those of previous studies (Fazzari et al., 1988; Hoshi et al., 1991; Myers, 1984; Schaller, 1993).

5. CONCLUSION

The stronger the trend of non-operating income and expenditure, the more evident is the company's operating risk. However, managers are more willing to invest, which shows that managers have a stronger illusion of control. We found that the non-operating income and expenditure of the previous period had a significantly positive impact on the future capital expenditure ratio. This conclusion is consistent with previous findings that the managers' optimistic characteristics will strengthen the sensitivity of capital expenditure to cash flow (Li, 2006; Lin et al., 2005, 2008; Malmendier and Tate, 2005; Weinstein, 1980).

The difference in governance structure has an adjustment effect on the manager's illusion of control and investment cash flow sensitivity. We showed that under the co-governance structure, as there is no single dominance of the company, the manager's illusion of control tendencies are mitigated and weakens the investment cash flow sensitivity. Under the expert management governance structure, an increase in non-operating income and expenditure will not increase the company's future capital expenditure ratio. We believe that because managers' personal interests are more aligned with the shareholders, they are more rigorous in investing, which thereby mitigates the sensitivity of investments to cash flow (Jensen and Meckling, 1976). Another reason is demonstrated by the function of the board of directors. The Financial Supervisory Commission R.O.C of Taiwan issued decree No. 1020053112 on December 31, 2013, which stipulated that all listed companies must set up an independent board. Independent boards of directors can provide objective and unbiased regulations, which mitigates managers' illusion of

Table 1: Summary statistics of the sample

Variable	Mean	Minimum	SD	Median	Maximum	N
$I_{i,t}$	4.506	−17744.7	938.107	0.020	185366	39432
$CF_{i,t-1}$	0.005	−10.968	0.124	0.004	6.091	39607
$O_{i,t-1}$	0.000	−0.099	0.011	0.000	2.114	39814
$CF_{i,t-1}\ O_{i,t-1}$	0.000	−0.038	0.001	0.000	0.098	39476
$LASSET_{i,t}$	15.362	9.260	1.619	15.096	22.747	40293
$SA_{i,t}$	0.000	−0.012	0.008	0.000	0.892	39060
$GROUPA_{i,t}$	0.124	0.000	0.329	0.000	2.072	37645
$GROUPA_{i,t}\ CF_{i,t-1}$	0.001	−1.582	0.030	0.000	2.072	37645
$GROUPA_{i,t}\ O_{i,t-1}$	−0.000	−0.099	0.001	0.000	0.012	37666
$GROUPA_{i,t}\ O_{i,t-1}\ CF_{i,t-1}$	0.000	−0.010	0.000	0.000	0.036	37534
$GROUPM_{i,t}$	0.233	0.000	0.423	0.000	1.000	40067
$GROUPM_{i,t}\ CF_{i,t-1}$	0.001	−10.262	0.078	0.000	0.862	37645
$GROUPM_{i,t}\ O_{i,t-1}$	0.000	−0.013	0.000	0.000	0.004	37666
$GROUPM_{i,t}\ O_{i,t-1}\ CF_{i,t-1}$	0.000	−0.004	0.001	0.000	0.098	37534
$GROUPG_{i,t}$	0.021	0.000	0.144	0.000	1.000	40067
$GROUPG_{i,t}\ CF_{i,t-1}$	0.000	−0.887	0.010	0.000	0.301	37645
$GROUPG_{i,t}\ O_{i,t-1}$	0.000	−0.000	0.000	0.000	0.000	37534
$GROUPG_{i,t}\ O_{i,t-1}\ CF_{i,t-1}$	−0.000	−0.000	0.000	0.000	0.000	37534

SD: Standard deviation

Table 2: The effect of illusion of control and governance type on cash flow sensitivity

Variable	Model 1	Model 2			
		Panel A	Panel B	Panel C	Panel D
$CF_{i,t-1}$	479.3*** (33.34)	456.6*** (31.68)	66.65*** (6.27)	482.9*** (33.39)	−0.541 (−0.06)
$O_{i,t-1}$	261339.7*** (474.24)	267269.0*** (480.40)	233395.3*** (695.31)	261328.8*** (473.11)	−146.0 (−0.10)
$CF_{i,t-1}$ $O_{i,t-1}$	381336.1 (148.2)	350467.2*** (128.39)	848523.5*** (371.14)	381498.7*** (147.89)	−28.55 (−0.02)
$LASSET_{i,t}$	−1.935 (−1.8)	−0.854 (−0.82)	1.164 (1.86)	−1.986 (−1.82)	0.831 (1.90)
$SA_{i,t}$	343.4 (−1.8)	367.9 (1.77)	−0.368 (−0.00)	344.7 (1.60)	−148.1 (−1.70)
$GROUPA_{i,t}$		4.960 (1.01)			
$GROUPA_{i,t}$ $CF_{i,t-1}$		−455.6*** (−7.72)			
$GROUPA_{i,t}$ $O_{i,t-1}$		267552.5*** (−44.24)			
$GROUPA_{i,t}$ $O_{i,t-1}$ $CF_{i,t-1}$		351080.7*** (−24.48)			
$GROUPM_{i,t}$			2.370 (1.03)		
$GROUPM_{i,t}$ $CF_{i,t-1}$			−67.51*** (−3.84)		
$GROUPM_{i,t}$ $O_{i,t-1}$			−233575.4*** (−11.58)		
$GROUPM_{i,t}$ $O_{i,t-1}$ $CF_{i,t-1}$			−848532.4*** (−205.80)		
$GROUPG_{i,t}$				7.765 (0.56)	
$GROUPG_{i,t}$ $CF_{i,t-1}$				492.1* (−2.36)	
$GROUPG_{i,t}$ $O_{i,t-1}$				−488635.0 (−0.13)	
$GROUPG_{i,t}$ $O_{i,t-1}$ $CF_{i,t-1}$				−4761855.4 (−0.03)	
$GROUPF_{i,t}$					−1.344 (−0.96)
$GROUPF_{i,t}$ $CF_{i,t-1}$					−34.07** (−2.85)
$GROUPF_{i,t}$ $O_{i,t-1}$					214958.4*** (151.72)
$GROUPF_{i,t}$ $O_{i,t-1}$ $CF_{i,t-1}$					1069740.3***(417.03)
Intercept	25.38 (1.53)	8.070 (0.50)	−19.89* (−2.05)	26.17 (1.56)	−12.58 (−1.85)
N	36641	36468	36468	36468	36468

$I_{i,t}$ represents capital expenditure ratio; $CF_{i,t-1}$ represents free cash flow ratio; Lasseti,t represents company size by logarithm of total assets; SAi,t represents revenue growth rate; $O_{i,t-1}$ represents tendency of mangers' illusion of control as proxy variable; non-operating income and expenditure (non-operating/operating revenue ratio) divided by total assets; $CF_{i,t-1}$·$O_{i,t-1}$ is interaction term of free cash flow ratio and non-operating income and expenditure. GROUPAi,t is the dummy variable of co-governance type, where yes=1, and no=0. $GROUPM_{i,t}$ represents expert management governance as a dummy variable where yes=1 and no=0. $GROUPG_{i,t}$ is the government-led dummy variable where yes=1 and no=0. $GROUPF_{i,t}$ is the single-family dummy variable where yes=1, and no=0. t indicates the current period, $t-1$ denotes the previous period. (t statistics in parentheses: *P<0.05, **P<0.01, ***P<0.001). SD: Standard deviation

control and weakens the sensitivity of investments to cash flow. A government-led governance structure has no significant impact on managers' illusion of control. In addition, there is no significant adjustment effect on its investment cash flow sensitivity. In the case of single family's governance, especially when the company's internal funds are abundant, managers with illusion of control will invest willingly, which increases the investment cash flow sensitivity. This finding suggests that due to family interests, there might be an agency problem in which one large shareholder exploits the interests of small shareholders. Consequently, this strengthens the investment cash flow sensitivity. This result is consistent with the empirical results in Wei and Zhang (2008).

Considering our results, we offer several suggestions. First, assessing whether a manager is under the illusion of control, in addition to the traditional methods, researchers and others can use the non-operating income and expenditure as a proxy variable. Second, because corporate governance is a mechanism of corporate management, improving corporate governance will reduce the negative impact of individual actions. Future studies can incorporate the differences in corporate governance mechanisms to further explore the impact of corporate governance and illusion of control on cash flow sensitivity.

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