A Study of Corporate Governance Factors and Earnings Management Behaviors of Taiwan Public Companies

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Abstract

This study explores the impact of corporate governance factors to earnings management behaviors. The sample covers 268 publicly held corporations in Taiwan. We use modified Jones model to test the free cash flow, discretionary accrual items and some corporate governance factors. Our analysis shows that the discretionary accruals are positively related with free cash flow. The results also indicate that companies that have been audited by the Big-Four CPA firms have less discretionary accrual items. Debt to asset ratio has a negative relationship with discretionary accruals. Results from corporate governance factors indicate that the turnover rate of internal auditors, the number of financial report restatement and the number of earnings forecast are not significantly related with discretionary accrual items. Our analysis also shows different earnings management behaviors between high-tech and traditional industry.

Keywords: Earnings Management, Discretionary Accruals, Corporate Governance, Free Cash Flow

Introduction

Compared to the United States, Britain, Singapore, Japan and some other countries, the internal control system and corporate governance for Taiwanese companies are less mature. The level of information transparency of financial statements is lower and, relatively speaking, the level of earnings management is higher (Leuz, Nanda, and Wysocki 2003). The main purpose of this research is to explore the impact of various variables that may affect the use of discretionary accruals in Taiwan's publicly listed companies. Basic variables in the analysis models are free cash flow, debt ratio, current cash flow, market value and total accruals.

Other variables are tested in separate models to explore the relationships within discretional accruals. In this study, we want to see if public companies that have been audited by high quality CPA firms will have less discretionary accruals; we examine whether the terms of auditing by the same CPA firm could affect the discretionary accrual items. In this study, we also examine several other factors with respect to discretionary accrual items, such as institutional ownership, the turnover rate of internal auditors, the number of times its executive manager is replaced, the number of times the financial statements are restated, and the number of times the financial forecasts are issued.

In addition, we also explore the earnings management behaviors between traditional industry and high-tech industry in Taiwan and compare its impacts on discretionary accrual items. The organization of this paper is as follows: next section is literature review, followed by data and methodology, the next section is empirical results and analysis, then concluding discussion.

Literature Review

In this section, we review literature related to corporate governance, earnings management and free cash flow. From the reviewed literature, we adopt appropriate variables to empirically test their relationships with earnings management.

Corporate Governance

Watts and Zimmerman (1983) suggest that the function of auditing is to reduce the agency cost caused by information asymmetry between management team and shareholders. In order to maintain the fairness of accounting practices, an auditor will request a company to correct the accounting errors if its accounting practice is not appropriate; otherwise an auditor will select a conservative attitude to assess the financial statements and information systems. Baker et al. (1998) adopt the theoretical foundation of Jones model, by using discretionary accrual items to examine the impact of earnings management with the relationship of quality of CPA firms. Their empirical results indicate that companies who employ non-Big-Four auditing firms do implement more discretionary accruals thus increase earnings. These companies' accounting systems are more flexible, their means and medians of discretionary accrual items are higher, and their total assets are 1.5 to 2.1 percentages higher than the average. Their empirical results also show that companies employ high-quality CPA firms would limit the usage of discretionary accrual items to increase revenues.

Francis and Krishnan (1999) also have a similar research result. They conclude that if the risk is higher than the acceptable level, auditors will keep the conservative attitude. Jiambalvo et al. (2002) in their research find that when having more institutional investors, stock prices reflect more information regarding future earnings, not short term earnings. They conclude that institutional investors have the advantages of better knowledge and information accessibility about earnings management related accruals. Chang and Fang (2006) study the impact of the assessment system of information disclosure to earnings management behaviors in Taiwan and conclude that after Taiwan's Security Exchange Center implemented the assessment system, the earnings management behaviors are significantly reduced, especially for companies whose management teams have higher ownership ratios.

Earnings Management

DeAngelo (1981) and many scholars agree that the Big Four CPA firms could be recognized as high-quality auditing firms, for they bear the heaviest burden of good reputation, social status, and public responsibilities. Healy studies the impact of bonus plans on managerial decision of selecting accounting practices. His study concludes that executives rewarded by earnings-based bonuses would choose accounting procedures that will increase their compensation (Healy, 1985). Jensen (1986) finds that managers of low growth companies tended to invest in projects with negative present value. To cover up these inefficiencies and to negate possible effect on future stock price, managers will use income-increasing discretionary accruals.

Healy and Wahlen (1999) summarize literatures, abstract and discuss several factors from these literatures that would impact earnings management. However, they also suggest that evidences and empirical studies are not enough to imply a significant conclusion for earnings management, and that further research is required.

Some of their summaries were: some firms manage earnings for stock market but those research studies are not able to identify specific accruals link to earnings management; compensation and lending contracts induce some firms to manage earnings to increase bonus awards, improve job security, and reduce potential violation of debt agreements; the regulatory considerations would also cause a firm conducting earnings management; firms would manage earnings when they foresee a loss, declined earnings, or inability to achieve investors' expectations. However, Healy and Wahlen argue that these studies are not able to find the specific accrual items significantly related to earnings management.

Mulford and Comiskey (2002) indicate that in order to achieve managers' expectation, managers would utilize the flexibility of accounting systems to manage earnings. Managers would adopt constructive and aggressive manipulation methods for earnings management.

Jelinek conducts an empirical study to examine the effect of leverage with earnings management. His study indicats that the relationship between debt leverage and earnings management is positive and measures three accrual based items. Jelinek uses Jensen's (1986) control hypothesis to test companies that have low-growth with high free cash flow. Jelinek'sempirical results indicate that the increased leverage is associated with a reduction in earnings management, and there are two factors to influence this relationship. The two factors are the growth rate and free cash flow levels (Jelinek, 2007).

Piot and Janin (2007) study companies in France regarding the relationship between several audit quality items, such as the existence of audit committee, auditor reputation, and the independence of audit committee with earnings management. The audit quality environment in Europe is quite different from the U. S. A. in terms of auditing and corporate governance. Based on French auditing and governance settings, their empirical study indicates that the audit committee significantly reduced earnings management. However, their empirical results does not support that audits by high quality CPA firms would reduce earnings management; the length of auditors' tenure has no relationship with earnings management. The independence of audit committee also has no relationship with earnings management (Piot and Janin, 2007).

Free Cash flow

Jensen's study also finds that debt would reduce the agency cost of free cash flow. Jensen indicates in his study that conflicts of interest between shareholders and managers over payout policies are especially significant when companies have substantial free cash flow. Managers that tend to invest in diversified projects are most likely to produce losses (Jensen, 1986).

Shiue and Lin study Taiwanese companies that went to public during the years from 1997 to 1999. Their research find that the agency cost of companies with low-growth and high free cash flow is higher and managers conduct more discretionary accruals to manage earnings. They also find that debt would impact and suppress companies with low-growth and high free cash flow to utilize discretionary accruals to manage earnings (Shiue and Lin 2003). Chung et al. (2005) in their empirical study find that companies with low-growth companies and high free cash flow would use income-increasing discretionary accruals to offset the low earnings or negative earnings caused by investments with negative present values. They also find that the high quality CPA firms and institutional investors with substantial shareholdings do effectively prohibit managers' earnings management.

Data and Methodology

Our data are from the Taiwan Economic Journal Database and Market Observation Post System (MOPS) of the Taiwan Stock Exchange (TSE). All sample firms are public companies traded in either TSE or over-the-counter. Sample periods are from 1996 to 2006 and the data for institutional investors are from 2002 to 2006 due to data limitation. Financial industry and companies' data with less than 11 years are excluded from this study. The total observed firms are 268 and the collected 11 years of times series data have in total of 2948 samples, except the variable of institutional ownership, which covers only 5 years with a total of 1340 sample data. We follow previous literature and set up the following equation to investigate the determinants for the discretionary accruals. We also use Variance Inflation Factor (VIF) to test the possibility of multicollinearity for independent variables. Table 1 shows that none of the variables has a value higher than 10, indicating the DAC regression do not have multicollinearity.

$$DAC_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 B4_{i,t} + \beta_3 FCF \cdot B4_{i,t} + \beta_4 AT_{i,t} + \beta_5 FCF \cdot AT_{i,t} + \beta_6 FS_{i,t} + \beta_7 FCF \cdot FS_{i,t} + \beta_8 INS_{i,t} + \beta_9 MA_{i,t} + \beta_{10} REF_{i,t} + \beta_{11} EXF_{i,t} + \beta_{12} DEBT_{i,t} + \beta_{13} CCF_{i,t} + \beta_{14} MVE_{i,t} + \beta_{15} AC_{i,t} + \varepsilon_{i,t} \quad (1)$$

$DAC_{i,t}$ is the discretionary accruals for firm i at time t. and it is calculated by Modified Jones Model method suggested by Dechow et al. (1995).

$FCF_{i,t}$ is free cash flow of firm *i* at time *t* and is calculated by Lehn and Poulsen (1989) model.

$B4_{i,t}$ is a dummy variable which stands for whether the company *i* at time *t* is audited by one of the big four auditing firms in Taiwan. If company *i* is audited by one of the big four auditing firms, its value is one, otherwise is zero. The expected sign is negative assuming that if company *i* is audited by one of the reputable auditing firms, the company will be more conservative with less discretionary accrual items.

$FCF_{i,t} \cdot B4_{i,t}$ is an interactive variable to test the effect of free cash flow and also is audited by one of the big four auditing firms. The expected sign is negative also.

$AT_{i,t}$ is a dummy variable which stands for the term of the same auditing firm to the same audited company for 5 years or more. If the auditor's tenure is 5 years or more, value for *AT* is one, otherwise is zero. The expected effect is not determined due to lack of consensus among literature and this study tries to observe some evidence from Taiwan data.

$FCF_{i,t} \cdot AT_{i,t}$ is an interactive variable and its purpose is similar to $FCF_{i,t} \cdot AT_{i,t}$ to test the interactive effect of the two variables, free cash flow and the auditor's tenure term.

$FS_{i,t}$ is a dummy variable, its value is one if the holding shares from institutional investors is greater than the medium number of the whole sample, otherwise is 0. The expected sign is negative. The reason is that institutional investors could possible more closely monitor a company's financial performance than individual investors; therefore, a company would lower its incentive to abuse discretionary accrual items.

$FCF_{i,t} \cdot FS_{i,t}$ is an interactive variable to test the interactive effect of free cash flow and institutional investors ownership.

$INS_{i,t}$ is the turnover times of internal auditor in company *i*. The expected sign is positive by assuming the higher turnover rate the higher possibilities for the management team to manipulate earnings through discretionary accrual items.

$MA_{i,t}$ is the turnover times of executive managers. The expected sign is positive by assuming that the higher the turnover rates of executive managers the higher the possibility to utilize discretionary accrual items to manage earnings.

$REF_{i,t}$ is the number of restatement of financial statements. The sign is expected to be positive. This means that the higher the number of restatements the higher the firm may use discretionary accrual items to manipulate earnings.

$EXF_{i,t}$ is the number of earnings forecast during one year. If there are more earnings forecasts, then the possibility for the management to meet the investors' expectation is higher and eventually the firm would like to use more discretionary accrual items to manage earnings. Therefore, the expected sign is positive.

$DEBT_{i,t}$ is the control variable to measure the consequence of leverage of debt to discretionary accrual items. It is a ratio of total debt to total assets. Because there are more restrictions under debt covenant, higher leverage probably will lower the utilization of discretionary accrual items.

$CCF_{i,t}$ is a control variable and is calculated as (current cash flow minus the median of all the sample firms' cash flow) divided by total assets at the beginning of the period. The expected sign is negative because if current cash flow is higher would have less incentive to manipulate the earnings by using discretionary accrual items.

$MVE_{i,t}$ is the natural log of a company's market value and it measures a company's market value growth or the market value changes. The expected sign is positive. This means that the higher the firm market value changed the higher degree of using discretionary accrual items to manipulate earnings.

$AC_{i,t}$ is a control variable and is calculated as follows. | total accruals / total assets at beginning of the period |, where total accruals is calculated as follows. Total accrual = (Δ in total assets - Δ in cash - Δ in total debt + Δ in current liabilities + Δ in tax payable – depreciation). The expected sign is negative. Hence the higher the total accruals are, the less the discretional items are used.

Empirical Results and Analysis

Table 1 reports the VIF value of variables in the *DAC* regression model. There are various independent variables in our *DAC* regression model. A multicollinearity test would reveal the correlation among variables and present a better understanding of the relationships among variables. The results from Table 1 show that there is no multicollinearity among variables.

Table 1: VIF value of variables in DAC Regression Model

	1996-2006		2002-2006		1996-2006	2002-2006
variable	**High-Tech**	**Traditional**	**High-Tech**	**Traditional**	**Full model**	**Full model**
FCF	6.600	6.166	7.642	8.856	5.879	6.945
B4	1.401	1.303	1.491	1.192	1.273	1.190
FCF*B4	6.368	5.947	4.652	8.420	5.685	5.157
AT	1.304	1.349	1.127	1.127	1.271	1.094
FCF*AT	1.698	1.621	1.194	1.187	1.578	1.145
FS			1.423	1.280		1.287
FCF*FS			2.788	4.582		3.110
INS	1.091	1.046	1.104	1.040	1.051	1.035
MA	1.108	1.064	1.135	1.080	1.070	1.087
REF	1.051	1.015	1.031	1.022	1.017	1.014
EXF	4.166	1.063	1.165	1.049	1.083	1.055
DEBT	1.238	1.092	1.415	1.147	1.111	1.163
CCF	1.107	1.017	1.027	1.017	1.037	1.010
MVE	1.135	1.076	1.440	1.320	1.095	1.298
AC	1.079	1.072	1.244	1.103	1.074	1.115

Note: if VIF value ≥10 indicating multicollinearity among variables

Table 2 reports the summary of descriptive statistics of tested variables. 78% of the samples are audited by Big Four auditing firms. This implies that most publicly listed companies are likely to be audited by the Big Four auditing firms, whether 26% of the total samples have the same auditing firms for five year or longer. The average percentage of institutional investor's share holdings in a firm is about 53%. The turnover rate of internal auditor and executive manager are 0.18 and 0.55 respectively.

Table 2: Descriptive Statistics

Name of variables	Variables	Samples	Mean	Std. Dev.
Discretional Accruals	**DAC**	2948	-0.0038	0.1051
Free cash flow	**FCF**	2948	-0.0192	0.0441
Auditors from big four CPA firms	**B4**	2948	0.7846	0.4112
Tenures of auditors	**AT**	2948	0.2598	0.4386
Institutional ownership	**FS**	1340	0.5276	0.4994
Turnover of internal auditors	**INS**	2948	0.1771	0.4759
Turnover of CEOs	**MA**	2948	0.5465	0.8186
Numbers of financial reports restated	**REF**	2948	0.0763	0.4638
Numbers of financial forecasts	**EXF**	2948	0.6842	0.9337
Debt ratio (leverage)	**DEBT**	2948	0.4029	0.1664
Current cash flow	**CCF**	2948	0.0049	0.0737
The logarithm of Corp's market value	**MVE**	2948	3.7189	0.6627
Absolute value of total accruals	**AC**	2948	0.0747	0.0833

To investigate the impact of various independent variables on the discretionary accrual items, we run the regression sequentially, by adding each independent variable (Model 1 to 8) until all the variables in the full model (Model 9). Table 3 presents all the test results of the nine models. Free cash flow (*FCF*) has significant expected sign with only one exception. This means there is a positive relationship between free cash flow and discretionary accrual items. Hence if a company has higher free cash flow, the more likely discretionary accrual items would be used to manage earnings. The sign of Big Four (*B4*) auditing firm variable is significantly negative as we expected. This means that auditing by the reputable Big Four auditing firms does have discouraging effect in employing discretionary accrual items. This variable combined with free cash flow (*FCF*B4*) also generates similar significant negative sign, which means the effect of auditing by Big Four dominates the free cash flow effect. The tenure of auditor (*AT*) has insignificant negative sign which means there is no significant relationship between tenure of auditor and use of discretionary accrual items. This result is not very far off our expectation, which is supported by previous literature. The possible reason is the tenure for each auditor is too short to have a deterrent effect in utilizing discretionary accrual items. The interactive effect of combining free cash flow and auditor tenure (*FCF*AT*) produces significant positive sign in the full model (Model 9). This means that the free cash flow (*FCF)* has much greater effect in determining the utilization of discretionary accrual items.

Table 3: DAC Regression

Model	1	2	3	4	5	6	7	8	9
Constant	0.000 (0.00)	-0.007 (-0.55) ***	-0.010 (-0.63)	-0.008 (-0.61)	-0.006 (-0.47)	-0.007 (-0.58)	-0.008 (-0.59)	0.002 (-0.15)	0.000 (0.02)
FCF	0.457 (4.57)***	0.173 (3.49)***	0.035 (0.41)	0.200 (4.62)***	0.200 (4.64)***	0.197 (4.56)***	0.199 (4.60)***	0.436 (4.23)***	0.478 (3.71)***
B4	-0.014 (-2.81)***							-0.015 (-2.961)**	-0.015 (-2.31)**
FCF*B4	-0.314 (-2.86)***							-0.316 (-2.87)***	-0.624 (-5.06)***
AT		-0.002 (-0.36)						-0.003 (-0.65)	0.012 (1.28)
FCF*AT		0.100 (1.01)						0.097 (0.99)	0.853 (3.95)***
FS			0.000 (0.09)						0.001 (0.12)
FCF*FS			0.259 (2.49)						0.263 (2.53)**
INS				0.002 (0.52)				0.002 (0.58)	0.002 (0.53)
MA					-0.004 (-1.65)*			-0.004 (-1.81)*	0.002 (0.63)
REF						-0.004 (-0.90)		-0.004 (-0.89)	-0.005 (-0.97)
EXF							0.001 (0.36)	0.001 (0.70)	0.004 (1.05)
DEBT	-0.054 (-4.60)***	-0.056 (-4.84)***	-0.039 (-2.76)***	-0.056 (-4.82)***	-0.052 (-4.45)***	-0.055 (-4.72)***	-0.056 (-4.81)***	-0.050 (-4.23)***	-0.031 (-2.15)**
CCF	-0.202 (-7.85)***	-0.205 (-7.92)***	-0.421 (-7.76)***	-0.203 (-7.89)***	-0.204 (-7.92)***	-0.203 (-7.87)***	-0.203 (-7.90)***	-0.204 (-7.91)***	-0.416 (-7.75)***
MVE	0.004 (1.31)	0.003 (1.11)	0.005 (1.37)	0.003 (1.08)	0.003 (0.99)	0.003 (1.06)	0.003 (1.05)	0.004 (1.24)	0.004 (0.96)
AC	0.265 (11.54)***	0.260 (11.33)***	0.140 (4.50)***	0.261 (11.35)***	0.263 (11.44)***	0.260 (11.35)***	0.259 (11.15)***	0.267 (11.46)***	0.135 (4.30)***
Adj R^2	0.065	0.062	0.067	0.062	0.063	0.062	0.062	0.066	0.092

*,**and *** indicate 10%, 5%, and 1% statistical significance respectively.

The debt ratio (*DEBT)* has significantly negative coefficient as expected. Therefore, there is a negative relationship between debt ratio and discretionary accrual items usage. This implies that firms have less room for discretionary accrual items when they are loaded with more debt, which leads to stricter debt covenant.

The coefficient of cash flow (*CCF*) is also significantly negative as expected, which means that a firm with higher cash flow would use less discretionary accrual items to manipulate earnings. The company value (*MVE*) has no significant influence on the use of discretionary accrual items even though the sign is as expected. The total accruals (*AC*) has significantly positive coefficient, which means a firm with higher total accruals would have lower discretionary utilization.

The data of institutional investors is only available from 2002. This year is also a year during which Taiwan's economy plunged into recession, therefore, the interesting goal here is to examine whether companies' behavior in utilizing discretionary accrual items would be different during different business cycles. Table 4 presents the results indicating that different economic situations do affect the discretionary accrual items utilization. Variables such as *FCF, B4, FCF*B4, DEBT, CCF* and *AC*, are significant in the complete sample period of 1996 – 2006. The same pattern continues in the sub period of 2002 – 2006. When comparison is made between these two periods, there are a few changes. The first change is the addition of the institutional investor's ownership *(FS)* and its interactive effect with free cash flow *(FCF*FS).* The institutional investor's ownership has no significant influence on the discretionary accruals, but the story changes for its interaction with free cash flow (*FCF*FS*). *FCF*FS* does affect the behavior of using discretionary accrual items in a positive way. The turnover of executive manager variable (*MA*) also changes from significantly negative to insignificantly positive. This means the turnover rate of executive manager during bad economic period would not significantly affect the use of discretionary accrual items to manipulate earnings.

Table 4: Discretional Accruals (DAC) Regression for Two Different Periods

		1996-2006			2002-2006		
Name of variables	**Code of variable**	**coefficient**	**t-statistic**		**coefficient**	**t-statistic**	
constant	**Constant**	0.002	0.152		0.000	0.021	
Free cash flow	**FCF**	0.436	4.234	***	0.478	3.706	***
Auditors from big four CPA firms	**B4**	-0.015	-2.961	***	-0.015	-2.312	**
Interactive effect of FCF and B4	**FCF*B4**	-0.316	-2.873	***	-0.624	-2.058	***
Tenure of auditors	**AT**	-0.003	-0.648		0.012	1.283	
Interactive effect of FCF and AT	**FCF*AT**	0.098	0.986		0.853	3.946	***
Institutional ownership	**FS**				0.001	0.116	
Interactive effect of FCF and FS	**FCF*FS**				0.263	2.527	**
Turnover of internal auditors	**INS**	0.002	0.577		0.002	0.528	
Turnover of CEOs	**MA**	-0.004	-1.805	*	0.002	0.626	
Numbers of financial reports restated	**REF**	-0.004	-0.890		-0.005	-0.968	
Numbers of financial forecasts	**EXF**	0.001	0.704		0.004	1.048	
Debt ratio (leverage)	**DEBT**	-0.050	-4.229	***	-0.031	-2.149	**
Current cash flow	**CCF**	-0.204	-7.905	***	-0.416	-7.747	***
The logarithm of Corp's market value	**MVE**	0.004	1.241		0.004	0.960	
Absolute value of total accruals	**AC**	0.267	11.456	***	0.135	4.295	***
	Adj. R^2	0.066			0.092		

*,**and *** indicate 10%, 5%, and 1% statistical significance respectively.

We further analyze whether company in various type of industries would exercise discretionary accrual items differently. The business cycle factor is also considered for comparison purpose. The industries are divided into two major categories. One is high-tech and the other is traditional industry. The reason we are interested in this regard is because high-tech industry grows much faster than traditional industry. Therefore, it is reasonable to argue that the usage of discretionary accrual items to manipulate earnings would be different between high-tech and traditional industry. Table 5 reports regression results of two types of industry across the completed sample period without institutional investors' ownership variable. The outcome of Table 5 demonstrates that there are significant differences for utilization of discretionary accrual items between two industries. For traditional industry, the free cash flow (*FCF*), Big Four auditor (*B4*), the *FCF*B4* interactive variable and the turnover rate of executive manager are no longer significant in determining the behavior of using discretionary accrual items. However, company's market value (*MVE*) becomes significant in the traditional industry.

Intuitively, this makes sense since the growth rate for high-tech companies is higher; thus, the change in company's market value is irrelevant in shaping the discretionary accrual items use. For traditional industry, companies' products are staples for the economy. The revenue of traditional industry is quite stable and the free cash flow is also stable. Because of this stability in revenue and free cash flow, their impact on discretionary accrual items usage would become insignificant.

Table 5: DAC Regression for Various Industries 1996-2006

	High-Tech			Traditional		
variable	**coefficient**	**t-statistic**		**coefficient**	**t-statistic**	
Constant	0.062	1.762	*	-0.032	-2.372	**
FCF	0.967	4.830	***	-0.014	-0.116	
B4	-0.041	-2.162	**	-0.006	-1.223	
FCF*B4	-0.842	-3.897	***	0.078	0.593	
AT	0.016	1.264		-0.011	-2.371	**
FCF*AT	0.074	0.408		0.102	0.827	
INS	0.010	0.925		0.000	-0.034	
MA	-0.011	-1.774	*	-0.003	-1.610	
REF	-0.013	-1.383		-0.001	-0.169	
EXF	0.003	0.623		0.003	1.272	
DEBT	-0.119	-3.869	***	-0.020	-1.751	*
CCF	-0.135	-3.116	***	-0.315	-8.761	***
MVE	-0.008	-1.217		0.012	3.785	***
AC	0.505	11.821	***	0.077	2.699	***
Adj R^2	0.176			0.045		

*,**and *** indicate 10%, 4%, and 1% statistical significance respectively.

Table 6 examines the influence of economic downturn toward the use of discretionary accrual items between two industries. The evidence in Table 6 shows that there are still significant differences between the two industries after adding the institutional investor's ownership (*FS*). However, the business cycle does change the way in determining the use of discretionary accrual items across industries. Auditing by the Big Four (*B4*) and leverage (*DEBT*) both become insignificant in bad economics. During the bad economic time, sales are down; free cash flow is also down, making it harder to increase debt. The tenure of auditor (*AT*) turns into significant in high-tech industry, but insignificant for traditional industry. The coefficient of institutional investor's ownership (*FS*) and its interaction with free cash flow (*FCF*FS*) are significant for traditional industry, but only the interactive effect is significant for high-tech industry. These results imply that during recession, institutional investors are more interested in traditional industry because of its stable revenue. The coefficient of earnings forecasts (*EXF*) becomes significant and coefficient of total accrual (*AC*) becomes insignificant for the traditional industry. However, for high-tech industry, the sign of coefficient of earnings forecasts (*EXF*) and the coefficient of total accrual (*AC*) are as the same as regular economic periods. The coefficient of earnings forecasts (*EXF*) in high-tech industry is insignificant and the coefficient of total accrual (*AC*) in high-tech is significant. These results imply that the patterns shift due to economic downturn for traditional industry.

Table 6: DAC Regression for Various Industries 2002-2006

	High-Tech			Traditional		
variable	**coefficient**	**t-statistic**		**coefficient**	**t-statistic**	
constant	0.000	0.011		-0.022	-1.331	
FCF	0.510	1.898	*	0.191	1.204	
B4	-0.023	-0.886		-0.003	-0.591	
FCF*B4	-0.908	-3.654	***	0.227	1.387	
AT	0.040	1.721	*	-0.005	-0.552	
FCF*AT	0.961	2.331	**	0.478	1.904	*
FS	0.005	0.358		-0.009	-1.742	*
FCF*FS	0.866	4.076	***	-0.499	-3.846	***
INS	0.010	1.038		-0.002	-0.615	
MA	0.010	1.308	**	-0.001	-0.407	
REF	-0.009	-0.687		-0.001	-0.175	
EXF	-0.001	-0.167		0.007	1.707	*
DEBT	-0.021	-0.558		-0.011	-0.807	
CCF	-0.378	-3.889	***	-0.467	-7.292	***
MVE	-0.004	-0.466		0.011	2.706	***
AC	0.257	4.366	***	-0.010	-0.245	
Adj R^2	0.211			0.075		

*,**and *** indicate 10%, 4%, and 1% statistical significance respectively.

Conclusion

This study examines the relationship between free cash flow and the related corporate-governance variables of 268 publicly listed companies in Taiwan. Data are collected from 1996 to 2006, and because of the institutional ownership data is only available after 2002, another set of data including the institutional ownership data from 2002 to 2006 is also collected to test the model.

The empirical results show that companies have more free cash flow would utilize more discretionary accruals, thereby making it easier for managers to manage earnings. The relationship of the Big Four CPA companies and the discretionary accrual items is negative. This implies that high-quality auditing will suppress the degree of earnings management. These results agree with previous studies. This study finds that the length of auditor's tenure has a negative relationship with discretionary accruals items in traditional industry, and the interactive effect of auditor's tenure and free cash flow has a positive relationship with discretionary accrual items. The institutional ownership also has a positive relationship with discretionary accruals; however, the institutional ownership and the interactive effect of auditor's tenure and free cash flow are negatively related in the traditional industry significantly.

Three corporate governance items such as the turnover rate of internal auditors, the number of financial reports restated, and the numbers of financial forecast are not related with discretionary accrual items. The results also show different earnings management behaviors among different industries. For high-tech industry, external auditor's tenure is positively related to discretionary accruals, implying that if external auditors assess the same company more than 5 years, auditors lose their professional skepticism. The results show that high-tech industry with higher institutional ownership will lead to higher discretionary accruals, implying that as institutional ownership increases, companies may try to reduce accrual revenues and therefore increase discretionary accrual items. The results show that of high-tech industry's turnover rate of CEOs is positively related to discretionary accruals, implying that frequently changing CEOs do increase discretionary accruals in high-tech industry.

For traditional industry, the results are different from high-tech industry. This study finds that the external auditor's tenure term is negatively related to discretionary accruals, implying that traditional companies try to manipulate earnings by replacing external auditors regularly. Also, in traditional industry, higher institutional ownership leads to less discretionary accruals, implying that if institutional ownership increases, it will increase stakeholders' monitoring ability and enhance corporate governance for traditional industry.

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