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An investigation into the effect of surplus free cash flow, corporate governance and firm size on earnings predictability

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Abstract

Purpose – Existing studies on corporate governance mainly focus on how a strong governance system enhances the valuation of firms with cash holding or free cash flow agency problem. The aims of this paper are threefold. First, it investigates the impact of surplus free cash flows (SFCF) on earnings predictability. Second, it investigates whether corporate governance variables moderate the negative impact of SFCF on earnings predictability. Finally, this study examines whether the ability of corporate governance to mitigate SFCF and improve the predictive value of earnings varies between large and small firms.

Design/methodology/approach – This paper uses heteroskedasticity-corrected least square regressions upon a sample of Malaysian listed firms.

Findings – This paper finds that firms with high SFCF experience less earnings predictability. It also indicates that earnings of firms with high SFCF are more predictable when institutional investors hold a large stake of shares and when a chairperson is independent. Finally, this paper reveals that the role of institutional and managerial ownership in mitigating agency conflict of free cash flow and improving earnings predictability is more prominent in larger firms. This study implies that investors still have reservations about the ability of boards to enhance earnings numbers in Malaysia, although efforts were taken to reform the corporate governance mechanisms following the Asian financial crisis.

Originality/value – This research is considered as the first attempt to examine the relationships between SFCF, corporate governance, firm size, and earnings predictability in a developing country such as Malaysia. The findings of this paper serve as a wake-up call to policy makers to evaluate the importance of governance structure in enhancing earnings predictability in emerging economies.

Keywords Ownership structure, Governance structure, Firm size, Earnings predictability, Surplus free cash flow

Paper type Research paper

1. Introduction

The loss of investor confidence in the integrity of accounting numbers following the financial reporting scandals of various corporations around the world has resulted in a growing interest in earnings quality among researchers. Earnings predictability, that is, the extent to which investors can anticipate the future earnings and/or future cash

JEL classification – G34, G38

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flow of a firm based on the current earnings information, is one of the proxies of earnings quality. Earnings information is said to be of high quality if it enables investors to analyze a particular firm's current performance and better estimate its future prospects (Hussainey, 2009). It is only when the quality of earnings numbers is high that stock markets rely more on cash flow information when valuing a firm (Cheng *et al.*, 2013).

In free cash flow agency theory, firms with high free cash flow but low growth opportunities (hereinafter free cash flow or the surplus free cash flow (SFCF) agency problem)[1] are more likely to experience a reduction in their value (Jensen, 1986). A review of the literature indicates that the earnings of firms with high agency costs of free cash flow are of low quality (Bukit and Iskandar, 2009; Chung *et al.*, 2005; Rahman and Mohd-Saleh, 2008). In this regard, Jensen (1986) suggests the use of governance tools to mitigate the conflict in relation to resources under the control of firm managers and thus enhance the firm's value. Academic researchers have approached this problem from different points of view: the corporate governance impact on the free cash flow agency problem (Richardson, 2006; Wu, 2004); the role of dividends, share repurchase, and/or debt in reducing the free cash flow agency problem (Gul, 2001; Jaggi and Gul, 1999; Nohel and Tarhan, 1998; Officer, 2011; Oswald and Young, 2008); and how governance mechanisms monitor the usage of cash available to managers and improve firm value (Chen and Chuang, 2009; Chi and Lee, 2010; Dittmar and Mahrt-Smith, 2007; Harford *et al.*, 2008; Kusnadi, 2011; Lee and Lee, 2009). Moreover, the study of Jaggi and Gul (1999) empirically documents that the conflict between managers and shareholders concerning excess cash is comparatively severe in large firms.

This study investigates the impact of SFCF on earnings predictability among Malaysian public listed firms. It also examines the moderating effect of board and ownership structures on this relationship. Additionally, this study examines whether the ability of corporate governance to mitigate SFCF and improve the predictive value of earnings varies between large and small firms. Malaysia provides an interesting context for this research for several reasons. First, firms in Malaysia are mostly owned by family members who are involved in the management of the firm and the selection of board members (Cheung and Chan, 2004; Claessens and Fan, 2002; Thillainathan, 1991). Second, the quality of law enforcement for minority shareholder protection in Malaysia is relatively weak (La Porta *et al.*, 1998). In addition, the mean cash reserves of Malaysian firms increased remarkably from 8 percent in 1996 to 12 percent in 2005 (Lee and Lee, 2009). Finally, corporate governance in Malaysia underwent some major changes in 2007 to strengthen the role of boards and audit committees; Malaysian firms are required to have an audit committee whose members are non-executives and at least two-thirds of them should be independent, and moreover, the members should be financially literate and at least one of them should be a member of an accounting association or body (Securities Commission, 2007). Also, empirical research concludes that the Western codes on corporate governance are not applicable in Asian countries, whose legal, social and culture factors differ greatly from those of Western countries (Ismail *et al.*, 2009).

We do not include audit committee variables in this study because an audit committee is considered a sub-committee of the board of directors and hence the ability of the board to monitor firm managers would consequently be reflected in the audit committee's effectiveness. Moreover, the board has the absolute power to monitor and

control the behavior of top managers so that they do not behave in a way that may affect a firm's wealth (Fama and Jensen, 1983; Jensen and Meckling, 1976).

This study contributes to the existing body of knowledge on the relationship between corporate governance, cash holding, and firm value (Dittmar and Mahrt-Smith, 2007; Harford *et al.*, 2008; Kusnadi, 2011; Lee and Lee, 2009) by examining how the negative effect of SFCF on earnings predictability is mitigated by strong boards and an effective ownership structure. We predict that among firms with high SFCF, those with more independent boards, smaller boards, and larger share ownership by institutions and executive managers are likely to report more predictable earnings. Following Jaggi and Gul (1999), who explore the monitoring effect of debt on free cash flow in large firms, we extend the study by examining the relationship between corporate governance, SFCF, and earnings quality in large as well as small firms.

2. Literature review and hypotheses development

2.1 Surplus free cash flow and earnings predictability

Based on free cash flow agency theory, it is evident that when free cash flow increases, managers will have the incentive to engage in projects that have a negative return (Jensen, 1986). In this regard, Chung *et al.* (2005) argue that these projects may support the self-interest of managers and may offer them a greater level of control over a firm's resources. Managers may thus undertake non-optimal actions such as making value-destroying investments that result in increased agency costs, a reduction of firm value, and senior executives being pushed into a vulnerable situation. The worst case scenario is that managers can use opportunistic earnings management tools to inflate reported earnings for the purpose of obscuring the devastating effect of such value-destroying investments (Bukit and Iskandar, 2009; Chung *et al.*, 2005; Rahman and Mohd-Saleh, 2008).

In fact, this type of inflated earnings report prepared by managers may affect the capability to forecast potential cash flows on the basis of earnings because it creates fake positive perceptions. In the context of Malaysia, Rahman and Mohd-Saleh (2008) found that as a result of misleading statements, the stock market gives less credence to the earnings of firms that have free cash flow agency problems. Since firms with a high agency conflict in terms of free cash flow are inclined to manipulate and misreport their earnings information, it is assumed that investors will rely less on this information to evaluate firms. Thus, the predictive value of earnings would be deteriorated for firms with a high free cash flow agency problem. Therefore, we hypothesize the following:

H1. Surplus free cash flow is negatively associated with earnings predictability.

2.2 Corporate governance, SFCF, and earnings predictability

There are a number of studies that examine the effectiveness of the role of governance mechanisms in addressing free cash flow agency problems (Bruch *et al.*, 2000; Bukit and Iskandar, 2009; Chung *et al.*, 2005; Gul and Tsui, 2001; Oswald and Young, 2008; Pawlina and Renneboog, 2005; Richardson, 2006; Wu, 2004). Lee and Lee (2009) conclude that in emerging markets, the negative effects of excess cash and entrenched managers on firm value is moderated by a strong board structure. Dittmar and Mahrt-Smith (2007) demonstrate that a high shareholding by public pension funds would mitigate the non-optimal use of excess cash by managers, and increase a firm's value. In the same vein, the study of Bruch *et al.* (2000) found that a high shareholding

by mutual funds influences managers to disburse free cash among shareholders as dividends and discourages them from investing in non-optimal investments that would result in lower returns. In addition, the probability of managers over investing their firm's free cash flow is moderated by activist institutional investors (Richardson, 2006).

In the context of audit fees, Gul and Tsui (2001) demonstrate that higher ownership of shares by directors moderates the positive relationship between free cash flow and audit fees. Wu (2004) points out that firms with high agency costs of free cash flow show a greater conflict of interest between owners and managers with respect to excess cash, and thus it is important for these firms to reduce such costs through the role of managerial ownership. Pawlina and Renneboog (2005) reveal that a high shareholding by insiders makes firms less dependent on internally generated cash to finance their unprofitable investments. Moreover, managers with a high managerial shareholding are more likely to distribute SFCF through share reacquisition rather than by squandering them in non-productive endeavors (Oswald and Young, 2008). Therefore, we expect that governance mechanisms will exert an influence on the negative impact of SFCF on earnings predictability because the agency problem of free cash flow is mitigated by a sound system of corporate governance. Thus, we hypothesize that:

- H2.* Good corporate mechanisms (i.e. independent board of directors, small board, independent chairman, high institutional ownership, and high managerial ownership) positively moderate the negative relationship between SFCF and earnings predictability.

2.3 Impact of board size on the associations among corporate governance, SFCF, and earnings predictability

From the theoretical point of view, it is argued that the free cash flow agency problem is evident among large firms and that cash flow-investment spending relationship varies with firm size. Vogt (1994) argues that large non-growth firms conform more to the free cash flow agency theory, whereas small-growth firms conform more to the picking order theory. In practice, large firms are supposed to reduce market control or prepare for dominance-increasing acquisition sprees through their maintenance of a significant amount of excess cash (Dittmar and Mahrt-Smith, 2007). Additionally, in large firms, managers have the incentives to utilize the available free cash flow to expand the firm size, which enables them to realize more benefits (Pawlina and Renneboog, 2005). On the other hand, small firms realize less free cash flow agency conflicts because of their ability to control the actions of managers thus deterring them from spending free cash flow unwisely (Jaggi and Gul, 1999).

From the above discussion, in the case of large firms, the agency costs of free cash flow are severe and therefore this warrants the use of governance mechanisms that deter managers from dissipating the resources of a firm unwisely and that, at the same time, enhance the predictive ability of earnings. This is, in essence, echoed in the study of Harford *et al.* (2008), who found that a good corporate governance mechanism is prevalent in large firms. Therefore, it is expected that the effectiveness of governance mechanisms in reducing the SFCF agency problem and improving earnings predictability will be higher in large firms than in small firms. Thus, we hypothesize that:

- H3.* The positive effect of governance mechanisms on the association of SFCF–earnings predictability is more prominent in large firms.

3. Research design

3.1 Model specification and estimation

At the organizational level, the ability of investors to estimate future cash flows is reflected in the predictability of earnings. The estimation of cash flows by investors is very important when valuing a firm because these cash flows are associated with perceived earnings quality (Ahmed and Ali, 2013). Velury and Jenkins (2006) found that the significance of the predictive value of earnings figures is apparent in the use of accounting numbers in the equity valuation and this requires investors to anticipate expected future cash flows. Moreover, because the discounted present value of future cash flows is used by investors to value a particular firm, a strong future cash flows-current earnings relationship can help investors to assess the value of a firm via the current earnings numbers (Ye *et al.*, 2010). Using the measurement employed by Velury and Jenkins (2006), Atwood *et al.* (2010) and Ye *et al.* (2010), we measure earnings predictability by the slope coefficient from a regression of one-year-ahead operating cash flows (CFO_{t+1}) on current earnings (EARN). The significant positive (negative) coefficient on current earnings indicates more (less) predictable earnings.

To examine whether the SFCF agency problem deteriorates the predictive ability of earnings, we extend the future operating cash flows-current earnings relationship by adding SFCF to the relation. To control for firm characteristics, we include firm size, debt, and loss in the model. To ensure that the moderating effect captures only the interactive effect of governance variables and SFCF, we also include board independence, board size, board leadership, institutional ownership, and managerial ownership in the model as control variables. This study interacts SFCF, firm characteristics, and governance variables with current earnings to test the incremental effect of the variables on the relationship between one-year-ahead operating cash flows and current earnings. Finally, a dummy year variable is included in the model to capture the fixed year effect. The following pooled cross-sectional model is used to test *H1*:

$$CFO_{t+1} = \beta_0 + \beta_1 EARN + \beta_2 EARN * SFCF + \beta_{3-7} EARN * CG + \beta_8 EARN * SIZE + \beta_9 EARN * DEBT + \beta_{10} EARN * LOSS + \beta_{11} YR + \varepsilon. \quad (\text{Model 1})$$

CFO_{t+1} is cash flow from operations for firm *i* at year *t* + 1 scaled by beginning total assets. EARN is net income before extraordinary items for firm *i* at fiscal year *t*, scaled by beginning total assets. SFCF is a binary variable with value of 1 if free cash flow (FCF, see Model 3) is above the sample median for the year and the growth ratio (market to book value of equity ratio, MBR) is below the sample median for the year, and 0 otherwise. CG denotes BDIND, BDSIZE, CHIND, IOWN, and MOWN: BDIND is the proportion of independent directors to total number of directors on the board; BDSIZE is the total number of directors on the board; CHIND is a binary variable with a value of 1 if the board chairman is an independent director, and 0 otherwise; IOWN is the proportion of shares held by the five main institutional investors in Malaysia[2]; and MOWN is the proportion of the executive directors' direct ownership of shares to total number of shares issued. SIZE is the natural log of total assets. DEBT is long-term debt to total assets. LOSS is a binary variable with value of 1 for loss firms and 0 for other firms. YR is a binary variable, 1 for year 2008 and 0 for year 2009. The * denotes the interactions between the study variables and ε is the error term.

In addition, we compute a three-way interaction between current earnings, governance practices, and SFCF to examine the moderating effect of CG on the association between

SFCF and earnings predictability. Apart from the current earnings-SFCF interaction, we expect the estimated coefficients on the three-way interaction variables to be significantly related to one-year-ahead operating cash flows in the predicted direction. The predicted and significant association implies that firms with high SFCF, strong board structure (higher proportion of outside directors on the board, smaller board size, and independent chairman), and effective ownership structure (higher institutional ownership and high shareholding by executives) report predictable earnings. We use the following pooled cross-sectional model to test *H2*:

$$\begin{aligned} CFO_{t+1} = & \beta_0 + \beta_1 EARN + \beta_2 EARN * SFCF + \beta_{3-7} EARN * CG \\ & + \beta_{8-12} EARN * CG * SFCF + \beta_{13} EARN * SIZE + \beta_{14} EARN * DEBT \\ & + \beta_{15} EARN * LOSS + \beta_{16} YR + \varepsilon. \quad (\text{Model } 2) \end{aligned}$$

We measure the SFCF agency problem by using operational definitions of the FCF and growth prospects (MBR) of a firm. Firms with a high FCF but low growth opportunities are viewed as firms with a SFCF agency problem (Bukit and Iskandar, 2009; Chung *et al.*, 2005; Rahman and Mohd-Saleh, 2008). Following the literature, the FCF for each firm is calculated as:

$$FCF_{it} = \frac{INC_{it} - TAX_{it} - INTEXP_{it} - OSDIV_{it} - PSDIV_{it}}{TA_{it-1}} \quad (\text{Model } 3)$$

FCF_{it} is free cash flow of firm *i* at year *t*. INC_{it} is operating income before depreciation of firm *i* at year *t*. TAX_{it} is income taxes of firm *i* at year *t*. $INTEXP_{it}$ is gross interest expense on short- and long-term debt of firm *i* at year *t*. $OSDIV_{it}$ is the total amount of ordinary dividends of firm *i* at year *t*. $PSDIV_{it}$ is preferred dividends of firm *i* at year *t*, and TA_{it-1} is total book value of assets for firm *i* at year *t* - 1.

Growth prospects are represented by the MBR. This ratio expresses the differences between a firm's market and its book value of equity, where the higher the difference the greater the growth opportunities for the firm (Jaggi and Gul, 1999). Firms with an above sample median FCF and a below sample median MBR represent those with a potential SFCF agency problem.

As for *H3*, we partition the study sample into halves based on firm size to examine whether the ability of corporate governance to mitigate the negative impact of SFCF on earnings predictability varies with firm size. Subsequently, we re-estimate Model 2 by running the regression on the two size groups (large and small firms). We use the variance inflation factor (VIF) and the Pearson correlation matrix to assess the multicollinearity problem. Both tests indicate that the multicollinearity problem is not a major concern. However, the White test rejects the null hypothesis that the variance of the error terms is homogeneous and free of the heteroskedasticity problem ($\chi^2 = 151.251$, *p*-value = 0.007). Therefore, to address this problem, the heteroskedasticity-corrected least square is estimated using Gretl software[3].

3.2 Sample selection and descriptive statistics

The sample selection criteria is summarized and presented in Table I, while Table II shows the distribution of sample firms according to sector classification. The sample is drawn from all firms listed on the Main Market of Bursa Malaysia. As we aim to test the hypothetical relationships after the amended listing requirements came into force

Table I.
Sample selection criteria

Criteria	No. of firm-years
Companies listed on the Main Market of Bursa Malaysia at December 31, 2010	1,750
Less finance, insurance, investment, real estate investment services, and real estate investment trust companies	(228)
Companies with other than December 31 fiscal year end	(672)
Newly listed companies	(90)
Companies with insufficient financial data	(50)
Companies with insufficient corporate governance data	(50)
Final sample	660

Table II.
Sampled firms by sector classification

Industry	No. of companies	Percentage (%)
Consumer products	120	18.2
Industrial products	254	38.5
Construction	32	4.9
Trading/services	168	25.4
IPC	14	2.1
Plantation	40	6.1
Technology	20	3.0
Hotels	8	1.2
Mining	4	0.6
Total	660	100.0

in 2008, the two-year period of 2008 and 2009 is covered. Financial data are obtained from the data stream database, while corporate governance data are extracted from the annual reports of the sampled firms. Following the literature, finance, insurance, investment, real estate investment services, and real estate investment trust companies are excluded. This is because these firms are highly regulated (Bradbury *et al.*, 2006; Siagian and Tresnaningsih, 2011) and their managers are expected to have less discretion over the use of free cash flow as well as methods to cover the bad performance of earnings (Rahman and Mohd-Saleh, 2008). To increase the homogeneity of the sample, companies whose financial year ends on dates other than December 31 are also excluded. This study requires data for the years 2007 and 2010 in addition to those for 2008 and 2009 to represent earnings predictability and free cash flow. Therefore, firms newly listed during the four years (2007 through 2010) which may bias our results are eliminated. Moreover, we omit companies with incomplete financial and corporate governance data for the sample period. We transform variables with extreme values using normal scores and logarithms to reduce the possible influence of outliers on the estimate of the coefficients.

Based on the size of the firms (large and small), Table III shows the descriptive statistics and mean differences for the variables under investigation. The univariate comparisons suggest that large firms generate more earnings than small firms, which is evident from the higher mean value of EARN. The differences in the mean value of EARN between large and small firms are statistically significant at the 0.01 level of confidence. The mean values of BDSIZE, IOWN, and (MOWN) of large firms are higher

(lower) than those of small firms and all are significant at the 0.01 level of confidence. These findings indicate that large firms tend to have larger boards and substantial shareholdings by institutional investors. The results also indicate that firms that have executive directors with higher interests tend to be lower in size. Collectively, the findings indicate that small firms may be family-owned, and therefore, institutional investors are less likely to invest in small firms than large firms.

In line with Gul (2001) and Jaggi and Gul (1999), large firms have more debt in their capital structure than small firms (the mean difference is statistically significant at the 0.01 level of confidence). This result implies that large firms use more debts as external financing to reduce the agency costs of SFCF. However, contrary to our expectation, large firms are less likely to experience agency conflict with respect to SFCF than small firms. Compared to small firms, large firms are more profitable. In conclusion, the above discussion indicates that large and small firms have different characteristics, and this therefore underscores the importance of considering the factors at play when testing our hypotheses. Table IV shows the correlation among the variables under investigation.

4. Results

Table V shows the findings with respect to the association between SFCF and earnings quality and for the moderating effect of corporate governance practices on this relationship. As shown in the table, the stand-alone coefficient on EARN is positively significant in the two models at $p < 0.01$, implying that Malaysian investors do make use of reported earnings to anticipate future cash flows. The coefficient of 0.548 indicates that a 1 percent change in current earnings results in a 0.548 change in future cash flows. Consistent with our expectation, SFCF is negatively and significantly related to earnings predictability. This means that the predictive value of earnings decreases by approximately -0.245 for each point increase in the SFCF. The result is in line with those of prior studies which found that firms with high SFCF experience low-quality earnings numbers (Bukit and Iskandar, 2009; Chung *et al.*, 2005; Rahman and Mohd-Saleh, 2008). Among the governance variables, only board leadership has an influence on earnings predictability in the predicted direction. This implies that firms with an independent chairman experience more predictable earnings. We also

	Large firms			Small firms			Difference	<i>p</i> -value
	Max.	Min.	Mean	Max.	Min.	Mean		
CFO _{it+1}	0.546	-0.662	0.072	0.484	-0.388	0.062	0.01	0.231
EARN	0.351	-0.294	0.049	0.390	-0.475	0.019	0.03	0.000**
BDIND	0.857	0.250	0.439	0.800	0.166	0.439	0.00	0.963
BDSIZE	15	4	8.05	17	4	7.07	0.98	0.000**
CHIND	-	-	0.34	-	-	0.33	0.01	0.719
IOWN	0.745	0.000	0.068	0.294	0.000	0.023	0.045	0.000**
MOWN	0.969	0.000	0.046	0.744	0.000	0.124	-0.078	0.000**
SFCF	-	-	0.22	-	-	0.29	-0.07	0.036*
DEBT	0.709	0.000	0.126	0.590	0.000	0.070	0.056	0.000**
LOSS	-	-	0.14	-	-	0.31	-0.17	0.000**

Note: Significant at: *0.05 and **0.01 levels

Table III.
Descriptive statistics and univariate differences in the CFO_{it+1}, EARN, governance mechanisms, debt, loss, and SFCF across large and small firm groups

Table IV.
Pearson correlation
matrix

	1	2	3	4	5	6	7	8	9	10	11
1. CFO _{t+1}	1										
2. EARN	0.462	1									
3. BDIND	-0.130	-0.090*	1								
4. BDSIZE	0.101	0.180	-0.274	1							
5. CHIND	-0.054	-0.022	0.235	-0.017	1						
6. IOWN	0.149	0.203	-0.061	0.232	-0.021	1					
7. MOWN	-0.127	-0.093*	-0.098*	0.007	-0.062	-0.115	1				
8. SIZE	0.128	0.214	-0.069	0.361	-0.015	0.425	-0.337	1			
9. DEBT	-0.120	-0.218	0.027	0.042	0.023	0.066	-0.036	0.294	1		
10. LOSS	-0.303	-0.715	0.089*	-0.216	0.038	-0.157	0.067	-0.250	0.104	1	
11. SFCF	0.144	0.131	-0.087*	0.046	-0.087*	-0.078*	0.074	-0.093*	-0.044	-0.235	1

Note: Correlation is significant at: *0.05 and **0.01 levels (two-tailed)

$$CFO_{it+1} = \beta_0 + \beta_1 EARN + \beta_2 EARN * SFCF + \beta_{3-7} EARN * CG + \beta_{8-12} EARN * CG * SFCF + \beta_{13} EARN * SIZE + \beta_{14} EARN * DEBT + \beta_{15} EARN * LOSS + \beta_{16} YR + \varepsilon.$$

Dependent variable: one-year-ahead operating cash flows (CFO_{it+1})

Explanatory variables	Expected sign	Model 1	Model 2	VIF
const	?	-0.193 (-3.973)***	-0.190 (-3.763)***	
EARN	+	0.548 (8.435)***	0.575 (8.387)***	3.727
EARN*SFCF	-	-0.245 (-2.024)**	-0.230 (-1.996)*	1.922
EARN*SFCF*BDIND	+		-0.015 (-0.133)	1.426
EARN*SFCF*BDSIZE	-		0.179 (1.732)*	1.293
EARN*SFCF*CHIND	+		0.408 (1.759)*	2.167
EARN*SFCF*IOWN	+		0.392 (2.497)**	1.275
EARN*SFCF*MOWN	+		0.099 (0.810)	1.269
EARN*BDIND	+	-0.034 (-1.118)	-0.055 (-1.438)	1.320
EARN*BDSIZE	-	-0.036 (-0.949)	-0.042 (-0.951)	1.564
EARN*CHIND	+	0.131 (1.940)*	0.088 (1.131)	2.066
EARN*IOWN	+	0.050 (1.296)	0.023 (0.509)	1.537
EARN*MOWN	+	-0.007 (-0.202)	-0.029 (-0.744)	1.477
EPS*SIZE	-	-0.077 (-1.761)*	-0.078 (-1.675)*	1.907
EPS*DEBT	-	-0.038 (-1.333)	-0.048 (-1.531)	1.176
EPS*LOSS	-	-0.227 (-2.670)***	-0.214 (-2.340)**	2.980
YR	?	0.306 (4.900)***	0.306 (4.952)***	1.013
Adjusted R ²		0.325	0.298	
F-statistic		29.808***	18.462***	
F test χ^2 (p-value)		18.851 (0.002)		

Notes: Significant at: *0.10, **0.05 and ***0.01 levels; CFO_{it+1} – one-year-ahead operating cash flows scaled by beginning total assets; EARN – current earnings scaled by beginning total assets; BDIND – proportion of independent non-executive directors on the board; BDSIZE – total number of directors on the board; CHIND – chairman independence; IOWN – the proportion of shares held by the five main institutional investors in Malaysia; SIZE – total assets; DEBT – debt to total assets ratio; LOSS – loss firm; YR – fixed year effects; *T*-statistics are in parentheses, while standard betas are outside parentheses; *Z* scores of variables SIZE and BDIND are used to mitigate multicollinearity problem; normal scores are used to transform EARN, IOWN, MOWN, and DEBT while variables BDSIZE and SIZE are transformed using logarithm

Table V. Regression results for the influence of SFCF, firm characteristics, corporate governance, and the interaction of SFCF with corporate governance on earnings predictability

find that the earnings of large firms and loss firms are less predictable because the managers of these firms are more likely to manipulate earnings to avoid government intervention and the publication of negative earnings (Sweeney, 1994; Watts and Zimmerman, 1978).

Model 2 tests the interaction of corporate governance and SFCF on earnings predictability. As shown in the model, EARN*SFCF*BDSIZE is marginally associated with earnings predictability, and the relationship is in the opposite direction. This result suggests that firms with small boards are less likely to mitigate the agency conflict with respect to SFCF and enhance earnings predictability. Even though the coefficient of EARN*SFCF*CHIND is positive, it is significant only at the 0.10 level of confidence. On the other hand, the coefficient of EARN*SFCF*BDIND is not significant. A possible explanation for the findings is that as the board of directors becomes larger and less independent, investors may perceive the board to be less

effective in preventing earnings misstatements by managers who want to hide the negative impact of value-destroying projects.

However, EARN*SFCF*IOWN is positively and significantly related to earnings predictability at the 0.05 level of confidence. This finding suggests that firms with high SFCF are more likely to experience predictable earnings if institutional ownership is high. The result supports those of previous studies that found that the monitoring role of institutional investors is effective in reducing the agency costs of free cash flow (Bruch *et al.*, 2000; Chen and Chuang, 2009; Chi and Lee, 2010; Dittmar and Mahrt-Smith, 2007; Richardson, 2006). The coefficient of EARN*SFCF*MOWN is in the predicted direction, but statistically insignificant. Overall, the *F*-test rejects the null hypothesis that the regression parameters for the three-way interaction variables are equal to zero, lending support to our expectation that the negative impact of SFCF on earnings predictability will be moderated by effective corporate governance mechanisms.

Table VI shows the results of the test that sought to ascertain whether the ability of governance practices to mitigate the negative impact of SFCF on earnings predictability depends on firm size. As shown in the table, none of the board structure variables reduces the agency costs of SFCF in both groups (large and small). Rather, a negative and significant coefficient of EARN*SFCF*BDIND is found in the small firms group. These findings suggest that such boards would be less inclined to prevent managers (controlling shareholders in the Malaysian context) from squandering a firm's resources in negative-return investments. If this were the case, the result would be a decrease in the valuation of a firm and eventually its earnings quality. These findings are inconsistent with prior research that found that board structure plays an effective role in mitigating the agency problem of free cash flow and enhancing firm value (Lasfer, 2002; Lee and Lee, 2009).

Explanatory variables	Large firms <i>N</i> = 325	Small firms <i>N</i> = 335
(Constant)	-0.182 (-2.486)**	-0.281 (-3.912)**
EARN	0.687 (6.323)***	0.600 (5.563)***
EARN*SFCF	-0.173 (-0.988)	-0.468 (-2.883)***
EARN*SFCF*BDIND	0.304 (1.506)	-0.200 (-1.811)*
EARN*SFCF*BDSIZE	0.124 (0.811)	-0.038 (-0.429)
EARN*SFCF*CHIND	0.459 (1.212)	0.150 (0.684)
EARN*SFCF*IOWN	0.707 (2.948)***	-0.056 (-0.440)
EARN*SFCF*MOWN	0.331 (3.057)***	0.087 (0.692)
EARN*BDIND	-0.085 (-1.267)	-0.010 (-0.219)
EARN*BDSIZE	0.002 (0.026)	-0.058 (-1.338)
EARN*CHIND	0.087 (0.661)	0.004 (0.051)
EARN*IOWN	-0.210 (-3.096)***	0.125 (1.993)**
EARN*MOWN	-0.117 (-1.507)	-0.017 (-0.420)
EARN*DEBT	-0.041 (-0.726)	-0.099 (-2.540)**
EARN*LOSS	-0.425 (-2.886)***	-0.155 (-1.211)
YR	0.216 (2.562)**	0.479 (5.749)***
Adjusted <i>R</i> ²	0.276	0.388
<i>F</i> -statistic	9.232***	15.142***

Note: Significant at: *0.10, **0.05 and ***0.01 levels

Table VI.
Coefficient of one-year-ahead operating cash flows regressed on current earnings; two-way interaction of current earnings with SFCF, firm characteristics, and corporate governance; and three-way interaction between current earnings, SFCF, and corporate governance in large and small firms

The results in Table VI indicate that even though $EARN*SFCF*IOWN$ and $EARN*SFCF*MOWN$ have no significant impact on earnings predictability in small firms, they are positive and significant at the 0.01 level of confidence in large firms. These findings suggest that in larger firms, earnings are more predictable for firms with high SFCF when shareholding by institutions and executive directors is high. The results also support our expectation that the moderating role of institutional and managerial ownership on the relationship between SFCF and earnings quality will be more pronounced in large firms than small firms.

5. Robustness analysis

Three additional tests are performed to ensure the sensitivity and robustness of the main results discussed earlier[4]. The first additional test re-runs our models using ordinary least squares (OLS) regressions with robust standard errors to overcome the heteroskedasticity problem. The unreported results for the OLS regressions are approximately the same as those for the heteroskedasticity-corrected least square regressions except that the coefficient of $EARN*SFCF*CHIND$ is no longer statistically significant. Furthermore, in the main analysis, we delete observations related to the entry of new firms during the sample period (of 2008 and 2009) as well as 2007 and 2010. To ensure that this restriction does not affect our results, we add back the observations to the sample and repeat the analysis. The unreported results for the new sample do not differ much from those for the sample without data on newly listed firms. Finally, we develop a board of directors index (BDI) through aggregating the scores of the board mechanisms investigated in this study[5]. This is because we want to examine whether the index can better capture the actual capability of the board mechanisms to improve earnings predictability through reducing the agency costs of free cash flow (Chen and Rezaee, 2012). Table VII shows the incorporated mechanisms and scores attached to them.

The BDI ranges from zero to three. A higher index score indicates a more effective board of directors, with a BDI score of three being the highest. We re-run this study's models using the new variable (BDI) instead of individual measures of the board of directors (i.e. board independence, board size, and board leadership). The unreported results lend further support to the ability of institutional investors and executive directors with high shareholding to attenuate the negative impact of SFCF on the predictability of reported earnings in large firms. Interestingly, the results also indicate that the role of BDI in restraining managers in firms with a high free cash flow agency problem from deteriorating earnings predictability is more pronounced in large firms than in small firms.

6. Conclusion

The findings of existing studies on financial reporting quality show that SFCF deteriorates the reliability and value relevance of reported earnings numbers (Bukit

Items	Score
BDIND	1 for firms with above sample median BDIND for the year, and 0 otherwise
BDSIZE	1 for firms with below sample median BDSIZE for the year, and 0 otherwise
CHIND	1 for firms with independent chairman, and 0 otherwise

Table VII.
BDI components

and Iskandar, 2009; Chung *et al.*, 2005; Rahman and Mohd-Saleh, 2008). Here, we went one step further by investigating the relationships between SFCF, corporate governance, and earnings predictability. We also explored whether the ability of governance mechanisms to reduce the negative impact of SFCF on earnings predictability is a function of firm size. The results have several interesting theoretical and practical implications. First, earnings are less predictable for firms with high SFCF. Second, while investors value the effective role of institutional and managerial ownership in reducing the agency costs of free cash flow and improving the predictive value of earnings numbers, they give less credence to the earnings numbers published by firms with a strong board structure when SFCF is high. Probably this is due to the nature of the board structure in East Asian countries, where board independence exists in “form” but not “substance” (Connelly *et al.*, 2012). In addition, management intervention in selecting directors from outside, lack of knowledge on the firm’s affairs among outside directors and dependency on top managers for necessary information are some other possible explanations for the insignificant contribution of board structure (Cheung and Chan, 2004; La Porta *et al.*, 1998; Thillainathan, 1991). However, our result, to some extent, supports the free cash flow agency theory, which states that when available cash is controlled by managers, governance practices have a vital role to play in mitigating the conflict between shareholders and managers concerning this cash.

Several limitations of this study have revealed the path for further investigations. First, due to the scarcity of data, this study depends on a pooled model for a two-year period (i.e. 2008 and 2009) to measure earnings predictability. A longitudinal study can provide insight into the predictive ability of earnings numbers, so perhaps using longer time-series observations to measure earnings predictability could yield better results. Second, this study did not address the endogeneity issue in relation to board and ownership structure. It is evident that the characteristics of board and ownership structure are not necessarily independent of earnings quality, and it would not be unusual that firms with higher earnings quality would be more likely to have a strong board structure and effective ownership structure (Engle, 2005). Beyond the scope of this study, there may be other factors such as capital requirements, political process, tax and non-tax regulation as suggested by Dechow *et al.* (2010) that influence earnings predictability. Finally, because contexts differ, the findings of this study may not be applicable to other settings such as those that have high investor protection, less family ownership, less concentrated ownership and no pyramidal ownership. This is because governance mechanisms are expected to play different roles in firms in developing countries, where the conflict of interest is not the same as that in firms in developed countries.

Notes

1. The terms “SFCF” and “free cash flow agency problem” are used interchangeably in this study because both of them refer to the existence of high free cash flow but low growth opportunities. Moreover, the authors use the term SFCF for free cash flow in low growth firms to ease exposition, as suggested by Chung *et al.* (2005).
2. The five main institutional investors are employee provident fund (EPF), Lembaga Tabung Angkatan Tentera (LTAT), Lembaga Tabung Haji (LTH), Social Security Organisation (SOCSO), and Permodalan Nasional Berhad (PNB).

3. To see how the heteroskedasticity-corrected least square is performed, please refer to Aktas and Oncu (2006, p. 81).
4. The remaining results tables are available from the author upon request.
5. Extant indices, such as Gompers' index or Brown and Gayor's index, are not suitable for the Malaysian market because they are based mainly on provisions relating to takeover defenses and restrictions in shareholders' rights. Hostile takeovers are rare in the Malaysian market due to concentrated ownership and unique institutional settings.

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