# Agency Problems and Audit Fees:

# Further Tests of the Free Cash Flow Hypothesis

By

**Paul A. Griffin[*], David H. Lont[**] & Yuan Sun[***]**

July 17, 2009

Comments Welcome

[*] Graduate School of Management, University of California, Davis (pagriffin@ucdavis.edu).
[**] Department of Accountancy and Business Law, University of Otago, P. O. Box 56, Dunedin, New Zealand. (david.lont@otago.ac.nz), Corresponding author.
[***]Haas School of Business, University of California, Berkeley (yuan_sun@haas.berkeley.edu).

We thank the discussants at the national meetings of the AAA 2007 (Chicago) (Susan Cammack, Cameron University) and AFAANZ 2007 (Gold Coast) (Michael De Martinis, Monash University). We also appreciate the useful comments and suggestions of seminar participants at the University of Otago, Dunedin.

**Agency Problems and Audit Fees:**
**Further Tests of the Free Cash Flow Hypothesis**


**Abstract**

This study finds that the agency problems of companies with high free cash flow (FCF) and low growth opportunities induce auditors of companies in the United States to raise audit fees to compensate for the additional effort. We also find that high FCF companies with high growth prospects have higher audit fees. In both cases, higher debt levels moderate the increased fees, consistent with the role of debt as a monitoring mechanism. Other mechanisms to mitigate the agency costs of FCF such as dividend payout and share repurchase (not studied earlier) do not moderate the higher audit fees.



**Keywords**: Audit fees, Free cash flow hypothesis, Agency problems

**JEL Classification:** C30, K22, L80, M40, M41

**Agency Problems and Audit Fees:**
**Further Tests of the Free Cash Flow Hypothesis**

## 1. Introduction

This study provides further evidence on whether audit fees vary in relation to the agency problems that can arise in companies with excess free cash flow (FCF).[1] Our goal is to understand better the mixed evidence in the literature thus far. We test several hypotheses about how FCF and company growth opportunities interact to induce auditors to charge higher audit fees to compensate for the additional risk and effort from FCF agency problems. For example, audit fees should be higher for companies with high FCF and low growth prospects if this encourages managers to invest FCF unwisely and mask such behavior by manipulating the financial statements. Audit fees should also be higher for companies with high FCF and high growth prospects. Unlike companies with low FCF and high growth potential that often issue shares to raise cash for valuable investment projects (Myers and Majluf 1984), companies with high FCF and high growth prospects can fund growth internally, which attracts less capital market scrutiny. Companies with high FCF and high growth propects also tend to have less debt (Myers 1977, Barclay and Smith 1995), which reduces debt monitoring and, thus, evinces greater auditor involvement. Because the evidence thus far studies companies in smaller capital markets, where agency problems can be less evident empirically, we conduct our analysis on a sample of large U. S. public companies. Richardson (2006), for example, argues that overinvestment of FCF can be a serious problem for U. S. traded companies.

Jensen (1986) hypothesizes that the combination of high FCF and low growth prospects encourages managers to engage in non-value-maximizing activities. Some studies examine acquisition

[1] We define free cash flow as cash flow in excess of that required to fund positive net present value investments not distributed to shareholders. See, also section 2 for further discussion.

decisions and find that the presence of FCF leads managers to act sub-optimally (Lang et al. 1991, Harford 1999). Others find that managers in high FCF companies prefer to invest in negative net present value (NPV) projects rather than to pay dividends (Robin 1990). Collectively, these and other studies, reviewed in section 2, support the FCF hypothesis.

By comparison, the evidence on a link between the FCF hypothesis and auditing is far from settled. Gul and Tsui (1998, 2001) investigate whether the agency problems of FCF vary with audit risk and effort as reflected in audit fees. The risk and effort aspects of the FCF and audit fee association, however, are not differentiated in their testing. Based on Hong Kong and Australian companies, Gul and Tsui (1998, 2001) document a positive relation between the agency problems of FCF and audit fees for low growth companies. They also show that higher debt weakens the positive relation. For high growth companies (their control sample), they find an insignificant relation between FCF and audit fees and no evidence of a moderating role of debt. Ferguson and Taylor (2007) question the positive relation between FCF agency problems and audit fees and argue that Gul and Tsui (1998, 2001) may have stretched the role of auditing too far. Based on Australian companies, Ferguson and Taylor (2007) find no evidence of a positive association between FCF and audit fees or of the moderating role of debt. They interpret their results in keeping with Australian Auditing Standard 202 (AUS 2002), which states that the role of an audit as a governance mechanism should not extend beyond assurance of the "identified financial reporting framework" (AUS 202.02) and, therefore, auditors have no need to incorporate the risks of agency problems of FCF into a statutory audit.

These prior studies, thus, offer mixed evidence on the relation between audit fees and the agency problems of FCF. We also contend that companies with high FCF and high growth prospects

have higher audit fees. First, these companies can fund growth opportunities internally and are, thus, less subject to capital market scrutiny, which may require more auditing involvement. Second, these companies can be more difficult to audit when they involve intangible assets and growth options, which potentially increase audit effort and risk. Third, the literature offers empirical evidence (Myers 1977) that high growth companies have lower debt levels to prevent loss from the underinvestment problem, and such relative lack of debt monitoring creates additional monitoring duties for auditors.

Also, the relation between FCF and audit fees has not been tested in the context of a more diverse and complex capital market such as the United States (compared to Australia and Hong Kong), where agency issues can be more acute, in that companies are typically larger and auditors' responsibilities and liability clearly extend beyond the financial statement audit.[2] Richardson (2006) documents that for non-financial companies in the U. S. during 1988-2002, the average company over-invests 27 percent of its available FCF. Our first objective is to test the audit fee/FCF relation in the context of U. S. capital markets.

Companies often use debt to monitor (and mitigate) the agency problems of FCF, as this reduces the funds available to managers. However, capital reduction or increased dividend payout are also "good" mechanisms to manage excess cash, although such payouts may be less effective than debt, according to Jensen (1986). Gul and Tsui (1998) find that debt interacts with high FCF/low growth companies to reduce audit fees, but do not test the effects on audit fees of alternative mechanisms such

[2] U. S. auditing standards as promulgated by the Public Company Accounting Oversight Board (PCAOB) may require a broader auditors' responsibility compared to Australian or Hong Kong auditing standards. For example, PCAOB Auditing Standard No. 5–An Audit of Internal Control Over Financial Reporting That Is Integrated with An Audit of Financial Statements (June 12, 2007), (and its predecessor, PCAOB Auditing Standard No. 2, 2002) emphasizes the importance of an overall risk assessment in planning the audit, and includes an analysis of "matters affecting the industry in which the company operates, such as financial reporting practices, economic conditions, laws and regulations, and technological changes" and "matters relating to the company's business, including its organization, operating characteristics, and capital structure." (p. 399). While *current* Australian standards (e.g., ASA 315) are similar to the PCAOB in this regard, ASA 315 became effective only for periods commencing on or after 1 July 2006, which is mostly outside of our study period (2000-2006).

as dividend payout or a share repurchase program. We test whether these alternative mechanisms moderate the FCF and audit fee association as a second objective.

We analyze 16,771 U. S. company-year observations over 2000-2006. We state an audit fee model and use a low/high FCF dummy variable to test if high FCF companies associate with high audit fees after controlling for other determinants of audit fees. We also categorize the observations into four groups based on median FCF and growth partitions (companies with low FCF/low growth, low FCF/high growth, high FCF/low growth, and high FCF/high growth). This allows for an audit fee comparison of the four groups of companies simultaneously.[3] We also include interactions between FCF and audit effort and risk variables to differentiate the effort and risk arguments for the positive FCF and audit fee relation. We further interact FCF with the use of debt, dividends, and share repurchases for the moderating hypotheses.

We find that high FCF/low growth companies have higher audit fees, which supports the view that auditors recognize and address the agency problems of FCF, for instance, possible financial statement manipulation. However, unlike Gul and Tsui (1998, 2001) and Ferguson and Taylor (2007), we find that high FCF/high growth companies also have higher audit fees. While this relation could be due to financial statement manipulation, we also surmise that this reflects a lack of transparency of managers' investment behavior regarding positive NPV projects, coupled with an increased complexity in measuring such positive growth projects. Lastly, consistent with Jensen's (1986, 1988) debt-monitoring hypothesis, we find that higher debt moderates the agency cost of FCF as reflected in audit

[3] Gul and Tsui (1998) and Ferguson and Taylor (2007) test the relation between FCF and audit fees on low growth and high growth companies based on two separate regressions: low FCF/low growth companies with high FCF/low growth companies, and low FCF/high growth companies with high FCF/high growth companies. Our method has the advantage that it allows a comparison of the four groups of companies simultaneously.

fees. However, we find no evidence that dividend or share repurchase payouts play an equivalent moderating role.

Our paper, therefore, adds to the literature in three ways. First, unlike the previous work, we document that audit fees reflect the agency problems of FCF regardless of whether the company has good or bad growth prospects. Since we use methods similar to the prior work, this finding is best explained by the economic and institutional setting that we examine (U. S. capital markets), where the agency problems of FCF can be more significant for auditors than elsewhere. Indeed, from an audit risk or effort standpoint, it is unclear why we should expect agency costs to be differentially consequential for audit fees in high FCF/low growth versus high FCF/high growth situations, as the previous literature seems to imply. Second, there has been a considerable amount of research that tests the FCF theory on corporate transactions such as takeovers, acquisitions, and R&D investments. The recent availability of U. S. audit fee data provides a timely opportunity to examine the impact of such FCF agency costs in an auditing context. This is particularly useful in that prior work on the effects of FCF on corporate transactions has focused mostly on the U. S. market. Third, we extend the literature by investigating whether other control mechanisms such as dividend payout and share repurchases address the agency problem by helping companies reduce the pool of excess funds available for investment. The main implication of our work is that when high FCF companies create agency costs, shareholders can suffer too, from the cost of increased audit fees, and this seems to occur regardless of whether the FCF agency costs arise in low or high growth situations. Indeed, the additional auditing resources needed to remedy an arguably inefficient use of FCF by managers represents a deadweight cost to investors, and to the economy in general. Economically, we estimate that audit fees are higher by approximately $82,000 for

the average high FCF company in our sample.

Section 2 reviews the related literature and outlines the hypotheses. Section 3 describes the research methods. Section 4 presents and discusses the results. Section 5 examines the robustness of the results to alternative procedures and definitions and section 6 concludes.

## 2. Literature and Hypotheses

### *2.1 Literature*

Jensen (1986) contends that FCF creates agency problems because of the increased likelihood of value destroying investments. He also suggests that the conflicts of interest between shareholders and managers may be more severe for a company with high FCF and low growth prospects. Many studies have subsequently investigated the implications of FCF for investment and financing activities (Blanchard et al. 1994, Shin and Stulz 1998, Harford 1999, Opler et al. 2001); and most support Jensen's hypothesis and confirm that the costly agency problems occur in companies with high FCF and poor investment opportunities.

We consider this hypothesis in an auditing context, specifically, whether audit fees might vary in relation to the agency problems of FCF. One reason is that managers of FCF companies may waste company resources on unwise projects and attempt to mitigate the deterioration of company value by manipulating the financial statements. Jaggi and Gul (2005) and Chung et al. (2005) show that increased audit risk and effort as a result of such manipulation leads to higher audit fees. The subjective nature of accruals alone may induce auditors to increase audit risk and effort and, thus, audit fees (Gul et al. 2003). The use of accruals may also raise questions about management credibility (Cohen et al. 2002). Similarly, auditors may recognize the potential for earnings management as an audit risk factor

(Bell et al. 2002).

While high FCF/low growth companies should reflect high agency costs, high FCF/high growth companies may also foster high agency costs and thus warrant additional auditing. For example, the latter companies can fund growth opportunities internally and may be less subject to capital market scrutiny (Myers and Majluf 1984). High growth companies can also be more difficult to audit. They have a higher ratio of market value (including future investment opportunities) to assets-in-place and, therefore, possess more intangible value, which can be harder to identify, measure, and audit.[4] As Tsui et al. (2001) suggest, opportunistic behavior can be particularly severe in high growth companies when managerial actions are difficult to observe, which can increase audit fees. Also, high FCF/high growth companies tend to have lower levels of debt (Myers 1977, Barclay and Smith 1995), with the lack of debt monitoring potentially creating additional audit work.

### *2.2 Hypotheses*

Our first hypothesis follows from the preceding discussion and tests for an overall effect on audit fees of the agency costs of FCF.

H1. *Audit fees for high FCF companies should be higher than low FCF companies' audit fees.*

Jensen (1986) argues that debt to an optimal level can mitigate the agency problems of FCF by reducing the cash available for discretionary spending. Higher debt, therefore, should serve as a mechanism to reduce auditors' monitoring of FCF, which should reduce audit fees. On the other hand,

[4] It could also be argued that balance sheets do not recognize growth-option assets, which therefore are less likely to be an issue for the auditors. However auditors could be concerned about the increased risks associated with intangibles or growth options. To test this possibility, we analyzed the interaction between growth and various audit risk variables used in our audit fee model, e.g., *DA*, *LOSS*, and *ZSCORE*. In unreported results, we found that the coefficients for the growth-risk interaction were consistently positive and statistically significant with the exception of *LOSS*. This implies that the positive relation between audit risk and audit fees is more pronounced for companies with a large market-to-book asset ratio (our growth proxy).

beyond the optimal level, additional debt could motivate misstatements by management to avoid violations of accounting-based debt covenants and, therefore, the overall effect of higher debt on audit fees is not unidirectional. Gul and Tsui (1998, 2001) posit that the cash discipline effects should dominate for high FCF/low growth companies. They also argue that companies with high FCF and high debt impose less risk because high FCF, by definition, means that such debt covenants less likely to be binding. This leads to our second hypothesis:

H2. *Audit fees for high FCF companies with low levels of debt should be higher than those for high FCF companies with high levels of debt.*

For companies with high FCF, a dividend increase can reduce current cash that would otherwise be invested in negative NPV projects (Jensen 1986). Dividends are similar to debt in that they become a commitment once declared (Oded 2008). However, dividends are more flexible than debt, as they can be reduced in the future, although shareholders often perceive a reduction as a signal of future bad performance. If a regular dividend makes managers distribute excess cash rather than add negative NPV projects, auditors should respond to the lower agency costs by reducing fees. Our third hypothesis therefore is:

H3. *Audit fees for high FCF companies with low dividends should be higher than those for high FCF companies with high dividends.*

A related notion considers the role of share repurchases as a mechanism to control FCF agency costs. Oded (2008) suggests that shareholders may find unattractive a dividend that may cause managers to pare investment or cannot impose a dividend in order to avoid FCF agency problems, and thus a share repurchase may be optimal. Better informed managers may also prefer a share repurchase

as it may lead to trading gains that offset the cost of wasting excess cash. However, even though share repurchases are optional and more flexible than dividends, open-market programs cannot always prevent the waste of FCF (Chan et al. 2007). This suggests a fourth hypothesis:

H4. *Audit fees for high FCF companies with low share repurchases should be higher than those for high FCF companies with high share repurchases.*

## 3. Data and Research Design

### *3.1 Data Collection*

We first obtain audit fees data for all US publicly listed companies from the Audit Analytics database with fiscal year ends between 2000 and 2006 (79,918 company-year observations). We then obtain 68,313 financial statement observations from Compustat over the same period and match the two data sources using the central index key to yield 45,231 company-year observations. We also collect market data from CRSP. We further eliminate financial and insurance institutions and observations with auditor changes, missing values for proxies of growth, FCF, dividends, share repurchase and other variables, to obtain a final sample of 16,771 company-year observations.[5]

### *3.2 Proxies for Experimental and Dependent Variables*

#### *3.2.1 FCF*

We measure FCF as operating income before depreciation minus taxes, interest expenses, preferred dividends, and ordinary dividends, normalized by either the total book value of equity or

[5] We excluded financial and insurance institutions from the analysis due to the lack of comparability of financial statement data used. We also removed companies with auditor changes, as the level of audit fees charged by a new audit firm is dependent upon whether the previous audit firm was dismissed or resigned (Griffin and Lont 2005). The removal of auditor change companies also eliminates any possible Arthur Andersen effect. We examined the sensitivity of our results including dismissal and resignation variables and adding an additional variable for Andersen clients to ensure that the removal of Andersen does not affect our results. Our results are robust to such sample differences (inclusion of finance and insurance institutions, auditor change companies, Andersen clients).

assets in the previous year (Lehn and Poulsen 1989). This measure of FCF, however, ignores capital expenditures or assumes that all capital expenditures are for negative NPV projects. Our FCF measure, therefore, deducts capital expenditures from the Lehn and Poulsen (1989) definition, as their definition could lead to an overestimate of real FCF in that companies classified as high FCF under their approach may actually be low FCF companies with large positive NPV projects.

### *3.2.2 Growth Opportunities*

We use market-to-book assets ratio to proxy for growth opportunities, as research shows that this ratio has the highest information content among four commonly used variables, and is least affected by other factors (Adam and Goyal 2008). We define the ratio as the market value of equity on the date that companies release their first quarterly report after the year end plus the book value of debt at the year end divided by the book value of assets at the end of year.[6]

### *3.2.3 Dividend and Share Repurchases*

Similar to others (Allen and Michaely 2003, Grinstein and Michaely 2005), we use dividend yield to proxy for dividend policy, defined as the ratio of the total dividends declared on the common and preferred shares during the year to the market capitalization as per above. Likewise, we use repurchase yield to measure share repurchases, defined as the ratio of common and preferred share repurchases to market capitalization.[7] Also, as many stock repurchases relate to normal debt/equity transactions (e.g., bond redemption), we consider only stock repurchases above a minimum threshold,

[6] We use the book value of debt as we do not have a measure of the market value of debt. This proxy has been used by Lang et al. (1991) and Jung, Kim and Stulz (1996). We also used the market-to-book equity ratio to proxy growth opportunity as a robustness test; the results are unchanged when using this alternative measure.

[7] Several studies define share repurchases using expenditures on the purchase of common and preferred stock (Compustat #115) minus any reduction in the value of the net number of preferred shares outstanding (#56). As the reduction in the value of preferred shares is not necessarily related to the purchase of preferred stock during the year, deducting #56 from #115 could significantly reduce the value for share repurchase and, therefore, #56 is not deducted from #115 in this study. This share repurchase yield definition also includes some measurement errors as it aggregates other types of transactions, such as conversions of other classes of stock into common stock, purchases of treasury stock, retirements of common or preferred stock, and redemption of redeemable preferred stock.

and define *REPURCHASE* as a dummy variable that equals one if repurchase yield is in the upper quartile, and zero otherwise. We also drop a small number of observations with negative dividend and repurchase yields.

### *3.2.4 Audit Fees*

Following most audit fee studies, we measure audit fees as the natural log of audit fees paid by the company for audit services during the year (*LAF*).

## *3.3 Research Design*

### *3.3.1 Univariate Analysis*

Our univariate analysis compares *LAF* for subsamples stratified according to growth opportunities and $FCF/TE_{t-1}$.[8] Table 1 reports that median $FCF/TE_{t-1}$ and growth vary over the sample period. Median $FCF/TE_{t-1}$ is 0.037 in 2000, decreasing to 0.011 in 2001, and increasing to 0.072 in 2004, 0.056 in 2005, and 0.075 in 2006. Median growth is 0.996 in 2000, and gradually increases to 1.280 in 2006. Since growth and $FCF/TE_{t-1}$ vary temporally, we partition the sample as follows. First, we calculate median growth for each year and classify companies with growth lower/higher than the median as low/high growth companies. Second, we classify each company as a high or low FCF observation. Third, from steps one and two, we form four groups: low FCF/low growth, low FCF/high growth, high FCF/low growth, and high FCF/high growth. We repeat these three steps each year, obtaining a different median value for growth and $FCF/TE_{t-1}$ each year, and then combine the quadrants for all six years. Our univariate tests use t-tests to compare two groups at a time to determine the group with the highest log of audit fees. We expect high FCF/low growth and high FCF/high growth companies to have higher audit fees than other companies' fees.

[8] $FCF/TE_{t-1}$ is the ratio of FCF to the book value of total equity at the end of the previous year to control for the effect of company size.

### *3.3.2 Multivariate Analysis*

Table 2 states the definitions of the variables. Our dependent variable is log of audit fees (*LAF*) and we use the prior literature to develop an audit fee model (e.g., Simunic 1980). We measure auditee size (*SIZE*) by the natural log of total assets and complexity by the number of business segments (*SEGMENTS*). We use debt-to-assets ratio (*DA*), quick ratio (*QUICK*), and dummy variables for loss in the audit fee year (*LOSS*) and whether a company has high default risk (*ZSCORE*) to measure auditee.risk. The model includes two industry variables, namely, *MANU* for manufacturers and *UTILITY* for utilities. Auditor size is measured by a dummy variable *BIG4*. We define busy season by *FISCAL*, a dummy variable for audit client that has a December 31 balance date. We include natural log of non-audit fees *(LNAF)* to control for a possible association between audit and non-audit fees. We also include dividends (*DIVIDEND*) and share repurchase (*REPURCHASE*). Finally, we include a year dummy (*YRDUM*) to capture temporal variation in audit fees (Menon and Williams 2001). This variable should partially capture the general effect of the Sarbanes-Oxley Act of 2002 (SOX), which could be critical as SOX has been shown to increase audit risk and effort and, consequently, audit fees.[9] *YR2001*, *YR2002*, *YR2003*, *YR2004*, *YR2005*, and *YR2006* are set equal to one for fiscal years 2001 to 2006, respectively.

### *3.3.3 Experimental Variables*

The experimental variables for the first hypothesis are *HLFCF* and *HLGROWTH*, defined as a one for companies with greater than median FCF (*HLFCF*) and growth opportunities (*HLGROWTH*) and zero otherwise.[10] We also include two interaction terms *HLFCF*SIZE* and *HLFCF*LOSS* to

[9] This is most likely due to section 404 of SOX. Section 404 requires management to report on internal controls and the auditors to attest to management's assessment.
[10] Section 3.3.1 defines the median partition method.

differentiate the risk and effort explanations of the FCF and audit fee relation.[11] We also examine an alternative to this approach by constructing four FCF and growth combined dummy variables, namely *FG1*, *FG2*, *FG3* and *FG4*. *FG1* has a value of one if it represents low FCF/low growth companies, and zero otherwise. Similarly, we assign *FG2* and *FG3* a value of one if they represent low FCF/high growth and high FCF/low growth companies, respectively, zero otherwise. The effect of *FG4* for high FCF/high growth companies is reflected in the intercept.

*3.3.4 Regression Models*

We use the following model to test H1.

$$LAF = \beta_0 + \beta_1 SIZE + \beta_2 SEGMENTS + \beta_3 DA + \beta_4 QUICK + \beta_5 LOSS + \beta_6 ZSCORE + \beta_7 BIG4 + \beta_8 FISCAL + \beta_9 MANU + \beta_{10} UTILITY + \beta_{11} LNAF + \beta_{12} DIVIDEND + \beta_{13} REPURCHASE + \sum_{k=2001}^{2006} \beta_{14} YRDUM_k + \beta_{15} HLGROWTH + \beta_{16} HLFCF + \beta_{17} HLFCF*SIZE + \beta_{18} HLFCF*LOSS + \varepsilon \quad (1)$$

H1 posits that mean audit fees should be *higher* for high FCF companies after controlling for other determinants of audit fees, implying that the overall impact of *HLFCF* on *LAF* should be positive. For the alternative approach, we replace *HLGROWTH* and *HLFCF* with *FG1*, *FG2*, and *FG3*. Under this approach, we expect that *FG3* and *FG4* companies should have higher fees relative to *FG1* and *FG2* companies, and therefore negative coefficients for *FG1* and *FG2*. We have no expectation regarding the sign for *FG3*. Lastly, since we argue that agency problems of FCF increase audit effort and risk, and therefore audit fees, we expect positive coefficients for $\beta_{17}$ and $\beta_{18}$.

To test H2-H4, we add a control variable to model 1 ($\beta_{19}$) to examine whether the effect of FCF on audit fees is moderated by debt, dividends, or share repurchases. The control variable (*CNTRL*)

[11] We use *SIZE* and *LOSS* to proxy for the audit effort and audit risk respectively. In unreported analysis, we also interact *HLFCF* with other risk variables such as *ZSCORE* and *QUICK*, and find similar results.

takes on debt (*DA*), dividends (*DIVDEND*), or repurchases (*REPURCHASE*) to examine the possible moderating roles. If *CNTRL* mitigates the agency problems of FCF, we should observe negative $\beta_{19}$ coefficients for the interactions *HLFCF*DA*, *HLFCF*DIVIDEND*, and *HLFCF*REPURCHASE*. To test these three hypotheses, we use the following regression model:

$$LAF = \beta_0 + \beta_1 SIZE + \beta_2 SEGMENTS + \beta_3 DA + \beta_4 QUICK + \beta_5 LOSS + \beta_6 ZSCORE + \beta_7 BIG4 + \beta_8 FISCAL + \beta_9 MANU + \beta_{10} UTILITY + \beta_{11} LNAF + \beta_{12} DIVIDEND + \beta_{13} REPURCHASE + \sum_{k=2001}^{2006} \beta_{14} YRDUM_k + \beta_{15} HLGROWTH + \beta_{16} HLFCF + \beta_{17} HLFCF*SIZE + \beta_{18} HLFCF*LOSS + \beta_{19} HLFCF*CNTRL + \varepsilon \quad (2\text{-}4)$$

## 4. Empirical Analysis

### *4.1 Descriptive Analysis*

We first compare the industry distribution of the sample with the distribution of companies in the Audit Analytics database (not tabulated). Based on two-digit NAICS categories, the two largest groups in both samples are manufacturing and information industries. The major differences in industry composition between our sample and Audit Analytics sample are a slightly increased percentage in the manufacturing industry, and a decreased percentage in the mining and management industries. Otherwise, we observe no significant discrepancies between two samples.

Second, table 3 presents summary statistics for the variables in the regressions. For the entire sample, the company data have fairly large ranges in assets, debt to asset ratios, quick ratios, number of segments and the level of audit and non-audit fees. We also observe that Big 4 auditors perform 76 percent of the audits; 39 percent of the observations incurred losses; 50 percent of observations have higher default risk; and 66 percent of the total observations have their audit performed during the busy

season (i.e., a December 31 year end date). Compared to low FCF/low growth companies, respectively, high FCF/high growth companies tend to have higher audit and non-audit fees. They are also larger, less likely to be subject to losses and bankruptcy, and less likely to be a utility companies and pay a dividend. However, they are more likely to have a Big 4 auditor, be a manufacturing company, and have large share repurchases. We also observe that high FCF/low growth companies have more segments, high leverage ratio, and smaller quick ratio.

### *4.2 Univariate Analysis*

Table 4 states the results when we partition the sample into four groups according to FCF and growth opportunities. For the low FCF/high growth (*FG2*) and high FCF/high growth (*FG4*) quadrants, mean *LAF* are 12.800 and 13.212, respectively. This suggests that auditors perceive high growth/high FCF companies as riskier and harder to audit. Our results also show that high FCF/low growth (*FG3*) companies have the higher mean *LAF* (13.061) than low FCF/low growth (FG1) companies (12.929). For the two low FCF quadrants, low growth companies (*FG1*) pay higher fees than high growth companies (*FG2*). Finally, the mean *LAF* for high FCF/low growth (*FG3*) companies is lower than that of high FCF/high growth companies (FG4). The t-statistics confirm that all these pairings differ statistically[12]. This evidence supports Jensen's (1986) argument and our expectation that high FCF/low growth (*FG3*) and high FCF/high growth companies (*FG4*) have higher audit fees than other companies.

We also conduct a univariate analysis of the control variables in model 1 by testing whether *LAF* differs on the basis of size (*SIZE*), complexity (*SEGMENTS*), leverage (*DA*), liquidity (*QUICK*), and non-audit fees (*LNAF*). We also partition based on client profitability (*LOSS*) and default risk

[12] These results are robust to possible deviations from non-normality, since they also hold for the non-parametric Mann-Whitney U test.

(*ZSCORE*) and audit firm type (*BIG4*), and busy season (*FISCAL*). Table 5 shows that mean *LAF* differs significantly for all partitions. Audit fees are higher for larger, more complex and more risky clients in terms of leverage, default risk, and liquidity. Audit fees are also higher when clients choose a Big 4 auditor, buy more non-audit services, and have their audit work done in the busy season. Regarding the *LOSS* variable, while we expected higher audit fees for loss companies similar to default risk, the result shows that loss companies have lower fees (as a univariate comparison). We consider the multivariate analysis next.

### *4.3 Multivariate Analysis*

#### *4.3.1 Hypothesis 1*

Table 6 summarizes the different tests of H1. Regression 1 tests for a positive relation between high FCF and audit fees after controlling for the other determinants of audit fees; regression 2 adds the interactions between FCF and audit effort and risk variables to regression 1; and regression 3 shows the results of an alternative approach that examines the fee differences among four groups (partitioned by median FCF and growth) more efficiently.[13]

Regression 1 shows an adjusted $R^2$ of 83.42 percent. All the control variables have the expected coefficient sign and are highly significant. For instance, *LAF* varies positively with *SIZE*, *SEGMENTS*, *DA*, *LOSS*, and *ZSCORE*, thus demonstrating the association of larger company size, greater company complexity and risk with audit fees. *LAF* also varies positively with *BIG4* and *FISCAL*, indicating that clients incur higher fees when the audit is performed by large and high quality audit firms, and during the busy season. The coefficient on *QUICK* has the expected negative sign and is highly significant.

[13] A correlation matrix reveals that auditee size proxy (*LTA*) is positively correlated to *LNAF* and *BIG4* (the coefficients are 0.77 and 0.54 respectively). No other correlation is greater than the threshold of 0.300. We also test the assumptions for using ANCOVA analysis (Tabachnick and Fidell 2007), and find no serious violations of these assumptions.

Dummy variable *MANU* shows a positive association with *LAF*, and the significant and negative coefficient on the *UTILITY* is consistent with the prior literature that audit fees for companies in this industry are lower than average. The year dummies provide information on mean changes in *LAF* from 2001 to 2006 relative to year 2000. The results suggest that audit fees have been increasing year by year, and significantly. We also note a significant and positive relationship between *LAF* and *LNAF*, which supports the so-called knowledge spillover relation between audit and non-audit services.[14] More importantly, our results show that the coefficient for *HLFCF* is positive and significant (0.075), indicating that auditors charge higher fees to high FCF companies (supports H1). *HLGROWTH* also shows a positive and significant association (0.023) with *LAF*, indicating that higher growth companies experience higher audit fees.

Regression 2 tests how FCF interacts with audit effort and risk. First, this regression shows virtually identical coefficients for the equivalent variables in regression 1, with the exception of *HLFCF*, which is negative without considering the effects of *HLFCF*SIZE* and *HLFCF*LOSS*.[15] Second, the positive and significant coefficient for *HLFCF*SIZE* (0.021) supports the view that auditors devote more effort when faced with the agency problems of FCF, thus charging higher fees. On the other hand, the coefficient for *HLFCF*LOSS* (-0.021) is insignificant, suggesting that companies with high FCF and high risk (as proxied by *LOSS*) are no more likely to use FCF more wisely than high FCF and less risky companies.[16]

---

[14] In order to capture better the joint determination between audit and non-audit fees, we also performed a two-stage regression. The results are similar to the primary results that utilize a single regression model (results available upon request).

[15] However, *HLFCF* and *LAF* still reflect a positive relation overall taking into account the effects of all three FCF coefficients, that is, *HLFCF*SIZE*, *HLFCF*LOSS,* and *HLFCF*. For example, using a mean of 19.53 for *SIZE* (from table 3), the overall *HLFCF* coefficient for a loss company is 0.057, calculated as -0.332**HLFCF* + 0.021**HLFCF**19.53 – 0.021**HLFCF**1 = 0.057**HLFCF.* Similarly, the overall *HLFCF* coefficient for a non-loss company is 0.078.

[16] The insignificant interaction between FCF and risk could be due to our choice of risk variables. While *LOSS* commonly represents the financial risk of a company, it may not be the best proxy for the agency problems of FCF. The results could also

The partitions of FCF and growth into four subgroups in regression 3 further shows that high FCF companies have higher audit fees than low FCF companies. In particular, we find that high FCF/high growth companies (*FG4*) have the highest *LAF*, as reflected in the negative coefficients for *FG1*, *FG2*, and *FG3*. For example, the coefficient for *FG1* (-0.099) represents the mean difference of *LAF* between *FG1* and *FG4*, and indicates that low FCF/low growth companies have mean *LAF* 0.099 lower than high FCF/high growth companies. Likewise, the coefficients for *FG2* and *FG3* indicate that the mean *LAF* for low FCF/high growth and high FCF/low growth companies are 0.084 and 0.032 lower than the mean *LAF* for high FCF/high growth companies, respectively. Therefore, consistent with our expectation that auditors perceive high FCF/high growth companies more difficult to audit, we document that mean *LAF* for these companies is higher than the other three groups. While the *LAF* for *FG3* appears to be lower than FG4, the estimated marginal means reported in the bottom of table 6 show that *LAF* for *FG3* is significantly higher than that for *FG1* and *FG2*.

Overall, these results support the Jensen (1986) hypothesis in an auditing context, namely, that managers of high FCF/low growth companies relative to low FCF companies are more likely to engage in non-value maximizing behavior, possibly including financial statement management, which increases audit fees. We also find higher audit fees for high FCF/high growth companies. Our results further support the view that the higher audit fees from the agency costs of FCF best associate with auditors' fee responses to additional audit effort rather than audit risk.

---

indicate that high FCF and high risk companies are likely to hold FCF more wisely than high FCF and low risk companies. High FCF companies also likely hold more liquid/marketable assets than other companies, which should make them easier to audit. Both factors could act as offsets to auditors' concerns regarding the negative NPV investments managers that, otherwise, should increase fees.

### *4.4 Hypotheses 2-4*

Table 7 presents the results. First, regression 1 shows that all control variables have coefficients and significance levels qualitatively similar to those in table 6 (regression 3). This regression also shows a significant and negative coefficient of the *HLFCF*DA* interaction (-0.048), which implies that for companies with high FCF, mean *LAF* is lower when FCF is assessed in combination with high debt. As such, this result supports H2. Second, regressions 2 and 3 estimate the audit fee model for low and high growth companies separately. As Jensen (1986) contends, the control function of debt is more important for high FCF companies with low growth opportunities rather than high FCF companies with high growth opportunities. Our results show significant and negative coefficient for *HLFCF*DA* for both low and high growth companies. Overall, we find that higher debt levels moderate the increased audit fees regardless of the level of companies' growth opportunities.

Table 7 also reports the tests of H3 and H4. We report only the results for the *HLFCF*DIVIDEND* and *HLFCF*REPURCHASE* interactions, as the results for all other variables are almost identical to those in regression 3 of table 6. Similar to the debt-monitoring hypothesis, we should observe a significant and negative coefficient for *HLFCF*DIVIDEND* and *HLFCF*REPURCHASE*. The results do not support our prediction of a negative coefficient; moreover, for *HLFCF*DIVIDEND*, we show a marginally significant positive coefficient. In other words, the results offer no support for H3 or H4.

Debt, dividends, and share repurchases are three methods companies often use to induce cash outflow. If the FCF theory applies to debt, why does it not also apply to similar variables as examined here? We offer two possible reasons. First, as discussed earlier, dividends and share repurchases are

more flexible than debt repayment. Moreover, they generally involve no contractual commitment by managers to shareholders, making them easier to cut or scale back (Jensen 1986). Second, our results could also be due to a pecking order in that the debt and interest components of FCF are paid first. Less uncertain components are paid as dividends and share repurchases. Both reasons suggest that debt may be a better control mechanism to force managers to pay out future cash, and our results are consistent with this view.

Finally, we use the coefficients for *HLFCF* and its interaction with debt to approximate the amount of audit fee increase for companies with high FCF and the amount of fee reduction as a result of the debt monitoring. Based on the coefficients in regression 1 of table 7, we estimate that companies with high FCF pay approximately 6.6 percent higher audit fees than low FCF companies. Given an average audit fee of $1,240,695 for low FCF companies in our data, the maximum audit fee increase for high FCF companies is $ 81,886. We also calculate that companies with high FCF and high debt receive a 72.7 percent mean reduction in audit fee ($59,531). In other words, the average coefficient on *HLFCF* (0.066) calculated taking into account the coefficients of the other *HLFCF* interactions decreases by 0.048 (72.7 percent = 0.048 ÷ 0.066) in the presence of debt monitoring.[17]

## 5. Robustness Tests

### *5.1 Partition of Companies' Growth Opportunities*

In regression 3 of table 6, we stratified FCF and growth into four subgroups according to high/low FCF and high/low growth partition, and found that growth does not affect the FCF-audit fee relation. As an alternative, we repartitioned the sample into six groups, high/low FCF and three groups

[17] The coefficient 0.066 is calculated as a weighted average of 39%*0.645 for a loss company and 61%*0.664 for a non-loss company given that 39% of the observations incurred losses. For example, using a mean of 19.53 for *SIZE* (from table 3), the coefficient 0.645 for a loss company is calculated as 0.273**HLFCF*+0.02**HLFCF**19.53-0.019**HLFCF**1.

of growth opportunities. Companies with growth scores in the bottom and top tercile are classified as low and high growth companies, and companies falling into the middle are categorized as median growth companies. The previous results are robust to this classification.

### *5.2 Lagged FCF and Growth Opportunities Partition*

As noted in sub-section 3.2.1, we classified a company with market to book ratio (MTB) lower than the median as a low growth company in that year. We also categorized a company into a low growth group if (1) it has lower than median MTB in both current year t and year t-1; (2) it has lower than median MTB in year t, year t-1 and year t-2; (3) its average growth rate from year t and year t-1 is less than the median average growth; (4) its average growth rate from year t, year t-1 and year t-2 is less than the median average growth. These multi-year proxies have the benefit that they allow sufficient time to assess a company's growth. We also similarly classified high growth, high FCF and low FCF companies using the above methods. The four alternative methods of classifying FCF and growth do not change our results for the FCF, dividend, and share repurchase hypotheses. For the debt hypothesis, however, we find significant negative interactions for companies classified under alternatives (3) and (4), but not under alternatives (1) and (2).

### *5.3 Alternative Measures of FCF*

Our results thus far use Lehn and Pouslen's (1989) definition of FCF after deducting capital expenditure to reflect better the existence of cash flow in excess of that required to fund positive NPV investments. We repeat our analyses employing Lehn and Pouslen's proxy without adjustments. We find that the experimental variable *HLFCF* is not significantly associated with *LAF*, which is inconsistent with our expectation regarding the Jensen hypothesis. However, this may be due to

overestimation of FCF resulting from following Lehn and Poulsen's definition, that is, as noted in sub-section 3.2.1, high FCF companies under such definition may exclude companies with actual high levels of FCF. Since capital expenditure can be spent on both positive and negative NPV projects, we further test the sensitivity of our results by assigning some arbitrary thresholds for positive and negative projects. For example, when we assume that 25 percent, 50 percent or 75 percent of the capital expenditure is used for positive NPV projects, and then calculate FCF by subtracting the positive NPV portion, the results are qualitatively unchanged.

### *5.4 Dividend and Share Repurchase Hypotheses*

Our earlier findings show only one significantly negative coefficient for the interaction term *HLFCF*REPURCHASE*. We examined the choice of dividend and share repurchase proxies using two alternative measures: the ratio of dividend (repurchase) to the sum of dividends and repurchases (Desai and Jin 2007) and the ratio of dividend (repurchase) to the earnings before extraordinary items (Blouin and Nondorf 2004, Grullon and Michaely 2004). Further, as dividends or share repurchases alone may not be sufficient to reduce agency costs of FCF, we also examine whether share repurchases and dividends can complement if not substitute for debt, and help increase total free cash payout. Therefore, we test a series of three and four way interactions. These results support the conclusion that neither dividend nor repurchases significantly moderate the positive relation between FCF and *LAF*.

We also conduct analysis using four measures of abnormal share repurchase and dividend. The first measure, following Guay and Harford (2000), creates a dummy variable that has a value of one if the company has a decrease/constant dividend payout in prior year and an increase in dividend payout in current year, or if the increase of company's dividend payout in current year is larger than that in the

previous year. The second measure subtracts previous dividend change from the current dividend change. The third measure creates a dummy variable that equals one for dividend increase in the current year and zero otherwise. The last measure constructs a dummy variable that equals one for a dividend increase or stock repurchases and zero otherwise. Overall, irrespective of our proxies for unusual dividend and repurchase changes, our results do not differ.

### *5.5 Replication of Gul and Tsui (1998, 2001)*

Gul and Tsui (1998) run an OLS regression on companies in the bottom quartile of growth opportunities. They adopt the Lehn and Poulsen (1989) definition of FCF and interact FCF with debt to test the moderating role of debt. They find a significantly positive coefficient for FCF and a significantly negative coefficient for the interaction between FCF and debt. We test our first two hypotheses following the approach of Gul and Tsui (1998). Our results show insignificant coefficients for FCF and the interaction between FCF and debt using the full sample set.[18] The only case where we are able to replicate their results (on our dataset) for the FCF hypothesis is when we trim the continuous FCF variable by four percent (above and below), or when we use an ordinal FCF variable, coded into a 1-5 scale. However, we still fail to find evidence in support of the debt monitoring hypothesis after we trim or rank the data. A descriptive analysis shows that the observations in the top and bottom four percent differ from the rest of our sample in that they have larger growth value, higher debt level, and are more likely to incur losses and be subject to bankruptcy. It, therefore, appears that, overall, the companies in our sample could be more risky than the Hong Kong or Australia samples used in Gul and Tsui (1998).

[18] When we subtract the capital expenditure from Gul and Tsui's FCF definition, the coefficient for FCF is still insignificant.

Gul and Tsui (2001) further introduce the director ownership as a proxy for management ownership into the analysis, and find that the audit fees for companies with high FCF/low growth and high director ownership are lower than for similar companies with low levels of director ownership. Contrary to their findings, we find that audit fees are higher for companies with high FCF/low growth and high director ownership. Therefore, instead of supporting a convergence of interests effect, as argued by Gul and Tsui (2001), our results are consistent with the entrenchment argument of management ownership, such that managers with large shareholdings have greater control over the company and, thus, greater scope for acting in their own private interest (Lennox 2005). However, although we are unable to replicate Gul and Tsui's findings with our data using their approach, our results are largely consistent with their conclusion.

## 6. Conclusion

This study tests whether the agency problems of companies with high FCF and low growth prospects induce their auditors to charge higher audit fees relative to other companies' fees. To test the FCF hypothesis from an auditing perspective, we also posit that high FCF/high growth companies should have higher audit fees. We find that audit fees of high FCF/low growth companies and high FCF/high growth companies are significantly higher than those of low FCF/low growth and low FCF/high growth companies, a result that supports the FCF hypothesis, and that such higher fees associate mostly with audit effort, not audit risk. Our results also support the debt-monitoring hypothesis in the context of auditing in that we find that audit fees vary negatively with debt for companies with high FCF. However, our study offers no evidence to suggest that audit fees vary negatively with the interaction of FCF and dividends or share repurchases, two other mechanisms that

companies can use to reduce FCF agency costs.

The positive relation between FCF and audit fees documented in this study lends some support to the view that the economic role of auditing has a broader governance contribution, as the FCF problem is only one instance of weak corporate governance. A number of recent studies has addressed this issue and specifically examined the corporate governance role of auditing. For example, Griffin et al. (2008) test an economic framework that explains a countervailing relation between governance and auditing. They find a positive association between governance and audit fees because auditing is one mechanism of governance, and a negative relation because auditors incorporate the benefits of better governance in pricing their services. Choi and Wong (2007) examine whether the strength of a country's legal system affects the governance role of auditors and conclude that auditors do play a strong governance role in countries with weak legal institutions.

Finally, we note that this study explores only a supply-side explanation of the positive relation between the agency problems of FCF and audit fees (Gul and Tsui 2001), that is, when the agency problems of FCF are severe, auditors will expend more effort, which induces higher fees. Future research might consider other explanations for this potential positive relationship. For instance, a positive relation may stem from shareholders' demands for higher quality audits to mitigate the agency problems of FCF. Auditors may also charge higher fees if they know that clients can pay more because of the available excess cash. Future research might also consider possible links between the demand side of auditing and the wider role of auditing as a governance or control mechanism to solve agency problems in general, that is, beyond the specific FCF agency issue that we address here.

**References**


Adam, T., and V. Goyal, 2008, The investment opportunity set and its proxy variables, *Journal of Financial Research* 31, 41-63.

Allen, F., and R. Michaely, 2003, Payout policy, in G. Constantinidies, M. Hariss, and R. Stulz. (Eds.), *Handbooks in Economics and Finance*, North-Holland.

Australian Auditing Standard AUS 202, 2002, *Objectives and general principles governing an audit of a financial report*, Auditing and Assurance Standards Board, Melbourne, July.

Australian Auditing Standard ASA 315, 2006, *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement,* Auditing and Assurance Standards Board, Melbourne, April.

Barclay, M., and W. Smith, Jr, 1995, The maturity structure of corporate debt, *Journal of Finance* 50, 609-632.

Bell, T., W. Landsman, B. Miller, and S. Yeh, 2002, The valuation implications of employee stock option accounting for profitable computer software firms, *The Accounting Review* 77, 971-996.

Blanchard, O., F. Lopez-di-Silanes, and A. Shleifer, 1994, What do firms do with cash windfalls? *Journal of Financial Economics* 36, 337-360.

Blouin, J., and M. Nondorf, 2004, Payout policy: A shareholder-level analysis, Working paper (University of Pennsylvania, Philadelphia, Pennsylvania).

Chan, K., D. Ikenberry, I. Lee, and Y. Wang, 2007, Share repurchase as a tool to mislead investors: Evidence from earnings quality and stock performance, Working paper (University of Hong Kong, Pokfulam, Hong Kong).

Choi, J., and T. Wong, 2007, Auditors' governance functions and legal environments: An international investigation, *Contemporary Accounting Research* 24, 13-46.

Chung, R., M. Firth, and J. Kim, 2005, Earnings management, surplus free cash flow, and external monitoring, *Journal of Business Research* 58, 766-776.

Cohen, J., G. Krishnamoorthy, and A. Wright, 2002, Corporate governance and the audit process, *Contemporary Accounting Research* 19, 573-593.

Desai, M., and L. Jin, 2007, Institutional tax clienteles and payout policy, Working paper (Harvard University, Boston, MA).

Ferguson, A., and S. Taylor, 2007, Free cash flow, debt monitoring and audit fees: A re-examination, Working Paper (University of New South Wales, Sydney, NSW).

Griffin, P, D. Lont, and Y. Sun, 2008, Corporate governance and audit fees: Evidence of countervailing relations, *Journal of Contemporary Accounting & Economics* 4, 18-49.

Griffin, P., and D. Lont, 2005, The effect of auditor dismissals and resignations on audit fees: Evidence based on SEC disclosures under Sarbanes-Oxley, Working paper (University of California at Davis, Davis, CA).

Grinstein, Y., and R. Michaely, 2005, Institutional holdings and payout policy, *The Journal of Finance* 60, 1389-1426.

Grullon, G., and R. Michaely, 2004, The information content of share repurchase programs, *The Journal of Finance* 59, 651-680.

Guay, W., and J. Harford, 2000, The cash-flow performance and information content of dividend increases versus repurchases, *Journal of Financial Economics* 57, 385-415.

Gul, F., and J. Tsui, 1998, A test of the free cash flow and debt monitoring hypotheses: Evidence from auditing pricing, *Journal of Accounting and Economics* 24, 219-237.

Gul, F., and J. Tsui, 2001, Free cash flow, debt monitoring, and audit pricing: Further evidence on the role of director equity ownership, *Auditing: A Journal of Practice & Theory* 20, 71-86.

Gul, F., C. Chen, and J. Tsui, 2003, Discretionary accounting accruals, managers' incentives, and audit fees, *Contemporary Accounting Research* 20, 441-464.

Harford, J., 1999, Corporate cash reserves and acquisitions, *The Journal of Finance* 5, 1969-1997.

Jaggi, B., and F. Gul, 2005, Evidence of accruals management: A test of the free cash flow and debt monitoring hypotheses, Working paper (The State University of New Jersey, Newark, NJ).

Jensen, M., 1986, Agency costs of FCF, corporate finance, and takeovers, *The American Economic Review* 76, 323-329.

Jensen, M., 1988, Takeovers: Their causes and consequences, *The Journal of Economic Perspectives* 2, 21-48.

Jung, K., Y. Kim, and R. Stulz, 1996, Timing, investment opportunities, managerial discretion, and the security issue decision, *Journal of Financial Economics* 42, 159-185.

Lang, L., R. Stulz, and R. Walkling, 1991, A test of the free cash flow hypothesis, the case of bidder returns, *Journal of Financial Economics* 29, 315-335.

Lehn, K., and A. Poulsen, 1989, Free cash flow and stockholder gains in going private transactions, *The Journal of Finance* 44, 771-787.

Lennox, C., 2005, Management ownership and audit firm size, *Contemporary Accounting Research* 22, 205-227.

Myers, S., 1977, Determinants of corporate borrowing, *Journal of Financial Economics 5*, 147–175.

Myers, S., and N. Majluf, 1984, Corporate financing and investment decisions when firms have information that Investors do not have, *Journal of Financial Economics* 13,187-221.

Oded, J., 2008, Payout policy, financial flexibility, and agency costs of free cash flow, Working paper (Boston University, Boston, WA).

Opler, T., L. Pinkowitz, R. Stulz, and R. Williamson, 2001, Corporate Cash Holdings, *Journal of Applied Corporate Finance* 14, 55-66.

Richardson, S., 2006, Over-investment of free cash flow, *Review of Accounting Studies* 11, 159-189.

Rubin, P., 1990, *Managing Business Transactions,* Free Press, New York.

Shin, H., and R. Stulz, 1998, Are internal capital markets efficient? *The Quarterly Journal of Economics* 113, 531-552.

Simunic, D., 1980, The pricing of audit services: Theory and evidence, *Journal of Accounting Research* 18, 161-190.

Tabachnick, B., and L. S. Fidell, 2007, *Using Multivariate Statistics,* 4th edition. New York: Harper Collins College Publishers.

Tsui, J., B. Jaggi, and F. Gul, 2001, CEO domination, growth opportunities, and their impact on audit fees, *Journal of Accounting, Auditing and Finance* 16, 189-208.

**Table 1**
**Distribution of FCF and Growth Opportunity Measures by Year**

| Variable | Fiscal Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | All Years |
|---|---|---|---|---|---|---|---|---|---|
| $FCF/TE_{t-1}$ | Mean | 0.538 | -0.291 | 2.047 | -1.521 | 0.963 | -0.401 | -0.368 | -2.527 |
| | Median | 0.037 | 0.011 | 0.030 | 0.049 | 0.072 | 0.056 | 0.075 | 0.046 |
| | Std. Dev. | 27.168 | 11.606 | 115.323 | 86.677 | 54.564 | 52.466 | 18.705 | 369.135 |
| GROWTH | Mean | 1.803 | 1.565 | 1.229 | 1.742 | 1.679 | 1.804 | 1.623 | 1.631 |
| | Median | 0.996 | 1.011 | 0.858 | 1.098 | 1.183 | 1.246 | 1.280 | 1.096 |
| | Std. Dev. | 2.431 | 1.839 | 1.547 | 2.372 | 2.168 | 2.565 | 1.526 | 2.140 |
| | No. of obs. | 1,198 | 2,358 | 2,632 | 2,963 | 3,096 | 3,086 | 1,438 | 16,771 |

**Table 2**
**Variable Definitions and Data Sources**

| Variable | Definition | Data Source[a] |
|---|---|---|
| Dependent | | |
| LAF | Natural log of total audit fees for fiscal year | AA |
| Experimental | | |
| $FCF/TE_{t-1}$ | $(INC-TAX-INTEXP-PREDIV-ORDIV-CAPEXP)/TE_{t-1}$ | See below |
| INC | Operating income before depreciation | Comp #13 |
| TAX | Total taxes – change in deferred tax from previous year to the current year | Comp #16, #35 |
| INTEXP | Gross interest expenses on short- and long-term debt | Comp #15 |
| PREDIV | Total dividend on preferred shares | Comp #19 |
| ORDIV | Total dividend on ordinary shares | Comp #21 |
| CAPEXP | Capital expenditure for fiscal year | Comp #128 |
| $TE_{t-1}$ | Book value of equity at end of prior year | Comp. |
| GROWTH | (MVEQUITY + DEBT)/TA | See below |
| DEBT | Book value of total debt at end of year | Comp #181 |
| TA | Book value of total assets at end of year | Comp #6 |
| DIVIDEND | Dividends on common and preferred shares divided by MVEQUITY | Comp #19, #21 |
| REPURCHASE | Upper quartile purchase of common and pref. shares ÷ MVEQUITY=1, otherwise 0. | Comp #115 |
| MVEQUITY | Market capitalization at end of the quarterly report after fiscal year | CS |
| HLGROWTH | GROWTH greater than the median=1, otherwise 0 | na |
| HLFCF | $FCF/TE_{t-1}$ greater than the median=1, otherwise 0 | na |
| FG1 | Companies with low FCF and low growth, otherwise 0 | na |
| FG2 | Companies with low FCF and high growth, otherwise 0 | na |
| FG3 | Companies with high FCF and low growth, otherwise 0 | na |
| FG4 | Companies with high FCF and high growth, otherwise 0 | na |
| Control | | |
| SIZE | Natural log of total assets at end of fiscal year | Comp |
| SEGMENTS | Number of segments | Comp |
| DA | Ratio of total debt to total assets at end of year | Comp |
| QUICK | Ratio of current assets less inventories to current liabilities | Comp |
| LOSS | Negative income before extraordinary items=1, otherwise 0 | Comp |
| BIG4 | Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers=1, otherwise 0 | AA |
| FISCAL | Fiscal year end = December 31, otherwise 0 | Comp |
| MANU | Manufacturing industry = 1, otherwise 0 | NAICS codes |
| UTILITY | Utility industry = 1, otherwise 0 | NAICS codes |
| YRDUM[b] | Six dummy variables for years | na |
| LNAF | Natural log of non-audit fees | AA |
| ZSCORE | Bankruptcy prediction score less than 3=1, otherwise 0 | Comp. |

Notes to table 2.

a. AA, CS, and Comp indicate the data are from the Audit Analytic, CRSP, and Compustat databases, respectively, with item numbers provided where appropriate.
b. These six dummy variables are YR2001, YR2002, YR2003, YR2004, YR2005 and YR2006. They equal 1 if the data are derived from 2001, 2002, 2003, 2004, 2005 and 2006, respectively, 0 otherwise.

**Table 3**
**Descriptive Statistics of Dependent and Independent Variables and Univariate Tests**

| Sample | | Total | Low FCF | High FCF | High less Low FCF | | Low Growth | High Growth | High less Low Growth | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable[a] | | | | | Mean diff. | Sig. | | | Mean diff. | Sig. |
| No. of obs. | | 16,771 | 8,351 | 8,420 | | | 8,392 | 8,379 | | |
| Dependent | | | | | | | | | | |
| LAF | mean | 13.01 | 12.87 | 13.15 | 0.274 | *** | 12.99 | 13.03 | 0.042 | * |
| | median | 12.91 | 12.73 | 13.11 | | | 12.88 | 12.95 | | |
| | std. dev. | 1.48 | 1.46 | 1.48 | | | 1.59 | 1.36 | | |
| Independent (continuous) | | | | | | | | | | |
| SIZE | mean | 19.53 | 19.33 | 19.72 | 0.392 | *** | 19.50 | 19.55 | 0.052 | ns |
| | median | 19.62 | 19.29 | 19.91 | | | 19.57 | 19.64 | | |
| | std. dev. | 2.42 | 2.43 | 2.40 | | | 2.66 | 2.16 | | |
| SEGMENTS | mean | 2.41 | 2.35 | 2.47 | 0.120 | *** | 2.58 | 2.24 | -0.336 | *** |
| | median | 2.00 | 1.00 | 2.00 | | | 2.00 | 1.00 | | |
| | std. dev. | 1.71 | 1.72 | 1.72 | | | 1.77 | 1.65 | | |
| DA | mean | 0.63 | 0.56 | 0.71 | 0.151 | *** | 0.73 | 0.54 | -0.192 | *** |
| | median | 0.51 | 0.52 | 0.50 | | | 0.59 | 0.42 | | |
| | std. dev. | 2.01 | 0.83 | 2.80 | | | 2.52 | 1.30 | | |
| QUICK | mean | 2.75 | 3.13 | 2.38 | -0.744 | ** | 2.43 | 3.07 | 0.640 | ** |
| | median | 1.33 | 1.29 | 1.37 | | | 1.10 | 1.70 | | |
| | std. dev. | 18.08 | 12.62 | 22.20 | | | 24.81 | 6.12 | | |
| LNAF | mean | 11.96 | 11.76 | 12.17 | 0.411 | *** | 11.87 | 12.05 | 0.177 | *** |
| | median | 11.97 | 11.70 | 12.24 | | | 11.86 | 12.07 | | |
| | std. dev. | 1.91 | 1.89 | 1.90 | | | 2.01 | 1.80 | | |
| DIVIDEND | mean | 0.05 | 0.06 | 0.04 | -0.012 | ns | 0.09 | 0.01 | -0.081 | *** |
| | median | 0.00 | 0.00 | 0.00 | | | 0.00 | 0.00 | | |
| | std. dev. | 0.78 | 0.66 | 0.54 | | | 0.85 | 0.04 | | |
| Independent (categorical) | | | | | | | | | | |
| LOSS | | 39% | 53% | 26% | -0.267 | *** | 0.47 | 0.31 | -0.159 | *** |
| ZSCORE | | 50% | 61% | 38% | -0.232 | *** | 0.69 | 0.30 | -0.390 | *** |
| BIG4 | | 76% | 76% | 77% | 0.014 | ** | 0.72 | 0.81 | 0.086 | *** |
| FISCAL | | 66% | 68% | 64% | -0.041 | *** | 0.64 | 0.68 | 0.040 | *** |
| MANU | | 49% | 45% | 53% | 0.082 | *** | 0.46 | 0.53 | 0.064 | *** |
| UTILITY | | 4% | 6% | 2% | -0.042 | *** | 0.06 | 0.01 | -0.056 | *** |
| REPURCHASE[b] | | 25% | 19% | 31% | 0.112 | *** | 0.22 | 0.28 | 0.066 | *** |
| FG1 | | 28% | 56% | 0% | na | | 0.49 | 0.07 | na | |
| FG2 | | 22% | 44% | 0% | na | | 0.06 | 0.37 | na | |
| FG3 | | 22% | 0% | 45% | na | | 0.39 | 0.06 | na | |
| FG4 | | 28% | 0% | 55% | na | | 0.06 | 0.49 | na | |

Notes to table 3.

a. Table 2 states the definitions of these variables.
b. REPURCHASE =1 if an observation is in the upper quartile purchase of common and preferred stock divided by market capitalization, otherwise 0. The 25% repurchase yield cut off is 0.0082.
c. Tests of significance: *** = less than .001, ** = less than .01.

**Table 4**
**Mean and Median of Log of Audit Fees for 16,771 Company Observations for Subsamples Stratified According to Growth Opportunities and FCF**

| | Low Growth | High Growth | Mean Difference[a] |
|---|---|---|---|
| Low FCF | FG1 | FG2 | (Low less High Growth) |
| mean | 12.929 | 12.800 | 0.129 |
| median | 12.774 | 12.679 | t=4.073*** |
| no. of observations | 4,633 | 3,718 | |
| High FCF | FG3 | FG4 | |
| mean | 13.061 | 13.212 | -0.151 |
| median | 13.014 | 13.173 | t=-4.576*** |
| no. of observations | 3,759 | 4,661 | |
| Mean difference (Low FCF - High FCF) | -0.132 | -0.412 | |
| | t=-3.796*** | t=13.977*** | |

Note to table 4.

a. Tests of significance: *** = less than .001, ** = less than .01.

**Table 5**
**Univariate Analysis for Log of Audit Fees by Control Variables**

| Variable[a] | | Mean[b] | Median |
|---|---|---|---|
| Client Size (SIZE) | Larger | 14.046 | 13.981 |
| | Smaller | 11.970 | 11.939 |
| | t-value | 128.003*** | |
| Client Complexity (SEGMENTS) | More | 13.682 | 13.697 |
| | Less | 12.513 | 12.413 |
| | t-value | 54.059*** | |
| Client Leverage (DA) | Higher | 13.383 | 13.396 |
| | Lower | 12.633 | 12.531 |
| | t-value | 34.005*** | |
| Client Liquidity (QUICK) | Higher | 12.761 | 12.687 |
| | Lower | 13.255 | 13.198 |
| | t-value | -17.617*** | |
| Client Default Risk (ZSCORE) | Higher | 13.078 | 12.991 |
| | Lower | 12.939 | 12.860 |
| | t-value | 6.078*** | |
| Client Loss (LOSS) | Yes | 12.640 | 12.468 |
| | No | 13.244 | 13.209 |
| | t-value | -26.237*** | |
| Audit Firm (BIG4) | Big 4 | 13.397 | 13.331 |
| | Non-Big 4 | 11.748 | 11.625 |
| | t-value | 76.695*** | |
| Non-Audit Services (LNAF) | Higher | 13.890 | 13.820 |
| | Lower | 12.125 | 12.008 |
| | t-value | 96.533*** | |
| Fiscal Year End (FISCAL) | Dec.31 | 13.127 | 13.052 |
| | Non-Dec.31 | 12.774 | 12.667 |
| | t-value | 14.947*** | |

Notes to table 5.

a. Table 2 states the definitions of these variables.
b. Tests of significance: *** = less than .001.

**Table 6**
**Regression Analyses for Hypothesis 1**

| Regression # | | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|---|
| No. of observations | | 16,772 | | 16,772 | | 16,772 | |
| Variable[a] | Pred. Sign | Coeff.[b] | Sig. | Coeff. | Sig. | Coeff. | Sig. |
| INTERCEPT | | 2.519 | *** | 2.719 | *** | 2.622 | *** |
| Control variables | | | | | | | |
| SIZE | + | 0.349 | *** | 0.338 | *** | 0.349 | *** |
| SEGMENTS | + | 0.072 | *** | 0.072 | *** | 0.072 | *** |
| DA | + | 0.025 | *** | 0.027 | *** | 0.025 | *** |
| QUICK | - | -0.001 | *** | -0.001 | *** | -0.001 | *** |
| LOSS | + | 0.076 | *** | 0.080 | *** | 0.076 | *** |
| ZSCORE | + | 0.158 | *** | 0.162 | *** | 0.158 | *** |
| BIG4 | + | 0.266 | *** | 0.265 | *** | 0.266 | *** |
| FISCAL | + | 0.174 | *** | 0.176 | *** | 0.174 | *** |
| MANU | + | 0.134 | *** | 0.133 | *** | 0.135 | *** |
| UTILITY | - | -0.290 | *** | -0.276 | *** | -0.292 | *** |
| LNAF | + | 0.192 | *** | 0.191 | *** | 0.192 | *** |
| DIVIDEND | ? | -0.019 | ** | -0.018 | ** | -0.019 | ** |
| REPURCHASE | ? | 0.061 | *** | 0.057 | *** | 0.060 | *** |
| YR2001 | + | 0.134 | *** | 0.133 | *** | 0.134 | *** |
| YR2002 | + | 0.365 | *** | 0.366 | *** | 0.365 | *** |
| YR2003 | + | 0.530 | *** | 0.530 | *** | 0.530 | *** |
| YR2004 | + | 0.909 | *** | 0.909 | *** | 0.908 | *** |
| YR2005 | + | 1.135 | *** | 1.136 | *** | 1.134 | *** |
| YR2006 | + | 1.312 | *** | 1.314 | *** | 1.312 | *** |
| Experimental variables | | | | | | | |
| HLGROWTH | + | 0.023 | ** | 0.022 | ** | | |
| HLFCF | + | 0.075 | *** | -0.332 | *** | | |
| HLFCF*SIZE | + | | | 0.021 | *** | | |
| HLFCF*LOSS | + | | | -0.021 | ns | | |
| FG1 – LFCF LGROWTH | - | | | | | -0.099 | *** |
| FG2 – LFCF HGROWTH | - | | | | | -0.084 | *** |
| FG3 – HFCF LGROWTH | ? | | | | | -0.032 | ** |
| $R^2$ | | 83.42% | | 84.45% | | 83.42% | |

| Pairwise Comparison for Regression 3 | | | | | |
|---|---|---|---|---|---|
| Dependent variable: LAF | | | | Mean difference | |
| FG3 | 13.029 | FG1 | 12.963 | 0.066 | *** |
| | | FG2 | 12.977 | 0.052 | *** |
| | | FG4 | 13.062 | -0.032 | ** |

Notes to table 6.

a. The variables are defined in table 2. HLGROWTH=1 if GROWTH is greater than the median, 0 otherwise; HLFCF=1 if $FCF/TE_{t-1}$ is greater than the median, 0 otherwise; and FG1, FG2, FG3=1 if the variable refers to companies with low FCF/low growth, low FCF/high growth, and high FCF/low growth, respectively, otherwise 0.
b. Tests of significance: *** = less than .001, ** = less than .05, * = less than .10, ns = not significant.

**Table 7**
**Regression Analyses for Hypotheses 2-4**

| Sample | | Combined | | Low Growth | | High Growth | |
|---|---|---|---|---|---|---|---|
| No. of observations | | 16,771 | | 8,392 | | 8,379 | |
| Regression # | | (1) | | (2) | | (3) | |
| Variables[a] | Pred. sign | Coeff.[b] | Sig. | Coeff. | Sig. | Coeff. | Sig. |
| INTERCEPT | | 2.680 | *** | 2.541 | *** | 3.103 | *** |
| Control variables | | | | | | | |
| SIZE | + | 0.339 | *** | 0.346 | *** | 0.327 | *** |
| SEGMENTS | + | 0.072 | *** | 0.068 | *** | 0.071 | *** |
| DA | + | 0.070 | *** | 0.052 | *** | 0.174 | *** |
| QUICK | - | -0.001 | *** | -0.000 | * | -0.013 | *** |
| LOSS | + | 0.082 | *** | 0.109 | *** | 0.067 | *** |
| ZSCORE | + | 0.155 | *** | 0.105 | *** | 0.154 | *** |
| BIG4 | + | 0.266 | *** | 0.268 | *** | 0.266 | *** |
| FISCAL | + | 0.176 | *** | 0.167 | *** | 0.182 | *** |
| MANU | + | 0.133 | *** | 0.126 | *** | 0.155 | *** |
| UTILITY | - | -0.279 | *** | -0.282 | *** | -0.262 | *** |
| LNAF | + | 0.190 | *** | 0.201 | *** | 0.174 | *** |
| DIVIDEND | ? | -0.018 | ** | -0.020 | ** | 0.079 | ns |
| REPURCHASE | ? | 0.057 | *** | 0.009 | ns | 0.083 | *** |
| YR2001 | + | 0.134 | *** | 0.113 | *** | 0.135 | *** |
| YR2002 | + | 0.364 | *** | 0.361 | *** | 0.337 | *** |
| YR2003 | + | 0.529 | *** | 0.488 | *** | 0.537 | *** |
| YR2004 | + | 0.908 | *** | 0.815 | *** | 0.969 | *** |
| YR2005 | + | 1.134 | *** | 1.041 | *** | 1.193 | *** |
| YR2006 | + | 1.313 | *** | 1.228 | *** | 1.353 | *** |
| Experimental variables | | | | | | | |
| HLGROWTH | + | 0.022 | ** | | | | |
| HLFCF | + | 0.273 | *** | -0.107 | ns | 0.675 | *** |
| HLFCF*SIZE | + | 0.020 | *** | 0.011 | ** | 0.041 | *** |
| HLFCF*LOSS | + | -0.019 | ns | -0.042 | * | 0.015 | ns |
| H2: DA Hypothesis | | | | | | | |
| HLFCF * DA | - | -0.048 | *** | -0.034 | *** | -0.132 | *** |
| H3: DIVIDEND Hypothesis | | | | | | | |
| HLFCF * DIVIDEND[c] | - | 0.021 | * | 0.025 | * | 0.213 | ns |
| H4: REPURCHASE Hypothesis | | | | | | | |
| HLFCF*REPURCHASE | - | -0.009 | ns | 0.006 | ns | -0.017 | ns |
| $R^2$ | | 83.48% | | 85.71% | | 81.12% | |

Notes to table 7.

a. The variables are defined in table 2. HLGROWTH=1 if GROWTH is greater than the median, 0 otherwise; HLFCF=1 if $FCF/TE_{t-1}$ is greater than the median, 0 otherwise.
b. Tests of significance: *** = less than .001, ** = less than .05, * = less than .10, ns = not significant.
c. The results for the control variables for the dividend and repurchase hypotheses are almost identical, and, therefore, we omitted the results for the control variable to save space. We only report the results for the interaction terms (*HLFCF*DIVIDEND* for the dividend hypothesis and *HLFCF*REPURCHASE* for the repurchase hypothesis).