

Free Cash Flow, Agency Conflicts, and Compensation Plans in a Non-growing Industry

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ABSTRACT

Free cash flow is known as a typical type of agency conflict between managers and shareholders in a firm. The insurance industry, which is not growing, is particularly susceptible to such excessive cash flow. We herein investigate the effects of stock ownership plans on reducing agency conflicts. We adopt undistributed cash flow to proxy free cash flow, and size, default risk, group membership, leverage, investment opportunity, and stock options are selected as explanatory variables. We find that stock option plans are effective (at a 10% level) in reducing free cash flow.

Key words : free cash flow, agency conflict, stock option, financial institution

I . Introduction

The principal-agent conflict is generally known as the problems involved with motivating one person or organization to act on behalf of another. From an economic point of view, this problem encompasses incentive

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arrangement, job design, the design of institutions to gather information, investment protection, decision and ownership rights allocation, and so on.

In a firm, problems arise from incentive conflicts between contracting parties. Incentive conflicts result in a costly contracting process among the various stakeholders and the resulting costs are known as agency costs. Agency costs can appear in many forms and may pass by unnoticed.

Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital. Free cash flow can be either a result of productive management (i.e., the firm is so profitable that it has high free cash flow before the cash can be redeployed) or a result of the agency problem.

Free cash flow can be invested in projects that have zero or negative net present values by a manager who wishes to expand the scope of operations and the size of the firm for the purpose of increasing his/her control and personnel remuneration. It is obvious that wasteful uses of free cash flow (that could otherwise be invested in a portfolio of stocks and bonds that would earn more than the cost of capital) are damaging to a firm's owners.

Having a compensation plan is one way to reduce the agency problem. Most managerial compensation plans have three components: salary, bonuses and stock options. While bonus plans can reduce a manager's incentive to shirk and over-consume perquisites, they may induce a manager's focus on short-run accounting profits and income management. Two reasons for using stock options are their effect on the agency problem and their tax advantages. All incentive compensation plans are supposed to accomplish two things. First, the existence of such a performance plan helps to attract and retain high-level managers. Second, they offer the managers incentives to act on those factors under their control in a manner that is likely to contribute to stock value maximization.

For a non-growing firm, there are not many ways to make stock value

increase. One way is, of course, to distribute the free cash flow to shareholders in the form of dividends. This suggests that stock options would not be so useful a tool to align managerial interests to shareholders, although they could provide managers with some incentive to reduce free cash flow. In reality, however, many companies adopt stock option plans.

The purpose of this study is to investigate the effectiveness of managerial compensation plans in particular stock options for reducing the free cash flow problem in a low-growth industry.

II. Agency Conflicts in a Low-growth Industry

The basic assumption of agency theory is that managers prefer leisure to hard work, and that all individuals care about financial compensation, wealth, and perquisites. Therefore, monitoring, specifying incentives, and forging the relationship that will minimize costs of interest conflicts between owners and managers is required.

Managers have remarkably broad responsibilities, and great latitude and discretion in determining the behavior, objectives and policies their companies will pursue. On the other hand, managers put their human capital, which is non-transferable, at risk when they undertake a risky project. Success reflects well on the manager's talent and decision, but failures hurt their market value. The asymmetric payoff patterns that pay the managers for successful investments, but do not punish them for failure can help offset the managers' risk aversion about the value of their human capital and motivate them to take on the risks inherent in investing. One way for paying the managers for successful investments is giving them stock options.

Regarding stock options, it is maintained that two reasons for using managerial stock options are their tax advantages and their effects on the agency problem. Miller and Scholes (1982) and Scholes and Wolfson (1991) demonstrate tax advantages and other merits of stock option plans, such as low manager turnover rate. Stock options can also help reduce an important source of owner-manager conflict: the time horizon problem. Managers and stockholders have different time horizons. Managers are concerned about a finite time horizon equal to the length of their careers, while stockholders have an infinite time horizon. The stockholders' time horizon is infinite because the value of the stock is the sum of the discounted values of future earnings. Free cash flow is closely related to investment that is, then, closely related to shareholders' wealth.

Jensen (1986) argues that a non-growing industry, such as the life insurance industry, generates more free cash flow and is accordingly more susceptible to agency conflicts. In Lang, et al. (1991), companies with a high Tobin's q and high free cash flow are not suspected to have agency problems, but companies with a low Tobin's q and high free cash flow are. Gaver and Gaver (1993) test 1,525 U.S. companies and identify 237 growing and 237 non-growing companies. Seventeen insurance companies are included in these growing and non-growing companies. Out of these 17 companies, only one is classified as a growing company, while 16 are non-growing companies. This result indicates that the insurance industry is one of low growth.

The question here, then, is that how to reduce interest conflicts, in this case, free cash problems in a low-growth industry with cash flow. One way to reduce the problem is by designing an incentive arrangement to motivate managers to disburse this cash rather than invest it at or below the cost of capital or waste it on organizational inefficiencies.

There are two questions to ask in terms of the free cash flow problem.

First, is the stock option plan effective in reducing free cash flow? Second, is the excess cash that might have been wasted by the managers used for the benefit of the shareholders? Regarding the second question, there is no realistic way to investigate it.

In this research, our purpose is to examine the effect of stock options in terms of reducing free cash flow in a low-growth industry, the life insurance industry.

III. Extant Research

There is a large body of research on managerial compensation (Lewellen, et al., 1970 ; Ciscel and Carroll, 1980 ; Argawal, 1981 ; Murphy, 1985 ; Brickley, et al, 1985 Butler and Maher, 1986; Baker et al., 1988 ; Abowd, 1990; Belkaoui, 1992 ; Gaver et al., 1995), on stock options (Smith and Watts, 1982 ; Miller and Scholes, 1982 ; Lemgruber, 1986 ; Long, 1988 ; Scholes and Wolfson, 1991), on agency conflicts (Jensen and Meckling,1976 ; Fama and Jensen 1983 ; Jensen and Smith, 1985), on free cash flow (Lehn and Poulsen, 1989; Jensen, 1986), and on cash holdings (Baumol, 1967 ; Gertler and Gilchrist, 1994 ; Kim, Mauer and Sherman, 1998 ; Opler, Pinkowitz, Stulz and Williamson, 1999).

The financial industry, including the insurance industry has been ignored in most studies because of its unique regulatory environment. Also, the different organizational forms that exist in the insurance industry have been obstacles to researchers. However, the life insurance industry alone, with more than 2,000 firms, provides a natural laboratory for examining cross-sectional differences.

Mayers and Smith (1981) differentiate the agency costs of equity between mutual companies and stock companies in the insurance industry. Boose

(1990) investigates agency problems in life insurance companies and finds that, depending on the form of the firm, there are significant differences in general insurance expenses. Wells, et al. (1995), examine the relationship between organizational form and free cash flow and find that mutual insurance companies have a greater level of free cash flow than stock insurance companies. They also find that other factors, such as firm size and leverage, affect the level of free cash flow. Colquitt, et al. (1999), study property-liability insurance companies' cash holdings and find that firms with better access to cash through capital markets, firms with a lower variance of cash flows, and firms with higher degree of leverage all hold less cash. Also, they find that larger insurance companies, higher-quality insurance companies, and insurance companies that write longer tail lines of business all hold less cash. Another finding in their study is that stock insurance companies tend to hold more cash than mutual companies.

IV. Research Methodology

1. Free Cash Flow and Explanatory Variables

Regarding free cash flow, there are many possibilities for explanatory independent variables, but here, six factors affecting free cash flow are chosen. These variables are firm size, default risk (financial strength), group membership, leverage, investment opportunities and stock options.

Firm size : Meltzer (1963), Vogel and Maddala (1967), Opler, et al. (1999), study the existence of economies of scale in cash transactions, and Kim, et al. (1998), assert that larger firms are likely to face lower costs of external financing and, therefore, hold lower levels of liquidity. Kim, et al. (1998) and

Opler, et al. (1999), document that larger firms tend to have lower ratios of cash to assets, and Colquitt, et al. (1999), report similar results for property-liability insurance firms. The results of the above studies lead one to predict a negative relationship between firm size and free cash flow. On the other hand, larger firms generally generate greater absolute amounts of cash flow than smaller firms. From the point of view of agency costs, as Mayers and Smith (1981) note, since the severity of agency problems involving equity increases with size, so should the level of free cash flow. This implies the positive relationship between firm size and free cash flow. So, the sign of the variable of firm size is ambiguous.

[Table 1] Variables and Their Definitions

Variable	Notation	Definition
Free Cash Flow	FCF	Undistributed cash flow (UFC) is used as a proxy variable $\text{UFC} = \text{UCF} = \text{Net Operating and Investment Income} + \text{Additional Capital Changes Paid in} - \text{Gross Interest Expenses} - \text{Income Taxes Policyholder Dividends} - \text{Total Stockholder Dividends}$ Natural log of UCF
Firm Size	SIZE	Natural log of total assets
Default Risk (Financial Strength)	DEF	AMBest's rating from A++ to C, A value of 6 is assigned for firms with A++, five for A+, down to 1 for C
Group Membership	GM	Dummy variable of 1 if the insurer is a member of a group and 0 otherwise
Leverage	LEV	Ratio of the insurer's total liabilities to total assets
Investment Opportunity	IO	Average growth in net premiums over the previous years
Stock Option	OPT	The value of total unexercised options scaled by total compensation
	INSIDE	The number of beneficial shares of stock held plus unexercised stock options divided by total shares outstanding

Default risk : insurance regulators' main concern is insurer solvency. Cash level held in a firm is closely related to solvency. If an insurer is classified as having an abnormal level of default risk, the insurer will face more rigorous monitoring. Most managers will try to avoid close monitoring by regulators. Managers will hold a certain level of cash, if available, to show that the firm is solvent. Therefore, a negative relation between default risk and free cash flow is predicted. Financially strong firms, of course, have little chance to fall into default risk. A.M. Best reports insurance companies' financial strength every year. Best's ratings are grouped into six categories, with zero representing the lowest rating category and five representing the highest. In this research, Best's rating is used as a proxy for financial strength. Also, the negative sign on this variable is predicted.

Group membership: In the life insurance industry, some insurance firms operate as single, unaffiliated firms while others do as a member of a group. We can easily imagine that a single, unaffiliated insurance firm may have few options available to solve financial problems, especially liquidity problems. On the other hand, a member of a group may have financial support from the parent or other companies in the group. Therefore, it is likely that an insurance firm that is a member of a group will hold a lower level of cash than a single, unaffiliated insurance firm does. Thus, the expected sign on the group membership variable is negative.

Leverage : The arguments on the relationship between the level of cash holding and leverage are divided. Opler, et al. (1999), provide conflicting predictions on the relationship. Their first argument is that highly leveraged firms are likely to hold more cash for future investment opportunities because those firms have difficulties in raising additional funds, in addition to their cost problems.

The other argument is based on the agency costs of managerial discretion. Managers may wish to hold excess cash because they are

risk-averse or because, in doing so, they can pursue their own goals. Holding excess cash, however, is more likely to cause monitoring from inside and outside of the firm. Firms with low leverage are less subject to monitoring. Thus, managers of firms with low leverage have more room to hold more cash holdings and, consequently, the inverse relationship between cash holdings and leverage is predicted. On the other hand, considering the fact that the main concern of monitoring is solvency, monitors would have little incentive to push managers not to hold excess cash, the safest of assets. On this point, Colquitt, et al. (1999), suggest a different view. They argue that insurance firms with greater relative liabilities may face higher costs to service those liabilities, and thus may not be able to accumulate the same levels of cash as insurance firms with lower liabilities. Also, poor performance could result both in high leverage and low levels of cash, while good performance could result in just the opposite. This argument supports the negative relationship between leverage and cash.

Jensen (1986) argues that debt reduces the agency costs of free cash flow by reducing the cash flow available for spending at the discretion of managers. John (1993) argues that a high debt ratio is a proxy for access to debt markets, so those highly leveraged firms have a lesser need to hold high liquidity. Life insurance firms rarely issue long-term debt; leverage effect comes from their underwriting obligations.

Investment Opportunity Set : A firm with greater future investment opportunities is likely to hold higher levels of cash in order to seize said opportunities as they arise, without having to go out for external sources of funds. Thus, the expected sign on the investment opportunity set variable is positive.

Stock option : A stock option plan is a long-term compensation contract that depends on market measures of corporate performance. Stock option plans generally grant managers the right to purchase a specific number of

shares over a specific period of time at an advantageous exercise price. As discussed before, two reasons for using managerial stock options are their tax advantages and their effects on the agency problem. Stock option plans are intended to direct managers to focus on long-run rather than short-run profits. Managers with a stock ownership plan will make efforts to drive the stock price up. One way for a stock price to increase is to make use of free cash flow for profits. Thus, it is expected that firms with stock options as a managerial compensation plan have less free cash flow than those without stock options. An inverse relation between stock options and free cash flow is predicted.

2. The Equation

Based on the above discussion, the following regression equation is obtained.

$$FCF = f (SIZE, DEF, GM, LEV, IO, STOP) \quad (1)$$

Where, FCF = free cash flow, SIZE = company size, DEF = default risk, GM = group membership, LEV = leverage, IO = investment opportunity, STOP = stock option.

The equation shows that free cash flow is a function of size, default risk, group membership, leverage, investment opportunities and stock options.

3. Data

Data was collected from the A.M. Best report (1996-1997), the DISCLOSURE program and proxy statements provided by firms. The A.M. Best report provides information of approximately 1,750 life/health insurance companies. Sample companies are selected from the A.M. Best report randomly. Initially, 343 companies were chosen. Most information related to company

operations is obtained from the A.M. Best's report and information about manager compensation comes from DISCLOSURE and proxy statements. The first sample size shrank due to lack of necessary information provided by the A.M. Best report, DISCLOSURE, and the proxy statements.

The number of companies with the necessary information (except for compensation information) from the A.M. Best report and DISCLOSE was 168. We then requested 168 companies of whose stocks are mostly non-publicly traded to provide managerial compensation data and only 68 companies replied. Thus, the final sample size is 68.

4. Variable Measurement

Following Lehn and Poulsen (1989), Lang, et al (1991), and Wells, et al. (1995), we choose undistributed cash flow as a proxy for free cash flow. Free cash flow can be defined theoretically, but measuring it is not possible in reality. Undistributed cash flow, defined in equation (2), includes all cash inflows and all obligatory cash outflows for a year. The obligatory cash outflows are those payments that managers are obligated to make.

$$\begin{aligned} \text{UCF} = & \text{Net Operating and Investment Income} + \text{Additional Capital} \\ & \text{Changes Paid-in} - \text{Gross Interest Expenses} - \text{Income taxes} \\ & - \text{Policyholder Dividends} - \text{Stockholder dividends} \end{aligned} \quad (2)$$

Undistributed cash flow can be negative. However, negative cash flow and negative manager discretion are meaningless. Thus, if undistributed cash flow was calculated to be negative, it then was set to zero for these purposes.

In the insurance industry, a firm's size can be measured by admitted assets, premiums written, and capital and surpluses. In this paper, admitted assets are selected to indicate firm size.

<Table 2> The Ranges of Undistributed Cash Flow of the Sample Firms

(in thousand US\$)

Quartile 1	11,635.0
Quartile 2	47,112.5
Quartile 3	179,212.3
Quartile 4	6,992,896.0
Mean	221,219.4
SD	604,908.5

The NAIC has developed a risk-based capital formula establishing target surplus amounts that will be required above reserve requirements, and that reflect the risk inherent in an insurer's contractual obligations and asset portfolio. A.M. Best reports a similar capital adequacy ratio for life/health insurers. Another possible proxy for default risk is A.M. Best's general rating. A.M. Best measures an insurance company's performance in the three critical areas of profitability, leverage/capitalization, and liquidity. A.M. Best's ratings range from "A++" to "C". In this research, the capital adequacy ratio for a life insurer is adopted to measure default risk. Numbers are given to the six categories (from "A++" to "C"). For example, a value of 1 is given to category "C", a value of 2 is given to category "B", and so on.

<Table 3> Capital Adequacy Ratios for Companies with Different Sizes

Company Size	Capital and Asset Size Range(\$)	Capital Adequacy Ratio Range
Large	Asset > 2 billion Capital > 300 million	132 - 182 %
Medium	Asset: 100 million - 2 billion Capital: 60 million - 300 million	177 - 233 %
Small	Asset < 100 million Capital < 60 million	198 - 348%

Group membership : A dummy variable is used in the regression. The value is 1 if the firm is a member of a group, and 0 otherwise.

Leverage: in the context of the insurance industry, three measures of leverage are often used. The first one is the ratio of adjusted liabilities to adjusted surpluses. This ratio is for testing surplus adequacy. The second one, net premiums written over adjusted surpluses, measures the intensity of surplus use in premium writings. This ratio measures the insurer's exposure to pricing errors. The third one measures the extent to which an insurer relies on reinsurance. As mentioned earlier, life insurers rarely issue long-term debt and most fixed obligations are policies. In this study, leverage is measured by the ratio of total liabilities to assets.

Investment opportunities : There are several proxies for investment opportunities. The most common are market-to-book ratios (Smith and Watts, 1992; Gaver and Gaver, 1993; Baber, Janakirman, and Kang, 1996; Jung, Kim, and Stulz, 1996). Another such proxy is research and development expenditures (Long and Malitz, 1985; Smith and Watts, 1992; Skinner, 1993). Some authors (Baber, Janakirman, and Kang, 1996) propose another measure. In addition to market-to-book ratio and R&D, they use past growth rates as a proxy for future investment opportunities. For our analysis, we use the past growth rates, or growth rates in net premiums written, as a variable for investment opportunity.

Stock option : To capture the effects of a stock option plan, two variables are selected. One is the value of total unexercised options and the other is the number of beneficial shares of stock held plus unexercised stock options. The greater the value of unexercised stock options, the greater the insurance company managers' motivation to focus on long-run goals, thereby increasing stock prices and reducing equity agency costs. The second variable measures ownership and control of a company. Ownership and control of a company have a similar effect on managers' motivation.

The two variables can be expressed as the following :

OPT : The value of total unexercised options scaled by total compensation

INSIDE : The number of beneficial shares of stock held plus unexercised stock options divided by total shares outstanding

5. The Regression Equation

Based on above discussions, we finally have the following regression equation.

$$\begin{aligned} \text{FCF} = & \alpha + \beta_1\text{SIZE} + \beta_2\text{DEF} + \beta_3\text{GM} + \beta_4\text{LEV} + \beta_5\text{IO} \\ & + \beta_6\text{OPT} + \beta_7\text{INSIDE} + \varepsilon \end{aligned} \quad (3)$$

IV. Results and Analysis

1. Statistics

<Table 4> Summary Statistics of Independent Variables and Expected Signs for 1997

Variable	Mean	SD	Expected Sign
SIZE	15.1259	15.9852	+/-
DEF	3.48	0.9684	-
GM	0.618	N/A	-
LEV	0.49	0.86	+/-
IO	0.1152	0.2766	+
OPT	0.1189	0.17246	-
INSIDE	0.022689	0.3752	-

Note : SIZE = firm size ; DEF = default risk measured by risk - based capital formul a ; GM = a dummy variable, (1 if the firm is a member of a group and 0 otherwise) ; LEV = leverage measured by the ratio of total liabilities to assets ; IO = growth rates in net premiums written ; OPT = the value of total unexercised options scaled by total compensation ; INSIDE = the number of beneficial shares of stock held plus unexercised stock options divided by total shares outstanding.

The summary of statistics and expected relationship between undistributed cash flow (free cash flow) and variables is shown in Table 4.

The average company size of the sample firms is 3.7 million dollars. With respect to stock ownership, a CEO's potential control is 2.58 percent of the outstanding stocks, and the value of options represents 1.13 percent of total CEO compensation.

2. The Results of Regression

The results OLS of equation (3) are shown in the following table.

<Table 5> Summary of the Results of Regression

Variable	β -Value	t-Value
Constant	0.9326	8.87***
SIZE	0.0224	1.788**
DEF	-0.427	-1.931**
GM	-0.0165	-1.421*
LEV	-0.1156	-1.926**
IO	0.2058	0.311
OPT	-0.2058	-1.813*
INSIDE	-0.329	-1.982
R-Square 0.654	Ad.R-Square 0.498	F 4.67

Note : * Significant at a level of 0.1.
 ** Significant at a level of 0.05.
 *** Significant at a level of 0.01.

The predicted sign of the coefficient of the variable SIZE was ambiguous. The results show that there is a statistically significant positive relationship between firm size and free cash flow. This result indicates that larger firms hold more free cash flow than smaller firms. This result also is consistent with the findings of Wells, et al. (1995). As previous studies show, there are

factors that affect the level of cash holdings; that is, there exist economies of scale in cash transactions and larger firms are likely to face lower costs of external financing. However, regarding free cash flow, the agency cost is a more influential factor.

Default risk, or the financial strength variable, is negative and statistically significant. This result indicates that firms with high default risk or financially weaker firms hold more cash flow.

The Group membership variable is negative and statistically significant. This result shows that insurance firms that are part of a group are likely to hold less cash because they can get liquidity help from a parent or other group members.

The LEVs, the sign of which was predicted to be ambiguous, turn out to be significant and negative. This means the LEVs have influence on free cash flow. This result is consistent with Jensen's prediction that the presence of fixed obligations in the capital structure obligates managers to disburse excess cash flow.

The positive estimated coefficient on the IO, or investment opportunities, indicates that firms with more investment opportunities hold more cash. However, the result is not statistically significant. We believe that this result reflects the fact that the life insurance industry is not growing.

Stock option plans have an effect on free cash flow at a 10-percent level of significance, so we can tell that a stock ownership plan can reduce agency conflicts in a financial firm to some extent. This result is consistent with the hypothesis that an incentive plan can reduce agency conflicts between managers and shareholders.

On the other hand, the variable INSIDE, indicating company ownership, is found to be insignificant. This result is probably consistent with the Gomez et al.'s finding. In their executive compensation study, they use a dummy variable for ownership control when "5 percent or more" of the outstanding

stock ownership is in the hands of the manager in their executive compensation study. According to their criterion, average managers in this sample of firms do not have ownership control, recalling an average 2.28 percent of control in our sample firms.

V. Conclusions

Because free cash flow in a firm can be used for unprofitable investments by managers, free cash flow has been regarded as one of the typical signs of agency conflicts between managers and owners. The life insurance industry is known to be particularly susceptible to excessive cash flow.

Managerial compensation plan is one of the effective ways to control agency conflicts in a firm. The number of insurance companies that link compensation to company profits is increasing. A stock option plan is part of a managerial compensation package. Due to tax advantages and effects on reducing agency conflicts in a firm, stock option plans are very popular these days.

In this research, we find that a stock option plan is effective in reducing undistributed cash flow that proxies free cash flow in a firm. This effect is one of the reasons that stock option plans are becoming more popular.

The drawbacks that this study is subject to are that it is based on archival data drawn from established databases. To the extent that factors unidentified and excluded from the regression equation are important, conclusions drawn about the effects of the included variables of interest on the variable may not be valid. Also, in evaluating stock option values, we did not use Black and Schole's model due to calculation problems. Instead, we used the value that the SEC suggested.

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