

Impact of Financial Leverage on Agency cost of Free Cash Flow: Evidence from the Manufacturing sector of Pakistan

Asma Khan¹, Prof. Dr. Ahmad Kaleem², Mian Sajid Nazir³

¹MS Scholar, Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan.

²Head, Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan.

³Assistant Professor, Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan.

ABSTRACT

The objective of this study is to examine how manufacturing sector of Pakistan mitigate the agency cost of free cash flow by using leverage. To measure the agency cost of free cash flow firm free cash flow is used as a proxy. Leverage of the firm is measured by using two ratios including debt to equity ratio and long term debt. Panel data of 54 manufacturing firms for the period 2006 to 2010 has been collected from the non financial sector of Pakistan. These firms were in the Karachi 100 stock index. Results revealed that the firm leverage play an important role in reducing the agency cost of free cash flow by reducing the free cash flow that is under the control of the manager. This result is consistent with the free cash flow theory. The implications, limitations and future area of study are also discussed in the conclusion at the end of the study.

Keywords: Leverage, agency costs, free cash flow, capital structure.

INTRODUCTION

The free cash flow theory of Easterbrook (1984) and Jensen (1986) states that companies with substantial free cash flow always tend to face conflicts of interest between stockholders and managers. Managers once have satisfied all the obligations contracted by the company with funds generated by operations, can use the remaining flows from the treasury for their own benefit instead of the interest of shareholder. Shareholders wants managers to invest cash in the projects that maximize their stock value where as the manager personal interest is in consuming perks. In the seminal paper on the agency theory Jensen Meckling (1976) argue that the agency cost are high in the firms with excess free cash flow. According to the free cash flow theory the firm sometimes generates more free cash that is required by the manager to be invested in the positive NPV project. Manager invest the excessive free cash in the non value maximizing projects when they are lacking in the positive NPV projects because managers gain prestige being the manager of the big firm. This behavior is called the overinvestment problem. Harvey et al (2004) stated that managers like to invest abundant cash for their own discretionary purpose. Owner of the firm with more free cash flow monitor the activities of the manager to avoid any wasteful expenditure. This monitoring increase the firm cost of monitoring hence increase the agency cost of the firm that in turn decrease the value of the firm. Zhang (2009) revealed that firm value is affected because investors while making the investments considered the anticipated agency cost both related to the consumptions of firm resources by the managers and the expenditures that are made to limit the wasteful consumptions of the manager into the stock price they are willing to pay for it. It is important to analyze effective mechanisms to mitigate this agency cost. These mechanisms can either restrict the available resources for manager discretionary purposes or align the interests between shareholders and managers.

Leverage and Agency cost of free cash Flow:

Firm holding more leverage in their capital structure can reduce the free cash flow. By using more leverage firm free cash flow instead of being inefficiently used by the managers given directly to the debt holder and is taken out of the company in the form of interest payments. The high level of leverage in the firm capital structure also increases the firm bankruptcy risk. By holding the debt in the capital structure firm gives the right to the debt holder that they can take the firm into the court if firm wouldn't meet the financial obligation. The risk of bankruptcy forces the manager to work in an efficient way that increases the firm profitability. They have risk of losing jobs in case of bankruptcy so they utilize the firm resources in positive NPV projects rather than wasting them in the activities of their own interest. Debt provide shield against the agency cost of free cash flow by reducing free cash flow and constraining management but this shield lost after firm get default. After bankruptcy the management of the firm is although replaced by the new one but the new management assumed to cause the same agency cost of free cash flow again.

***Corresponding Author:** Asma Khan, MS Scholar, Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan. Email: Asma_logical@yahoo.com +923236367685

In this research, we test the impact of leverage on agency cost of free cash flow in Manufacturing sector of Pakistan. The study will help the manufacture sector of Pakistan to control their agency cost of free cash flow by including the optimal level of leverage in their capital structure. In this study profit, investment and growth opportunities, firm size and managerial ownership is also measured to see their impact on the agency cost of free cash flow.

LITERATURE REVIEW

Debt policy is a mechanism of reducing free cash flow problem. Many researchers focused on the relationship between the level of debt in the capital structure and agency cost of free cash flows. Some of these researches are:

Lingling (2004) investigated the impact of ownership structure on the debt financing in the context of free cash flow problem. In this study he investigated the implications of free cash flow theory in capital structure policy of listed Japanese firms. The paper focuses specially on relations between leverage and free cash flow. The results of the study show that there is a negative relationship between the free cash flow and debt and the results is more significant for low growth firms than he high growth firms. He argued that the firm with low growth opportunities is discouraged by the intuitional ownership as they have to compensate their debt. The results of the study show that the capital structure has a disciplinary role in reducing free cash flow problem.

Li and Cui (2003) test the impact of capital structure on agency costs. He argued in his research that the debt decreases the agency cost. As the creditors of the firm are more concerned about the principal payments and the interest. These creditors more often monitor the activities of the manager to protect firms to be bankrupt. This reduces the agency cost of the firms.

Zhang and Li (2008) argued that increase in leverage may reduce agency cost. The result of the study shows that increase in the leverage may reduce the agency cost. In this study they also reported that if the leverage is increased from the optimal level that results in the opposite effect on the agency cost of free cash flow. They argued that increase in the debt sometime result in increase in the bankruptcy cost. They pointed out that the increases in the debt level reduce the agency cost but increase the bankruptcy cost. The results of their study are consistent with the agency theory of free cash flow that the increase in debt helps in reducing the cash flow.

Zhang (2009) investigated the role of capital structure and managerial incentive compensation in controlling the free cash flow agency problem. The result of the study suggests that the debt and executive can be act as a substitute in reducing the free cash flow problem. He also pointed out the free cash flow problem is more in the firms with low growth prospective and mature. The usage of debt is benefit as a monitoring device and there is a negative relationship between the leverage and free cash flow. The study suggests that there is a more pronounced effect in the firms that have more severe agency problem.

McKnight (2008) examined the relationship between the corporate governance and ownership structure and agency cost in the UK perspectives. In his study he used three proxies to measure the agency cost which includes the ratio of sales to total assets, the free cash flow and the firm growth prospect. The analysis shows a significant negative relationship between the free cash flow and the debt. This result is consistent with the free cash flow theory given by Jensen in 1986. According to this the increase in debt reduce the free cash available to the firm hence reduce the agency cost.

Byrd (2010) argued that there is a conflict between the interest of manger and shareholders about the spending of the free cash flow. The results of the study show that there is inverse relationship between leverage and agency cost. He reported that the free cash flow theory has stresses the importance of the firm capital structure and dividend policies for controlling the free cash flow problem. The results of his stated that unlevered firms with free cash flow bear high agency cost than the leveraged firm.

Fleming et al (2004) assumes that the agency cost of equity always increase with the increase in the separation of control. The study has focused on the change in the agency cost. This research has conducted in the Australian on small and medium enterprise. Their study also pointed that debt can play an important role in reducing free cash flow of the firm by paying interest payments that reduce the available cash to the manager. They stated that because of high debt level the risk of the bankruptcy increases that make the manager more conscious

Fatma (2011) has investigated the impact of ownership structure and dividend policy in reducing the agency conflict between the shareholder and the manager in the restrictions of free cash flow problem. Her study stated that the debt policy is the principal mechanism of controlling the free cash flow problem of the firm. Hers study also concluded that the managerial ownership can also be used to reduced the agency cost related to free cash flow.

The previous researches conducted in different countries, business culture and the economic conditions revealed that the agency cost of free cash flow can be reduced by using more debt in the capital structure.

Researchers pointed out that the firm using more debt can reduce free cash flow that is under the control of the manager. Researchers conducted in different countries find that the firm leverage is an effective mechanism of controlling the agency cost of free cash flow.

RESEARCH METHODOLOGY

Data and sample:

Sample

In order to examine the impact of dividend policy, leverage and voluntarily contribution on the agency cost of free cash flow in the context of Pakistan, present study initially selected 74 non financial firms from the top 100 index of Karachi stock exchange. KSE 100 index is that it is most recognized index of the KSE. It shows representation from all sectors of the KSE and includes the largest companies on the basis of their market capitalization. Most importantly KSE represents over 85% of the market capitalization of the Exchange. The manufacturing sector is chosen for the present study. The reason behind selecting manufacturing sector is that it is a capital intensive firms and their cash builds up. Secondly manufacturing sector lies in the cyclical industries so they need to keep the extra cash in their reserves to ride up in the cyclical downturns. The need of keeping extra cash in the reserve make the manufacturing more appealing for the study of agency cost of free cash flow.

Financial firms were excluded from the sample as these firms follow different accounting standards. Present study recorded 270 observations. Only those firms have been included in the final sample which has fulfilled the following criteria.

1. Firms must remain in business for the whole study period.
2. The firms that remained listed from 2006 to 2010.
3. Should not have merged, due to any reason.
4. The firms that has paid dividend at least once in five years has included in the sample.
5. The firms that have long term debt in their capital structure in the year of study.

On the basis of the above mentioned criteria sample of 54 Manufacturing firms has been selected for the five years from 2006 to 2010. Data has been collected from the Annual reports of Karachi Stock Exchange (KSE), Economic survey of Pakistan, Published financial statements of companies, Balance Sheet Analysis of e Joint Stock companies and publication of the State Bank of Pakistan. Type of data structure used in this study is panel (balanced panel data). McKnight (2008) stated that panel data isolates both time series and cross sectional effects.

Measures

Free cash flow is used as a proxy of agency cost of free cash flow and it is also the dependent variable of the study. Several researchers use different definitions of free cash flow. Utami et al (2011) defined free cash flows as net profit minus changes in fixed assets minus changes in net working capital divided by total assets. Wu (2004) defined free cash flows as operating income before depreciation minus interest expense minus taxes minus preferred dividends divided by book value of assets. Chu (2010) calculated the free cash flows by subtracting total tax on income, gross interest expense and expense on investment activity from operating income before depreciation. In our study free cash flow is measured by

$$\text{Free cash flow} = \text{Operating Income before depreciation} / \text{Total assets}$$

Previous researches used different measures to calculate the debt level of the firm. Some of these researches are Fatima (2010) used debt ratio to measure firm level of debt in her study on the interaction between her debt policies and free cash flow. Jensen et al (1992) used debt to equity ratio to measure the debt policy. Byrd (2010) in his study to see the relationship between the debt and free cash flow he takes the value of each firm long term obligations. Zhang (2009) in his study on the effect of debt in reducing the free cash flow defined leverage as a firm's net debt issuance minus the net equity issuance. In the light of the previous researches we calculated debt policy as:

$$\text{Debt to Equity Ratio} = \text{Total debt} / \text{Total equity}$$

$$\text{Long term debt Ratio} = \text{Long term debt} / \text{Long term debt plus short term debt}$$

Control variables of the study are investment and growth opportunity, firm size and profitability. Tobin Q is used as a proxy to measure the investment and growth opportunities. It is measured by market value of equity plus book value of long term debt plus book value of short term debt divided by total assets. Previous researches shows positive relationship between the Tobin Q and the agency cost of free cash flow. They argued that the firm holds more free cash when they have investment opportunities that lead towards creating free cash flow problem (Ferreira et al, 2004; Saddour, 2006; Opler et al, 1999). Size of the firm is calculated by natural log of total assets. There is a

positive relationship between the free cash flow and the size of the firm (Ferreira and Vilela 2004; Saddour 2006 and Doukas et al. 2000) Whereas the profitability of the firm is measured by earning after tax/Total number of share outstanding. Previous researches concluded that profitability of the firm is positively related to the agency cost free cash flow as the profitable firms hold more free cash that can be used by the manager for their own discretionary purpose (Utami et al, 2011; Ahmad, 2009). Managerial ownership of the firm is measured by the number of shares hold by the manager divided by the outstanding shares. Agency cost of free cash flow reduces with the increase in the firm managerial ownership (James s et al, 2000; Ahmad, 2009 and McCosker , 2005).

Statistical procedure:

Generalized Least Square (GLS) regression on panel data is used to examine the impact of leverage on agency cost of free cash flow. The use of the OLS as an estimation method instead of GLS model does not result in the efficient estimates of the regression coefficient. To decide about whether RE (Random Effect) is more precise or FE (Fixed Effect) for a particular panel data, Hausman test is used. If the Hausman test is significant then in this case FE is more appropriate and if this test is insignificant then it reveals that RE is more precise for a particular data set (Saleh et al, 2008).

The model of the study is

$$ACF_{it} = \beta_0 + \beta_1 D/E_{it} + \beta_2 LTDR_{it} + \beta_3 PRFT_{it} + \beta_4 Size_{it} + \beta_5 TOBINQ_{it} + \beta_6 MRG_{it} + \varepsilon_{it} \dots 1$$

Whereas β = regression coefficient i = index of ith firm t =time period ε =error term

- ❖ D/E =Debt to equity Ratio
- ❖ $LTDR$ = Long term debt
- ❖ $PRFT$ =Profit
- ❖ $TOBIN Q$ =Investment and growth opportunities
- ❖ SZE =size
- ❖ MRG = Managerial ownership

Table 1: Variable Summery

RESULTS

Symbol	Proxy	Variable Description.	Expected Relationship
Dependent variable			
FCF	Free Cash Flow	Operating Income before depreciation / Total assets	
Independent variable			
D/E	Debt to equity ratio	Total debt/ Total equity	Negative(-)
LTDR	Long term debt	Long term debt/long term debt + short term debt	Negative
Controlled Variable			
Size	Firm size	Natural log of the total assets	Positive(+)
PRFT	Profit	Earnings after tax / Total number of share outstanding	Positive(+)
MGR	Managerial Ownership	Common shares own by insiders/total number of shares outstanding	Negative(-)
TOBNQ	Tobin Q	MV of equity + BV of long term debt+ BV of shorter debt/ Total assets.	Positive(+)

Table 2 contains the descriptive analysis of 54 manufacturing firms listed in the Karachi stock exchange (KSE) of Pakistan from the period of 2006 to 2010. Free cash flow (FCF) which is basically the proxy of agency cost of free cash flow is used as a dependent variable. In our study two variables debt to equity ratio (D/E) and Long term debt ratio (LTDR) is used to measure the firm leverage. Managerial ownership (MNGR), Size of the firm (SZE), Firm's profitability (PRFT) and growth and investment opportunities (TOBQ) are also included in the study. In our study penal data analysis is followed in which each firm year has treated individually which establish the total sample of 270 firm year observations.

In this study free cash flow (FCF) is measured by operating income minus tax minus interest rate plus depreciation divided by total assets. Table 1 provides the descriptive statistics of dependent and independent variables. Minimum value of FCF is -0.311 whereas the maximum value of the FCF is 0.676. The minimum negative values of free cash flow shows that firm of Pakistan are making large investment. The maximum value of the FCF shows that Pakistani firms hold maximum 67 percent of free cash to the total assets. Two ratios are used to measure the leverage of the firm this include debt to equity ratio calculated by total debt divided by equity and the

long term debt ratio calculated by long term debt divided by total debt plus market value of equity. Debt to equity ratio .The average ratio of debt to equity in Pakistan is 2.0813 which show that the non financial firm of Pakistan is using more debt than equity in order to continue their operation. This ratio pointed out that the Pakistani firms are highly leveraged. The minimum value of debt to equity ratio in Pakistan is .0325 where as the maximum value of the debt to equity ratio is 35.8576. The long-term debt ratio is also used as a measurement of debt ratio. The mean value of long term debt is .1961 which shows that firm uses 19 percent of long term debt to finance their operations. The minimum value of long term ratio is .0056 and the maximum value of long term ratio is.8496 which shows that there is maximum 84 percent of long term debt in total capitalization of the Pakistani non financial firms.

Managerial ownership is the Percentage of the shares held by the manger of the firm. The average value of managerial ownership in Pakistan non financial firm is .0143 which means that on average 1.4 percent of total outstanding shares is held by the manger of the firm. Profitability of the firm is measured by net income divided by sales. The average profitability of the firm is .1061 which tells us the earning of the firms is 10 percent of its sales. The minimum negative value of the firm is -.4861.The minus sign is showing the loss of 48 percent of sales. Whereas the maximum value of the Pakistani firm profitability is 2.0224 showing that earnings of the Pakistani firms is 202 percent of total sales. Tobin Q in our study is used as a proxy of growth and investment opportunities. It is measured by market value of equity plus book value of long term debt plus book value of short term debt divided by total assets. The mean value of Tobin Q is 1.8004 which shows that high growth and investment opportunities are available for Pakistan non financial firms. This value can deviate from its mean value up to 1.9270.The minimum value of Tobn q in Pakistani firms is .1982 where as the maximum value is of 15.6501. Size of the firm is calculated as log of total sales. The average size of the Pakistani non financial firms in terms of sales is 2.3441 which can deviate to1.2568. The minimum value of the firm size is 19.2154 and the maximum value is of 26.1564.

Table 1: Descriptive of variables:

Variable	Observation	Mean	Std.Dev	Min	Max
FCF	270	0.136	0.111	-0.311	0
D/E	270	2.090	2.828	0.032	.676
LTDR	270	0.187	0.222	0	35.858
PRFT	270	0.101	0.173	-486	0.85
MNGR	270	0.012	0.0473	0	2.022
Tobin Q	270	1.871	1.977	.198	.326
SIZE	270	23.529	1.992	0	15.65

The table 3 shows the results of the GLS regression. Leverage ratios debt to equity ratio (-.0060, p<0.01) and long term debt (-0.085, p<0.01) are significant and negatively associated with the free cash flow. This show that the agency cost of free cash flow decreases with the increase in the firm leverage. These results are consistent with the agency theory of free cash flow that the firm leverage can reduce the agency cost of free cash flow. The size of the firm is positively and significantly (0.225, p>0.05) associated with the agency cost of free cash flow. This shows that there is a decrease in the agency cost of free cash flow with the increase in the size of the firm. The profitability of the firm is positively and significantly (0.228, p<0.01) associated with the free cash flow. Whereas the investment and growth opportunities is also positively and significantly (0.009, p<0.01) associated with the free cash flow. This shows that the firm with more investment and growth opportunities bears more agency cost of free cash flow. The managerial owner is insignificantly related to the agency cost of free cash flow (0.0671, p>0.05).The insignificant result is due to the lack of managerial ownership in Pakistan.

Table 3: GLS regression Results:

Variables	Dep. Variable: FCF	
	FE Model	RE Model
Debt to equity	-0.0060*	-0.0071
Long term debt	-0.0855**	-0.1148
Size	0.0038	0.0043
MNGR	0.0671	0.2320
Profit	0.2251*	0.2320
Tobin Q	0.0091*	0.0165
Year Dummy	NO	No
R ²	0.53	0.3798
Hausman Test	0.042 (insignificant at p>0.01)	

*Significant at 1%, **Significant at 5%, ***Significant at 10%

DISCUSSION

Results for the debt policy of the firm is also accordance to free cash flow theory that the optimal level of leverage in firm capital structure can reduce the free cash flow that is under the control of the manager. By using more debt in the capital structure manager give right to the debt holder that they can bring the firm in to the court if they do not make the interest and principal payments to them. More usage of debt increase the bankruptcy risk of the firm and the risk of losing jobs for the manager so they avoid investing free cash flow in the negative NPV projects. Thus debt is also a controlling mechanism of agency cost of free cash flow like the dividend. Li *et al.* (2003) argued that high debt in the capital structure increase the creditors concern about the interest and principal payments and they have more incentives in monitoring the manager's action. As a result of high debt in capital structure reduce the agency cost. Fleming (2005) concluded that a firm by using optimal level of debt in their capitals structure can control their agency cost of free cash flows.

The investment and growth opportunities (Tobin Q) of the firm increase the agency cost associated with the free cash flow. As the firm with more growth and investment opportunities of the firm hold more free cash to avoid the forego of any profitable project because of lack of cash availability. Hence the managers of the firm with more investment and growth opportunities hold more free cash that is misused by the manager. This increase the monitoring need of their activities which in result in crease the agency cost associated with the free cash flow our result is also consistent with the so many previous studies. Ferreira *et al* (2004) pointed out that the firms with better investment opportunities have greater financial distress costs because the positive NPV of these investments disappears in case of bankruptcy. In this case, firms with better investment opportunities will keep higher levels of cash to avoid financial distress. Opler *et al* (1999) reported that the firm prefers to hold more cash if they have profitable investment opportunities which leads towards the increase in the agency cost of free cash flow. The results of the joint model of the study shows that the managerial ownership is negatively associated with the free cash flow that is with accordance with the free cash flow theory that managerial ownership can reduce the free cash flow problem but the insignificance result of the study is due to less number of outstanding shares that are owned by the manager.

In Pakistani context the managerial ownership is not an effective way of controlling the agency cost of free cash flow. The results of the study also revealed that the profitable firm carry more free cash flow that is under the control of the manager can be used by them for their own discretionary purposes. Utami *et al* (2011) reported that firm profitability increase the firm cash under the control of management that can be used by them for the wasteful activities. So the profitability of the firm is positively related to the agency cost. Ahmad (2009) stated that a profitable firm always holds more cash that can be misused by the manager of the firm. The larger firm carries less free cash flow this is due to the fact that the larger firm carries more operations that increase the expenditures of the firm and reduce the profitability of the firm. Larger the firm less cash flow is available to be used by the manager for the wasteful expenditures. Large firms bears less agency cost of free cash flow. Our study confirms the results of Henery (2010) that larger firms are relatively less profitable which leaves lower cash flows available to the manager to be disinvested by them.

There are some recommendations for the government, investors and the mangers to control the agency cost associated with the free cash flow. Firstly certain convents between the principal and the agents are also needed to limit the management decisions on investments undertaking to restrict the investment of firm free cash in non value adding projects. Complex contractual arrangements between the managers and owner of the firm. That protects the right of the owner on the free cash flow of the firm. Agency cost may be also minimized by forming the rules prohibiting the conduct that is reliably identified contrary to the interest of the principal.

There are some alternatives for future research and the first one is that this topic is further studied by conducting research including different variables and different sectors. Another extension would be including private firms. Due to the difficulty to find the necessary data for non listed firms, this research only involves Karachi listed firms. It is possible that in the future this data becomes better available. It is then interesting to find out in what kind of way non listed firms act to mitigate agency problems. There are other proxies including cash flow, modified cash flow and firm discounted cash flow that is also used to see the impact of leverage on agency cost of free cash flow. This will help in examining the more precise impact of the leverage on the agency cost of free cash flow.

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