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Extended Abstract

Investigation of Interactions between Free Cash Flow, Debt Policy and Ownership Structure Using the Simultaneous Equations System: Case Study of Listed Companies in Tehran Stock Exchange

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Introduction

Jensen (1986) predicts that when managers maintain more free cash flow in hand, they commit opportunistic behaviors such as investing in projects with fewer net cash, less amount of effort for creating revenues, causing more unnecessary expenses, wasting revenues, and other such things. He also predicts that an increase in financial leverage enforces managers to be more disciplined and would reduce their opportunistic behaviors, because paying debt reduces the free cash flow. On the other hand, establishing debt has influence on free cash flows. Therefore, there is an interaction between risk of free cash flow and establishing a debt. Also there are other factors that influence both of these factors. Consequently, this research tests the efficiency of the ownership structure and the debt policy as a mechanism of resolution of agency conflicts between shareholders and managers due to the problem of overinvestment, and in the limitation of the problem of the free cash flow. In other words, in this study the free cash flow theory of Jensen (1986) with some of relevant variable are investigated.

Hypotheses

According to the research questions and literature review, research hypotheses are as follows:

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a) Hypothesis related to endogenous variables (free cash flow risk and debt policy):

1. There is a significant relation between the free cash flow risk and debt policy.

b) Hypotheses related to exogenous variables (effective on endogenous variable of free cash flow):

2. There is a significant relation between ownership concentration (Conc) and free cash flow risk.
3. There is a significant relation between institutional ownership level (Inst) and free cash flow risk.
4. There is a significant relation between managerial stock ownership (Man) and free cash flow risk.
5. There is a significant relation between state ownership (State) and free cash flow risk.
6. There is a significant relation between size of the firm (Size) and free cash flow risk.

c) Hypothesis related to exogenous variables (effective on endogenous variable of free cash flow):

7. There is a significant relation between tangible asset structure (Tang) and debt policy.
8. There is a significant relation between tax paid (Tax) and debt policy.
9. There is a significant relation between growth opportunity (Growth) and debt policy.
10. There is a significant relation between size of the firm (Size) and debt policy.
11. There is a significant relation between profitability (profit) and debt policy.
12. There is a significant relation between fluctuation in price (Risk) and debt policy.
13. There is a significant relation between industry (Ind) and debt policy.
Methods

Because of investigating cross relations in this study, variables were divided into two groups: exogenous and endogenous. Consequently, we used the simultaneous equations system for estimating the equations. Hence, this study uses a two-equation model with free cash flow and leverage as the variables. Additional leverage appears as a regressor in the free cash flow equation and vice-versa. Thus, the leverage and free cash flow are simultaneously determined. The models are as follow:

\[
FCF_{i,t} = \beta_0 + \beta_1 \text{Leverage}_{i,t} + \beta_2 \text{Conc}_{i,t} + \beta_3 \text{Inst}_{i,t} + \beta_4 \text{Man}_{i,t} + \beta_5 \text{Stat} + \beta_6 \text{Size}_{i,t} + \varepsilon_{1i,t}
\]

\[
\text{Leverage}_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 \text{Asst}_{i,t} + \beta_3 \text{Tax}_{i,t} + \beta_4 \text{Growth}_{i,t} + \beta_5 \text{Size}_{i,t} + \beta_6 \text{Profit}_{i,t} + \beta_7 \text{Risk}_{i,t} + \beta_8 \text{Ind}_{i,t} + \varepsilon_{2i,t}
\]

Free cash flow risk (FCF) equation includes long term debt (Leverage), ownership concentration (Conc), institutional ownership level (Inst), managerial stock ownership (Man), state ownership (State) and size of the firm (Size). While leverage equation, includes measures of Free cash flow risk (FCF), firm size (Size), tangible assets structure (Tang), tax paid (Tax), growth opportunity (Growth), profitability (Profit), fluctuation at price (Risk) and industry (Ind).

Results

Referring to the result of statistical tests, ownership concentration (Conc) and state ownership (State) variables have the negative and significant effect and debt policy, and the level of institutional ownership have a positive and significant effect on the risk of free cash flow. Also, risk of free cash flow, tax and size variables have the positive and significant effect, and earning variable exhibits the negative and significant effect on the debt policy.

Discussion and Conclusion

Results from research hypotheses disapprove of Jensen’s theory of free cash flows (1986). In other words, current study shows that using debt for reducing agency cost from free cash flows is not a suitable solution but increase it. In fact, debting that Jensen (1986) suggests for reducing free cash flows causes increase in free cash flows itself from one side and earning of free cash
flow investing from the other side. In addition, the results of statistical tests show that, ownership concentration (Conc) and state ownership results in a decrease in free cash flow risk. Also in relevance with debt policy variable, statistical test shows that it influences free cash flow risk.

**Keywords:** Free Cash Flow Risk, Debt Policy, Ownership Structure, Simultaneous-Equation, Agency Costs.