UCT JOURNAL OF MANAGEMENT AND ACCOUNTING STUDIES 2016(03)

Available online at http://journals.researchhub.org

Study the Effect of Operating Cash Flow on the Time Structure of Debts

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ARTICLE INFO

Article history:
Received 16 Mar 2016
Received in revised form 18 Apr 2016
Accepted 28 Apr 2016

Keywords:
Time structure of debts,
Operating cycle,
Operating cash flow,
Non-current debts

ABSTRACT

Objective: Capital structure is one of the most important topics in any company. Choose an appropriate capital structure is one of the important issues in determining the value of each company and this structure is composition of financing the company. **Methodology:** In this study, we investigate the effect of operating cash flow on time structure of debts in listed companies in Tehran Stock Exchange within 2006 to 2013 .The number of observations in this research are 98 companies. Research data have been collected using informational banks of Stock Exchange and companies and the hypotheses have been tested using OLS method. **Results:** Given the results of study, there is a significant relationship between operating cash flow and time maturity of debts. **Conclusion:** Debts and equity are structural components of capital. Type of debt used in the company will be effective on the company's risk ratio .Some of the companies have used the current debts in financing and financial risk of them will be increased naturally and some are more willing to Non-Current debts.

1. Introduction

The recent global financial crisis, reaffirmed the importance of debt's time structure of the corporations for financial stability and remind the rules and standards providers that at the present there is no suitable framework for time compliance. Researches show that the deadline or Cash flow is one of the vital and important sources of each economic unit. The balance between available cash flow and cash needs is one of the most important factors of economic health and continuity of activities in business units. on the other hand, most of the Iranian companies prefer to convert other properties due to existing inflation position. Although such a common phenomenon is considered as shield resistance against inflation, but its secondary effect is that the companies are distress in deadline of debts and the reputation of the organization is disturbed.

Experience has shown that most of those companies faced to bankruptcy and financial distress have been had always weaknesses from working capital management and also in Cash flow control. strategy of cash assets of a company determines its destiny and future. In an imperfect market, companies have noted to collecting and having cash flow and reduce in the risk, but having Cash flow too much, increase the costs for opportunity, while having small amounts of Cash flow can be induced shortage of costs that are not useful for investment.

The optimal level of cash assets of the company is an alternative relationship between the costs and benefits of asset of Cash flow. Without doubt, the increase in pressure of inflation affect the amount and cost of funding sources and thus are overshadowed the succession relationship between the costs and benefits of having cash flow. In addition, the operating cycle of a company has direct relationship with the time and the speed which is acquired on that Cash flow.

The recent global financial crisis has highlighted the importance of time structure of debts in companies for financial stability and points out to the drafters of the rules and standard that there is no suitable framework for time compliance currently. Researches shows that the deadline of the company's sources has made the pre-crisis areas for the global financial crisis. Most firms used debt in their capital structure.

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DOI: https://doi.org/10.24200/jmas.vol4iss03pp37-43

Debt structure is one of the most important criteria in determining the company's success and sustainable growth of the company. Hence the decisions focused on this structure are critical for the survival of the company's business. However, the structure of debt is not simple and the wrong decision making leads the company into crisis and bankruptcy.

This is an applied study from goal view, because an applied study intends to search for answer to the problems. Two methods of descriptive and inferential statistics are also used in the following. In descriptive statistics, the necessary information has been collected using financial information and summarized and then inferential statistics will be used to examine the hypotheses. This research is consistent and correlation type, because the relationship between variable is focused.

The study period, includes financial data related to the performance of fiscal years 2006 to 2013 companies listed on the Stock Exchange of Tehran. In this study, the population under study are companies listed on Tehran Stock Exchange from 2006 up to end of 2013. The following filters have been used to select samples.

1. The Company Financial Year ends to the 29 March and the company in the period under consideration has not changed its financial year.
2. Not to be among investment companies, banks and financial mediators.
3. Information required calculating the research variables to be available in the years under studied. sampling to be as systematic removing, i.e. after applying the above limits on the study population, the remaining companies has been considered as a case study.

In the present study, databank of Tehran stock exchange, central Bank and companies selected by referring to the financial statements and explanatory notes have been used in order to collect and required data. In this study, the correlation and regression coefficient and the corresponding tests have been used to analyze the data.

2. Materials and methods

2.1 Research hypotheses

2.1.1 Main hypothesis: There is a significant relationship between company's operating cash flow and time structure of debts.

2.1.2 Subsidiary hypotheses:

The effect of operating cash on the time structure of debts is more for companies with larger size.

The effect of operating cash on the time structure of debts is more for companies with higher lifetime.

2.2 Research theoretical Foundations

2.2.1 Factors affecting the level of cash flow holdings

The factors affecting the level of cash flow holdings can be explained in various theories (for example, information asymmetry theory, representation theory, balancing theory, the theory of the hierarchy of financing, theory of Free Cash Flow). For example, according to hierarchical theory, management prefers the internal resources of financing than external sources (Haushalter et al., 2007).

Thus, manager moves toward accumulating the cash flow to meet financing within the company and does not refer to the outside the company, in the first phase. (Custodio et al., 2005). So, less Cash flow may be maintained. According to agency theory also, it is expected that the lower debt to reduce supervision of capital markets on management and increase in his authorities and the consequently to leads to increase in level of cash flow holdings. In the following any of the theories is expressed in detail.

2.3 Theories of the level of cash holdings

2.3.1 Theory of information asymmetry

According to the mentioned theory, a party to the transaction, compared to others, has informational advantage. Such case is called asymmetric information. According to the mentioned theory, the difference between public and confidential information can be observed in the financial markets. Overall, can be said that asymmetry of information has an important effect on the cost of external financing (Zhou and Xie, 2007).

2.4 Agency Theory

Since, there is conflict of interest between managers and owners, in the mentioned theory, the structure of the contracts is studied in order to coordinate the interests of managers and owners (Zhou and Xie, 2007). An agency problem is one of the most important factors determining the cash holdings in the company.

Research results have shown that in countries where shareholder rights are not well protected, the companies protect more cash flow to countries that shareholders have good support (Davar and Peirovani, 2011). Faulkender (2002), in an economic unit, have identified two types of conflict of interest:

A) Conflicts of interest between managers and shareholders

B) Conflicts of interest between shareholders and holders of debt securities

Such conflict helps to identify agency costs that can be used to justify management performance in cash holdings. About the size of companies can be said that management will have more authority whatever the company be larger. Thus, the probability of excess cash holdings increases. Debt agency costs create when the interests of shareholders to be different with the interests of creditors (holders of debt securities) and the interests of various classes of creditors (Faulkender, 2002).

2.5 Balance theory

Based on the mentioned theory, companies determine favorable amount of cash flow by creating balance between benefits and costs of cash holdings (Faleye, 2004). cash holdings cause to provide the favorable investment policies follow-up at face time of company with financial constraints and costs for collecting financial resources or to reduce existing cash assets (Opler et al., 1999).

2.6 Determinants factors of cash flow on the basis of balance theory

Based on the theory of balance, Determinants factors of cash flow of companies are described below. Investment Opportunities: shortage of cash flow in companies with more investment opportunities, is higher because of opportunity costs caused by removing valuable investment plans. Therefore, it is expected that there is positive relationship between investment opportunities and cash balances. Also, in this the theory it is predicted that companies with more investment opportunities, have more financial crisis costs, because present positive net value of these plans is destroyed during bankruptcy. Companies with more investment opportunities will keep more cash flow in order to avoid of financial crisis (Wang, 2009). Liquidity of current assets: when companies are faced with cash flow shortage, the ability to convert current assets into cash flow can be considered an alternative to cash flow. Therefore, it is expected that companies by more power liquidity to keep less cash flow Financial leverage: financial leverage increases the probability of bankruptcy and is expected that leveraged companies hold more cash flow to reduce financial risk. Financial leverage ratio is considered a factor to determine the company's ability order to diffusion of new debt securities. Thus, if the repayment power of financing costs to increase in a company has also more financial flexibility and may be keep less cash flow. For this reason, cannot be explained the relationship between financial leverage and cash flow carefully (Custodio et al., 2005). Size: Based on the theory of balance, the expected relationship between company size and cash holdings is negative. Since the large companies are more flexible, can be expected more stable cash flows for them. As a result, they are less facing at risk of bankruptcy and compared to small companies have easier access to sources of debt financing (Sajadi et al., 2010). As well as the size is used as an indicator for the informational asymmetry between those inside and outside the organization of the company. Yanchao et al., (2013) showed that the companies deal to financing through the creation of debt when the asymmetry of information is low. Cash Flow: According to Fresard (2010) since the cash flow, provides a source of liquidity available, can be considered a good alternative for cash flow. So, it is expected that on the basis of this theory, there is a negative relationship between the cash flow and cash balances. Uncertainty of cash flow: companies with more fluctuations of cash flows more likely are faced with shortage of cash flow, because cash flow may be unexpectedly reduced. Therefore, it is expected that there is a negative relationship between the uncertainty of cash flows and cash balances (Faleye, 2004). Debt maturity: impact of debt deadline is not clear on the cash flow balances. Companies that rely on short-term debt, should be extend their credit agreement in any extension period and if be created restrictions in extending credit agreement, are faced at risk of financial crisis. Therefore, by controlling other factors can be expected that there is a relationship between deadline and cash balance negatively. But Pinkowitz et al., (2006) showed that companies with high credit rating, because of ease of creating debt, usually use from short-term debt they maintain less cash flow balances that makes positive this relationship. Paying dividends: the company that deals to dividends currently can be provided resources by lowest cost through reduction of dividends. It is expected that companies that pay dividends, keep less cash flow compared to companies that do not pay to dividends (Custodio et al., 2005).

3. Discussion and results

This study examines the impact of inflation on operating cash flow on time structure of debts in listed companies on Tehran Stock Exchange; therefore, one main hypothesis and two sub-hypothesis have ben explained. Separate regression models have been used to testing them; This section consists of two main parts: the first part indicates descriptive and correlation statistics in which, research data collected are described using central and dispersion and Pearson correlation in the second part also, regression equations were fitted after reviewing hypotheses of regression model and ensuring establishment of them, and hypotheses are examined based on their results.

3.1 Descriptive Statistics

Table 1: Descriptive statistics of the explanatory variables of research

Description	Ratio current to the non-current debt y	Operation cycle X1	The ratio of cash flow to total assets X2	Company size X4	Company lifetime X5
Mean	11.523	97.46	0.286	5.865	32.73
Middle	8.11	94.72	0.06	6	34
Maximum	113.32	402.04	60.25	8	61
Minimum	0.22	52.83	0	4	6
Standard deviation	12.738	60.133	3.045	0.903	12.64
Skewness	2.757	0.6066	18.27	0.426	-0.037
Elongation	14.54	3.412	338.31	3.014	1.964

Variable of operating cycle with an average equal to 97.46 shows that cycle times of operating of sample companies 98 times had been more than desired industry return on average. Of course the minimum and maximum values of this variable suggests that there is a company that its ratio of return 52 times less than the cycle of industry operations and versus there is the company that its operation cycle 402 times is higher than the desired operation cycle industry. Variable of cash flow ratio to total assets has an average of 0.286, which shows the average ratio of cash flow to total assets is more than 29% of

the desired industry average and according to the minimum and maximum of this variable shows that a company has cash flow ratio to total assets of zero and a company has the cash flow to total assets of 60 percent. Well as inflation rate has an average of 20.64 and its proximity with Middle indicates normality of data of this variable and attention to the minimum (10.8) and maximum (34.7) show that more data is placed around the average. Mean variable of company size is equal to 5.865, that shows variable of company size almost 6 times is more than the industry average and the proximity of the average to middle indicate the normality of company size variable data and average of lifetime variable has been equal to 32.73 and its proximity distance with middle show a good data for this variable and attention to the smallest 6 and biggest 61show that most of data is not placed around average.

3.2 Results of Main hypothesis

According to second main hypothesis, there is a significant relationship between cash operating and debts structure of companies. This hypothesis was tested in level of panel data by using model (1) and its results have been reflected in Table 1. The coefficient β_2 in the model (1) is considered to confirmation or rejection of the first hypothesis. The first hypothesis is confirmed if the coefficient β_2 is significant, but the first hypothesis is rejected if the coefficient β_2 is not significant. In this test coefficient that is same company's operating cash flow is equal to 0.089325 that by significant level of 0.0022 and is greater than zero, but is significant, which suggest there is a significant relationship between cash flow operating and debt time structure, so the second main hypothesis is confirmed based on the second model.

***3.3 Third sub-hypothesis*:** the effect of operating cash flow on the time structure of debt is more for companies with bigger size.
H0: the effect of operating cash flow on the time structure of debt is not more for companies with bigger size.
H1: the effect of operating cash flow on the time structure of debt is more for companies with bigger size.

Table 2: Test results F Limer (width consistency of width from origins of Companies)

Null hypothesis	Research Relationship	F statistic	Degree of freedom	P-value	Test result
width from origins of all sections are equal with each other	Model 4	28.918986	97.679	0.0	Null hypothesis is rejected

Table 3: Hausman test results (the choice between constant and random effects works)

Null hypothesis	Research Relationship	F statistic	Degree of freedom	P-value	Test result
disturbing element of width from origin and explanatory variables are independent	Model 4	23.222398	6	0.0007	Null hypothesis is rejected

The results of estimating the regression equation model (4) at the time interval from 2013 to 2006, order to testing third sub hypothesis of research is as following table.

Table 4: results of third sub-hypothesis testing based on the model (4)

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_2 * x_4 + \varepsilon$$

Variables	Coefficients Value	T-statistic	Significant level
operating cycle (x_1)	0.002529	1.288036	0.1982
Operating cash flow (x_2)	-2.335448	-1.405649	0.1603
Inflation ratio (x_3)	-0.002598	-0.174520	0.8615
firm size (x_4)	0.287089	4.505779	0.0
Company lifetime (x_5)	0.450182	2.429096	0.0154
$x_2 * x_4$	0.074793	1.452453	0.1468
Width from origin	0.982818	0.393101	0.6944
The coefficient of determination	0.921458	Durbin - Watson	1.598470
F statistic	77.34015	Significant level	0.0

3.4 Evaluation of remaining credit:

3.4.1 Autocorrelation:

The Durbin-Watson statistic is used to investigate this hypothesis the assumption of autocorrelation between the remaining sentences is rejected if the amount of this statistic to be placed at the distance of 1.5 to 2.5. According to above table result amount of this statistics is equal to 1.598470. So there is no autocorrelation regression in remaining sentences of this model.

3.4.2 Remaining normality:

Since the model remains are linear combination of dependent variable and the other hand normal distribution of the linearity property. Therefore, can be examined normality of dependent variable of model to test the remains normality. The hypothesis is tested by using Jarek and bra statistics in eviews and significant level of 0.0643 is more than 5%, so the null hypothesis of the test based on normality of distribution of remain is acceptable.

3.5 Evaluate the validity and power of the model:

3.5.1 F Fisher statistic:

F-Fisher test is used to verify the significant assumption of the total model or in other words existing a meaningful linear relationship between independent and dependent variables. The null hypothesis of this test shows that there is no linear relationship between independent and dependent variables. Results of table with Significant level of zero (below 5%) show the rejection of the null hypothesis with 99% confidence, in other words generally there is meaningful linear relationship between independent and dependent variables and model has needed validity for analysis of the results.

3.5.2 The coefficient of determination:

Amount of determining factor represents the percentage of dependent variable changes that is explained by the independent variables. In this model the determining factor is roughly equal to 92% means that the dependent variable explains 92% of changes of the independent variable changes, so the model has the power to interpret the results.

3.6 Hypothesis test result

According to third sub-hypothesis, the effect of operating cash flow is more on the time structure of debt for companies with bigger size. This hypothesis was tested by using the model (4) at level of panel data and its results have been shown in Table 4. Coefficients β_6 in model (4) are considered to confirm or reject the hypothesis1-3.

Third sub-hypothesis is confirmed if the coefficient β_6 is positive and significant, third sub-hypothesis is rejected but if the coefficient β_6 is less than zero. In this test coefficient β_6 that is the same interactive variable of operating cash flow with company size is equal to 0.074793 with significant level of 0.1468 and is greater than zero but is not significant, that shows the impact of operating cash flow on the time structure of debt is not more for companies with bigger size. As a result, third sub-hypothesis is rejected on the basis of model (4).

3.7 The fourth sub-hypothesis testing

3.7.1 Fourth sub-hypothesis: the effect of operating cash flow is more on the time structure of debt for companies with higher lifetime.

H0: the effect of operating cash flow on the time structure of debt is not more for companies with higher lifetime.

H1: the effect of operating cash flow on the time structure of debt is more for companies with higher lifetime.

Table 5: F Limer test results (width consistency of width from origins of Companies)

Null hypothesis	Relationship Research	F statistic	Degree of freedom	P Value	Test result
width from origins of all sections are equal with each other	Model 5	7.878575	97.679	0.0	Null hypothesis is rejected

Table 6: Hausman test results (the choice between constant and random effects work)

Null hypothesis	Relationship Research	F statistic	Degree of freedom	P Value	Test result
disturbing element of width from origin and explanatory variables are independent	Model 5	24.204147	6	0.0	Null hypothesis is rejected

The results of estimating the regression equation model (5) at time interval from 2013 to 2006, order to testing research fourth sub-hypothesis is as the following table.

Table 7: Results of Fourth sub-hypothesis testing based on model (5)

$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_2 * x_5 + \varepsilon$			
Variables	**Coefficients Value**	**T-statistic**	**Significant level**
operating cycle (x_1)	0.002388	1.425652	0.1544
Operating cash flow (x_2)	-15.33233	-2.020469	0.0437
Inflation ratio (x_3)	-0.003027	-0.192499	0.8474
firm size (x_4)	0.277795	4.048264	0.0001
Company lifetime (x_5)	0.109881	0.497097	0.6193
$x_2 * x_4$	3.083156	2.03571	0.0427
Width from origin	3.108922	1.007776	0.3139
The coefficient of determination	0.923537	Durbin - Watson	1.600390
F statistic	79.62227	Significant level	0.0

3.8 Evaluation of remaining credit:

3.8.1 Autocorrelation:

The Durbin-Watson statistic is used to investigate this hypothesis the assumption of autocorrelation between the remaining sentences is rejected if the amount of this statistic to be placed at the distance of 1.5 to 2.5. According to above table result amount of this statistics is equal to 1.600390. So there is no autocorrelation regression in remaining sentences of this model.

3.8.2 Remaining Normality

Since the model remains are linear combination of dependent variable and the other hand normal distribution of the linearity property. Therefore, can be examined normality of dependent variable of model to test the remains normality. The hypothesis is tested by using Jarek and bra statistics in eviews and significant level of 0.0658 is more than 5%, so the null hypothesis of the test based on normality of distribution of remain is acceptable.

3.9 Evaluate the validity and power of the model:

3.9.1 F Fisher statistic:

- F Fisher test is used to verify the significant assumption of the total model or in other words to existing a meaningful linear relationship between independent and dependent variables. The null hypothesis of this test shows that there is no linear relationship between independent and dependent variables. Results of table with Significant level of zero (below 5%) show the rejection of the null hypothesis with 99% confidence, in other words generally there is meaningful linear relationship between independent and dependent variables and model has needed validity for analysis of the results.

3.9.2 The coefficient of determination:

Amount of determining factor represents the percentage of dependent variable changes that is explained by the independent variables. in this model the determining factor is roughly equal to 92% means that the dependent variable explains 92% of changes of the independent variable changes, so the model has the power to interpret the results.

3.10 Hypothesis test result

According to forth sub-hypothesis, the effect of operating cash flow on the time structure of debt is more for companies with higher lifetime. This hypothesis was tested by using the model (5) and its results have been shown in Table 4. Coefficients β_6 in model (5) are considered to confirm or reject the forth hypothesis. But the forth hypothesis is rejected if Coefficients β_6 to be less than zero. In this test coefficient β_6 that is the same interactive variable of operating cash flow with company lifetime is equal to 3.08315 with significant level of 0.0427 and Confidence level 95% is greater than zero that shows the impact of operating cash flow on the time structure of debt is more for companies with higher lifetime. As a result, forth sub-hypothesis is confirmed on the basis of model (5).

4. Conclusion

According to the second main hypothesis, there is a significant relationship between cash flow operations and debt structure. in Table 5, cash flow coefficient value of operations has 0.0893 coefficient and in 95% confidence level there is a significant positive relationship between cash flow operations and time structure of debts. This means that higher operating cash flow in the company, willing to use current depts. Is more.

According to sub-hypothesis (1-2), the effect of operating cash flow on the time structure of debts is more in bigger size companies. The results of Table 4 reject the above hypothesis.

7- According to sub-hypothesis (2-2), the effect of operating cash flow on the time structure of debts is more in companies with higher lifetime. This hypothesis is confirmed based on the results of Table 4.

Table 8: **Summary of results of hypotheses testing**

Second main hypothesis	**There is a significant relationship between operating cash flow and debt structure.**	**confirmation**
Sub 1	the effect of operating cash flow on the time structure of debts is more in bigger size companies	Rejection
Sub 2	the effect of operating cash flow on the time structure of debts is more in companies with higher lifetime	confirmation

4.1 Suggestions obtained the hypotheses testing:

According to the second main hypothesis, there is a significant relationship between operating cash flow cycle and the time structure of debts. According to the confirming above hypothesis, i.e. a positive relationship between operating cash flow and the time structure of debts, it is suggested to venture investors to pay special attention to the net operating cash flow of companies in investing on stocks of companies and observe it on their investment decisions.

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How to Cite this Article:

Mahmoud Aghdam P., Mohammadzadeh A., Study the Effect of Operating Cash Flow on the Time Structure of Debts, Uct Journal of Management and Accounting Studies 4(3) (2016) 37–43.