# The Impact of Capital Structure on Corporate Performance

## Abolfazl Ghadiri Moghaddam

Accounting Associated Professor, Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran

## Mahdi Sadeghi Kashkoueyeh

Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran
Corresponding Author/Email:mahdi.sadeqi66@gmail.com

## Mohammadmahdi Talezadeh

Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran

## Mohammadreza Aala

Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran

## Mahdi Ebrahimpour

Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran

## Mina Tehranypour

Accounting Department, Mashhad Branch, Islamic Azad University, Mashhad, Iran

**Abstract**
The present study was designed to gather evidence about the relationship between short-term debt, long-term debt with variables such as EPS, return on equity, return on assets and the ratio Q / B. This research was conducted in companies listed in Tehran Stock Exchange. Multiple linear regressions were used to test the hypothesis. In this study, 3 dependent variables, 4 control variables and 3 independent variables are used. Also, 12 hypotheses were provided for this study. The sample of the study consisted of 50 participate in a 5-year period of 2008 to 2012. The findings suggest that there is negative relationship between short-term debt, long-term debt and total debt with returns on equity. Also about four to six hypothesis it became clear that short-term debt and total debt to equity returns are negatively related. In testing hypotheses 7 and 9 showed that short-term debt, long-term debt and total debt is

negatively associated with ROA. Also worth noting that in 10 to 12 hypothesis it is showed that there is negative relationship between short-term debt and total debt by Tobin's q.
**Keywords:** Capital structure, Corporate Performance and Debts

## Introduction

By referring to researches and literature of financial management it can be seen that the most common reasons for failure of companies is the absence and inadequacy of investment and their financing inadequate. For example, the owners of these companies may have the wrong of mix in resources (debt versus equity), or obtain the resources that have high liquidity commitments and restrictions or have agreements and obligations that have high cost on them. It is even possible to see the sources of financing to suppliers that work with them is problematic. Therefore, it is possible weaknesses lead to bad investments that threat to the survival and persistence of firms (Cassar, 2004). In addition to inadequate capital structure of each company affects all aspects of a company's activities and can cause problems such as inefficiency in the marketing of products, the lack of effective and appropriate in use of human resources and some others (Hashemi & Akhlaghi, 2010). Decisions relating to the capital structure of the company have two aspects: 1. the amount of required capital, (2) the composition of the funding sources. It is assumed that firm itself is aware of the amount of required capital. In such cases the issue is that which resources should be used to fund. In other words, how many bonds should be issued or how much of capital should be from the supply (Van auken, 2005). With attention to situation of capital structure and its effect on the value, profitability and economic performance of firms determining the optimal capital structure is very important.

## Theoretical issues

Different definitions of capital structure is presented that each of these definitions expressed the financing methods as capital structure. According to Cooper (1983), capital structure is older securities (rated) to total investment. Belkooei (1999) defines capital structure as general claim on the firm assets. He knows that capital structure consists of issued securities to public, private investment, bank debt, and business debt, Leases that usually measured through ratios such as debt to total assets ratio, the ratio of equity to total assets and the ratio of debt to equity. The subject of capital structure was presented by Miller and Modigliani for the first time in 1960. Research conducted by various researchers showed that under certain conditions which is called the efficient market, capital structure is a key factor in determining the value of the firms and can affect the performance of the enterprise and just in this time, capital structure and its influencing factors were interest by researchers (Sajjad et al., 2011). Nowadays managers as representatives of the shareholders set capital structure that have a positive impact on increasing of the value of the company which increase shareholder wealth (Noroozi, 2010).

## Background

Nikbakht & Peikani (2009) studied the relationship between capital structure and market criteria of performance evaluation in listed company in Tehran Stock Exchange. They found that there is a correlation between the capital structure and the ratio of Tobin's q multiple correlations (0/379) and between capital structure and P / E ratio (0/224).

Abbaszadeh et al (2013) examined the relationship between capital structure and performance of the listed companies in Tehran Stock Exchange using the technique of DEA. The results showed a significant correlation between the efficiency and debt ratio.

Khodami Pour et al (2013) examined the effect of capital structure on future abnormal returns of shares with respect to the level of industry concentration. The results of their study showed there is negative and significant relationship between capital structure and future stock abnormal returns. On the other hand, the share of industry concentration has a significant negative effect on the relationship between capital structure and future abnormal stock returns. Zeraatgari & Dehghanzadeh (2012) investigate the relationship between capital structure and return on assets and return on equity. The result showed that return on assets has a negative significant relationship with capital structure (ratio of short-term debt to total assets, the ratio of long-term debt to total assets and total liabilities to total assets ratio as independent variables).

The research conducted by Muir and Krishnan (1977), and Machur & Gelisen (2000) and Anderson (2005) show that there is a significant relationship between measures of capital (leverage) and performance measures (return on assets), respectively.

Kapobeyankou (2004) used DEA models to determine the optimal capital structure for international airline companies. Their research results showed that the optimal capital structure includes a lever 60 percent for all companies.

Mok et al (2007) examined the impact of financial leverage on efficiency and relationship between efficiency and profitability. The results showed that the financial leverage have a positive impact on efficiency of these firms and efficiency and profitability positively correlated with each other.

Margaritiz et al (2009) investigate the relationship between capital structure, ownership rights, and efficiency in the French manufacturing firms. Testing of their hypothesis showed that firms with greater efficiency tend to have higher financial leverage.

Otamy and Inanga (2012) tested the relationship between capital structure and life cycle. The results of their study showed that both companies including: growing and mature companies follow the hierarchical theory.

Park and Jang (2013) tested the relationship between capital structure, free cash flow and performance. They follow a linear relationship between variables. They found that debt leverage is an effective way to reduce free cash flow and strengthen the company's performance.

Brian et al (2013) studied the effect of capital structure on the performance of Japanese firms. The result showed that firms with higher returns compared to the cost of debt leverage, managed to improve their performance by issuing bonds and entering new markets. Also, the results of Berayan et al's research represent direct linear relationship between the amount debt and performance.

## Research hypotheses

1. There is significant relationship between short-term debts to total assets with EPS.
2. There is significant relationship between long-term debts to total assets with EPS.
3. There is significant relationship between total debts to total assets with EPS.
4. There is significant relationship between short-term debts to total assets with return on equity.
5. There is significant relationship between long-term debts to total assets with return on equity.

6. There is significant relationship between total debts to total assets with return on equity.
7. There is significant relationship between short-term debts to total assets with return on assets.
8. There is significant relationship between long-term debts to total assets with return on equity.
9. There is significant relationship between total debts to total assets with return on equity.
10. There is significant relationship between short-term debts to total assets with Tobin's q.
11. There is significant relationship between long-term debts to total assets with Tobin's q.
12. There is significant relationship between total debts to total assets with Tobin's q.

**The research population and sample**
The population of the study is all listed companies in Tehran Stock Exchange. The sample consisted of those companies listed in Tehran Stock Exchange whose shares are actively traded in the period 2009 to 2013 the method of sampling is elimination according to the following priorities:
1. Only firms whose shares are traded on the Tehran Stock Exchange during the years of 2009 to 2012 and is also a member of the Stock Exchange.
2. Because of comparability of the results, the fiscal year of companies must be ended March each year and during the period under review does not change the fiscal year.
3. Information is available for the company.
4. Companies should be manufacturing and are not component of investment firms; financial intermediation, insurance industry, holding and banks are not accepted in Tehran Stock Exchange.

**Research variables**
**Dependent variables:**
Performance Measurement,
EPS: Net income after tax divided by the number of issued shares
ROE: Net income after tax divided by equity
ROA: Net income after tax divided by total assets
Tobin's Q: This was introduced in 1969 by James Tobin: the total market value divided by the book value of total assets
**Independent Variables:**
Capital Market, short-term debt to total assets ratio, long-term debt to total assets ratio, ratio of total liabilities to total assets represents the capital structure of the company. Variable is the logarithm of the total assets of the company comes as the control variable.

**Research model**
We use cumulative panel data regression model to evaluate the effect of capital structure on firm performance that is as follows:
$Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$
Here, i = 1, 2, ..., N; and t = 1, 2, ..., T
$Y_{it}$ is dependent variable (performance) i in year t.

$X_{it}$ is capital structure of firm i in year t.

$\beta$ is regression coefficient and $\varepsilon it$ is the error. In this study we have used three cumulative models: Cumulative model of least squares (OLS), the fixed effects model and random effects model.

To facilitate the selection of appropriate integrated model we have used the F test and Hausman test. First to select between fixed and cumulative models we use the F test. Then we use Hausman test to choose between a fixed or random effects, durbin-Watson statistic model is used to determine the correlation. In addition to test the stability of all the variables, the test Levin, Lin and Chu (2002) were used. However, using the regression model, the effect of selected capital structure on firm performance is examined:

$EPS_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (1)

$EPS_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (2)

$EPS_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (3)

$ROE_{it} = \alpha_{it} + STDTA_{it}\beta0 + Size_{it}\beta1 + \varepsilon_{it}$ (4)

$ROE_{it} = \alpha_{it} + LTDTA_{it}\beta0 + Size_{it}\beta1 + \varepsilon_{it}$ (5)

$ROE_{it} = \alpha_{it} + TDTA_{it}\beta0 + Size_{it}\beta1 + \varepsilon_{it}$ (6)

$ROA_{it} = \alpha_{it} + STDTA_{it}\beta0 + Size_{it}\beta1 + \varepsilon_{it}$ (7)

$ROA_{it} = \alpha_{it} + LTDTA_{it}\beta0 + Size_{it}\beta1 + \varepsilon_{it}$ (8)

$ROA_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (9)

$Tobin's\ Q_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (10)

$Tobin's\ Q_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (11)

$Tobin's\ Q_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it}$ (12)

STDTAit, LTDTAit and TDTAit represents short-term debt, long-term debt and total debt of firm i in year t. also, Sizeit is natural logarithm of firm assets i in year t is the. All other variables are as previously defined. $\alpha$, $0\beta$ and $1\beta$ are the regression coefficients, and $\varepsilon it$ is the error.

Dependent Variable: EP
Method: Panel Least Squares
Date: 01/25/15   Time: 19:35
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0000 | -8.027883 | 0.110633 | -0.888145 | STDTA |
| 0.3336 | 0.969280 | 0.059310 | 0.057488 | SIZE |
| 0.8723 | -0.160961 | 0.831383 | -0.133820 | C |

| Effects Specification | | | | |
|---|---|---|---|---|
| Cross-section fixed (dummy variables) | | | | |

| 0.122600 | Mean dependent var | 0.664741 | R-squared |
|---|---|---|---|
| 0.364256 | S.D. dependent var | 0.578387 | Adjusted R-squared |
| 0.137222 | Akaike info criterion | 0.236518 | S.E. of regression |

| 0.869686 | Schwarz criterion | 11.07628 | Sum squared resid |
| 0.432017 | Hannan-Quinn criter. | 34.84725 | Log likelihood |
| 1.595276 | Durbin-Watson stat | 7.697819 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the model is significant. The significant amount in the level of variable implies that the ratio of short-term debt to total assets has a significant negative correlation with the ratio of earnings per share.

Dependent Variable: EP
Method: Panel Least Squares
Date: 01/25/15   Time: 19:36
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|-------|-------------|------------|-------------|----------|
| 0.0000 | -4.936711 | 0.186253 | -0.919479 | LTDTA |
| 0.4352 | 0.781932 | 0.064494 | 0.050430 | SIZE |
| 0.5729 | -0.564741 | 0.900629 | -0.508622 | C |

Effects Specification

Cross-section fixed (dummy variables)

| 0.122600 | Mean dependent var | 0.604321 | R-squared |
|----------|---------------------|----------|-----------|
| 0.364256 | S.D. dependent var | 0.502404 | Adjusted R-squared |
| 0.302923 | Akaike info criterion | 0.256948 | S.E. of regression |
| 1.035387 | Schwarz criterion | 13.07245 | Sum squared resid |
| 0.597718 | Hannan-Quinn criter. | 14.13461 | Log likelihood |
| 1.633344 | Durbin-Watson stat | 5.929520 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of short-term debt to total assets has a significant negative correlation with the ratio of earnings per share like the first hypothesis.

Dependent Variable: EP
Method: Panel Least Squares
Date: 01/25/15   Time: 19:37
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|-------|-------------|------------|-------------|----------|

| 0.0000 | -11.17128 | 0.087485 | -0.977318 | TDTA |
| 0.4404 | 0.773031 | 0.053514 | 0.041368 | SIZE |
| 0.7673 | 0.296259 | 0.751503 | 0.222639 | C |

| Effects Specification |
|---|
| Cross-section fixed (dummy variables) |

| 0.122600 | Mean dependent var | 0.727422 | R-squared |
| 0.364256 | S.D. dependent var | 0.657212 | Adjusted R-squared |
| -0.069755 | Akaike info criterion | 0.213265 | S.E. of regression |
| 0.662709 | Schwarz criterion | 9.005443 | Sum squared resid |
| 0.225041 | Hannan-Quinn criter. | 60.71934 | Log likelihood |
| 1.988484 | Durbin-Watson stat | 10.36072 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of total debt to total assets has a significant negative correlation with the ratio of earnings per share.

Dependent Variable: ROE
Method: Panel Least Squares
Date: 01/25/15   Time: 19:38
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0000 | -4.883392 | 0.437478 | -2.136376 | STDTA |
| 0.3396 | -0.957189 | 0.234530 | -0.224490 | SIZE |
| 0.1149 | 1.583422 | 3.287565 | 5.205603 | C |

| Effects Specification |
|---|
| Cross-section fixed (dummy variables) |

| 0.761720 | Mean dependent var | 0.633674 | R-squared |
| 1.377960 | S.D. dependent var | 0.539318 | Adjusted R-squared |
| 2.886846 | Akaike info criterion | 0.935271 | S.E. of regression |
| 3.619309 | Schwarz criterion | 173.1969 | Sum squared resid |
| 3.181641 | Hannan-Quinn criter. | -308.8557 | Log likelihood |
| 2.233851 | Durbin-Watson stat | 6.715738 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of short-term debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: ROE
Method: Panel Least Squares
Date: 01/25/15   Time: 19:39
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0765 | -1.780908 | 0.711934 | -1.267889 | LTDTA |
| 0.3597 | -0.918148 | 0.246520 | -0.226342 | SIZE |
| 0.2445 | 1.167401 | 3.442560 | 4.018846 | C |

Effects Specification

Cross-section fixed (dummy variables)

| | | | | |
|---|---|---|---|---|
| 0.761720 | Mean dependent var | 0.596024 | R-squared | |
| 1.377960 | S.D. dependent var | 0.491970 | Adjusted R-squared | |
| 2.984677 | Akaike info criterion | 0.982158 | S.E. of regression | |
| 3.717141 | Schwarz criterion | 190.9977 | Sum squared resid | |
| 3.279473 | Hannan-Quinn criter. | -321.0847 | Log likelihood | |
| 2.230965 | Durbin-Watson stat | 5.728010 | F-statistic | |
| | | 0.000000 | Prob(F-statistic) | |

According to statistics of f and obtained P-Value, we can conclude that H0 is rejected and also total of model is significant. In the level of variable implies that the ratio of long-term debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: ROE
Method: Panel Least Squares
Date: 01/25/15   Time: 19:40
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0000 | -5.434281 | 0.378841 | -2.058729 | TDTA |
| 0.2703 | -1.105357 | 0.231736 | -0.256151 | SIZE |
| 0.0782 | 1.770407 | 3.254279 | 5.761398 | C |

Effects Specification

Cross-section fixed (dummy variables)

| | | | | |
|---|---|---|---|---|
| 0.761720 | Mean dependent var | 0.642825 | R-squared | |
| 1.377960 | S.D. dependent var | 0.550826 | Adjusted R-squared | |

| | | | | |
|---|---|---|---|---|
| 2.861548 | Akaike info criterion | 0.923515 | S.E. of regression | |
| 3.594011 | Schwarz criterion | 168.8704 | Sum squared resid | |
| 3.156343 | Hannan-Quinn criter. | -305.6934 | Log likelihood | |
| 2.276870 | Durbin-Watson stat | 6.987268 | F-statistic | |
| | | 0.000000 | Prob(F-statistic) | |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of total debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/25/15   Time: 19:40
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0000 | -8.110135 | 0.051306 | -0.416095 | STDTA |
| 0.0391 | -2.076602 | 0.027505 | -0.057116 | SIZE |
| 0.0033 | 2.974221 | 0.385552 | 1.146716 | C |

Effects Specification

Cross-section fixed (dummy variables)

| | | | | |
|---|---|---|---|---|
| 0.094360 | Mean dependent var | 0.668692 | R-squared | |
| 0.169927 | S.D. dependent var | 0.583356 | Adjusted R-squared | |
| -1.399608 | Akaike info criterion | 0.109685 | S.E. of regression | |
| -0.667144 | Schwarz criterion | 2.382084 | Sum squared resid | |
| -1.104813 | Hannan-Quinn criter. | 226.9510 | Log likelihood | |
| 2.619532 | Durbin-Watson stat | 7.835922 | F-statistic | |
| | | 0.000000 | Prob(F-statistic) | |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of short-term debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/25/15   Time: 19:41
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|

| 0.0311 | -2.171651 | 0.090694 | -0.196955 | LTDTA |
| 0.0726 | -1.804722 | 0.031404 | -0.056676 | SIZE |
| 0.0414 | 2.053296 | 0.438549 | 0.900471 | C |

| Effects Specification |
| --- |

| Cross-section fixed (dummy variables) |
| --- |

| 0.094360 | Mean dependent var | 0.568902 | R-squared |
| 0.169927 | S.D. dependent var | 0.457862 | Adjusted R-squared |
| -1.136321 | Akaike info criterion | 0.125118 | S.E. of regression |
| -0.403857 | Schwarz criterion | 3.099569 | Sum squared resid |
| -0.841525 | Hannan-Quinn criter. | 194.0401 | Log likelihood |
| 2.436112 | Durbin-Watson stat | 5.123386 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of long-term debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/25/15   Time: 19:42
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
| --- | --- | --- | --- | --- |
| 0.0000 | -8.701101 | 0.044170 | -0.384330 | TDTA |
| 0.0210 | -2.327179 | 0.027019 | -0.062878 | SIZE |
| 0.0013 | 3.262246 | 0.379427 | 1.237784 | C |

| Effects Specification |
| --- |

| Cross-section fixed (dummy variables) |
| --- |

| 0.094360 | Mean dependent var | 0.680718 | R-squared |
| 0.169927 | S.D. dependent var | 0.598479 | Adjusted R-squared |
| -1.436580 | Akaike info criterion | 0.107676 | S.E. of regression |
| -0.704117 | Schwarz criterion | 2.295621 | Sum squared resid |
| -1.141785 | Hannan-Quinn criter. | 231.5726 | Log likelihood |
| 2.719193 | Durbin-Watson stat | 8.277282 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of total debt to total assets has a significant negative correlation with return on equity.

Dependent Variable: TOBINQ
Method: Panel Least Squares
Date: 01/25/15   Time: 19:43
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0001 | -3.946055 | 0.117381 | -0.463193 | STDTA |
| 0.3853 | -0.870065 | 0.062928 | -0.054751 | SIZE |
| 0.0623 | 1.874453 | 0.882098 | 1.653450 | C |

| Effects Specification | | | | |
|---|---|---|---|---|
| Cross-section fixed (dummy variables) | | | | |

| 0.605160 | Mean dependent var | 0.822739 | R-squared |
|---|---|---|---|
| 0.531504 | S.D. dependent var | 0.777081 | Adjusted R-squared |
| 0.255646 | Akaike info criterion | 0.250946 | S.E. of regression |
| 0.988110 | Schwarz criterion | 12.46881 | Sum squared resid |
| 0.550442 | Hannan-Quinn criter. | 20.04421 | Log likelihood |
| 1.704331 | Durbin-Watson stat | 18.01959 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of total debt to total assets has a significant negative correlation with Tobin's Q.

Dependent Variable: TOBINQ
Method: Panel Least Squares
Date: 01/25/15   Time: 19:43
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.3536 | -0.929894 | 0.188508 | -0.175293 | LTDTA |
| 0.4129 | -0.820482 | 0.065274 | -0.053557 | SIZE |
| 0.1356 | 1.498630 | 0.911533 | 1.366051 | C |

| Effects Specification | | | | |
|---|---|---|---|---|
| Cross-section fixed (dummy variables) | | | | |

| 0.605160 | Mean dependent var | 0.809630 | R-squared |
|---|---|---|---|
| 0.531504 | S.D. dependent var | 0.760596 | Adjusted R-squared |

| | | | |
|---|---|---|---|
| 0.326993 | Akaike info criterion | 0.260059 | S.E. of regression |
| 1.059456 | Schwarz criterion | 13.39091 | Sum squared resid |
| 0.621788 | Hannan-Quinn criter. | 11.12593 | Log likelihood |
| 1.671518 | Durbin-Watson stat | 16.51141 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant. The significant amount in the level of variable implies that the ratio of total debt to total assets has not a significant negative correlation with Tobin's Q.

Dependent Variable: TOBINQ
Method: Panel Least Squares
Date: 01/25/15   Time: 19:44
Sample: 1387 1391
Periods included: 5
Cross-sections included: 50
Total panel (balanced) observations: 250

| Prob. | t-Statistic | Std. Error | Coefficient | Variable |
|---|---|---|---|---|
| 0.0001 | -4.015405 | 0.102809 | -0.412821 | TDTA |
| 0.3348 | -0.966781 | 0.062888 | -0.060799 | SIZE |
| 0.0503 | 1.969478 | 0.883141 | 1.739326 | C |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| 0.605160 | Mean dependent var | 0.823196 | R-squared |
| 0.531504 | S.D. dependent var | 0.777656 | Adjusted R-squared |
| 0.253064 | Akaike info criterion | 0.250622 | S.E. of regression |
| 0.985528 | Schwarz criterion | 12.43666 | Sum squared resid |
| 0.547860 | Hannan-Quinn criter. | 20.36694 | Log likelihood |
| 1.715064 | Durbin-Watson stat | 18.07621 | F-statistic |
| | | 0.000000 | Prob(F-statistic) |

According to statistics of f and obtained P-Value, we can conclude that the total model is significant.
The significant values in significant variable level indicate that there is significant negative correlation between the ratio of total debt and with Tobin's q.

**Limitations**
Since the financial statements report historical value, and generally these values have not major differences with the current values, so this research has limitations.

**Recommendations**
In Future research you can separate accruals variable to voluntary and involuntary separation or short term and long term and examine the impact of each them separately.

Also in future research additional control variables can be used to increase the explanatory power of the dependent variable.

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