

The Effect of Growth Indices on Financial Leverage Ratios of the Companies Listed in Tehran Stock Exchange

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ABSTRACT

The current study aimed to study the effect of company growth indices on leverage ratios of the companies listed in TSE (Tehran Stock Exchange). The sale growth, profit growth and asset growth were applied as independent variables and leverage ratios were considered as dependent variables. Four various ratios were used to evaluate the financial leverage. To test the study hypotheses and the study of the effect of independent variables and leverage ratios, the data of 102 companies listed in TSE were applied as study sample during 2002-2011 by pooled data analysis. To estimate the suitable models of hypotheses test in pooled data, Chow and Hausman tests were used. The results of the study showed that sale growth and profit growth had negatively significant effect and asset growth had positively significant effect on leverage ratios, it means that by improving the profit growth indices, company sale, leverage ratios and company risk are reduced but the increase of asset growth increased the leverage ratio.

KEYWORDS: Capital structure; financial leverage; Sale growth; Profit growth; asset growth; TSE

INTRODUCTION

The investors in investment in common stock should have extensive investigation. Also, the managers should take the required measurements to increase the output and wealth of the investors. One of the decisions is determining appropriate capital structure and using debt and loan. It is required to determine the effective factors on the capital structure and financial leverage.

The current study was done with the aim of the development of knowledge about financial leverage and the effect of company growth indices and financial power among the companies listed in TSE. Most of the theorists studied the financial leverage and the related attributes in developed and developing capital markets. The activities of the most of the theorists showed that financial leverage and appropriate use of debt and capital combination is one of the effective factors in determining company growth. The company growth is the ability of the company in transferring useful information for the managers to take good decisions.

The commercial companies with high sale and the assets growth are recognized as developing commercial company. High ability in rapid achievement of debt, provided good financial flexibility for the companies with the aim of growth. Most debt doesn't change the equity return and earnings per share of the developing companies (Gupta, 1968). The lenders are inclined to give loan based on the future view of the companies and the inclination of the top managers for high growth requires extra cash created via local resources and debt contracts are concluded (Barton and Gordon, 1988).

Today, the rating of the companies is dependent upon their capital structure and the production basis and services depend upon the cash financing (Myers and susman, 2003).

The most important aim of the policies of determining the capital structure is defining financial resources composition to increase the wealth of the stock holders. The required money is provided via various resources by different forms but the whole capital is divided into two main groups: Loan and stock.

Loan and stock are defined as two main groups of financing of the companies. Using the resources being achieved of debts besides creating considerable fixed costs increase leverage and high risk. Thus, the study of financing by leverage methods by considering various factors is of great importance. It means that by selecting any cheap or expensive debt from the company besides the change of capital costs created appropriate profit opportunities by critical condition (De Angelo and Masulis, 1980). The general aim of the study is the study of the effect of growth indicators (earning, sale and asset) on the leverage ratios of the companies listed in TSE. This question is raised that whether growth indicators are effective on leverage ratios of the companies listed in TSE?

Theoretical basics

Some factors affected the leverage ratios and the first is the company growth. The higher the growth rate of the company, the more the opportunity for investment. These companies prefer more debt (Bei and Wardana, 2012). The second important factor is the tax of the company. The most important reason of using debt is acceptable interest costs by finance ministry. The third factor is the financial flexibility or the ability of logical increase of capital in inappropriate situation. Sometimes, the capital structure affects the earning before the interest and tax. If the debt level is high when the interest rate is high and earning is low, the company can not finance and this provides the necessity of ignoring the good investment opportunities. Second, weak financial conditions (more debts) decrease the sale of the company. Third, the financially strong companies can deal with their unions while the weak companies can surrender easily because such companies don't have the required financial resources to cope with them. Thus, the study of financial leverage without considering all the aspects is incomplete and mentioning that financial policies of the company don't relate to the value of the company (increasing the wealth of stock holders) is not true. As the selection of financial leverage level to achieve good level of weal of the company is useful.

Using leverage ratios to identify the required financial resources is measuring the financial risk and the prediction of loan in future and it is possible that the industries with low financial leverage at economical stagnation are less at loss. Thus, any decision making regarding the use of leverage should establish balance between the higher expected return and the increase of financial risk (Hampton, 1993).

The results of the empirical and theoretical studies in selecting the financial leverage level to access the optimized level of weal had some benefits. The application of the changes of capital structure is the symbol for various partners of the company. The financial decision making is acting as one of the main roles compared to other roles of company decision making helping the financial managers to take decision when, where and how they can achieve investment to provide the demands of the investors (Bei and Wardana, 2012).

Most of the researchers studied the financial leverage and the required characteristics in developed and new financial markets. The introductory activities of Modigliani, Miller and most of the researchers including Gupta, Bowman, Jensen, Meckling, Myers, Majluf and Zingales showed that financial leverage is as the most effective factors in determining the company growth. The common approach in the investigation of capital structure is studied about the relation of financial leverage and company value and stock price. Donaldson (1963) reported that the resources affecting the long-term investment are including accumulated earning, long-term debt and issuing new stock. In addition, Titman (1984) showed the various factors of capital structure or financial leverage levels. These factors show the value of asset guarantee, tax shields without debt, growth, exclusion, industry classification, size, income instability and profitability. The factors and their relation with financial leverage and the applications were different. Among the important factors, when the company capital structure or financial leverage is determine, the growth is a challenging issue. Growth based on the change of annual percent in total sale asset and operating earnings is defined. Jensen and Meckling (1976) and Titman (1984) believed that growth opportunities of the company were the indicators of the debt agency costs. They showed that the inclination for sub-optimized investment to violate the ownership of the wealth of the bonds is high for the developing companies and it can be as an index of profitability and company success. If this is so, the growth is a factor for internal investment.

The financial crisis is occurred when the company has problem to fulfill the obligations. The financial crisis problem is mostly about the ability of paying the debt. If the capital structure of the company is formed, the cost of financial crisis is important.

The financial crisis cost is including the legal, execution costs of bankruptcy. But the increase of debt via equity ratio is useful for the following reasons:

- 1- The extra payment about extra cash turnover has no effect on debt financing.
- 2- The interest tax shield is increased by debt

Thus, using debt in capital structure has some benefits and costs (Pandey, 1994).

Bankruptcy is occurred when the company can not pay its debts. Thus, it stops its trading activities (Altman, 1968).

Financial leverage is used to achieve the extra return for the stock holders. This is good until the company can pay the interest and the original debt and the return of using the leverage is higher than its application costs, but if the company loses such conditions and the company has problems in paying the debts and the interest, the high financial leverage reduces the ability to pay the interest and the original debt. In such condition, the company risk is increased and the investors including the creditors and stock holders are not inclined to continue investment in the company. Thus, the company will have problem in financing. Such issue will make the company go bankruptcy. It is expected that there is a relation between high financial leverage and bankruptcy. The good leverage for each company and each industry based on the profitability level and the market of the its products is different (Anvar Khatibi and Mohammadi, 2012).

Based on the above items, it is expected that growth indices in the company had significant effect on debt composition in capital structure and good financial leverage.

REVIEW OF LITERATURE

Some of the researches in Iran and foreign countries are as following:

Victor Gonzales (2013) investigated the effect of financial leverage on the performance of 10375 companies in 39 countries in the world. The results of the study showed that the company performance with high leverage compared to their competitors reduced considerably and the reason is the financial crisis costs. Based on the legal origin of its effect in the countries with civil law as France is different. Protecting the rights of stock holders and law execution power is the main variable in explaining the effect of financial leverage on performance.

Liuf (2013) in his study among 428 companies of Canada investigated the effect of bankruptcy risk on debt ratio and stock return. The results of his study showed that bankruptcy risk had positive and significant relation with debt ratio. Also, bankruptcy risk had negative relation with stock return.

Bei and Wardana (2012) investigated the financial leverage, company growth and financial power in the companies listed in Sri Lanka during 2000-2009. The sample size is 30% of the 13 sections. The multiple regression model was applied and the results of the study showed that sales growth and financial power had negative relation with financial leverage and earnings growth had positive relation with financial leverage and there was no relation between asset growth and financial leverage.

Lee and et al (2011) investigate the effect of adjusting the capital on the relation between leverage and financial crisis of the Restaurant industry of USA. The results showed that capital adjustment had positive effect on the relation between leverage and financial crisis due to the sensitivity of the restaurants to the economical fluctuations.

Paul A. and et al. (2010) found that stock return growth among the American companies during 1999-2006 had positive relation between debt ratios.

Huang and Song (2009) investigated the effective factors on financial leverage for 1200 companies listed in stock exchange of China and found that financial leverage had direct relation with company size and fixed asset and had negative relation with profitability, debt tax benefits, growth opportunities and stock maintenance by the managers.

Westgaard and et al. (2008) studied about the factors of capital structure among 308 companies during 1998-2006 in England and by regression found that major factors affect the capital structure of the companies and profitability and company size had positive relation and asset turnover and profitability had negative relation with capital structure.

Nikolase eriotis (2007) in his study titled how the company characteristics (company size, immediate ratio, interest cost and expected growth) affect the capital structure of Greece market and applied econometric methods including panel data in a sample of 19 Greek companies in Athens market during 1977-2001 and found that there is a negative relation between capital structure and interest rate cover, expected growth and immediate ratio and there is a positive relation between company size and capital structure.

Sinayi et al. (2011) investigated the effect of growth opportunities on the relation between capital structure, dividend earnings and ownership structure with company value in the companies listed in TSE during 2004-2008. The results of the study showed that there was a significant relation between capital structure (leverage) and dividend with company value and in case of growth opportunities, this relation is negative and significant but without growth opportunities, the relation is positive and significant. The results showed that there was a non-linear and significant relation between ownership structure and company value and growth opportunities had significant effect on this relation.

Metan et al. (2010) investigated the effect of company characteristics on its capital structure in the companies listed in TSE during 2002-2006 and 132 active companies were selected in TSE via screening sampling and to evaluate the relation of variables by data panel methodology and the results supported this hypothesis that there is a negative and significant relation between capital structure and asset structure, profitability, expected growth, immediate ratio and asset return and there is a positive and significant relation between company capital structure with company size and interest costs covering ratio.

Alavi (2008) investigated some of the effective factors on financial leverage of the companies listed in TSE during 2000-2006. Based on the hypothesis test, there was a direct significant relation between independent variables of company size, trading risk, operating leverage and financial leverage. And there is an inverse significant relation between independent variables of observed fixed assets, profitability, investment opportunities, stock earnings percent and stock price with financial leverage.

Namazi and Shirzade (2005) by separated industries investigated the relation of capital structure and profitability of the companies listed in TSE. By cluster sampling, 108 companies in the form of 74 industries during 1996-2000

were investigated. The results showed that there was a positive relation between capital structure and profitability. But this relation is weak statistically.

Baqerzade (2003) investigated the most important factors on capital structure of the companies during 1998-2002. The sample was including 158 manufacturing companies among 252 companies and found that there was a positive relation between profitability and debt ratio and the companies listed in TSE for the requiring financing followed the hierarchy theory of financing choices and supported the sustainable theory prediction of the capital structure but didn't supported the prediction of hierarchy theory of financing choices.

Study hypotheses

Leverage structure decisions are inspired by the inclinations of companies' growth. The owners who don't follow the growth of their companies rely on accumulated earnings and the loan institutions for financing. Although all the capital resources are achieved for development, the growth nature is effective what type of resources are appropriate.

The companies interested in bold growth apply the risk capital resources or follow it, slow growth is financed via the capital resources such as accumulated earnings and financing loan institutions (Van auken, 2005).

Gupta (1968), Humpton (1993) and Pandey(1994) explained that financial managers believed in company size to increase the company size in long term. According to Humpton (1993) there are three measurement methods for company growth including the sale increase, earnings increase and asset increase. This hypothesis that sale, earnings and assets are fixed is unreal. The sale and earnings of most of the companies are developed due to the company sustainability. Based on the theoretical basics and previous studies, the study hypotheses including the three hypotheses are as following:

First hypothesis: Sale growth had significant effect on leverage ratios

Second hypothesis: Net earnings growth had significant effect on leverage ratios

Third hypothesis: The asset growth had significant effect on leverage ratios

Variables and study models

In this study, dependent, independent, control variables were applied. Table (1) showed the variables of separating the hypotheses. All the data of variables were extracted of the financial statement of the companies listed in TSE and Iran accountant community site (www.iacpa.com).

Table 1: Independent, dependent and control variables

Hypotheses	Independent variable	Depend variable	Control variable
Hypothesis 1	Sale growth	Leverage ratios	Financial strength
Hypothesis 2	Profit growth	Leverage ratios	Financial strength
Hypothesis 3	Assets growth	Leverage ratios	Financial strength

The measurement method of each of the variables and the hypothesis test model is as following:

Dependent variables in this study are leverage ratios (FL).

Leverage ratios showed the debt application in capital structure and financing of the company. These ratios showed that how the company pays its debts in deadline. To study the leverage ratios, four models are used as:

1- **Total debt ratio:** The sum of the debts is evaluated compared to the sum of the assets. This ratio shows the percent of the cash being financed via the debts. If the return is higher than debt costs, using the leverage is for the benefit of the owners but the creditors prefer low debt ratio because if the ratio of bankruptcy, the loss tolerance risk is increased. This ratio is computed as following:

$$\text{Total debt ratio} = \frac{\text{Long-term debts} + \text{loans} + \text{That year borrowing}}{\text{Total asset}} \quad (1)$$

2- **The debt to equity ratio:** This ratio shows that compared to the money being given from the equity ratio, how much of the financial resources is achieved by debt. This ratio is an important criterion of the ability to paying the debts. Because the high debt in capital structure can provide some problems to pay the interest and original loan. In addition, if the debt is high, due to the increase of financing problems, the financial flexibility of the company namely at bad monetary market conditions is reduced. This ratio is computed as following:

$$\text{Debt ratio to equity} = \frac{\text{Long-term debts} + \text{loans} + \text{That year borrowing}}{\text{Equity}} \quad (2)$$

3- **The long-term debt to total assets ratio:** Long-term debts are evaluated compared to total asset. This ratio shows the cash percent being provided via long-term debts. This ratio is computed as following:

$$\text{Long – term debt ratios to total asset} = \frac{\text{Long – term debts}}{\text{Total assets}} \quad (3)$$

4- **Long-term debt to fixed asset ratio:** It assesses the long-term debts to fixed assets. This ratio shows that compared to the cash provided via fixed asset, how much of the financial resources is achieved via long-term debt. This ratio is as following:

$$\text{Long – term debt ratios to fixed asset} = \frac{\text{Long – term debts}}{\text{Fixed assets}} \quad (4)$$

The independent variables are including **sale growth (SG)**, **profit growth (PG)** and **asset growth (AG)** and they are measured as (Bei and Wardana, 2012):

The studied variables including sale, earning and assets are computed as following:

The difference of total sale, earnings and assets in the required year with the previous year divided by total sale, earnings and asset in the past year

$$\text{Sale growth} = \frac{\text{Previous year sale – the requireid year sale}}{\text{Previous year sale}} \quad (5)$$

$$\text{Sale earnings} = \frac{\text{Previous year earnings – the requireid year earnings}}{\text{Previous year earnings}} \quad (6)$$

$$\text{Assets growth} = \frac{\text{Previous year Assets – the requireid year Assets}}{\text{Previous year Assets}} \quad (7)$$

Thus, the study models are defined as:

$$FL_{TD/TA} = \alpha + \beta_1 SG + \beta_2 PG + \beta_3 AG + \beta_4 FS + \epsilon \quad (8)$$

$$FL_{TD/EC} = \alpha + \beta_1 SG + \beta_2 PG + \beta_3 AG + \beta_4 FS + \epsilon \quad (9)$$

$$FL_{LD/TA} = \alpha + \beta_1 SG + \beta_2 PG + \beta_3 AG + \beta_4 FS + \epsilon \quad (10)$$

$$FL_{LD/FA} = \alpha + \beta_1 SG + \beta_2 PG + \beta_3 AG + \beta_4 FS + \epsilon \quad (11)$$

Where FL is leverage ratios (Financial leverage).

β_1 to β_2 are growth and financial strength coefficients. Financial strength as control variable is used in the models (based on Bei and Wardana, 2012).

SG is sale growth, PG is profit growth, AG is asset growth, FS is financial strength that is computed in the form of Z- Score model (Predictor- the bankruptcy of the companies). By the data extracted of the financial statements of the companies listed in TSE, the existing ratios in the model are computed and by putting the ratios in the model, Altman model ratio for each company per year was determined. The study population was the companies listed in the stock market as 102 companies. The companies listed in TSE were selected due to the easy, standard access and homogeneity of financial statements of the companies. The study was conducted during 2002-2011. The model was Z-Score (Altman). This model is consisting of five financial ratios (current capital to total asset (WCTA), accumulated earnings to total asset (ROA), earnings before interest and tax to total asset (EBTA), market value of equity to debt book value (MVTD), sale to total asset (STA) as:

$$Z = 0/012 WCTA + 0/014 ROA + 0/033 EBTA + 0/006 MVTD + 0/999 STA \quad (12)$$

Full bankruptcy $Z < 1/81$

Between bankruptcy and non-bankruptcy $1/81 < Z < 2/67$

Full health $Z > 2/67$

STUDY METHOD

The current study is applied in terms of aim and is descriptive-correlation in terms of nature and method. This study was done based on semi-empirical study by retrospective approach. For data analysis, the pooled data approach was used. The pooled data is common among the researchers of behavioral sciences. Because in this method, there is no need to much statistics. Many questions are answered correctly (Ashrafzade and Mehregan, 2008).

For data collection of review of literature, library method was used. “Tadbirpardaz” software and internet sites (research management, Islamic studies of TSE)(www.rdis.ir) were applied.

Thus, the current study is a field study.

For data analysis, descriptive and inference methods were applied. The data analysis was carried out by Excell2007 and Eviews6.

The study population

The study population was all the companies listed in TSE during 2002-2011 and they kept their membership in this period. The sample selection method in this study was systematic elimination and among the companies listed, the companies not meeting the criteria were excluded and rest of the companies were selected for the test:

- The companies should have complete knowledge for all financial statements as balance sheet, loss and profit statement and cash flow.
- Their financial year should lead into 29th Esfand.
- The companies during the study period should be active in TSE.
- During the period, they shouldn't change their financial year.
- The companies shouldn't be of investment or financial or insurance agency.

In the current study based on the limitations, 102 companies (1020 Company) were selected as study sample.

The descriptive statistics

For better understanding of the study population and familiarity with study variables, before the data analysis, it is required to describe the data. By raw data, the study variables were computed and then the descriptive statistics of independent and dependent variables including mean, mode, max, min and standard deviation were computed and are shown in Table (2). The mentioned values presented a general view of the data distribution. All the data of the variables were extracted of the financial statements of the companies listed in TSE.

The obtained mean for financial strength of the sample companies was 0.81. The standard deviation of the index was 0.09 and max and min of the value were 4.04, 0.01, respectively. The mean and standard deviation of growth indicators for sale growth were 0.18, 0.34, for profit growth 0.14, 0.12 and for asset growth 0.12, 0.24. The mean and standard deviation of financial leverage $FL_{1TD/TA}$ is 0.51, 0.23 and for $FL_{2TD/EC}$ was 0.82, 0.79, for $FL_{3LD/TA}$ as 0.62, 1.02 and for $FL_{4LD/FA}$ as 1.26, 2.04.

Table 2: The descriptive statistics of study variables

Variables	Symbol	Mean	Median	SD	Min	Max
Total asset ratio	$FL_{1TD/TA}$	0.51	0.48	0.23	0.06	1.38
Debt to equity ratio	$FL_{2TD/EC}$	0.82	0.81	0.79	-1.26	2.84
Long-term debts to total assets ratio	$FL_{3LD/TA}$	0.62	0.56	1.02	-0.08	1.87
Long-term debts to fixed assets ratio	$FL_{4LD/FA}$	1.26	0.94	2.04	-0.56	4.34
Sale growth	SG_t	0.18	0.21	0.34	-0.22	0.84
Profit growth	PG_t	0.14	0.13	0.12	-0.16	0.41
Assets growth	AG_t	0.12	0.11	0.24	-0.28	0.59
Financial strength	FS_t	0.81	0.83	0.09	0.01	4.04

Source: Researcher computations

Correlation coefficients

The correlation study is the statistical instrument by which a grade a variable to another variable is related linearly is measured. The correlation relation between the study variables and their significance (sig or p-value) are presented in Table (3). The correlation coefficient between the applied variables in a model shouldn't be more because the correlation between the independent variables in a model changes the regression results. If the significance coefficient of a variable is less than 5% (Sig <5%), H_0 is rejected and H_1 is supported and the significance of two variables is acceptable otherwise it is not accepted.

Table 3: Pearson correlation coefficients between the variables

AG_t	PG_t	SG_t	FL4	FL3	FL2	FL1	
						1	$FL_{1TD/TA}$
					1	0.43 (0.082)	$FL_{2TD/EC}$
				1	0.14 (0.231)	0.25 (0.122)	$FL_{3LD/TA}$
			1	0.22 (0.165)	0.24 (0.003)	0.33 (0.067)	$FL_{4LD/FA}$
		1	-0.19 (0.098)	-0.12 (0.000)	-0.18 (0.014)	-0.21 (0.089)	SG_t
	1	0.31 (0.006)	-0.32 (0.014)	-0.26 (0.008)	-0.21 (0.012)	-0.11 (0.000)	PG_t
1	0.22 (0.221)	0.08 (0.004)	-0.08 (0.342)	-0.09 (0.024)	-0.09 (0.076)	0.28 (0.000)	AG_t
0.09 (0.022)	0.11 (0.000)	0.24 (0.099)	-0.12 (0.043)	0.04 (0.025)	-0.21 (0.016)	-0.08 (0.000)	FS_t

Source: Research computations

Normality test of the study variables

In a study, to use the regression model, at first the normality of the study variables should be considered and on the basis of their normality, the regression results are valid otherwise, some of the variables should be excluded and another model should be replaced. To study the normality of the variables in this study, JB test (pooled data test) was applied.

Jarque-Bera test

JB test was applied in Eviews6 software and the results of the test are shown in Table (4). The study hypotheses of JB test are as following:

H0: Normality

H1: Non-normality

If sig<0.05, H0 is rejected and H1 is supported and if sig >0.05, H0 is supported and H1 is rejected.

Table 4: The results of normality test of independent and dependent variables of the study

Variables		FL1	FL2	FL3	FL4	SG _t	PG _t	AG _t	FS _t
Jarque-Bera	p-value	11.7421	1.9273	0.7284	14.1941	9.7320	11.8273	0.3904	4.2848
test	statistics	0.2443	0.4137	0.4629	0.0809	0.3243	0.0537	0.1609	0.0842

Source: Research computations

As is shown in Table (4), the test normality statistics and their significance level showed the reject of H1 and support of H0. In other words, the applied variables in regression models didn't have non-normal distribution.

The test of determining the good model in pooled data

To measure the variables and hypothesis test of the sample companies' data during 2002-2011 were collected. Thus, in this study, the number of the observations of each period were 102 (company) consisting of 10-year period and in the analysis of pooled data, 1020 observations (year-company) were applied.

To study the type of model test in various periods of pooled data, F lemer (Chow) and Hausman were applied. In Chow test if the chow statistics is as the result of significant test, null hypothesis is rejected and fixed effect model (panel data) is supported. If the statistics was not significant, the pooled data method was used for hypothesis test. In Hausman test, if the statistics was significant, the null hypothesis was rejected and the fixed effect model was supported. If the required statistics was not significant, the random effect model was used for the hypothesis test. The results of Chow test are shown in Table (5).

As is shown in the table, the results of Chow test in all null hypothesis models of this test based on the similarity of intercept in all periods were not supported. Thus, panel model (fixed effect or random effect) was used to test the model. The results of Hausman showed that null hypothesis of the test is supported. Thus, random effect was good to estimate all the study models.

Table 5: The results of Chow and Hausman test

Tested model	Type of test	p-value	Result
Model (8)	Chow test	4.46 (0.00)	Doing Hausman test
	Hausman test	4.33 (0.72)	Panel data Random Effect
Model (9)	Chow test	4.09 (0.01)	Doing Hausman test
	Hausman test	6.62 (0.48)	Panel data Random Effect
Model (10)	Chow test	3.64 (0.03)	Doing Hausman test
	Hausman test	4.94 (0.71)	Panel data Random Effect
Model (11)	Chow test	4.61 (0.00)	Doing Hausman test
	Hausman test	6.12 (0.47)	Panel data Random Effect

Source: Researcher computations

Significance test of the study models

In each of the study models, there were four independent variables. Before the models of the test hypothesis are estimated, it is required to test the regression model hypotheses. These hypotheses are including 1- Normality of model residuals, 2- Homogeneity of residuals variance, 3- The non-linearity of the explanatory variables, 4- Non-self-correlation of the error components

The results of normality test of the residuals of the study are shown in Table (6).

Table 6- The results of normality test of the residuals of the study

Description		RESIDUALS			
		Model (8)	Model (9)	Model (10)	Model (11)
Jarque-Bera	p-value	1.4992	0.9846	1.4232	1.2106
		0.2143	0.2381	0.1869	0.3147

Source: Researcher computations

The statistical hypotheses of JB were as following:

H0: Normality

H1: Non-Normality

If sig<0.05, H0 is rejected and H1 is supported and if sig>0.05, H0 is supported and H1 is rejected.

As is shown in Table (4-5), the normality test statistics of the residuals and its significance level showed the rejection of H1 hypothesis and supporting H0 hypothesis. In other words, the residuals of regression model estimation didn't have non-normal distribution.

As to estimate the study models, panel data was used, for variance homogeneity, the adjusted Wald test was used. The results of variance homogeneity of the model residuals are shown in Table (7).

Table 7: The results of homogeneity test variance of regression models residuals

Adjusted Wald test	Explanation	Model (8)	Model (9)	Model (10)	Model (11)
	Statistics χ^2		43.23	61.63	48.18
	p-value	0.16	0.11	0.29	0.13

Source: Researcher computations

As is shown in Table (7), adjusted Wald test statistics and their significance level supported null hypothesis of the test based on variance homogeneity. In other words, the residuals of the estimation of the study models had fixed variance.

Regarding the non-linearity of the independent variables, it should be said that based on the correlation coefficients presented in Table (3), for the correlation between the explanatory variables of the study models, small values are achieved. The low coefficients showed the non-linearity of the explanatory variables of the models.

To study the self-correlation of the regress model residuals, Durbin-Watson test was applied. The result of simultaneous test was achieved by estimation of regression model in Eviews software.

Its good value for non-self correlation was 2. If the statistics value is 1.5 to 2.5, self correlation is rejected at model error values. Durbin Watson statistics of the regression models observed in Table (8) are 1.84, 1.94, 2.18, 1.76, respectively. Based on the statistics of Durbin-Watson, the self-correlation in model error values is rejected.

After the study of the four hypotheses of regression model and desirability of the model, the results of model estimation were investigated.

The results of significance study of the study models and the coefficients of random effect during 2002-2011 and 102 companies listed in TSE are shown in Table (8).

Table 8: The results of study hypotheses model

$$FL_{it} = \beta_0 + \beta_1 SG_{it} + \beta_2 PG_{it} + \beta_3 AG_{it} + \beta_4 FS_{it} + \varepsilon_{it}$$

Description	Model (8) FL1 _{TD/TA}	Model (9) FL2 _{TD/EC}		Model (10) FL3 _{LD/TA}		Model (11) FL4 _{LD/FA}		
	Coefficient	t-static	Coefficient	t-static	Coefficient	t-static	Coefficient	
Fixed coefficient	-0.17	t-static -4.36 p-value 0.00	0.22	t-static 4.42 p-value 0.00	-0.27	t-static -2.48 p-value 0.03	0.46	t-static 4.66 p-value 0.00
SG _t	-0.84	t-static -2.83 p-value 0.02	-0.41	t-static -5.54 p-value 0.01	-0.06	t-static -3.48 p-value 0.00	-0.84	t-static -2.26 p-value 0.04

PG _t	-0.46	-6.44 0.00	-0.11	-3.69 0.00	-0.31	-6.18 0.00	-0.18	-6.61 0.00
AG _t	0.06	4.28 0.00	0.10	4.46 0.00	1.28	1.84 0.11	0.05	6.39 0.00
FS _t	-0.14	-4.83 0.00	-0.16	-6.14 0.00	0.48	1.89 0.21	-0.14	-1.21 0.16
Adjusted R ²	0.34		0.48		0.32		0.24	
F-static	4.48		4.93		6.42		5.12	
F (p-value)	0.00		0.00		0.00		0.00	
D-W	1.84		1.94		2.18		1.76	
The number of observations	1020		1020		1020		1020	

Source: Researcher computations

As is shown in the table, F statistics for four models with confidence level 99% was significant. It can be said that the study models were significant and the existing independent variables in the model can explain the dependent variable of the model, leverage ratios. In addition, the R² of the first to fourth models were 0.34, 0.48, 0.32, 0.24, respectively. The R² of the second model test is more than other models. The existing leverage ratio in the second model was the debts to equity ratio. This shows that about 48% of the changes of dependent variable, the leverage ratios of the changes of existing independent variables in the model and 52% of other changes are due to other factors.

After being ensured of the appropriateness of the regression model, the significance of the independent variables coefficient is studied. The significance test of the coefficients is what the researcher is following. This test besides determining the significance of the coefficient, the effect of the coefficients on dependent variable is determined. The statistics is used to determine the significance of the coefficients is t-student statistics.

Conclusion and recommendation

The first hypothesis of the study investigated the effect of sale growth on leverage ratios. In this hypothesis, the dependent variable was financial leverage and independent variable was sale growth. The financial leverage was evaluated by four indices (FL1- FL4). Based on the t-statistics values of SG_t independent variable and its p-value in Table (8) and as the error for the study was 0.05, the sale growth variable coefficient in the first model (-0.84), second model (-0.41), fourth model (-0.84) at confidence level 95% and in the third model (-0.06) with confidence level 99% were significant. The coefficient of this variable in four models was negative. Thus, sale growth on leverage ratios had inverse effect. In other words, by increasing sale growth among the member companies, the leverage ratio of the companies was reduced. Thus, the first hypothesis of the study with four measures of leverage ratio was supported. The results of first hypothesis test were consistent with the results of the study of Bei and Wardana (2012).

The second hypotheses of the study investigated the effect of profit growth on leverage ratios. In this hypothesis, the dependent variable, leverage ratios (four indices FL1-FL4), independent variable and profit growth. To test the significance of the coefficients, t-statistics was uses. Based on the results of Table (8), t-statistics of PG_t independent variable and its significance level (p-value) profit growth variable coefficient in the first model (-0.46), second model (-0.11), third model (-0.31) and fourth model (-0.18) were significant. As the significance level for this variable was less than 0.01, regarding the independent variable, it can be said that the profit growth with confidence level 99% had significant effect on leverage ratios. The variable coefficient was negative and the effect of profit growth on leverage ratios was inverse. In other words, by the increase of profit growth of the member companies, the leverage ratios are reduced. Thus, the second hypothesis of the study with four measures of leverage ratio was supported. The results of second hypothesis test were consistent with the results of the study done by Alavi (2008) but there were inconsistent with the results of Bei and Wardana (2012), Baqerzade (2003), Namazi and Shirzad (2005).

The third hypothesis of the study investigated the effect of assets growth on leverage ratios. In this hypothesis, the dependent variable was leverage ratio indices (FL1-FL4) and independent variable was assets growth. Based on t-statistics of AG_t and p-value in Table (8), the assets growth variable in the first model (0.06), second model (0.10) and fourth model (0.05) with confidence level 99% was significant. But in the third model it was not significant at error level 5%. The related coefficient in first, second and fourth models were positive. Regarding the independent variable, it can be said that assets growth of the sample companies 99% on first, second and fourth indices of leverage ratios had positive and significant effect. These three indices were the total debt to total assets ratio, total debt to total equity ratio and long-term debts to fixed assets ratio. In other words, by the increase of assets growth, the mentioned indices among the sample companies were increased. Thus, the third hypothesis of the study with first, second and fourth indices of measuring leverage ratio was supported. The results of third hypothesis test were not consistent with the results of the study of Bei and Wardana (2012).

Based on supporting the first to third hypotheses (the effect of sale growth, profit and assets on leverage ratios) it can be said that company growth had effect on leverage ratios.

There were some limitations in the study as the lack of control of some of the effective factors on the results of the study including the effect of some variables as economical factors, political conditions, global economy condition, rules, etc not in the access of the researcher and it is possible to be effective in the study. Another limitation is the lack of adjustment of the financial statement items by inflation that can influence the study results.

In the first and second hypothesis test, there was a negative significant relation between sale growth and profit growth with financial leverage ratios. In other words, by the increase of sale growth indices and profit growth among the sample companies, financial leverage ratios were decreased. Thus, the companies by increasing the sale growth and profit growth indices reduced the financial leverage ratios of the company.

In the third hypothesis test, there was a positively significant relation between asset growth and financial leverage ratios. In other words, by the increase of assets growth among the companies, the financial leverage ratios are increased. Thus, the companies by increasing the asset growth increase the financial leverage ratios of the company. Based on the results in this study, the followings are recommended for future study:

- 1- The study of the effect of other growth indices such as dividend growth, profit growth per share, etc on leverage indices in stock companies.
- 2- The study of the effect of growth indices on financial leverage ratio in the stock companies based on various industries and the comparison of the results among the industries.
- 3- Determining the relation between growth indices on financial leverage ratio in companies except TSE such as the companies under the supervision of Iran national industry organization, Mostazafan foundation, industry and mine bank and other private companies in Iran.
- 4- The study of the financial strength by the aid of other measures as Charioto et al. (2004) model , classification in accordance with rule 141 of Iran trading law, etc on financial leverage ratios in stock companies and the comparison of the results with each other.

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