

Leverage Determinants in the Absence of Corporate Tax System: The Case of Non-Financial Publicly Traded Corporations in Saudi Arabia

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Abstract

In Saudi Arabia corporate tax code is unique where taxes are based on total networth. We used a sample of firms composed of all publicly traded firms except financial sectors to study the variations in leverage ratios and their determinants. It was found that leverage was employed with different variations in the studied sectors. The study examined a set of factors that determined leverage levels.

I. INTRODUCTION

Capital Structure is defined as the relative amount of debt and equity used to finance enterprise. This issue is one of the most contentious issues if not a puzzle in finance. A number of theories have been advanced to explain the variation in debt ratios across firms. The theories suggest that firms select capital structure depending on attributes that determine the various costs and benefits associated with debt and equity financing. Explanations vary from the irrelevancy hypotheses (M&M, 1958) to the optimal capital structure where the cost of capital is minimized and the firm value is maximized, and hence, maximizing the shareholders' wealth. This study undertakes an objective of investigating an economy that apply a unique tax system to examine the implication of taxes on its publicly traded corporations capital structure. It is organized as follow: First the relevant literature review on capital structure is discussed. Second, a look at the Saudi economy and the unique features of its tax code is presented. Third part, presents the methodology and data. Fourth is a discussion of results. Finally, conclusion remarks are given.

A. Literature Review

A number of theories have been advanced to explain capital structure and to understand whether there is an optimal capital structure for a firm. In 1958, *Modigliani & Miller* published their seminal theory of investment where they classified firms into equivalent return classes assuming perfect market conditions. Their propositions state that the market value of any firm and its cost of capital are independent of its capital structure. However, it is dependent on the expected return appropriate to its class. Accordingly optimal capital structure does not exist. In 1963, they added to their findings that taxes could be an advantage and an increase in the after-tax yield on equity capital as leverage increases. This final conclusion urges the firms to use debt, even reaching to a 100% debt ratio if possible. Another theory in explaining capital structure is the agency theory which states that debt financing create an agency problems to firms. Barnea, Haugen, and Sanbet (1981) identified three problems that occur because of debt financing. First is the stockholders' incentive to accept sub-optimal and high-risk projects, which transfer wealth from bondholders to stockholders. Second, The presence of debt in the capital structure causes the firm to forgo any investment with positive net market value being lower than the debt

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value. The third is the bankruptcy costs where bankruptcy probability increases with debt level since it increases the fear that the company might not be able to generate profits to pay back the interest and the loans. The need to balance gains and costs of debt financing emerged as a theory that was called the *Static Trade-Off Theory* by Myers (1984). It values the company as the value of the firm if unlevered plus the present value of the tax shield minus the present value of bankruptcy and agency costs. Alternatively, another theory, the *pecking order theory*, has emerged as an explanation for financing decisions by Myers (1984). It states that internal financing is preferred more than external financing. This is due to the transaction (floatation) costs and the resulting agency costs of issuing new securities. Internal financing is done through retained earnings. When retained earnings are not sufficient, debt financing is the next choice before considering offering new stocks. The reason is that the floatation costs of debt issuing are lower than those of equity issuing.

The pecking order theory would indicate that the profitability of a firm affects its financing decisions. If it issues debt, this means that the firm has an investment opportunity that exceeds its internally generated funds. So, changes in the capital structure often serves as a signal to outsiders about the current situation of the firm as well as the managerial expectations concerning future earnings. This is called the *signaling theory*. The debt offering is believed to reveal information the management of a firm is expecting about future cash flows if it will cover the debt costs. However, the bankruptcy fears still impact the signal and intensify the cost of this signal. Such conclusions are supported by results of most empirical work — for example Asquith and Mullins (1986) and Eckbo's (1986) - that documented a positive effect on stock prices when leverage increases while leverage-decreasing announcements have a negative effect.

MacKie-Mason (1990) studied the tax effect on corporate financing decisions. The study provided evidence of substantial tax effect on the choice between debt and equity. He concluded that changes in the marginal tax rate for any firm should affect financing decisions. When already exhausted (with loss carry forwards) or with a high probability of facing a zero tax rate, a firm with high tax shield is less likely to finance with debt. The reason is that tax shields lower the effective marginal tax rate on interest deduction.

The determinants of capital structure are studied in several papers. Titman and Wessels (1988) analyze the explanatory power of some of the theories of optimal capital structure that suggest attributes in determining the various costs and benefits associated with debt and equity financing. They applied a factor analysis technique for estimating the impact of unobservable attributes on the choice of corporate debt ratios. The results find that debt levels are negatively related to the "uniqueness" of a firm's line of business and transaction costs is an important determinant of capital structure choice where short-term debt ratios were shown to be negatively related to firm size. However, they failed to prove the effect of non-debt tax shields, future growth, volatility of earnings, and collateral value on debt ratios and the firm size on long-term debt.

The theoretical relationship between earnings variability and financial leverage is ambiguous. Jaffe and Westerfield (1987) show that under certain conditions there would be a positive relationship. Castanias (1983) discussed conditions regarding bankruptcy cost, interest expenses and earnings variability necessary to derive a negative relationship. In a more recent study Thies and Klock (1992) found similar results that pertains to long term debt and common equity. The findings also refute claims that there is no cross-

sectional relationship between variability and capital structure and suggests that there are differences in the utilization of leverage across time and across firms.

Barclay, Smith and Watts (1995) studied the effects of size, growth, signaling, and regulation on debt levels. The study reported a small economic effect of size on leverage level where results were mixed when regressing the leverage on total sales as a measure of size. In studying signaling effect, they find a positive relation between leverage and size of the earnings increase. They expected that regulation effectively reduce the possibility for corporate under-investment agency problem simply by transferring much of management's discretion over investment decision to regulatory authorities. The result matched the expectation that leverage increases with regulation. Finally, Johnson (1998) conducted a study on the effect of the existence of bank debt on a firm's capital structure. Theoretical and empirical research suggested that bank debt mitigate the agency costs. His findings are consistent with the proposition that firms can have higher optimal leverage if they borrow from banks. This is due to benefits from bank screening and monitoring.

B. Saudi Arabian Economy Unique Features

Saudi Arabia is an oil dependent economy where more than a third of its GDP is generated from oil revenues. Its GDP has grown from around 120 billions in 1993 to around 150 billions in 1998. There are more than 300,000 registered companies from which there are only 74 publicly traded companies listed in the market and ten of these are banks. The government own around 43% of traded shares. One of the basic features in the Saudi Arabian economy is the absence of income tax on citizens. Instead, there is one form of tax that is called Zakat, which is, in most cases, based on payers' net worth. This part addresses the Zakat system and present major features of the stock market in Saudi Arabia.

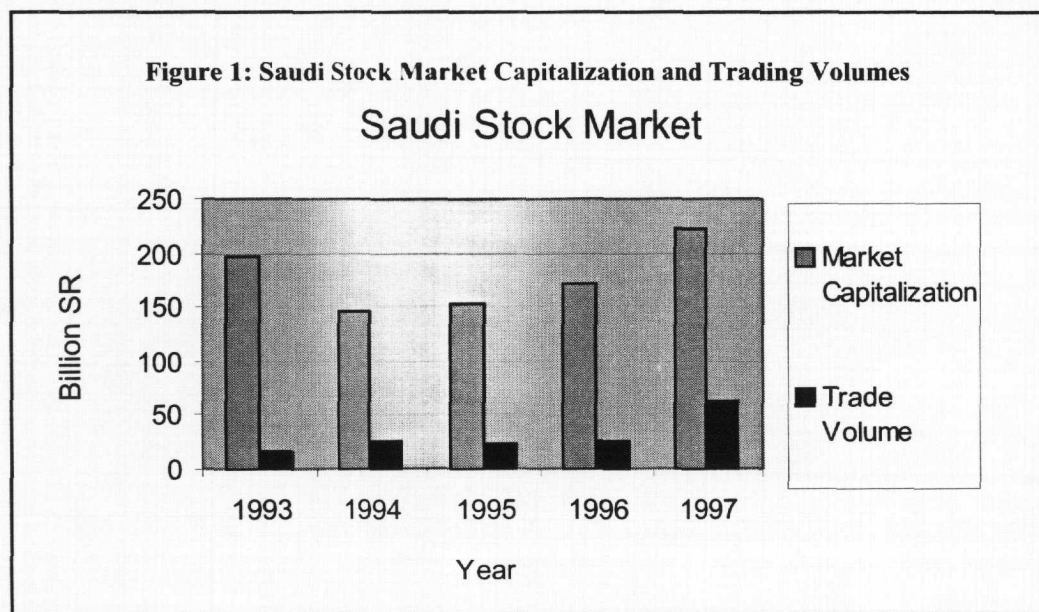
B.1. Zakat & Corporate Taxation System in Saudi Arabia

Zakat and Tax are managed by a government department of Zakat and Income Tax. Saudis pay Zakat based on their net worth. If a company has Saudi and non-Saudi owners, Saudis pay Zakat on their share of the Zakat base and non-Saudis pay income tax on their share of the taxable income. Zakat is 2.5% of the Zakat base. It is important to note that there is no penalty for late payment of the Zakat. Our discussion will be mainly concerned with items related to capital structure included in the calculation of the Zakat base. According to Aljurad & Company Zakat base includes the share capital, retained earnings or accumulated deficit, Saudi Industrial Development Fund loans and Public Investment Fund loans. It also includes long-term loans, notes payable and advances if they are used to finance fixed assets. Moreover, the adjusted net income for Saudi Income Tax and Zakat purposes is added to the Zakat base. Deductions from the Zakat base include net fixed assets and properties under construction, dividends distributed during the year not to exceed retained earnings at the beginning of the year, investments in other Saudi companies and Saudi government bonds, and adjusted deficits. If the Zakat base is negative or lower than the adjusted net income for the year, Zakat is imposed on the adjusted net income. If both are negative, no Zakat is due.

B.2. The Saudi Stock Market

Although Saudi companies represent about ten of the top thirty Middle East companies, there is no exchange floor in Saudi Arabia. Share trading is consummated through local

banks using a computerized network. Share ownership is transferred electronically from the seller to the buyer through the Saudi Shares Registration Company. Share trading is restricted to Saudi nationals while some few companies, excluding banks, are open to the citizens of the other Gulf States. Currently there are 74 joint stock companies listed in the stock market. As can be seen in figure 1 the market remains fairly illiquid with the value of shares traded being only 15% of the total market capitalization.



The government own nearly 43% of listed stocks that is dominated by the banking sector which represent 43% of total market capitalization of the market. The industrial stocks are representing 29% where the Saudi Arabia Basic Industrial Corporation has the largest share. Other sectors are the cement with 9% share and non-financial services represent 6% while electricity is 12% and agriculture is 1%.

II. RESEARCH METHODOLOGY, DATA AND RESULTS

A. Data and Methodology

The purpose of the paper is to study the capital structure of the publicly traded Saudi companies and to identify its determinants. As in table 1 there are 74 companies of which ten are financial institutions. Relevant information was available for a sample of 35 firms. Our study will identify and compare the different types of leverage ratios between sectors and the stock market as a whole. This exploratory analysis will try to identify if there are significant variations in capital structure of the sampled firms. Using regression analysis, a further look into the effect of Zakat on leverage, if any. In explaining variations leverage ratios will be regressed versus some selected items from firms' balance sheets and income statements. Items selected from the balance sheets and income statements are shown in table 1. The sources of data are mainly Bakheet Financial Advisors and annual reports of the companies chosen for the years between 1993 to 1997. There were 171 ob-

servations (See table 2). All of these data were based on book value of the selected items from the balance sheets and the income statements.

The capital structure variables used are the leverage ratios based on book values. The ratios are the total debt to capital (debt + equity) ratio, long-term debt to capital ratio, and short-term debt to capital ratio. These are the same variables used by Titman and Wessels (1988). It is important to note that the short-term debt was computed as the sum of the two balance sheet items of the current portion of long-term debt and the short-term debt. These will be the dependent variables in the models generated using regression analysis. On the other hand, the independent variables developed here are government share, government subsidy, growth, firm size and profitability.

It is expected that Zakat makes no difference if financing was using equity or debt since both are included in the Zakat base. Also, the effect of interest payments on loans, if any, would be small since it is deducted from income, which is included in the Zakat base. The correlation coefficients between Debt/Capital ratios and Zakat support such hypothesis as can be seen in table (3) where all correlation coefficients are small and insignificant. Hence Zakat will be considered irrelevant and the other variables will be tested.

Since the Saudi government is a major shareholder in many companies, we will consider it as a determinant of the type of the capital structure. The government ownership would give a confidence to lenders to extend loans to a company. So, a positive relationship is expected between government ownership measured by its percentage of shares owned and debt ratios. Also, the government is subsidizing some industries. For example, it guarantees a 7% profit to electricity companies. The eligibility of a company to get this subsidy increases its willingness to borrow. The significance of this variable is tested via a dummy variable.

The growth factor is measured using the percentage changes of assets. This is the same measure used by Titman and Wessels (1988). They proposed that Equity-controlled firms have a tendency to invest sub-optimally hence the cost associated with this agency relationship is likely to be higher for firms having higher growth. This means that expected future growth should be negatively related to long-term debt levels.

Natural log of total assets was used to measure the size factor. Large firms are expected to be highly leveraged, while small firms might be highly leveraged with short-term debt. Titman and Wessels (1988) used natural log of sales because they state that size factor affects mainly the very small firms.

According to the pecking order theory, firms prefer internal financing over external equity or debt issuing. Hence, profitability is an important issue. The more profits a company has, the less it is expected to use debt financing. Titman and Wessels (1988) and Thies and Klock (1992) used the operating profit rate of return (EBIT/assets) as an indicator of profitability. In this study, profitability was measured by two measures, return on assets (EBZ/assets) and profit margin (EBZ/sales).

In Saudi Arabia debt employment in financing firms activities is fairly limited and below the international norm. Alsakran (1999) concluded the tendency of Saudi public firms to used equity as a financing tool to their operations. Basically the reason is the ab-

sence of bond market. Another reason of not using debts in Saudi Arabia is probably the limited sources of such financing mechanism.

As stated earlier our analysis will use a multi-linear regression models to investigate the different relationships. These models are:

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ G. Share} + \beta_2 \text{ G. Subsidy} + \beta_3 \text{ Growth} + \beta_4 \text{ Size} + \beta_5 \text{ ROA} + \beta_6 \text{ PM}$$

$$\text{Long-Term Debt/Capital} = \beta_0 + \beta_1 \text{ G. Share} + \beta_2 \text{ G. Subsidy} + \beta_3 \text{ Growth} + \beta_4 \text{ Size} + \beta_5 \text{ ROA} + \beta_6 \text{ PM}$$

$$\text{Short-Term Debt/Capital} = \beta_0 + \beta_1 \text{ G. Share} + \beta_2 \text{ G. Subsidy} + \beta_3 \text{ Growth} + \beta_4 \text{ Size} + \beta_5 \text{ ROA} + \beta_6 \text{ PM}$$

Where G. Share is:	The share of the government ownership in the firm;
G.	subsidiary: A dummy variable = 1 if the firm in an industry receiving a subsidiary from the government and = 0 if no;
Growth:	the growth of the firm measured by the percentage changes of assets;
Size:	the size of the firm measured by Natural log of total assets;
ROA:	Return on Assets and
PM:	Profitability margin.

B. Results and Findings

Our analysis, will start by examine the correlation between all variables, dependent and independent. Table 4 shows the result of the correlation matrix. There exists a high positive correlation between the size of the firm and the total debt ratio and the long-term debt ratio. This supports the expected effect of size on debt ratios. Government subsidy has relatively high correlation with government share in the company. Also, government share has a positive correlation with size indicating that the government has share in large companies only. Government subsidy has relatively high correlation with the size of the firm and, thus, it has positive correlation with total debt and long-term debt. The highest negative correlation factors were between the profit margin and long-term debt ratio, total debt ratio and government subsidy. The analysis would justify these correlation values.

There are five sectors examined in the study. First is the industrial sector which includes 10 firms of the sample, the cement sector has eight companies listed in the market, the services sector includes eight companies, four electricity companies; and five firms from the agricultural sector. Table 5 shows the characteristics of the sample in terms of variables of concern. All industrial sector firms used both short-term and long-term financing. Its worth to mention that we included loans that are extended by the Saudi Industrial Development Fund (SIDF) which is a government institution that extend funds to industries at an extremely low cost to be paid on an annual installment for 25 years. This loan is considered in our study as part of short term loans.

B.1. Industrial Sector

The industrial sector sample represents 51% of the sample market capitalization. In figure 2, it is clear that the industrial sector used both short-term and long-term financing. The nature of the industry is that the company sizes are relatively large, over SR 7 billions in total assets. Also, the largest company in Saudi Arabia, SABIC with 70% government share and assets of SR 68 billions, is part of this sector where its leverage ratio has been around 21% for the last five years. Another important observation to this sector is the availability of interest-free loans provided by the SIDF. This might explain the high short-term debt ratio.

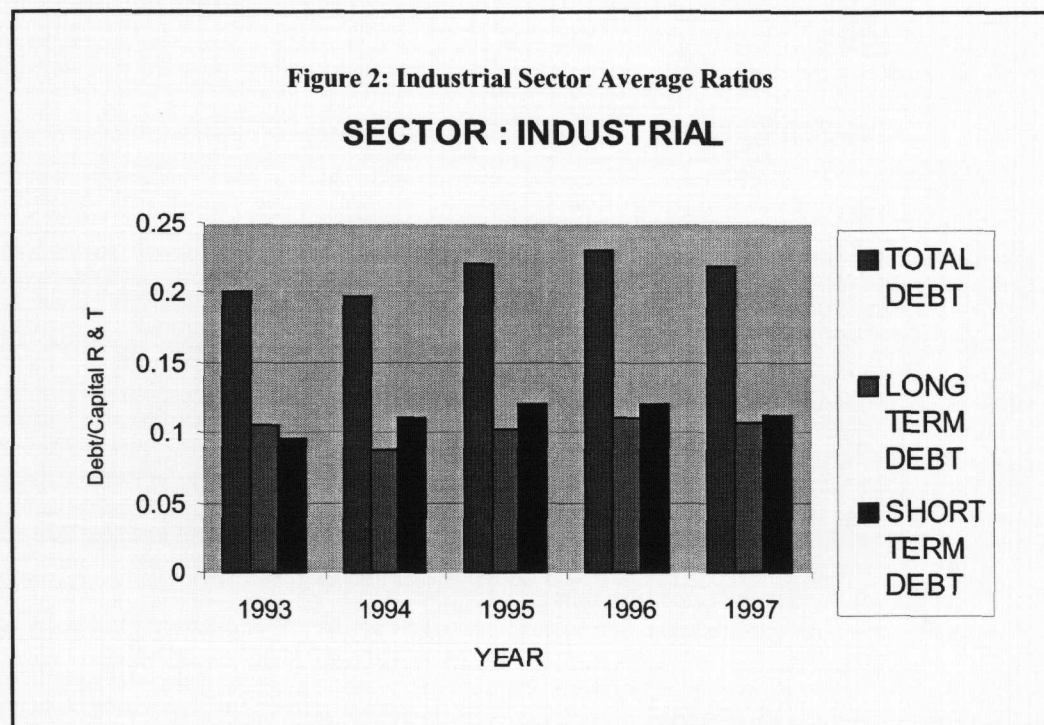


Table 6 shows the regression result for this sector. There are 47 observations for 10 firms and all six variables were used.

The debt-to-capital regression model is significant with an explanatory power of 54.9%. The size of the firm has the highest positive relationship with all types of debts ratios. Although small, growth factor is having a significant positive relationship with total debt ratios but insignificant with its two components. This is in contradiction with expectation implied by previous empirical work of capital structure. Also the profitability variable showed a negative relationship but with no significance. This conclusion is confirmed by the relationship between ROA and debt ratios where results are insignificant except in short term debt ratio. Finally, the government share is having a negative significant relationship with total debt. This may be due to the fact that such sector is securing more loans from government agencies rather than issuing debts from commercial financial institutions.

B.2. Cement Sector

The cement industry is a well performing industry during the period of study with an average ROA reach to around 21% and an average growth rate of 30%. This may be due to the increasing demand on such product that led most of cement companies to undergo expansion projects to increase their production capacity. This may explain the sharp increase in debt financing in the last three years as shown in figure 3 below.

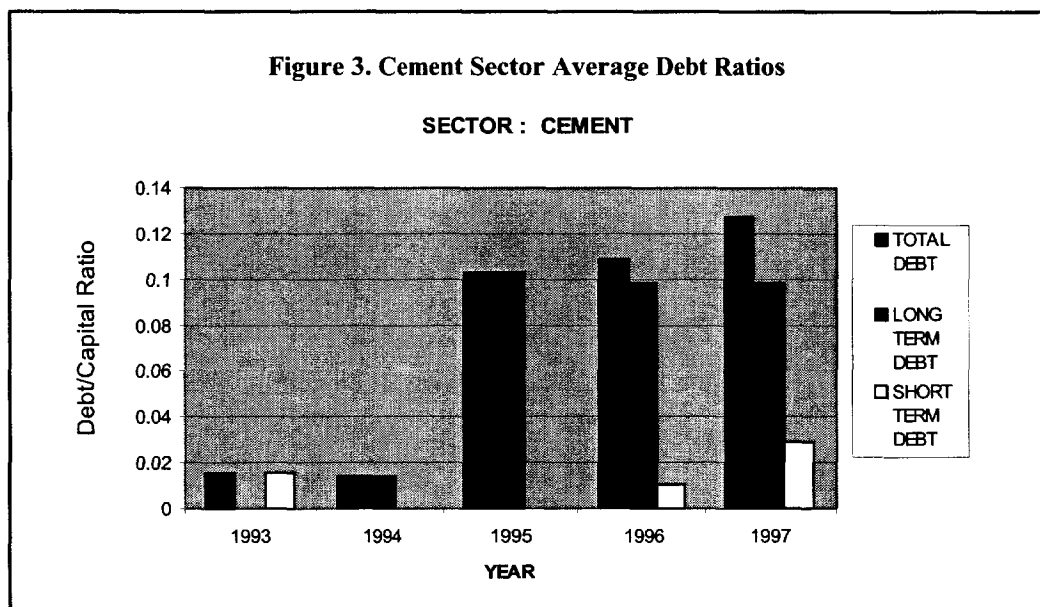


Table 7 shows the regression results for the cement sector. There are 38 observations for eight firms. Since there is no government subsidy provided to this sector the related variable was dropped in addition to profitability measure because of the availability of sales figures.

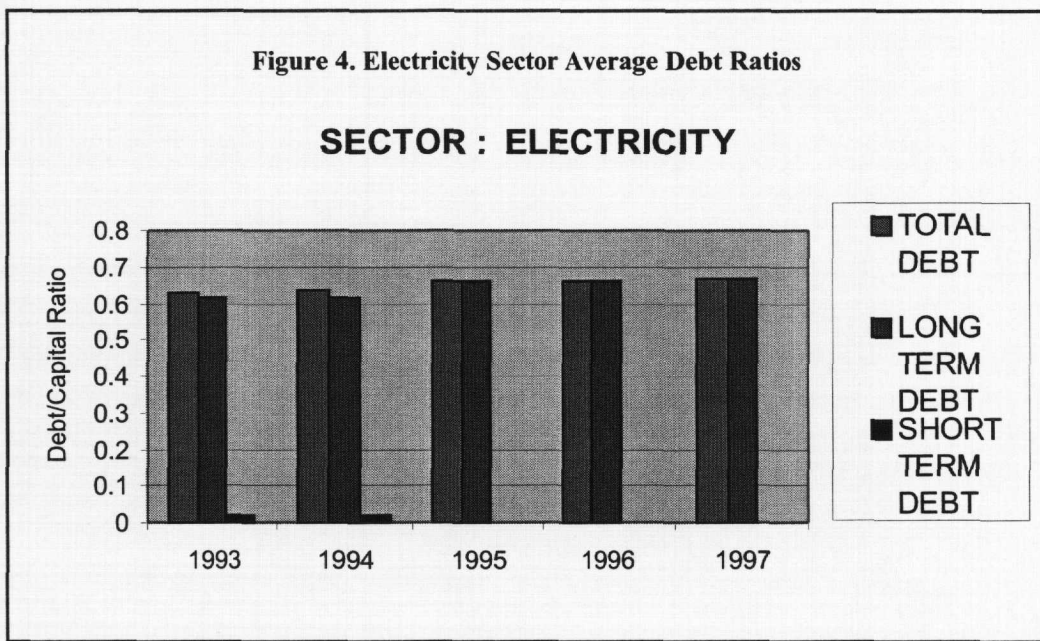
Results show that all regression variables were insignificant. One important note to such results is the relatively absence of short term debt to the whole sector during the period of study.

B.3. Electricity Sector

All firms in this sector have long-term loans but only one used short-term debt twice in the period of study as shown in figure 4 below. This sector is characterized by a high leverage ratios due to the following reasons. First, government operates and run these companies establishment where it owns between 50% and 98% of its shares. Second, the government is subsidizing their operations. Third is the increasing demand for electricity kingdom wide and as a result expansion project were assumed. Finally, the nature of utilities companies where normally long-term loans are more than short-term loans.

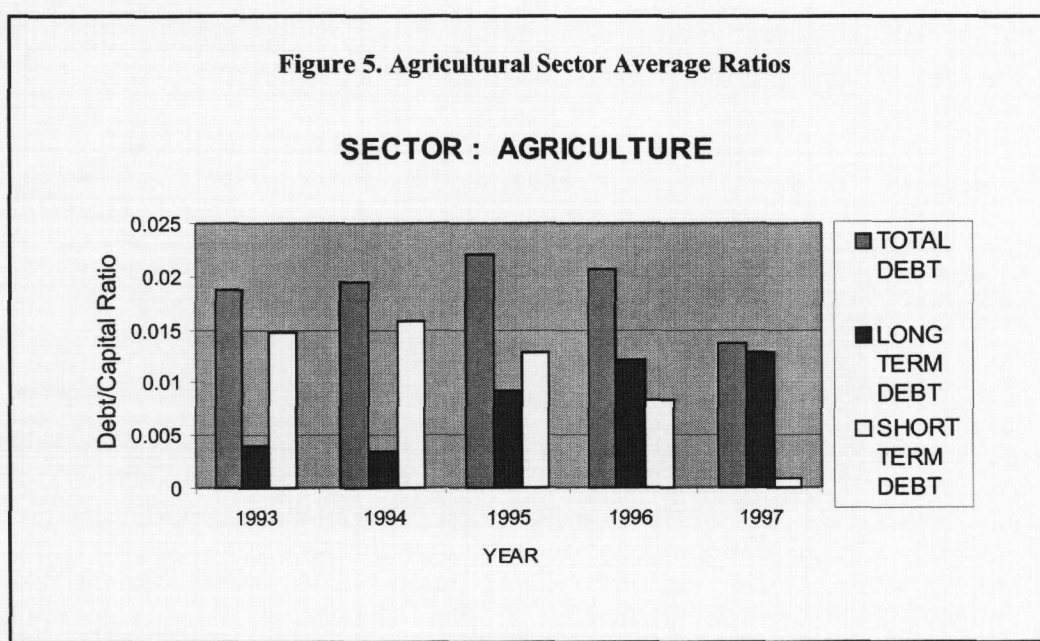
Table 8 shows the regression result for the electricity sector. There are 19 observations for four firms and all six variables were used.

Figure 4. Electricity Sector Average Debt Ratios



The overall F-Statistic is significant for all types of leverages except for the short-term debt due to the limited usage of such financing in this sector. Results reveal that growth, size and ROA are significant factors in explaining the variations in debt-equity ratios. The growth factor is consistent with expectation by having a negative significant relationship while size shows a negative one. The strong relationship of ROA and capital structure variations may be explained by the fact that the sector is mostly having a negative ROA.

Figure 5. Agricultural Sector Average Ratios



B.4. Agriculture Sector

This sector is characterised by a very low ROA where its around an average of 1% and a small average size. Figure 5 shows the debt ratio averages for the last five years. An important fact to notice is the absence of government direct subsidy to all firms of this sector.

Table 9 shows the regression result for the agricultural sector. There are 24 observations for five firms. All the variables except the government subsidy were included, because there has been non during the period of study.

The F statistic is significant but the model fails to explain the individual relationship with some kind of significance except for the size factor.

B.5. Services Sector

The services sector has the highest growth rate as measured by the percentage of changes of sales (51%) in the sample. It used about 7% of total leverage where about 4% are in long term debt and the remaining 3% are in short-term . Figure 6. show the debt ratios history over the period of study. Four of the eight companies used in our sample are not having any debt financing.

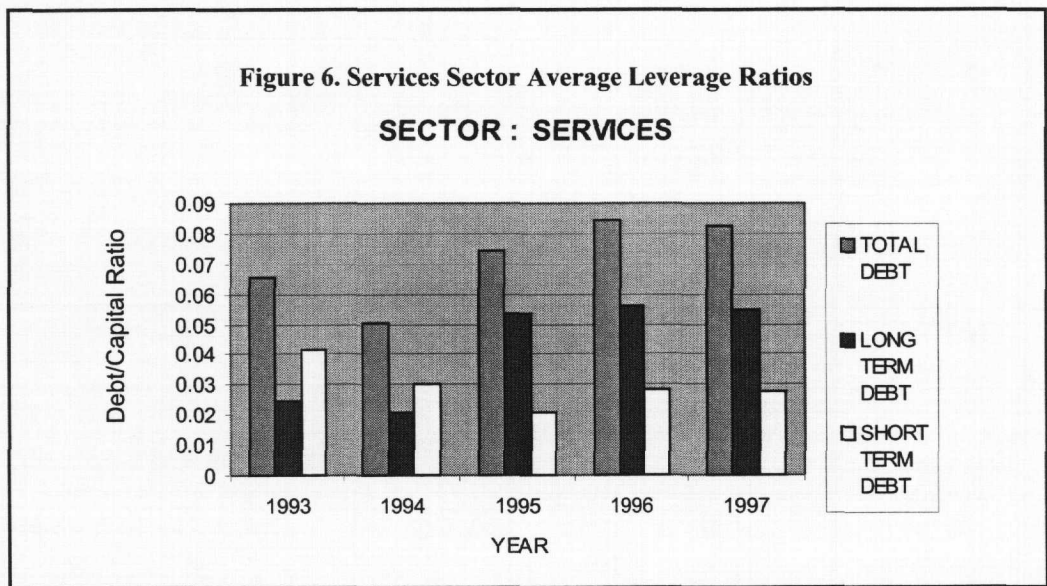


Table 10 shows the regression result for the services sector. There are 38 observations for eight firms. All the six factors were used. The overall F statistic is significant but only the government share factor was documented to have a positive significant relationship.

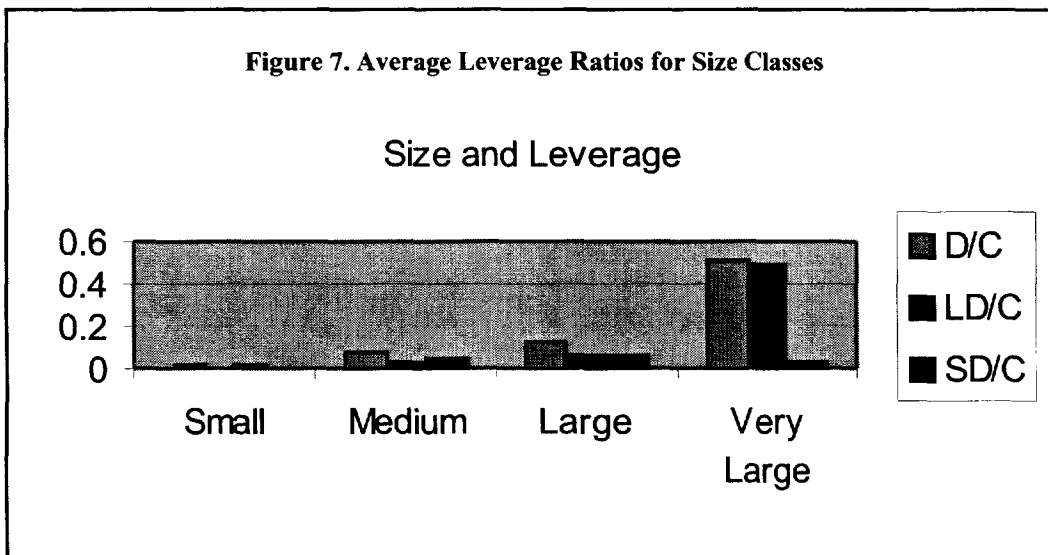
In summary, the type of business of sampled firms showed an effect on its leverage ratios. Companies in the electricity sector tend to be highly leveraged while in the industrial sector it was around the sample average. The leverage ratios of cement and service

sector were below the sample average and in the agricultural sector is shown to be very low leverage ratio.

C. Analysis by Size

In this part of analysis our sampled firms were classified into four categories based on their size measured by total assets. Table 11 shows these categories with their studied variables averages.

Also, figure 7 tries to depict the relationship between size and average leverage ratios where it seems to supports the notion that a negative relationship between size and short-term leverage and a positive relationship between size and long-term leverage and total leverage.



C.1. Small Firms

There are 21 observations in this category. The average debt ratio is 0.5% where all in the form of mainly short-term debt. All variables were included in the sample and results are presented in table 12. Apparently the F statistic is not significant and the model could not explain the variations in capital structure for this class of firms. Since there are no firms in this category that have financed its activities using long-term debt, the regression for the short-term debt is the same for total debt.

C.2. Medium Firms

There are 51 observations that fall into this class. The results are shown in table 13 . The model was able to explain about 31% of the variations in the capital structure of these firms

The expected relationship with growth is consistent with expectations of being negative .This may due to the high growth ratio of these companies.



C.3. Large Firms

There are 66 observations that fall into this category. The average debt-to-capital ratio is 12.66 % combining 6.5% of long-term debt and 6.2% of short-term debt. Table 14 shows the regression results for these observations. The overall F statistic is significant. In this class profitability measures showed a significant negative relationship with leverage. Also, firm size is in accordance with expectation where it has a positive sign.

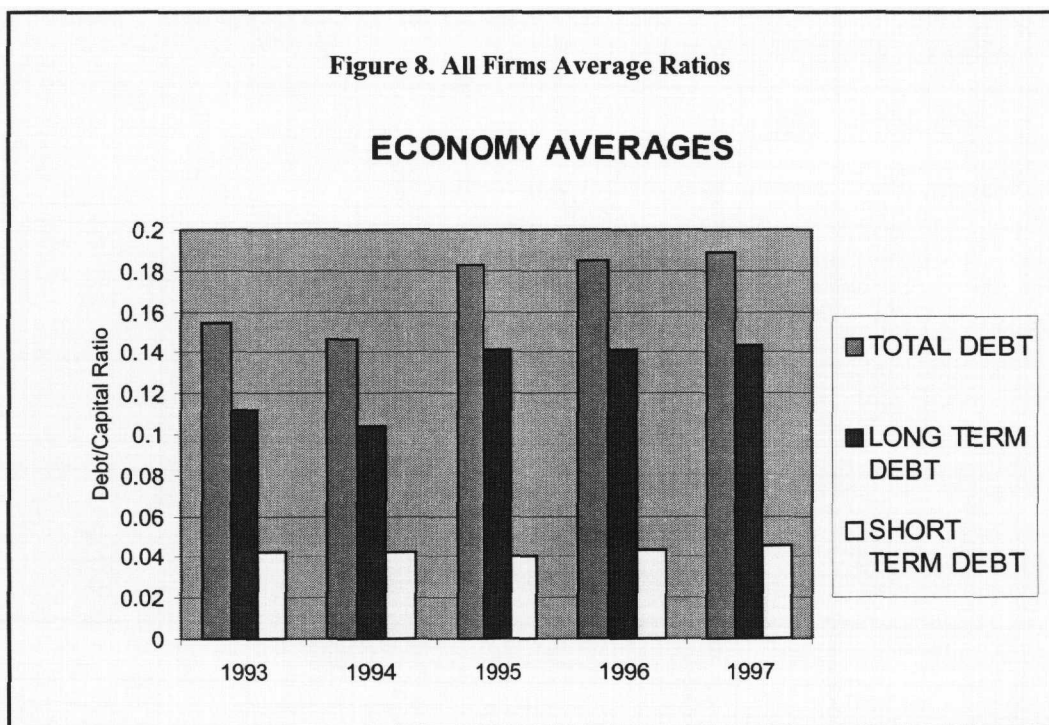
C.4. Very Large Firms

There are 33 observations for firms that we characterize as very large. The average debt-to-capital ratio shows that these companies used as much debt as equity. Most of the debt is in the form of long-term debt (95% of total debt). The six variables are included in the models shown in table 15. The F statistic is significant and the variations in the variables of the model were able to explain about 90% of the variations in the capital structure of these firms. It is important to note that the electricity companies are part of this category as well as SABIC. So, the government share is expected to be the highest in these firms. Also, the average ROA and PM are very low and the government subsidy is very high.

Further, results are inclined to support the conclusion that leverage ratio increases with size but at a decreasing rate but there is a negative relationship between size and short-term leverage ratios.

D. All Firms Analysis

Figure 8 below shows the trend of our sampled firms in terms of their leverage ratios. It can be seen that the use of debt has increased over the years of study especially in the last



three years where the whole Saudi economy recovered from the consequences of the Gulf war and the oil industry enjoyed good prices. The short-term debt usage remained almost constant over these years while changes were in the level of long-term debt.

In the regression models, all variables were used. There were 171 observations, and results are shown in table 16. The model was significantly explaining the variations in the sampled firms capital structure particularly in the long term debt where it reach to an explanatory power of 80%. As expected, size has a significant positive effect on both total leverage and long-term leverage and government subsidies have a positive significant effect of the long-term leverage ratio. Also as expected, significant negative reactions to the variations of profit margin. Our results documented a negative relation of leverage ratios with ROA and growth rate but not statistically significant.

E. Single Factor Analysis

In this section a simple regression models were used to test the relationship between each factor and the total leverage ratios using the whole sample as follows:

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ Government Share \%}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ Government Share}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ Government Subsidy}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ Growth}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ Size}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ ROA}$$

$$\text{Total Debt/Capital} = \beta_0 + \beta_1 \text{ PM}$$

Table 17, show the results of these relationships. It was found that all seven variables except two namely government share percentage and growth rate are statistically significant factors in explaining the variations in leverage ratios.

III. SUMMARY & CONCLUSIONS

It was expected that in the absence of taxes, leverage level would be lower due to the absence of its benefit in the form of interest deduction and other tax advantages. In Saudi Arabia corporate tax code is unique where taxes are based on total network. We used a sample of firms composed of all publicly traded firms except financial sectors to study the variations in leverage ratios and their determinants. It was found that leverage was employed more than average in the electricity sector, average in the industrial sector, and below average in the cement industry. However it was almost negligible in services and agricultural sectors. Certainly, the examined factors play a determinant role in the determination of the leverage level. The study documented a negative relationship between growth, profitability and return on assets and leverage ratios. However, size and government share is documented to show a positive relationship with leverage.

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Table 1. Saudi Joint Stock Companies Listed in the Saudi Stock Market

SECTOR	COMPANY	MARKET CAPITALIZATION (SR Million)
BANKING	Riyadh Bank	14,480
	Jazirah Bank	1,236
	Saudi Investment Bank	2,398
	Saudi Hollandi Bank	3,121
	Saudi French Bank	6,642
	Saudi British Bank	9,775
	Arab National Bank	8,790
	Saudi American Bank	18,120
	Al-Rajhi Banking & Investment Co.	22,650
	United Saudi Bank	9,114
	TOTAL	96,326
INDUSTRIAL	Saudi Basic Industries Co.	48,000
	Saudi Arabian Fertilizer Co.	6,500
	Saudi Arabian Refinery Company	148
	Saudi Ceramic Company	432
	Savola Company	1,992
	National Industrialization Co.	1,020
	SPIMACO (Al-Dawaiah)	1,182
	National Gas & Industrialization Co.	765
	Food Products Company	214
	National Gypsum Company	598
	Saudi Cable Company	363
	Saudi Advanced Industries Co.	79
	Saudi Co. for Industrial Dev. (SIDC)	372
	Al-Ahsa Development Company	336
	National Co. for Glass Industries	644
	Saudi Arabian Amiantit Co.	861
	Alujain Corp.	206
	Arabian Pipes Co.	N/A
	FIPCO	N/A
	SISCO	N/A
	Arabian Industrial Dev. Co. (Nama)	N/A
TOTAL	63,712	
CEMENT	Arab Cement Co.	1,788
	Yamama Saudi Cement Co.	3,465
	Saudi Cement Co.	4,345
	Qassim Cement Co.	1,755
	Southern Province Cement Co.	2,527

Table 1. Saudi Joint Stock Companies Listed in the Saudi Stock Market (continued)

	Yanbu Cement Co.	2,678
	Eastern Province Cement Co.	2,451
	Tabuk Cement Co.	987
	TOTAL	19,996
SERVICES	Saudi Hotels & Resort Areas Co.	775
	Saudi Real Estate Co.	852
	National Shipping Co. of Saudi Arabia	1,277
	Saudi Arabia Public Transport Co.	1,150
	Saudi Automotive Services Co.	176
	Al-Mawashi - Al-Mukairish	830
	Tihama Advertising & Public Relations Co.	195
	Asir Company	176
	Taibah Investment & Real Estate Co.	940
	Makkah Construction & Dev. Co.	3,713
	Saudi Land Transport Co. (Mobarrad)	213
	Al-Aziziah Panda United	1,269
	Al-Baha Dev. & Investment Co.	105
	Saudi Industrial Export Co.	109
	Arriyadh Dev. Co.	890
	National Agricultural Marketing Co. (Thimar)	17
	TOTAL	12,687
ELECTRICITY	SCECO-CENTRAL	9,040
	SCECO-WEST	8,363
	SCECO-EAST	4,774
	SCECO-SOUTH	4,030
	Tabuk Electricity Co.	11
	Arar Electricity Co.	17
	Al-Jouf Electricity Co.	20
	Timah Electricity Co.	1
	Haql Electricity Co.	1
	Rafha Electricity Co.	4
		TOTAL
AGRICULTURE	National Agricultural Dev. Co. (NADEC)	432
	Qassim Agricultural Dev. Co. (GACO)	108
	Hail Agricultural Dev. Co. (HADCO)	189
	Tabuk Agricultural Dev. Co. (TADCO)	214
	Saudi Fishries Co. (ASMAC)	210
	Ash-Sharqiah Agricultural Dev. Co. (SAHDCO)	89
	Al-Jouf Agricultural Dev. Co. (JADCO)	143
	Bisha Agricultural Dev. Co.	38
	Jizan Agricultural Dev. Co. (JAZADCO)	168
	TOTAL	1591

Table 2. Selected Balance Sheets and Income Statements Items

Government Subsidy		Revenue (Sales)
Total Fixed Assets		Earnings Before Zakat
Total Assets		Zakat
Current Portion of Long Term Loans		Earnings After Zakat (Net Income)
Long Term Loans		
Government Loans		
Bank Loans		
Total Shareholders Equity		
Retained Earnings		

Table 3. Correlation Coefficients Between Zakat and Capital Ratios

	Zakat
Debt / Capital	0.137015
Long-Term-Debt / Capital	0.121491
Short-Term-Debt / Capital	0.067478
Equity/Capital	-0.13702

Table 4. Correlation Matrix

	Gshare%	Gsubsidy	Growth	Size	ROA	PM	Total Debt	Long-Term
Class								
Government Share	1							
Government Subsidy	0.51754	1						
% Change assets	-0.0655	-0.0678	1					
LN Assets	0.4587	0.54784	0.017	1				
ROA	-0.1097	-0.1877	-0.023	-0.16	1			
Profit Margin	-0.314	-0.465	0.051	-0.38	0.163	1		
Debt / Capital	0.39693	0.55707	-0.069	0.753	-0.201	-0.53	1	
Long-Term-Debt / Capital	0.47482	0.6704	-0.054	0.832	-0.193	-0.57	0.9133581	1
Short-Term-Debt / Capital	-0.0765	-0.1162	-0.051	0.008	-0.066	-0.04	0.4334702	0.0289965

Table 5. Sample Characteristics

Parameter	Industrial	Cement	Services	Electricity	Agricultural
Average Debt/Capital	21%	7.5%	7.1%	65%	1.9%
Average Long-Term Debt/Capital	10%	6.4%	4.2%	64.5%	0.9%
Average Short-Term Debt/Capital	11%	1.1%	2.9%	0.7%	1.0%
Sector Sample Market Capitalization (SR 1000,000)	61391	19996	10921	26207	1296
Percentage of whole sample market capitalization	51%	17%	9%	22%	1%
Average Government Share	15.58 %	16.54%	44.82%	76.39%	13.94%
Average Government Subsidy	0.08	0	0.28	0.95	0
Average Growth	5.15%	30.50%	51.14%	6.51%	0.47%
Average Size (SR million)	7234	1455	1662	26379	550
Average ROA	0.04	0.21	0.03	-0.03	0.01
Average PM	0.29	N/A	0.38	-0.84	0.07

Table 6. Industrial Sector Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-1.9131 t=-3.19	-1.1883 t=-5.95	-0.7249 t=-1.56
Government Share %	-0.7056 t=-2.93	-0.1567 t=-1.95	-0.5489 t=-2.94
Government Subsidy	-0.0864 t=-0.95	0.0058 t=0.19	-0.0923 t=-1.32
Growth (%∇Assets)	0.0052 t=2.12	-0.0028 t=3.38	0.0025 t=1.29
Size (ln Assets)	0.1585 t=3.67	0.0919 t=6.40	0.0666 t=1.996
Return on Assets	-0.8753 t=-1.22	-0.7800 t=-3.25	-0.0954 t=-0.17
Profit Margin	-0.0612 t=-0.64	0.0545 t=1.70	-0.1157 t=-1.55
F-Statistic	8.32	29.31	5.61
R-Square	0.549	0.811	0.451

Table 7. Cement Sector Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-0.0453 t=-0.07	-0.1420 t=-0.26	0.0967 t=0.48
Government Share %	-0.1683 t=-1.74	-0.1354 t=-1.64	-0.0328 t=-1.07
Growth (%∇Assets)	-0.0001 t=-0.92	-8.3 E (-5) t=-0.88	-1.9 E (-5) t=-0.53
Size (ln Assets)	0.0117 t=0.26	0.0171 t=0.45	-0.0054 t=-0.39
Return on Assets	-0.0609 t=-1.01	-0.0462 t=-0.89	-0.0148 t=-0.77
F-Statistic	1.40	1.37	0.420
R-Square	0.142	0.139	0.047

Table 8. Electrical Sector Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	6.0839 t= 2.57	6.2962 t= 2.38	-0.2123 t=-0.34
Government Share %	0.3401 t= 1.38	0.4362 t=1.59	-0.0962 t=-1.49
Government Subsidy	0.00075 t= 0.01	0.0266 t= 0.37	-0.0259 t=-1.52
Growth (%∇Assets)	-0.0196 t=-2.50	-0.0180 t= -2.05	-0.0016 t=-0.79
Size (ln Assets)	-0.3070 t= -2.19	-0.3218 t= -2.06	0.0148 t=0.40
Return on Assets	11.2924 t= 2.46	14.2503 t= 2.79	-2.9579 t=-2.462
Profit Margin	-0.0441 t= -0.41	-0.0725 t=-0.60	-0.2848 t= 1.00
F-Statistic	4.76	5.16	7.50
R-Square	0.69	0.70	0.78

Table 9. Agricultural Sector Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-0.3950 t= -4.00	-0.3566 t= -5.54	-0.0384 t=-0.41
Government Share %	-0.0016 t=-0.06	0.0265 t=1.51	-0.0280 t=-1.09
Growth (%∇Assets)	0.0008 t= 0.96	0.0004 t= 0.72	0.0004 t= 0.52
Size (ln Assets)	0.0320 t=4.24	0.0278 t=5.66	0.0042 t=0.58
Return on Assets	0.1376 t = 0.68	0.1319 t= 1.00	0.0057 t= 0.03
Profit Margin	-0.0973 t=-1.29	-0.0671 t=-1.36	-0.0302 t=-0.42
F-Statistic	3.74	6.86	0.47
R-Square	0.496	0.644	0.110

Table 10. Services Sector Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-0.29662 t= -1.05	-0.1726 t= -1.02	-0.1241 t=-0.63
Government Share %	0.0770 t=4.15	0.0739 t=6.69	0.0031 t=0.24
Government Subsidy	0.0573 t=1.56	0.0367 t=1.68	0.0206 t=0.81
Growth (%∇Assets)	1.01 E (-5) t=0.14	3.08 E (-5) t=0.71	-2.1 E (-5) t=-0.41
Size (ln Assets)	0.0232 t=1.12	0.0126 t=1.02	0.0106 t=0.74
Return on Assets	0.1846 t=0.84	-0.0032 t=-0.02	0.1878 t=1.24
Profit Margin	-0.0453 t=-1.23	-0.0206 t=-0.94	-0.0247 t=-0.96
F-Statistic	10.12	19.88	1.034
R-Square	0.655	0.788	0.162

Table 11. Sample Classification by Size

Categorization		AVERAGES					
Size	RANGE	Gshare	Subsidy	Growth	Size	ROA	PM
Small	Total Assets < 440	0.1316	0.0476	-12.1	272969	0.1261	0.274
Medium	440 < Total Assets < 1200	0.0913	0.0784	40.77	823625	0.0499	0.221
Large	1200 < Total Assets < 3250	0.2115	0.1061	19.84	2E+06	0.0879	0.297
Very Large	3250 < Total Assets	0.8725	0.6667	8.669	2E+07	0.0073	-0.4

Table 12. Small Firms Regression Results

	Total Debt / Capital
Intercept	0.0069 t= 0.036
Size (ln Assets)	0.0003 t= 0.02
Government Share %	-0.0118 t= -0.67
Government Subsidy	-0.0112 t=-0.84
Growth (%∇Assets)	7.87 E (-5) t= 0.53
Return on Assets	-0.0008 t= -0.13
Profit Margin	-0.0102 t= -1.29
F-Statistic	0.42
R-Square	0.153

Table 13. Medium Size Firms Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-2.6942 t= -3.46	-0.8802 t= -2.65	-1.8139 t= -3.08
Size (ln Assets)	0.2083 t= 3.61	0.0676 t= 2.74	0.1407 t=3.22
Government Share %	-0.5276 t= -2.36	-0.0206 t= -0.22	-0.5070 t=-3.00
Government Subsidy	-0.0774 t= -1.15	-0.016 t= -0.58	-0.0614 t=-1.20
Growth (% ∇ Assets)	-0.0003 t=-2.29	-8.3 E (-5) t= -1.68	-0.0002 t= -2.08
Return on Assets	0.2164 t= 0.59	-0.1547 t= -0.99	0.3711 t= 1.34
Profit Margin	-0.0273 t= -0.45	0.0463 t= 1.79	-0.0736 t= -1.60
F-Statistic	3.25	2.01	3.34
R-Square	0.307	0.215	0.313

Table 14. Large Size Firms Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-1.7561 t= -1.42	-1.4475 t= -2.28	-0.3086 t= -0.37
Size (ln Assets)	0.1417 t= 1.64	0.1089 t= 2.45	0.0328 t=0.56
Government Share %	-0.0756 t= -1.24	-0.0041 t=-0.13	-0.0715 t=-1.72
Government Subsidy	-0.0694 t= -0.92	-0.0415 t= -1.08	-0.0279 t= -0.55
Growth (%∇Assets)	-1.2 E (-5) t= -0.07	-1.9 E (-5) t= -0.21	6.2 E (-5) t= 0.05
Return on Assets	-1.0052 t= -3.58	-0.3125 t= -2.17	-0.6927 t= -3.62
Profit Margin	-0.1269 t= -2.57	-0.0571 t= -2.25	-0.0698 t= -2.08
F-Statistic	4.21	2.78	3.85
R-Square	0.300	0.220	0.28

Table 15. Very Large Firms Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-1.3458 t= -4.73	-1.2108 t= -4.00	-0.1350 t=-1.76
Size (ln Assets)	0.1039 t= 6.51	0.0954 t= 5.61	0.0084 t=1.96
Government Share %	0.0067 t= 0.33	-0.0234 t= -1.09	0.0300 t= 5.52
Government Subsidy	0.1611 t= 3.19	0.1905 t= 3.54	-0.0294 t= -2.16
Growth (%∇Assets)	0.0005 t = 0.34	0.0003 t= 0.20	0.0002 t=0.50
Return on Assets	-1.1769 t= -1.94	-1.4547 t= -2.25	0.2778 t= 1.69
Profit Margin	-0.0255 t= -0.83	-0.0095 t=-0.29	-0.0160 t= -1.94
F-Statistic	36.35	35.84	8.62
R-Square	0.893	0.892	0.665

Table 16. All Firms Regression Results

	Total Debt / Capital	Long Debt / Capital	Short Debt / Capital
Intercept	-1.2848 t=-9.29	-1.2509 t=-13.22	-0.0339 t=-0.36
Government Share %	-0.0107 t=-0.42	0.00044 t=0.025	-0.0112 t=-0.65
Government Subsidy	0.0663 t=1.83	0.1149 t=4.63	-0.0486 t=-1.99
Growth (%∇Assets)	-0.00013 t=-1.33	-7.1 E (-5) t=-1.09	-5.6 E (-5) t=-0.87
Size (ln Assets)	0.1021 t=10.39	0.0955 t=14.19	0.0067 t=1.01
Return on Assets	-0.0541 t=-0.95	-0.0149 t=-0.38	-0.0392 t=-1.03
Profit Margin	-0.0990 t=-4.53	-0.0820 t=-5.48	-0.0170 t=-1.15
F-Statistic	50.47	107.70	1.197
R-Square	0.649	0.798	0.042

Table 17. Total Debt/Capital Regression Results

	β_0	β_1	F-Statistic	R-Square
Government Share %	0.1186	0.1821	31.606	0.1576
Government Share	0.1367	0.0529	1.971	0.0115
Government Subsidy	0.1076	0.3241	76.045	0.310
Growth	0.1748	1.4 E(-4)	0.811	0.0048
Size	-1.6597	.01276	221.145	0.5668
ROA	0.1878	-0.02405	7.100	.0403
PM	0.2017	-0.2161	65.104	0.2781