Determinants of Capital Structure; a Study of Manufacturing Companies in Iran

*Ali NEMATI[1], Joriah Muhammad[2]

[1]Department of Accounting, Islamic Azad University, Central Tehran Branch,Tehran, Iran
[2]School of management University Sains Malaysia

Abstract: The aim of this paper is determine capital structure of manufacturing companies in Iran. Generally our results are consistent with the predictions of theoretical studies and the results of previous empirical studies. Profitability is strongly negatively related with TL. A one percent increase in ROA could bring more than 1.5-2.0 percent drop in TL. Non-debt tax shields are also highly negatively related with TL. Volatility, size and ownership of institutes are positively related with TL. As expected, tax and management shareholding have no significant effect on TL.

1. Introduction

Determinants of a firm's capital structures have long been an important area in corporate finance since Miller and Modigliani's pioneer work in 1958. Of a firm's choice of capital structure, the trade-off theory is the oldest one, which indicates that a firm optimizes its debt level such that marginal tax advantage of additional borrowing is offset by the increase in the cost of financial difficulties. The followed pecking order theory says that firms prefer to finance their investments from internally generated cash flowing as their first best choice as compared to borrowing (Myers and Majluf). Two other theories related to asymmetric information are signaling theory (Ross) and agency theory (Jensen). Signaling theory suggests that investors interpret higher levels of debt as a signal of higher credit quality and higher future cash flows. Due to the high expected costs of financial distress at any debt level, lower credit firms cannot mimic higher credit firms by taking on more debt. According to agency theory, the potential conflict of interests between management and shareholders in a company may lead to either under investment or over investment. Most of the empirically testing on the theories worked on public firms (Titman and Wessels, Altman, Myers, Vogt and more), with few on non-public firms (Schoubben and Hulle, Barry et al). A recent study on farm capital structure supports the pecking order theory as well as the trade off theory (Barry et al, 2000). The aim of this paper is determine capital structure of manufacturing companies in Iran.

1.1. Review of Literature

After the work of Modigliani and Miller in the beginning of the 1960 decade, which is almost one of the first studies considered in capital structure literature; this issue has been noticed by other researchers. Capital structure researches divide into two major groups: first, is about the determinants of capital structure, and second, is regard to the relation between capital structure and firm's value.

A glance to the works of Scott (1972), Carleton and Silberman (1977), Bradley et al (1984), Castanias (1983), Titman and Wessels (1988), Long and Malits (1985) and Marsh (1982), reveals a number of variables that affect the capital structure choice in various countries, and the vector of these affects. Declared variables in the above studies, including durable assets, operating risk, non-debt tax shields, growth opportunities and firm size, have positive correlations with the leverage, as a proxy of capital structure (dependent variable), although, volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product, have negative correlations with leverage. Ferri and Jones (1979) studied the capital structure determinants considering, industry type, firm size, business risk, and operating leverage. They found independent variables, except to business risk, seemed to be related significantly, although the Industry type, have a weak relationship. Aggarwal (1981) expresses that, growth rate, profitability, and international risk are not adequate factors to determine the capital structure choice, and some important variables such as industry type have been ignored. He adds "country-effect" as another important variable in determining firm's capital structure. Park (1998) also uses the national culture as an independent variable in such researches. Myers and Majluf (1984) find that the firm size has a positive relation with capital structure, while profitability may have either a negative or positive relation. A positive relation between profitability and capital structure is consistent with the static trade off theory, whereas its negative relation supports the pecking order theory. DeAngelo

and Masulis (1980) and Modigliani-Miller (1958) investigated non-debt tax shield, as another determinant of capital structure. They argued that non-debt tax shields, such as depreciation, can be replaced by interest (debt) tax shields. A negative correlation between non-debt tax shield and profitability found, in these papers. Bowen, Daley, and Huber (1982) and Kim and Sorensen (1986), inform that there is a negative association, between non-debt tax shield and leverage, as a proxy for dependent variable. And in contrast, some researchers didn't found a significant relationship or found a positive relation that was inconsistent with the previous results (Titman and Wessels, 1988; Homaifar et al. 1994; De Miguel and Pindado, 2001; Ozkan, 2001). For example, Titman and Wessels (1988), non-debt tax shields, volatility, growth, and asset structure are not generally associated with the leverage, while profitability has a significantly negative relationship with debt ratios. In some other cases, operating risk (Myers, 1977), dividend policy (Smith and Warner, 1979), and inflation (Homaifar et al, 1994), were concerned, and results indicate that there is a significant correlation between operating risk and dividend policy, and capital structure. Additionally, Homaifar et al. (1994) find that inflation has a positive association with debt ratio.

In a comparing study, across U.S. and Japanese companies, Kester (1986) found a negative significant relationship between profitability and debt ratio, which supports the pecking order theory, by preferring internal funds to external borrowing. He also considers variables such as risk, growth, size, as well as industry type, and discovers noticeable differences among the sample countries. Allen and Mizuno (1989) in a test based on both market and book value of Japanese corporations; find that there is a significant negative relation between profitability and capital structure. These results are consistent with the former studies of Kester (1986) and Titman and Wessels (1988). Rajan and Zingales (1995) have done a research to compare capital structure and it's affecting factors in G7 countries. They observed that results are comparatively similar in their sample countries in spite of a little difference that are due to differences in taxation and bankruptcy laws as well as ownership structure. They also find that the determinants of capital structure that have been reported for the U.S. (size, growth, profitability, and importance of tangible assets) are also important in other countries. These results are consistent with the previous study of Harris and Raviv (1991), on U.S. firms, considering those four variables. The cross sectional study of Bennett and Donnelly (1993) in UK firms, indicate that non-debt tax shields, asset structure, size and profitability, affect the capital structure choice decisions. Lasfer (1995) tested the relationship between a firm's capital structure and its corporation tax and agency costs as possible determinants of capital structure using both the cross-sectional and time-series methods. Results indicate that, firms with more free cash flow problems have lower debt ratio, and there is a negative significant relationship between growth opportunities and debt ratio. Also it seems that corporate tax does not have a significant effect on the capital structure choice in short run. Deesomsak, Rataporn, Paudyal, and Pescetto (2004) determined the debt-equity choice, in an eastern Asia and Australian firm's analysis, concerning firm size, non-debt tax shield, liquidity, and share price performance, as the main influencing factors. The results show that there is a significant association between these four variables and leverage as a proxy for capital structure. In most of countries, firm size has a positive relation with capital structure, which is consistent with trade off model. By a panel for the years 1992-2001 of the Korean corporations data, including the South Korean financial crisis, Fattouh, Scaramozzino, and Harris (2005), demonstrated that the proxy variables for asymmetric information cost such as firm size, non-debt tax shield, asset tangibility and profitability, are significantly related to capital structure. Their results are consistent with the pecking order theory. Results of previous studies indicate that neither a simple pecking order model nor a simple trade-off model is capable to explain all of time-series and cross-sectional studies that have been documented. Also none of them is such competent that can explain all aspects of financial policies; so we believe that the financing process is complex and dynamic.

2. Material and Methods

Theoretical and empirical studies have shown that profitability, tangibility, tax, size, non-debt tax shields, growth opportunities, volatility, and so on affect capital structure. On the relationship between these factors and companies' capital structure, Harris and Raviv (1990), summarizing a good number of empirical studies from US firms, suggest that "leverage increases with fixed assets, non-debt tax shields, investment opportunities and firm size and decreases with volatility, advertising expenditure, the probability of bankruptcy, profitability and uniqueness of the product." However, recent studies have updated our understanding about the determinants of capital structure. For example, Wald (1999) shows that leverage decreases rather than increases with non-debt tax shields. Here, we first summarize the results of previous theoretical and empirical studies on these factors and then discuss how we will measure these determinants in this study.

1.2. Profitability

Although much theoretical work has been done since Modigliani and Miller (1958), no consistent predictions have been reached of the relationship between profitability and leverage. Tax-based models suggest that profitable firms should borrow more, *ceteris paribus*, as they have greater needs to shield income from corporate tax. However, pecking order theory suggests firms will use retained earnings first as investment funds and then move to bonds and new equity only if necessary. In this case, profitable firms tend to have less debt. Agency-based models also give us conflicting predictions. On the one hand, Jensen (1986) and Williamson (1988) define debt as a discipline device to ensure that managers pay out profits rather than build empires. For firms with free cash flow, or high profitability, high debt can restrain management discretion. On the other hand, Chang (1999) shows that the optimal contract between the corporate insider and outside investors can be interpreted as a combination of debt and equity, and profitable firms tend to use less debt.

In contrast to theoretical studies, most empirical studies show that leverage is negatively related to profitability. Friend and Lang (1988), and Titman and Wessels (1988) obtain such findings from US firms. Kester (1986) finds that leverage is negatively related to profitability in both the US and Japan. More recent studies using international data also confirm this finding (Rajan and Zingales (1995), and Wald (1999) for developed countries, Wiwattanakantang (1999) and Booth et al. (2001) for developing countries). Long and Maltiz (1985) find leverage to be positively related to profitability, but the relationship is not statistically significant. Wald (1999) even claims that "profitability has the largest single effect on debt/asset ratios." In this study, profitability will be defined as earnings before interest and tax (EBIT) scaled by total assets.

2.2. Tangibility

On the relationship between tangibility and capital structure, theories generally state that tangibility is positively related to leverage. In their pioneering paper on agency cost, ownership and capital structure, Jensen and Meckling (1976) point out that the agency cost of debt exists as the firm may shift to riskier investment after the issuance of debt, and transfer wealth from creditors to shareholders to exploit to the option nature of equity. If a firm's tangible assets are high, then these assets can be used as collateral, diminishing the lender's risk of suffering such agency costs of debt. Hence, a high fraction of tangible assets is expected to be associated with high leverage. Also, the value of tangible assets should be higher than intangible assets in case of bankruptcy. Williamson (1988) and Harris and Raviv (1990) suggest leverage should increase with liquidation value and both papers suggest that leverage is positively correlated with tangibility.

Empirical studies that confirm the above theoretical prediction include Marsh (1982), Long and Malitz (1985), Friend and Lang (1988), Rajan and Zingales (1995), and Wald (1999). In this study, tangibility is measured as fixed assets scaled by total assets. As the non-debt portion of liabilities does not need collateral, tangibility is expected to affect the long-term debt or total debt ratio rather than total liabilities ratio.

3.2. Tax

The impact of tax on capital structure is the main theme of pioneering study by Modigliani and Miller (1958). Almost all researchers now believe that taxes must be important to companies' capital structure. Firms with a higher effective marginal tax rate should use more debt to obtain a tax-shield gain. However, MacKie-Mason (1990) comments that the reason why many studies fail to find plausible or significant tax effects on financing behaviors, which is implied by Modigliani and Miller theorem, is because the debt/equity ratios are the cumulative result of years' of separate decisions and most tax shields have a negligible effect on the marginal tax rate for most firms. MacKie-Mason, contrary to other researchers, studies the incremental financing decisions using discrete choice analysis. He focuses especially on the effect of taxes (tax loss carry-forwards and investment tax credit) upon the debt-equity choice conditional on going public, and finds that the desirability of debt financing at the margin varies positively with the effective marginal tax rate, which is consistent with MM theorem. Unfortunately we don't have relevant data to analyze the tax effect in a similar way as MacKie-Mason. Instead, the average tax rate is used to measure tax effect on leverage in this study. Also, a certain portion of total liabilities does not have to pay any interest. Hence there is no tax-shield effect for that portion of total liabilities.

4.2. Size

Many studies suggest there is a positive relation between leverage and size. Marsh (1982) finds that large firms more often choose long-term debt while small firms choose short-term debt. Large firms may be able to take advantage of economies of scale in issuing long-term debt, and may even have bargaining power over creditors. So the cost of issuing debt and equity is negatively related to firm size. However, size may also be a proxy for the information that outside investors have. Fama and Jensen (1983) argue that larger firms tend to provide more information to lenders than smaller ones. Rajan and Zingales (1995) argue that larger firms tend to

disclose more information to outside investors than smaller ones. Overall, larger firms with less asymmetric information problems should tend to have more equity than debt and thus have lower leverage. However, larger firms are often more diversified and have more stable cash flow; the probability of bankruptcy for large firms is smaller compared with smaller ones, *ceteris paribus*. Both arguments suggest size should be positively related with leverage. Also, many theoretical studies including Harris and Raviv (1990), Stulz (1990), Noe (1988), Narayanan (1988), and Poitevin (1989), suggest that leverage increases with the value of company. Empirical studies, such as Marsh (1982), Rajan and Zingales (1995), Wald (1999), and Booth et al. (2001), generally find that leverage is positively correlated with company size. While both Rajan and Zingales (1995) and Wald (1999) find that larger firms in Germany tend to have less debt, Wald (1999) finds that, in Germany, a small number of professional managers control a sizable percentage of big industrial firms' stocks (such as Siemens and Daimler-Benz) and can force management to act in the stockholders' interests. Based on this fact, he argues that such centralized company control is responsible for the negative coefficient on size. Following the above-mentioned studies, a natural logarithm of sales is used to measure firm size in this study. In doing so, we imply the size effect on leverage is nonlinear. The natural logarithm of sales and total assets are highly correlated (the correlation coefficient is 0.79), so each of them should be a sound proxy for company size. Here sales rather than total assets are used to prevent the probability of spurious correlation.

5.2. Non-debt tax shields

The tax deduction for depreciation and investment tax credits is called non-debt tax shields (NTDS). DeAngelo and Masulis (1980) argue that non-debt tax shields are substitutes for the tax benefits of debt financing and a firm with larger non-debt tax shields, *ceteris paribus*, is expected to use less debt. Empirical studies generally confirm their prediction. Bradley et al. (1984) employ the sum of annual depreciation charges and investment tax credits divided by the sum of annual earnings before depreciation, interest, and taxes to measure NTDS. They find leverage is positively related with NTDS. However, NTDS is highly correlated with tangibility and they do not include proxy of tangibility in their studies, which is also expected to affect firms' leverage. Wald (1999) uses the ratio of depreciation to total assets and Chaplinsky and Niehaus (1993) employ the ratio of depreciation expense plus investment tax credits to total assets to measure NDTS. Both studies find that leverage is negatively

correlated with NDTS. In this study, we use depreciation scaled by total assets to measure non-debt tax shields.

6.2. Growth Opportunities

Theoretical studies generally suggest growth opportunities are negatively related with leverage. On the one hand, as Jung, Kim and Stulz (1996) show, if management pursues growth objectives, management and shareholder interests tend to coincide for firms with strong investment opportunities. But for firms lacking investment opportunities, debt serves to limit the agency costs of managerial discretion as suggested by Jensen (1986) and Stulz (1990). The findings of Berger, Ofek, and Yermack (1997) also confirm the disciplinary role of debt. On the other hand, debt also has its own agency cost. Myers (1977) argues that high-growth firms may hold more real options for future investment than low-growth firms. If high-growth firms need extra equity financing to exercise such options in the future, a firm with outstanding debt may forgo this opportunity because such an investment effectively transfers wealth from stockholders to debtholders. So firms with high growth opportunity may not issue debt in the first place and leverage is expected to be negatively related with growth opportunities. Jensen and Meckling (1976) also suggest that leverage increases with lack of growth opportunities. Empirical studies predominately support theoretical prediction; Kester (1986) is only one exception. The findings of Kim and Sorensen (1986), Smith and Watts (1992), Wald (1999), Rajan and Zingales (1955), and Booth et al. (2001) are consistent with the above theoretical prediction. There are different proxies for growth opportunities with different implications. Wald (1999) uses a five-year average of sales growth. Titman and Wessels (1988) use capital investment scaled by total assets as well as research and development scaled by sales to proxy growth opportunities. Rajan and Zingales (1995) use Tobin's Q and Booth et al. (2001) use market-to-book ratio of equity to measure growth opportunities. We argue that sales growth rate is the past growth experience, while Tobin's Q better proxy future growth opportunities although sales growth rate as well as Tobin's Q (market-to-book ratio of total assets) are employed to measure growth opportunities in this study.

7.2. Volatility

Volatility or business risk is a proxy for the probability of financial distress and it is generally expected to be negatively related with leverage. However, Hsia (1981), based on the contingent claim nature of equity, combines the option pricing model (OPM), the capital asset pricing model (CAMP), and the Modigliani-Miller theorems to show that as the

variance of the value of the firm's assets increases, the systematic risk of equity decreases. So the business risk is expected to be positively related with leverage. Several measures of volatility are used in different studies, such as the standard deviation of the return on sales (Booth et al., 2001), standard deviation of the first difference in operating cash flow scaled by total assets (e.g., Bradley et. al., 1984; Chaplinsky and Niehaus, 1993; and Wald, 1999), or standard deviation of the percentage change in operating income (e.g., Titman and Wessels, 1988). All these studies find that business risk is negatively correlated with leverage. In this study, we follow Booth et al. (2001) in using standard deviation of earnings before interest and tax to measure volatility.

8.2. Ownership Structure and Managerial Shareholdings

Agency theory (Jensen and Meckling (1976), Jensen (1986) etc.) suggests that the optimal structure of leverage and ownership may be used to minimize total agency costs. They propose two types of conflicts of interest: conflicts between shareholders and managers, and conflicts between shareholders and debtholders. So it is expected that there are some correlation between ownership (including managerial ownership) structure and leverage. Theoretically, Leland and Pyle (1977) argue that leverage is positively correlated with the extent of managerial equity ownership. However empirical studies produce mixed results: for example, Berger, Ofek and Yermack(1997) confirm such positive correlation, while Friend and Lang(1988) give opposite results. Although ownership structure is believed to have impact on capital structure, there seems no clear predication about the relationship between ownership structure and leverage. In this study, institutional shareholdings proxy the ownership structure of Iranian firms and managerial shareholdings are proxied by the total shares held by top managers, directors and supervisors.

3. Results

In this section, we present the results of empirical analysis on the determinants of capital structure. As the results of OLS analysis and Tobit model are much similar with each other, we just present and discuss OLS results for simplicity. Generally our results are consistent with the predictions of theoretical studies and the results of previous empirical studies. Profitability is strongly negatively related with TL.   A one percent increase in ROA could bring more than 1.5-2.0 percent drop in TL. Non-debt tax shields are also highly negatively related with TL. Volatility, size and ownership of institutes are positively related with TL.   As expected, tax and management shareholding have no significant effect on TL. On the relationship between size and leverage, if size is interpreted as a reversed proxy for bankruptcy cost, it should have less or no effect on Iranian firms' leverage because the state keeps around 40% of the stocks of these firms and, because of soft budget constraint, state-controlled firms should have much less chance to go bankrupt.

PARAMETER	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9
ROA	-188.03	-149.16	-198.91	-160.58	-163.14	-159.31	-155.48	-158.92	-153.94
	(-13.25)***	(-9.05)***	(-14.15)***	(-9.85)***	(-9.93)***	(-9.74)***	(-9.22)***	(-9.7)***	(-9.07)***
SIZE	4.19	2.739	4.424	2.996	2.917	2.617	2.391	2.618	2.448
	(7.36)***	(4.22)***	(7.89)***	(4.69)***	(4.54)***	(4.06)***	(3.51)***	(4.00)***	(3.51)***
NDTS	-193.1	-200.91	-184.87	-192.64	-189.9	-128.19	-108.29	-116.45	-102.34
	(-5.63)***	(-5.92)***	(-5.49)***	(-5.78)***	(-5.68)***	(-3.37)***	(-2.73)***	(-3.09)***	(-2.6)***
INSTITUT	0.081	0.091	0.076	0.086	0.086	0.081	0.08	0.078	0.084
	(3.43)***	(3.9)***	(3.3)***	(3.76)***	(3.74)***	(3.53)***	(3.39)***	(3.31)***	(3.47)***
VOLTY	22.91	36.17	19.72	32.793	32.92	32.91	31.43	26.26	27.93
	(1.46)	(2.29)**	(1.28)	(2.11)**	(2.11)**	(2.13)***	(2.02)**	(1.66)*	(1.75)*
TOBIN'S Q		-2.475		-2.433	-2.422	-2.736	-2.835	-2.394	-2.563
		(-4.48)***		(-4.49)***	(-4.45)***	(-4.98)***	(-4.97)***	(-4.25)***	(-4.38)***
GROWTH			5.392	5.333	5.348	5.129	4.889	4.543	4.576
			(5.6)***	(5.61)***	(5.6)***	(5.4)***	(5.09)***	(4.81)***	(4.78)***
TANG						-12.593	-8.872	-12.203	-10.676
						(-3.34)***	(-2.12)**	(-3.24)***	(-2.55)***
TAX					6.27	6.156	7.871	9.77	10.466
					(0.74)	(0.73)	(0.93)	(1.13)	(1.2)
MANAG					0.689	0.613	0.594	0.481	0.531
					(1.16)	(1.04)	(0.99)	(0.81)	(0.87)
INDUSTRY		NO	NO	NO	NO	NO	YES	NO	YES
REGION		NO	NO	NO	NO	NO	NO	YES	YES
ADJRSQ	0.261	0.278	0.288	0.305	0.305	0.314	0.324	0.354	0.359

Note: Number of observations is 799. F-tests shows the coefficients of province dummy variables are not equal to zero at the 1% level in the models of No. 8 and 9, and the coefficients of industry dummy variables are not equal to zero at the 5% level in the model of No.7 and not significantly different from zero at the 10% level in the model of No.9

4. Discussions

The forces working on firms' capital structure in other countries also work in a quite similar way in Iran. Although Iran is still transforming its economy from a command economy to a market-based economy and the state is still the controlling shareholder for most listed companies, the factors which affect firms' leverage in other countries also affect Iranian companies' leverage in a similar way. Specifically, leverage, as measured by long-term debt ratio, total debt ratio and total liabilities ratio, decreases with profitability and increases with company size. Tangibility has a positive effect on long-term debt ratio. Firms that have experienced quick sales growth rate tend to have higher leverage while firms that have bright growth opportunities tend to have less leverage. The ownership structure also affects capital structure. Firms with higher state shareholding and lower institutional shareholding tend to have lower total liabilities ratio and lower total debt ratio. Although it is not very economically significant, we do find the companies with B- or H-shares have economically significantly higher level of leverage than those without B- or H-shares. We fail to find a significant correlation between the shareholding of management and firms' leverage. This is probably because that management shareholding is too low; the shareholding of all management (directors, supervisors and top managers) is only 0.017% (median value for 135 firms). While the findings in developed countries are mostly portable to Iran, the capital structure of Iranian companies has some different features. First, although the practice of the General Accepted Accounting Principles (GAAP) varies across the world and a rigorous comparison in capital structure across countries is impossible, we have clear evidence that Iranian companies have less long-term debt, less total liabilities and higher shareholders' equity compared to their counterparts in both developed countries (e.g., US, Japan, Germany, France, Italy, UK, Canada) and some developing countries (e.g., India, Pakistan, Turkey). Second, Iranian companies tend to rely on higher levels of external financing, especially higher levels of equity financing than those in other developed countries. Third, the difference between book value and quasi-market value of leverage is much bigger in Iran than that in other countries. Generally the market value of leverage is much lower than the book value of the same leverage measure in Iran. Why do Iranian firms have such a low long-term debt ratio? One possible reason is that Iranian firms prefer and have access to equity financing once they go public as most firms enjoy a favorable high stock price. This is the case at least compared to the book value of equity. As mentioned, the remarkably high Tobin's Q make Iranian firms prefer equity financing over debt financing at least from the perspective of state or institutional shareholders. Also, the management prefers equity financing rather than debt financing because the former is not binding. Another possible explanation is the fact that the Iranian bond market is still in an infant stage of development. Banks are the major or even the only source of firms' external debt. As a result, firms have to rely on equity financing and trade credit, where firms owe each other in the form of accounts payable. In order to provide more financing opportunities for Iranian firms, it is desirable for Iran to accelerate the development of its bond market.

Corresponding Author:
Ali NEMATI
Department of Accounting, Islamic Azad University, Central Tehran Branch, Tehran, Iran.
E-mail:anemati67@gmail.com

References

1. Berger, G. Philip, Eli Ofek and David L. Yermack, 1997, Managerial entrenchment and capital structure decisions, *Journal of Finance* 52, 1411-1438.
2. Booth, Laurence, Varouj Aivazian, Asli Demirguc-Kunt, and Vojislav Maksimovic, 2001, Capital structures in developing countries, *Journal of Finance56,* 87-130.
3. Bradley, Michael, George A. Jarrell, and E. Han Kim, 1984, On the existence of an optimal capital structure: theory and evidence, Journal of Finance, 39,857-880.
4. Chang, Chun, 1999, Capital structure as optimal contracts, *North American Journal of Economics and Finance 10(2)*, 363-85.
5. Chaplinsky, Susan and Greg Niehaus, 1993, Do inside ownership and leverage share common determinants? *Quarterly Journal of Business and Economics*, 32(4), 51-65.
6. DeAngelo, H. and R. Masulis, 1980, Optimal capital structure under corporate and personal taxation, *Journal of Financial Economics* 8, 3-29.
7. Demirguc-Kunt, Asli, and Vojislav Maksimovic, 1999, Institutions, financial markets and firm debt maturity, *Journal of Financial Economics* 54, 295-336.
8. Fama, E.F. and Jensen, Michael, 1983, Agency problem and residual claims, *Journal of Law and Economics* 26, 327-349.
9. Friend, Irwin, and Larry H.P. Lang, 1988, An empirical test of the impact of managerial self-interest on corporate capital structure, *Journal of Finance* 43, 271-281.

10. Gibson H. Charles, 2001, Financial Reporting and Analysis: Using financial accounting information, South-Western College publishing.
11. Harris, Milton, and Artur Raviv, 1988, Corporate control contests and capital structure, *Journal of Financial Economics* 20, 55-86.
12. Harris, Milton, and Artur Raviv, 1990, Capital structure and the information role of debt, *Journal of Finance* 45, 321-349.
13. Harris Milton, and Artur Raviv, 1991, The theory of capital structure, *Journal of Finance* 46, 297-355.
14. Hsia, C. C., 1981, Coherence of the modern theories of finance, *Financial Review*, Winter 1981, 27-42.
15. Jensen, Michael C. and William H. Meckling, 1976, Theory of the firms: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.
16. Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323-339.
17. Kester, Carl W., 1986, Capital and ownership structure: a comparison of United States and Japanese corporations, Financial Management, 5-16.
18. Kim, Wi Saeng and Eric H. Sorensen, 1986, Evidence on the impact of the agency costs of debt in corporate debt policy, *Journal of Financial and Quantitative Analysis* 21, 131-144.
19. Leland, Hayne and David Pyle, 1977, Information asymmetrics, financial structure, and financial intermediation, *Journal of Finance* 32, 371-388.
20. Long, Michael and Ileen Maltiz, 1985, The investment-financing nexus: Some empirical evidence, Midland Corporate Finance Journal 3, 53-59.
21. MacKie-Mason, Jeffrey K., 1990, Do taxes affect corporate financing decisions? *Journal of Finance* 45, 1471-1493.
22. Maksimovic, Vojislav and Sheridan Titman, 1991, Financial policy and reputation for product quality, *Review of Financial Studies* 4(1), 175-200.
23. Marsh, Paul, 1982, The choice between equity and debt: An empirical study, *Journal of Finance* 37, 121-144.
24. Masulis, Ronald W. 1988, *The Debt/Equity Choice*, Ballinger Publishing Company.
25. Megginson, William L., 1997, *Corporate Finance Theory*, Addison-Wesley Educational Publishers Inc.
26. Miller, Merton, and Franco Modigliani, 1961, Dividend policy, growth and the valuation of shares, *Journal of Business* 34, 411-433.
27. Miller, Merton, 1977, Debt and taxes, *Journal of Finance* 32, 261-275.
28. Modigliani, Franco, and Merton Miller, 1958, The cost of capital, corporation finance and the theory of investment, American Economic Review 48, 261-275.
29. Myers, Stewart C. and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics 13,* 187-221.
30. Narayanan, M. P., 1988, Debt versus equity under asymmetric information, Journal of Financial and Quantitative Analysis 23, 39-51.
31. Noe, Thomas, 1988, Capital Structure and signaling game equilibria, *Review of Financial Studies* 1, 331-356.
32. Poitevin, Michael, 1989, Financial signaling and the 'deep-pocket' argument, *Rand Journal of Economics* 20, 26-40.
33. Rajan G. Raghuram, and Luigi Zingales, 1995, What do we know about capital structure? Some evidence from international data, *Journal of Finance* 50, 1421-1460.
34. Ross, Stephen, 1977, The determinants of financial structure: The incentive signaling approach, *Bell Journal of Economics* 8, 23-40.
35. Shyam-Sunder, Lakshmi and Stewart C. Myers, 1999, Testing static tradeoff against pecking order models of capital structure, *Journal of Financial Economics* 51,219-244.
36. Smith, Clifford, and Ross Watts, 1992, The investment opportunity set and corporate financing, dividend and compensation policies, *Journal of Financial Economics* 32, 263-292.
37. Stulz, Rene, 1988, Managerial control of voting rights: Financing policies and the market for corporate control, *Journal of Financial Economics* 20, 25-54.
38. Stulz, Rene, 1990, Managerial discretion and optimal financing policies, *Journal of Financial Economics* 26, 3-27.
39. Titman, Sheridan, 1984, The effect of capital structure on a firm's liquidation decision, *Journal of Financial Economics 13,* 137-151.
40. Titman, Sheridan, and Roberto Wessels, 1988, The determinants of capital structure choice, *Journal of Finance*, 43, 1-19.
41. Toy, Norman, Arthur Stonehill, Lee Remmers, Richard Wright, and Theo Beekhuisen, 1974, A comparative international study of growth profitability, and risk as determinants of corporate debt ratios in the manufacturing sector, Journal of Financial and Quantitative Analysis 9, 875-886.
42. Wald John K. 1999, How firm characteristics affect capital structure: an international comparison, *Journal of Financial Research* 22(2), 161-187.
43. Williamson, Oliver, 1988, Corporate finance and corporate governance, *Journal of Finance* 43, 567-591.
44. Wiwattanakantang, Yupana, 1999, An empirical study on the determinants of the capital structure of Thai firms, *Pacific-Basin Finance Journal* 7, 371-403.

11/13/2012