



Addis Ababa University
College of Business and Economics



Corporate Capital Structure and Its Impact on Profitability: Evidence from Manufacturing Firms in Ethiopia

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**A thesis submitted to the School of Graduate Studies of Addis Ababa University in
partial fulfillment of the requirements for the Degree of Masters of Science in
Accounting and Finance**

Mar, 2016

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Approval Sheet

This is to certify that the thesis entitled, “Corporate capital structure and its impact on profitability: evidence from manufacturing s.c. in Ethiopia” was carried out by Frezewd Birassa Tufa under the supervision of Venkati Panola (PhD), submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by:

Internal examiner: _____ Signature _____ Date _____

External examiner: _____ Signature _____ Date _____

Advisor: Venkati Panolla (Phd _____ . Signature _____ Date _____

Declaration

I, Frezewd Birassa Tufa, hereby declare that this thesis entitled “Corporate capital structure and its impact on profitability: evidence from manufacturing S.Cs. in Ethiopia” submitted by me for the award of the degree of Master of Accounting and Finance, Addis Ababa University at Addis Ababa, Ethiopia, is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

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This master thesis, has been submitted for examination with my approval as thesis

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Signature _____ Date _____

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First and for most, I acknowledge almighty God for showering me with grace and mercies in every step of my life. I attribute all my successes to his unwavering presence.

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May God Keep you all in love and peace!

Frezewd Birassa

Abstract

The aim of this paper is to provide large sample evidence on capital structure and its impact on profitability using a new database of large tax payer manufacturing firms in Ethiopia. The study employs a panel data regression analysis. The dataset comprises twenty four large tax payer manufacturing share companies covering a five-year period (2010-2014 G.C.) using firm level accounting data. Within what is referred to as capital structure the researcher is able to examine the relationship between capital structure variables and profitability. Most sample firms concentrate their borrowing in only one of these debt types especially short term debt finances and this debt specialization persists overtime. It is also clear from the study that short-term debt to total liability, long-term debt capitalization ratio and interest coverage ratio showed positive and significant impact on profitability. Other constituted variables i.e. debt ratio and debt to equity ratio found to be insignificant regarding their impact on profitability of sample firms. Therefore, no significant linear dependence was detected for debt ratio and debt to equity ratio versus profitability.

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Acronyms

CSA	Central Statistical Agency
CPI	Consumer Price Index
CR	Current Ratio
DAR	Debt to Asset Ratio
DER	Debt to Equity Ratio
DOL	Degree of Operating Leverage
DR	Debt Ratio
EBIT	Earnings before Interest and Taxes
ESIC	Ethiopian Standard Industrial Classification
GDP	Gross Domestic Product
GPR	Gross Profit Ratio
ICR	Interest Coverage Ratio
ICWAI	The Institute of Costs and Works Accountants of India
IRR	Internal Rate of Return
LDCR	Long term Debt Capitalization ratio
LDTL	Long term Debt to Total Liability ratio
ME	Mean
MI	Minimum
MX	Maximum

NBE	National Bank of Ethiopia
NPR	Net Profit Ratio
OPR	Operational Profit Ratio
RE	Retained Earnings
ROA	Return on Asset
ROCE	Return on Capital Employed
ROE	Return on Equity
ROI	Return on Investment
SZ	Size
SDTL	Short term Debt to Total Liability ratio
TN	Tangibility

Chapter One: Introduction

1.1. Background of the Study

The concept capital structure generally described as the combination of debt and equity that make the total capital of firms. (Akinsulire, 2002), defined capital as stock of money, possessed by a person or a business firm, that could be invested from time to time, in order to earn income, but for which it is intended not to diminish. For its capital to be well structured and effectively utilized, a business firm must be able to devise various ways for selecting the best components of its capital which would be used in the company's operation to raise its productivity and or achieve performance (Uremandu, 2012).

However, not all business firms use a standardized capital structure hence they differ in their financial decisions under various terms and conditions (Uremandu, 2012). For the most part, a firm can choose any capital structure that it wants. If management so desired, a firm could issue some bonds and use the proceeds to buy back some stock, thereby increasing the debt-equity ratio. Alternatively, it could issue stock and use the money to pay off some debt, thereby reducing the debt-equity ratio (Allen, 2011).

After the pioneer seminar work of M&M (Miller&Modigliani, 1958) which explains the value of the firm is independent to its financial structure under certain key assumptions; several researchers have come up with theories and empirical studies to solve the puzzle regarding the impact of capital structure decision on firm performance and its determinants. Of the popular propositions pecking order and trade off theories take the major stake (Goyal, 2005). While prediction of the pecking order theory is the strict ordering of financing; implication of the trade-off theory is that leverage exhibits target adjustment so that deviations from the target are gradually eliminated. Likewise, (Graham, 2000) posits the typical firm could double tax benefits by issuing debt until the marginal tax benefit begins to decline.

It is agreeable, as Kim et al, (2014) puts firms with high solvency ratios are more robust to adverse macroeconomic shocks than firms with low solvency ratios. This is largely due to high solvency ratios give firms a larger range of financing options to choose from and thereby lower funding and refinancing risks. The impact of capital structure has also been explained by many authors in different ways through several body of literature, some of which shall be adequately addressed in subsequent discussions in this paper.

1.2. Problem Definition

The successful selection and use of capital is one of the vital elements of the firms' financial strategy. In the background we have seen the difference of choices about the financing decisions gave rise to various capital structure theories. Empirical studies undertaken were also inconclusive and inconsistent with respect to country, industry, size of the firm and also type of corporate debt utilized. Most studies such as: (Niresh, 2012) and (Mohammad et al, 2012) found negative relationship between profitability and leverage. One other hand (Kim et al, 2014) indicated that the overall capital structure has no significant impact on profitability or productivity, neither at an industry level nor at a firm level. One of interesting findings by (Paolo, 2010) indicates profitability is positively and significantly associated with revolving credit and term loans. Moreover, the result indicated that using a gross measure of leverage such as total debt can be misleading, as it hides heterogeneity across various types of debt. The argument capital structure is incomplete without a detailed examination of all forms of corporate debt; was also reinforced by (Bevan, 2002).

Furthermore, (Babatunde, 2014) investigated the relationship between capital structure and profitability of conglomerate, consumer goods, and financial services firms on quoted firms in Nigeria stock exchange. The study established that highly geared firms are more profitable since there was found a significant relationship in almost all firms between return on equity and debt to equity. After going through extensive research on international data, Rajan & Zingales, (1995) failed to conclude and suggested further

research is required with more detailed data to identify more accurate proxies meanwhile; theoretical underpinnings of the observed correlation are still largely remain unresolved.

As to the researcher's knowledge there are perhaps no previous researches in Ethiopia which investigated the relationship between capital structure variables and profitability rigorously on manufacturing share companies. Though, there are some studies in relation to the topic such as Mekonnen, 201, Ashenafi, 2005 and Mintesinot, 2010 which were made on determinants of capital structure. Empirical finding inefficiencies such as the aforementioned ones added to longing personal interest of the researcher on the subject was a motive to research further and contribute in filling the gap observed. So this empirical research is another step in exploring the relationship between capital structure and profitability by using new data set i.e. manufacturing share companies in Ethiopia.

1.3. Objectives

The main objective of this paper is to assess the relationship between capital structure and firm profitability. Specifically, to analyze whether firm's choice to finance its assets through some proportion of debt and equity would impact profitability in case of large tax payer manufacturing share companies in Ethiopia.

1.4. Significance of the Study

The researcher believes this paper would add to the vast literature of corporate finance in general and finance structure decisions in particular by underpinning industrial difference grounds. The study would also bring sound arguments regarding the subject matter and be referred as evidence for international studies since most of previous studies were conducted on developed countries where there is active secondary market and better market efficiency. Finally the study would aid decision makers (company managers, investors and perhaps creditors) in scrutinizing the relationship of the capital structure and profitability.

1.5. Methodology

The methodology deals with model specification, statistical tools, and sources of data. The study used quantitative statistical techniques mainly regression analysis which was used to generate a model to analyze the impact of capital structure variables on profitability. The data was gathered from annual financial statement and reports of subject companies basically balance sheet and income statements. The study undertake panel analysis on twenty four large tax payer manufacturing share companies from thirty four of same found in Ethiopia for five years (2010-2014G.C.) using an econometric view (e-view 6) software. This section will be thoroughly discussed in chapter three of this paper.

1.6. Scope of the study

The manufacturing sector comprises all establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The scope of this paper will be limited to large tax payer manufacturing share companies found in Ethiopia.

Chapter Two: Review of Related Literature

Introduction

In this section of the paper we shall dwell on review of the related literature and establish theoretical and empirical foundations on which the study shall lean. Specifically, literature shall cover composition of corporate capital structure, choice of capital structure, capital structure and company profit, and other issues relevant to the study in hand. Moreover, it shall uncover the gap and how this particular study would contribute to fill the same.

2.1. Capital Structure Defined

To further elaborate on capital structure, it becomes pertinent to elaborate on the meaning of the forms or elements of the firm's capital structure. As cited on (Uremandu, 2012) Zoppa and McMahon (2002) identify a more comprehensive capital structure composition, based on their study of businesses capital structure behavior.

Consequently, they identified that a company's capital structure should include the following;

1. Reinvested profits (R.Es);
2. Short-term debt financing like trade credit;
3. Long-term debt financing like debentures and long-term debts etc.
4. New equity capital injections from existing owners and owner managers;
5. New equity capital from uninvolved parties like outside investors, venture capitalists etc

Capital structure is therefore, referred to the way in which the firm finances itself through these funds. The capital structure of a firm is very important since it is related to the ability of the firm to meet the needs of its stakeholders. The Board of Directors or the financial manager of a company should always strive to develop a capital structure that

would lie beneficial to the equity shareholders in particular and to the other groups such as employees, customers, creditors and society in general (Pandey, 2010).

2.2. Debt Financing

Business enterprises use debt in their businesses, because it offers them potential to increase the volume of their operations and increase the average return on their equity funds. The borrowing firm takes a chance to use debt in the hope that it will elevate the firm to a more valuable level, by increasing the turnover and therefore increase the profits. The financial leverage chance will arise if the rate of interest charged to the firm is lower than the internal rate of return (IRR) for the company, in which case the firm will be making enough to pay the interest charged and the principal repayment and retain the surplus for the shareholders. On the other hand, the firm may experience a financial leverage risk that the returns of the business are not enough to cover the interest charged. This occurs when the rate of interest exceeds the internal rate of return of the company. To avoid liquidation, the firm will have to use part of the shareholders' funds to repay the interest and principal. This could eventually lead to erosion of the equity and the collapse of the business (Koech, 2013).

Leverage is usually measured by ratios like ratio of debt to total asset, a debt ratio to the equity and equity ratio to debt. Bierman (1999) defines financial leverage as the use of debt in the capital structure and enumerates four ways of measuring it (Koech, 2013).

The static measure of indebtedness using book values is the proportion of debt to the total capital or debt to the sum of debt and common stock, given as:

$I_1 = \frac{D}{D+E}$, Where D represents the book value of debt and E is the book value of equity (or shareholders' funds).

A second measure of indebtedness is the static measure of indebtedness using market values and is defined as the proportion of debt to total capital or the sum of debt and

common stock, with the debt and equity taken at market value. It is expressed mathematically in the same way as the first measure above.

The third measure is the flows measure of indebtedness which uses interest and income and is expressed as the ratio of the earnings before interest and tax (EBIT) to the interest for the period. It is represented by: $I_2 = \frac{EBIT}{INTEREST}$

This ratio measures the firm's debt servicing capacity and shows the number of times the interest charges for the period are covered by funds that are ordinarily available for the interest payment.

A fourth measure is the flows measure of leverage, using cash flows and employs the ratio of cash inflows (income including depreciation and other non-cash expenses) and cash outflows (in terms of payment of debt). It is a measure of the ability of the firm to finance its debt obligations of paying the interest and the principal debt as they fall due.

2.3. Profitability and Its Measurement

Profit is the major motive of a business. An enterprise should earn profits to survive and grow over a long period of time. It provides evidence concerning the earnings potential of a company and how effectively a firm is being managed. If the enterprise fails to make profit, capital invested is eroded and if this situation prolongs the enterprise ultimately ceases to exist. Though, profit and profitability are two different terms. Profit means as an absolute measure of earning capacity, while profitability is relative measure of earning capacity (Nishanthini A. and Nimalathan, 2013). Thus the word profitability may be defined as the ability of given investment to earn a return from its use.

Profitability ratios measure the firm's ability to generate profits and central investment to security analysis, shareholders, and investors. It is often conceptualize the profitability is the primary measure of the overall success of a business.

(Nishanthini A. and Nimalathan, 2013), pinpoints five important profitability ratios which are Gross Profit Ratio(GPR), Operating Profit Ratio(OPR), Net Profit Ratio(NPR), Return on Investment(ROI), and Return on Capital Employed(ROCE). Whereas, (Babatunde et al, 2014) explaining profitability ratios connotes return on asset and return on equity as decisive measures of profitability; since they show management's efficiency in generating profits from firm's asset and efficiency of a firm in generating profits from shareholders equity respectively.

2.4. Theoretical Framework of Capital Structure

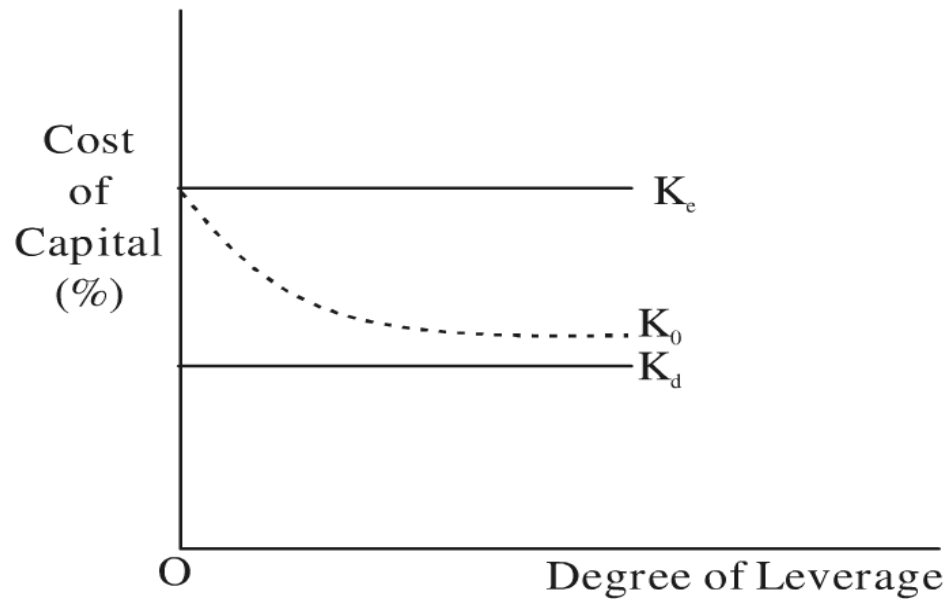
The main issue of debate in finance revolves around the optimal capital structure. There are two schools of thought in this regard. One school pleads for optimal capital structure and other does against it. Former school argues that judicious mixture of debt and equity capital can minimize the overall cost of capital and maximize the value of the firm. Hence, this school considers capital structure decision as relevant. Latter school of thought led by Modigliani and Miller contends that financing decision does not affect the value of the firm.

The subsequent sections discuss outstanding capital structure theories which emerge and present direction as well as firm behavior regarding debt and capital structure.

2.4.1. Traditional Theories

As mentioned on (Keshar, 2004); David Durand propounded the net income approach of capital structure in 1952. As depicted in the figure 1 below this approach states that firm can increase its value or lower the cost of capital by using the debt capital.

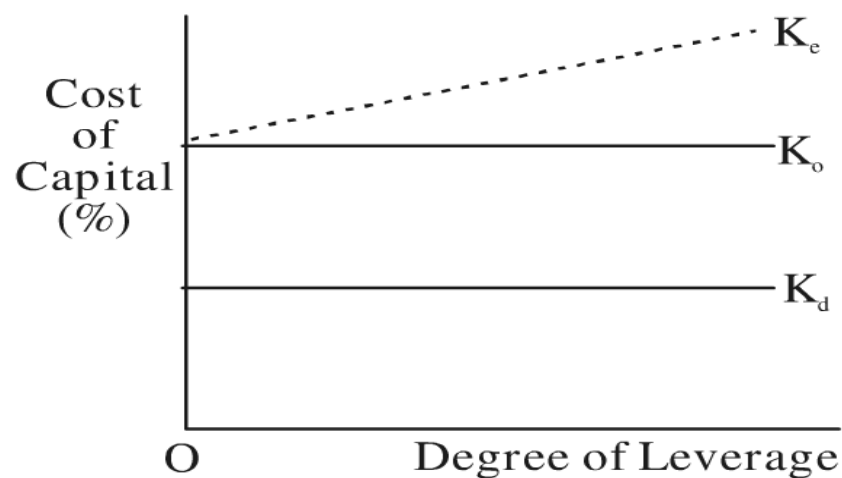
Figure 1: Net Income Theory of Capital Structure K_e , K_d , and K_o in degree of leverage



(Source: ICWAI, 2010 p.60)

Net operating income approach is converse to this approach. This approach contends that the value of a firm and cost of the capital are independent to capital structure (cf., figure 2).

Figure 2: Net Operating Income Approach of Capital Structure K_e , K_d , and K_o in degree of leverage

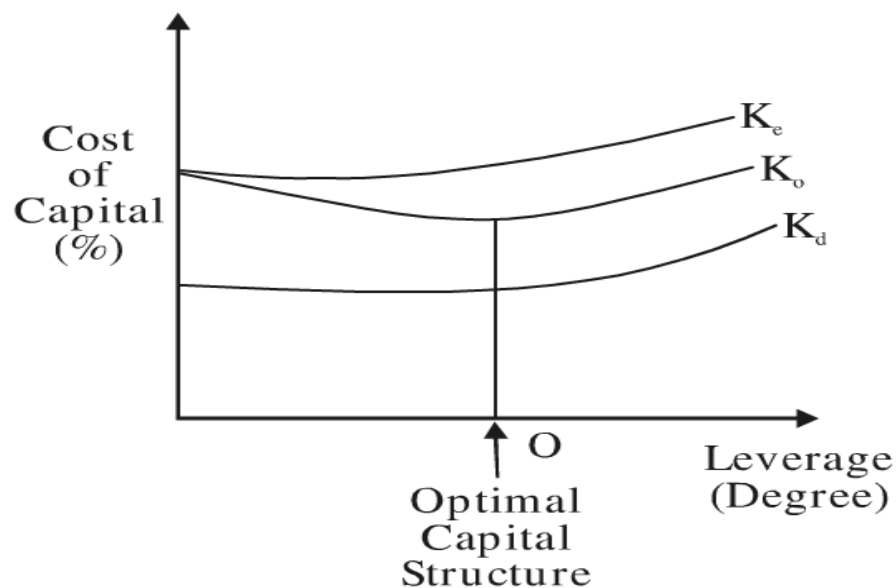


(Source: ICWAI, 2010. p.60)

As it is shown in Figure 2 above, the firm cannot increase its value by judicious mixture of debt and equity capital. These are two extreme approaches to capital structure.

Solomon then developed the intermediate approach to the capital structure in 1963(cf., figure 3) below. This traditional theory of capital structure pleads that value of the firm goes increase to a certain level of debt capital and after then it tends to remain constant with a moderate use of debt capital, and finally value of the firm decreases (Keshar, 2004).

Figure 3: Traditional Approach of Cost of Capital and Leverage (K_e , K_o and K_d)



(Source: ICWAI, 2010, p.61)

Thus, this theory holds the concept of optimal capital structure; until gearing reaches at an optimal point, the financial risks of debt is more than the benefit offered by the introduction of that debt.

2.4.2. Tax Benefit Theories

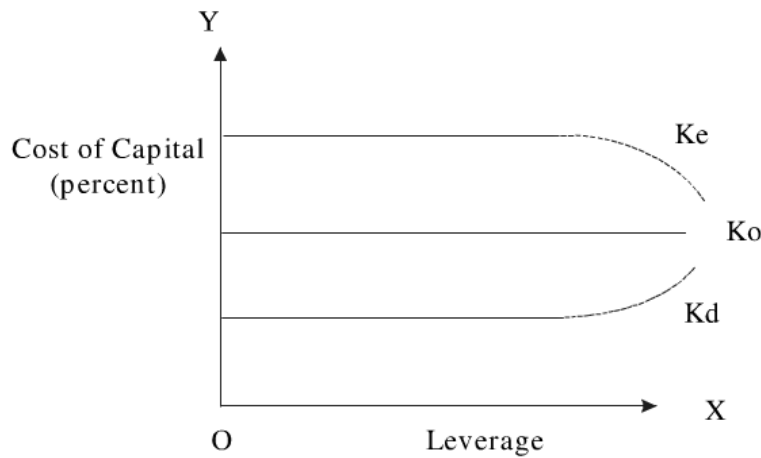
The modern theory of capital structure began with (Modigliani, 1958), which offered behavioral support for the independence of the total valuation and the cost of capital of

the firm from its capital structure. In this paper, they supported the net operating income approach and rejected the traditional theory of capital structure. They contend in their first proposition that the market value of any firm is independent to its capital structure and is given by capitalizing its expected return at the rate appropriate to the risk class (Modigliani, 1958). The proposition is derived using the assumption that cash flows are unaffected by capital structure.

Though arbitrage arguments are now pervasive throughout finance, the more immediate and direct impact of the arbitrage proof of Proposition I was to provide the foundation for modern corporate finance because it specifies sufficient conditions for leverage not to matter (cf., figure 4 below). As it is shown in the figure, MM says that increase in gearing will not make any change on the K_o , because the cheapness of debt will be exactly counterbalanced by the increase in K_e . On the other hand, issuing more debt will increase the risk of the debt holders, so that the K_d will increase, meanwhile K_o stays constant again. Because the additional risks are shared among debt holders, therefore the risk of equity holders will decline.

The arbitrage proof assumes a world where contracting is costless, all parties have the same information, transaction costs do not exist, there are no taxes, there are no limitations to short-sales, and firms and investors take prices as given. Of these assumptions, the absence of taxes was quickly identified as posing substantial difficulties for the result that leverage is irrelevant for firm value in the real world (Stulz, 2000).

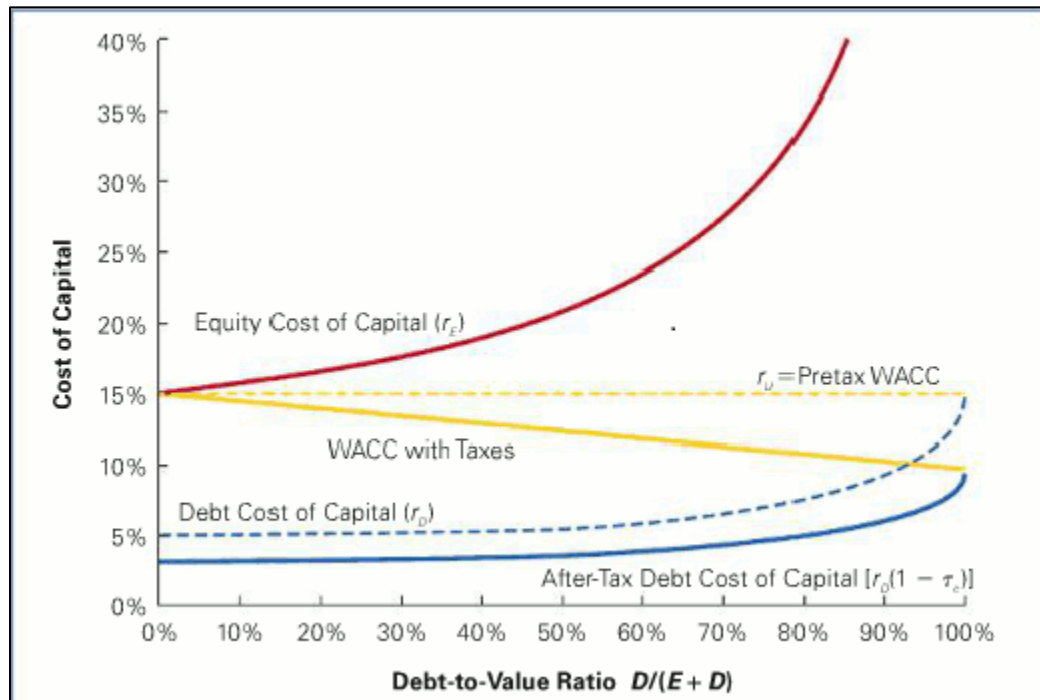
Figure 4: M&M proposition I Cost of Capital and Leverage



(Source: ICWAI, 2010, p.64)

Proposition I though theoretically very sound, it was based on the assumptions of perfect capital market and no tax world, which were not valid in reality. So, this was corrected in 1963 in the work “Corporate Income Taxes and the Cost of Capital: A Correction”. In correction, they incorporated the effect of tax on value and cost of the capital of the firm (Modigliani, 1963); and contend that, in the presence of corporate tax, the value of the firm varies with the variation of the use of the debt due to tax benefit on interest bill (Keshar, 2004). While dividends and retained earnings are not deductible for tax purposes, interest on debt is a tax- deductible expense. As a result, the total income available for both the shareholders and debt holders is greater when debt capital is used.

Figure 5: M&M Proposition II: WACC with and without taxes



(Source: <http://finance.ewu.edu>.)

As figure 5 above depicts the tax deductibility of corporate interest payments favors the use of debt. The proposition further states that, a firm's cost of equity capital is a positive linear function of the firm's capital structure (Ross, 2003).

In 1976, Miller propounded the next version of irrelevancy theory of capital structure. He pleaded in his presidential address to Annual Meeting of American Finance Association held on September 17, 1976 in Atlanta City, New Jersey; capital structure decisions of firms with both corporate and personal taxes are irrelevant. He argued that the original MM proposition, which says that financial leverage does not matter in a tax free world, is valid in a world where both corporate and personal taxes exist. He stated that changes in capital structure have no effect on the firm's total valuation. This position is the same as Modigliani-miller's original proposition in a world of no taxes, but it contrasts sharply with their 1959 corporate tax adjustment article, in which they found that debt had substantial advantage, companies will issue debt till the tax rate for the marginal

bondholder, is the same as the corporate tax rate. Beyond this point, there is no tax advantage to companies from issuing debt.

The arbitrage mechanism is how Merton Miller thought about finance phenomena (Stulz, 2000). In 'Debt and Taxes', (Miller, 1977), showed how he could use arbitrage arguments to change how finance academics and practitioners understood how the world works. In that paper, he pointed out that the tax advantage of corporate debt might be mostly if not completely illusory. Because interest on corporate debt is taxed as income for the holder of corporate debt, the interest paid on corporate debt must be high enough so that the after-tax income from holding corporate bonds is attractive relative to the income from equity which, when it accrues as capital gains, is taxed at a lower effective rate. As a result, corporations get to deduct from their taxes interest payments but, because personal taxes on interest income are higher than on capital gains, the before-tax cost of capital on debt must be higher than on equity if investors are to hold debt. His paper added personal taxes to the analysis and demonstrated that optimal debt usage occurs on a macro-level, but it does not exist at the firm level. Interest deductibility at the firm level is offset at the investor level (Gay B. Hatfield, 1994).

The argument is further complicated by (DeAngelo and Masulis, 1980) adding non-debt tax shields. The model demonstrated that with the presence of corporate tax shield substitutes for debt (e.g. depreciation, depletion, amortization, and investment tax credits); each firm will have a unique interior optimum leverage decision with or without leverage related costs. Specifically, they used the existence of non-debt corporate tax shields to overturn the leverage irrelevancy theorem.

2.4.3. Trade-off Theories

The trade-off theory, in both its static and dynamic forms, predicts an optimal capital structure that balances the costs (e.g., financial distress) against the benefits (e.g., debt interest tax shields) of debt financing (cf., figure 6) below. Under this framework,

corporate leverage is predicted to exhibit mean reversion as firms seek to adjust towards their target leverage.

Figure 6: Trade-off theory: value of the firm and Debt level, (Debt financing and equity financing)



In a static trade-off framework the firm is viewed as setting a target debt to value ratio and gradually moving towards it (Myers 1984). The theory says that every firm has an optimal debt–equity ratio that maximizes its value. The theory affirms that firms have optimal capital structure, which they determine by trading off the costs against the benefits of the use of debt and equity. The benefits from debt tax shield are thus adjusted against cost of financial distress. Agency cost, informational asymmetry and transaction cost are some of the other costs to be mitigated. The theory predicts that an optimal target financial debt ratio exists, which maximizes the value of the firm. (As figure 6 above shows) the optimal point can be attained when the marginal value of the benefits associated with debt issues exactly offsets the increase in the present value of the costs associated with issuing more debt (Myers, 1999).

Whereas, in a dynamic model, the correct financing decision typically depends on the financing margin that the firm anticipates in the next period. The models suggest that firms may have a range of leverage targets and that they only adjust their capital structure when the costs of adjustment can be offset by the benefits of such adjustment (i.e., the benefits of firms being close to or at leverage targets) (Viet Anh Dang, 2012).

2.4.4. Cost Based Theories

As discussed above one of important imperfection affecting capital structure decision is the presence of costs such as bankruptcy and agency costs. (Baxter et.al, 1967) used the concept of bankruptcy costs to argue for the existence of an optimal capital structure. Expected bankruptcy cost depends on the cost of bankruptcy (e.g., legal fees, loss of sales, employees and suppliers) and the probability of occurrence. When a firm is unable to meet its obligations it results in financial distress that can lead to bankruptcy because a major contributor to financial distress is debt. The greater the level of debt, the larger the debt servicing burden associated with it, the higher the probability of financial distress. If there is a possibility of bankruptcy, and if administrative and other costs associated with bankruptcy are significant, the levered firm may be less attractive to investors than that of the unlevered one (cf., figure 7). As a result, the investors are likely to penalize the price of the stock as leverage increases.

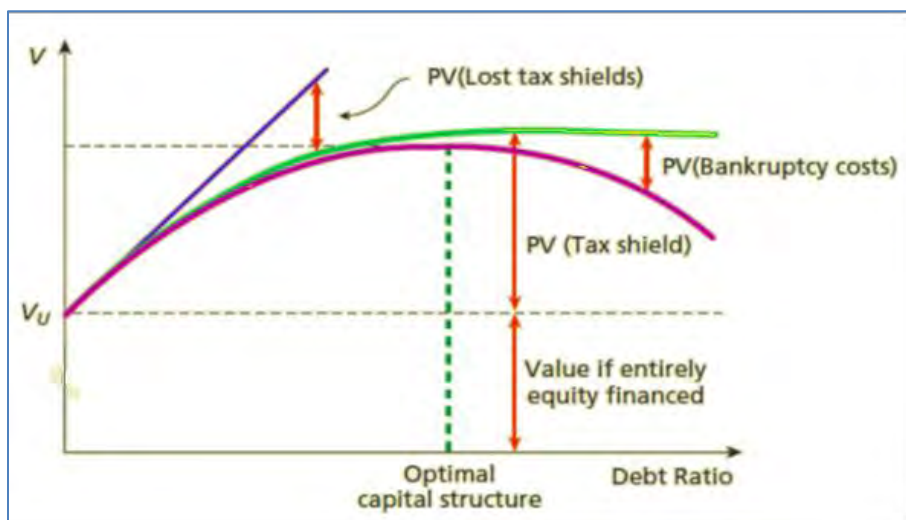


Figure 7: Value of the firm, capital structure and bankruptcy costs

(Source: FactSet Research Systems Inc. 2015)

Expected bankruptcy cost rise when profit declines, and the threat of this cost pushes less profitable firms toward lower leverage targets. Similarly, expected bankruptcy cost is higher for firms with more volatile earnings, which should drive smaller, less-diversified firms toward fewer targets leverage. Increased debt financing will increase the probability of bankruptcy and will in turn increase expected bankruptcy costs. According to this theory the optimal debt ratio is reached when the marginal tax savings from debt financing is equal to the marginal loss from expected bankruptcy costs.

It is important though, to note not all bankruptcy costs are measureable, direct costs (Warner, 1977). For direct costs of bankruptcy costs arise, it is sufficient that there be transaction costs associated with negotiating disputes between claimholders. But whether indirect costs arise depends upon the market setting and industry characteristics. Bankruptcy would seem to be irrelevant when the bankrupt and non-bankrupt firm might each operate in the same way, engaging in identical activities to maximize the wealth of their claimholders (Warner, 1977).

(Meckling, 1976), put forward the concept of agency costs. There is an agency relationship between the shareholders and creditors of firms that have substantial amounts of debt. In such firms shareholders have little incentive to limit losses in the event of a bankruptcy. Agency theory recognizes that the interests of managers and shareholders may conflict and that, left on their own, managers may make major financial policy decisions, such as the choice of a capital structure, that are suboptimal from the shareholders' standpoint. (Uremandu et al, 2012) further posits, when the owners who have a high stake in organization is in control of capital structure policy, they would prefer debt financing to equity capital because debt capital would act as a good check on the managers appointed to run the organization. This is so because the managers would want to do all their best to ensure they perform and pay off the debt. At the same time, these controlling owners would not want to dilute their ownership control by selling their stake to new shareholders who would want to invest in the company. Hence, there is a discouragement from engaging equity finance in financing the operation of the company.

The theory suggests, however, that compensation contracts, managerial equity investment, and monitoring by the board of directors and major shareholders can reduce conflicts of interest between managers and shareholders (Mehran, 1992). It is also suggested that capital structure models that ignore agency costs are incomplete.

Another type of agency cost put forth by (Myers, 1977) is which arises from the underinvestment problem. When a firm has debt which matures after an investment option expires, shareholder save the incentive to reject projects that have positive net present values because the benefits from accepting the projects accrues to the bondholders without increasing the shareholders' wealth. The issuance of debt therefore leads to suboptimal investment for the firm, requiring this type of agency cost to be traded off against the tax savings of debt financing to determine the optimal capital structure. (Ang, 2000), on the other hand, stated that agency costs are significantly higher when an outsider rather than an insider manages the firm and lower with greater monitoring by banks.

On the other hand, the capital structure literature is abundant also with attempts to explore the consequences of market imperfections caused by uncertainty or asymmetric information.

The Modigliani-Miller theorem on the irrelevancy of financial structure implicitly assumes that the market possesses full information about the activities of firms. If managers possess inside information, however, then the choice of a managerial incentive schedule and of financial structure signals information to the market, and in competitive equilibrium the inferences drawn from the signals will be validated (Ross, 1977).

Signaling theory conceptualized with asymmetric information, equity issues are rationally interpreted on average as bad news; since managers are motivated to make issues when the stock is overpriced. Ross's (1977) model suggests that the value of firms will rise with leverage, since increasing leverage increases the market's perception of value. This is a major reason why equity issues are comparatively rare among large established

corporations. Other things being equal, the high-quality firms hold more inside equity than the low-quality firms with the same debt level and issue less debt than the low-quality firms with the same inside equity position (Cheong, 1999).

2.4.5. Profitability Theories

The trade-off theory predicts that profitable firms should be more highly levered to offset corporate taxes (Ross, 1977). (Fama and French, 2002) and others on the other hand, found profits and leverage to be negatively correlated. (Myers, 1984), suggested that management follows a preference ordering when it comes to financing. His work also proposes that the costs of issuing risky debt or equity overwhelm the forces that determine optimal leverage in the trade-off model; the result is the pecking order. He also argued that the trade-off theory fails to predict the wide degree of cross-sectional and time variation of observed debt ratios. The pecking order theory is mainly a behavioral explanation of why certain companies finance the way they do. It is consistent with some rationale arguments, such as asymmetric information and signaling discussed above, as well as with flotation costs. Moreover, it is consistent with the observation that the most profitable companies within an industry tend to have the least amount of leverage.

The pecking order theory explains why the bulk of external financing comes from debt; why more profitable firms borrow less: not because their target debt ratio is low.

The order followed is as follows:-

- Firms prefer internal finance
- If external finance is required; firms issued the safest security first. They start with debt, then possible hybrid securities such as convertible bonds then perhaps equity as a last resort.

Pecking Order Theory suits large firms with high profit and which has enough internal funds in the form of retained earnings and depreciation. These firms follow a stringent dividend policy and a target dividend payout ratio. Thus, this theory states that highly

profitable firms prefer internal funds and when external funds are required the firm will borrow, rather than issuing equity. The pecking order theory predicts that high-growth firms, typically with large financing needs, will end up with high debt ratios because of a manager's reluctance to issue equity. (Fama and French 2002) posits though, high-growth firms consistently use less debt in their capital structure. Firms that choose to fund with equity today will leave less expensive sources of funding for future needs. If they choose debt funding now, then they will tend to have only more expensive funding available in the future. This reasoning made (Cornell, 1987) to hypothesize that, firms with higher levels of net organizational capital should be predominantly equity financed and hold relatively large cash balances.

Another theory developed in this regard is free cash flow theory. This theory is framed for matured firms that are prone to over invest. It says that high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities (Myers, 2001). Thus, the profit earning capacity increases the value of the firm despite the threat of financial distress. Firms with a positive free cash flow use this cash flow to lower their debt ratio. Firms with a negative free cash flow increase their debt ratio to respond to the lack of internal funds. The percentage adjustment is smaller for firms with relatively more debt than for firms with relatively low debt.

2.5. Empirical Framework

As discussed above major international studies of capital structure dates back to 1958's Modigliani and Miller paper. They stated that in a simplified world that it did not matter whether a firm financed investments through debt or equity, famously known as the Irrelevancy Theorem. (Modigliani and Miller, 1963) then went on to point out that if companies can deduct debt interest before arriving at taxable profits hence concluding that a firm should finance full with debt. Since then there have been vast amounts of empirical studies on this topic; expressing different and conflicting views as to what

really determines optimal capital structure and its impact on firm performance. Accordingly, the subsequent sections deal with these studies at international and regional/national level.

The most prominent paper in the literature of capital structure is (Rajan and Zingales, 1995) entitled, “What do we know about Capital structure? Some evidence from international data.” The paper investigated the determinants of capital structure choice by analyzing the financing decisions of public firms in the major industrialized countries. At an aggregate level, firm leverage found to be similar across G-7 countries. The authors look at the institutional differences across the seven countries and identify the main determinants of capital structure. Furthermore they did find that firms in the UK had lower level of debt than in the other six countries. They argue that although common firm-specific factors significantly influence the capital structure of firms across countries, several country-specific factors also play an important role. They also found that profitability was negatively correlated with firm leverage, i.e. the more profitable a firm was, and the less leverage they would have.

Other studies comparing firms from developing and developed countries found similar results regarding the importance of country specific factors. For instance, (Maksimovic.V., 1999) and (Joseph P.H. Fan, 2012) compare leverage of firms developed and developing countries. They found institutional environment factors between countries describe the differences in the capital structure, specifically the long-term debt to total assets. Developed countries firms have more long-term debt and a greater amount of their total debt is held as long-term debt and that large firms have more long-term debt as a proportion of total assets and debt. They believe that cross-country variations in leverage can be described by difference in the legal systems and financial institutions, as well as firm industry and macroeconomic factors, such as the rate of inflation and the economy’s growth rate. (Harry Huizinga, 2007) by incorporating international taxation factors, posits corporate debt policy indeed not only reflects

domestic corporate tax rates but also differences in international tax systems since multinational firms have an incentive to shift debt to high-tax countries.

To achieve target profit it is agreeable that companies must empower all of its resources optimally. The problem rise when the resource is insufficient; and companies decide to obtain debt with consideration of profitability and risk of bankruptcy. (Mohammad et al, 2012) seeks to extend, Abor's (2005), and Gill, et al., (2011) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the industrial companies listed on Amman Stock Exchange during a six-year period (2004-2009). Applying correlations and multiple regression analysis, the results reveal significantly negative relation between debt and profitability. Related studies such as (Winston Pontoh, 2013), (Koech, 2013), (Singh, 2013) and (Opoku et al, 2014) reaffirmed this result. The former study used debt equity and debt asset ratio as indicators for capital structure, where growth, size, tangibility and degree of operating leverage as its determinant on 247 companies in period 2009 to 2011. For profitability, they used return on asset and return on equity. With path analysis, this research found that size negative significant to DAR, DOL negative significant to DER, DAR negative significant to ROA, and DER negative significant to ROE. (Uremandu, 2012), conducting research on data sourced from the financial statements of 10 selected firms in Nigeria. The research also affirmed negative and significant influence of value of long-term debt, ratios of long-term debt to total liability, and ratios of short-term debt to total liability and equity capital to total liability, on returns; and positive and significant effects of domestic liquidity rate, ratios of long-term debt to equity capital and value of short-term debt, on profitability. Even when a company decides to settle for the choice of debt capital in its capital structure, disparity still exists in the choice of the type of debt to use in financing the firms operations. So their paper suggests maturity of the debt is also a consideration to be properly made before choosing a corporate capital structure to adopt.

In addition, (Singh, 2013) analyzed how far capital structure affect the profitability of corporate firms in India. The study tried to establish the hypothesized relationship as to how far the capital structure affect the business revenue of firms and what the interrelationship is between capital structure and Profitability. This study is carried out after categorizing the selected firms into three categories based on two attributes, viz. business revenue and asset size. The study proved that there has been a strong one-to-one relationship between Capital Structure variables and Profitability variables, Return on Assets (ROA) and Return on Capital Employed (ROCE). The Capital Structure found to have significant influence on Profitability, and increase in use of debt fund in Capital Structure tend to minimize the net profit of the Manufacturing firms listed in Bombay Stock Exchange in India.

On the other hand, (Babatunde Yusuf et al, 2014) investigated the relationship between capital structure and profitability of conglomerate, consumer goods, and financial services firms on quoted firms in Nigeria stock exchange. The study established a significant relationship in almost all firms between return on equity and debt to equity which justifies highly geared firms are more profitable. Moreover, they posit the nature of the industry also determines the effect of capital structure on profitability. In the financial firms, there is a negative significant relationship between return on equity and debt to assets ratio. In the conglomerate firms, there is also a negative relationship between return on assets (ROA) and debt to equity ratio however not significant. This explains that highly geared firms have significant relationship with return on equity while insignificant with return on assets. The study recommended that firms that want to maximize shareholders wealth should increase their leverage while firms that ensure stakeholders performance should increase their assets; which is consistent with (Graham, 2000) who posits more profitable firms should rely on external funds like debt to finance their investments because of tax shields advantage which they stand to derive from interest repayment.

Another empirical research result which fall neither on the above wings is (Kim et al, 2014). The study took a closer look at the links between corporate capital structure and productivity, profitability and access to finance based on Danish industry-level and firm-level accounting data from the period 2000-2011. The results indicated that the capital structure has no significant impact on the firms' profitability or productivity. However, the capital structure found to be important in relation to the range of financing options available to the firm and its funding and refinancing risks.

As to the access and knowledge of the researcher the impact of capital structure on profitability of various Ethiopian industries is still under-explored area in literature of financing decision and manufacturing industry is not an exception. Though, there are some studies in relation to the topic such as Mekonnen, 201, Ashenafi, 2005 and Mintesinot, 2010 which were made on determinants of capital structure. They fail to show us the possible inverse relationship i.e. not only how profitability affect capital structure but also the impact of capital structure on profitability.

2.6. Conclusion from Literature Review

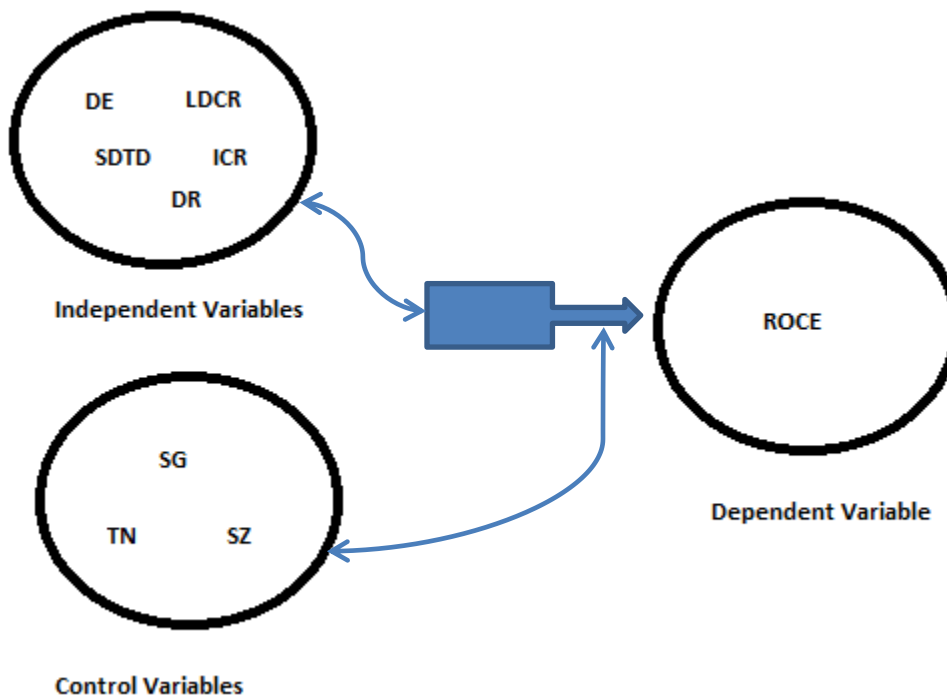
The conceptual literature review has detailed several theories that explain capital structure and the relation to the value of the firm and consequently a number of theories can be used to predict the possible effects of capital structure changes on performance. Overall, the debate over capital structure is unlikely to be resolved in terms of predominance of one of the those theories prevailing over the other, if anything because there are a larger amount of elements that have to be factored into the equation than those that appear in the theories outlined above: whilst it is important for a capital structure to minimize the weighted average cost of capital, such considerations have to be balanced against considerations of flexibility, for instance, that are even more important in today's operating environment. In this sense, the existence of multiple theories on capital structure, as opposed to one, may in fact be beneficial. The empirical literature section

cited the various relevant empirical studies done on capital structure changes, the outcomes of the studies and finally an explanation of the outcome.

In spite of the continuing theoretical debate on capital structure, there is relatively little empirical evidence on how companies actually select between financing instruments at a given point of time in order to attain optimum profitability. This is mainly due to considerable inter-industry differences caused by unique nature of each industry's business and the intra-firm variations attributed to the business and financial risk of individual firms. Which implies specific empirical research (like this one) is paramount importance in order to answer the question how the capital structure influences performance in manufacturing industry in Ethiopia; especially since there are only few previous researches based on scope and methodology.

2.7. Conceptual Framework

Figure 8: Conceptual framework



(Source: Authors own design, 2015)

Chapter Three: Research Design and Methodology

Introduction

The purpose of this chapter is to present the research question and the underlying research methodology, the choice of the appropriate research method and model specifications for the study.

3.1. Research Question

As presented in chapter one, the broad objective of the thesis is to assess the relationship between capital structure and firm profitability.

To achieve this objective the following research questions are developed in this chapter.

- What is the effect of using short-term and long-term debt options on profitability of subject companies?
- What is the effect of debt to equity combination on financial performance of sample firms?

3.2. Research Design

There are three alternative strategies of inquiry: qualitative, quantitative and mixed approaches. Cresswell (2009) explains these different approaches in terms of their typical philosophical assumptions as well as techniques used in data collection, analysis and interpretation. In this study Quantitative methods approach will be applied to meet the overall objective of the study and to answer research questions under it. Thus statistical technique applied is ordinary least square (OLS) regression analysis which will be used to generate a model to analyze the impact of capital structure variables on profitability.

In order to reach out its very objective the study used panel research design employing secondary quantitative data. By combining cross-sectional and time series data, one can increase the number of degrees of freedom, and thus the power of the test, by employing information on the dynamic behavior of a large number of entities at the same time. The

additional variation introduced by combining the data in this way can also help to mitigate problems of multi-collinearity that may arise if time series are modeled individually. Third, structuring the model in an appropriate way, we can remove the impact of certain forms of omitted variables bias in regression results (Brooks, 2008).

3.3. Target Population

The Ethiopian Standard Industrial Classification (ESIC) set forth sectoral definition of industries (ESIC, 2010). Accordingly, the total population of the research encompasses large tax payers manufacturing share companies of Ethiopia. The Ethiopian Revenues & Customs Authority (ERCA) has revised the entry point into the large taxpayer category to start from companies who have an annual sales turnover greater than 27 million Birr. The new revision had been effective as of August 7, 2013. In which it has an increase from the previous 15 million Birr annual sales cut-off point between medium and large taxpayers. When the new revision is implemented number of large taxpayers increased from 870 to 1,002.

In addition, According to Ethiopian revenue and customs Authority (ERCA) large tax payers office(LTO), from 1002 large tax payers organizations in Ethiopia, construction companies are 112, Financial institutions are 38, wholesale and other traders are 649 and Manufacturing companies encompasses 203 in number as of 31 March 2015. (Unpublished data taken from ERCA, 2015). This study will focus only on large tax payer manufacturing share companies in which it excludes Private limited companies even though they are large tax payers. Therefore, large tax payers manufacturing share companies as of 31 March 2015 were 34. We can deduce then, the total number of population eligible and used for the study has been 34 large tax payers manufacturing share companies found in Ethiopia. The sample has been drawn from the population registered in ERCA.

3.4. Data Sources and Instruments

The study makes use of secondary data. All the data was collected by review of annual financial reports (balance sheet and income statement) of selected companies and Ethiopian revenue and Customs Authority. Basing the sample selection on a comprehensive list of potential respondents who have an equal chance of selection is vital to increasing the representativeness of the sample. Accordingly, after stratifying the population based on business type and turnover the study selected a total sample of twenty four large tax payer share companies from all manufacturing sectors using random sampling techniques for the period (2010-2014 G.C.). The total number of observation for the study would then be one hundred twenty.

3.5. Measurement of Variables

The capital structure was measured using the indebtedness ratio and firm performance measurements based on models developed on previous studies such as (Uremandu, 2012) (Mohammad et al, 2012) and (Pratheepkanth, 2011) with few modifications on variables. In this model the paper shall establish if proportion of debt to equity, debt to total asset, short-term debt and long-term debt profile will have significant influence on corporate profits on manufacturing industry in Ethiopia.

Leverage

The leverage indicators which will be used in this study are Interest coverage ratio (ICR), Debt ratio (DR), debt to equity ratio (DE), Long term debt to capitalization ratio (LDCR), short term debt to total liability (SDTL), and long-term debt to total liability (LDTL).

The interest coverage ratio is used to determine how easily a company can pay interest on outstanding debt. It is calculated by dividing a company's earnings before interest and taxes (EBIT) by the company's interest expenses for the same period.

$$ICR = \frac{EBIT}{Interest\ Expenses}$$

Hypothesis 1: There is positive and significant relationship between Interest coverage ratio and profitability.

Whereas, Debt ratio calculated by dividing total liabilities (i.e. long-term and short-term liabilities) by total assets.

$$DR = \frac{\text{Total Debt}}{\text{Total Assets}}$$

Hypothesis 2: There is negative and significant relationship between Debt ratio and profitability.

Debt-to-equity ratio (D/E) also known as gearing ratio; which frequently used to gauge the extent to which a company is taking on debts as a means of leveraging is our third independent variable.

The ratio is computed by dividing a company's total liabilities by its stockholders' equity and represented in the following way;

$$DE = \frac{\text{Total Liabilities}}{\text{Share holders Equity}}$$

Hypothesis 3: There is negative and significant relationship between Debt-to-equity ratio and profitability.

Long term debt to capitalization ratio, is the other ratio that is used in the study. The acceptable level of capitalization ratios for a company depends on the industry in which it operates. But generally as reviewed in literatures above, high capitalization ratios imply increase in return on equity because of the tax shield of debt; a higher proportion of debt also increases the risk of bankruptcy for a company.

The ratio is computed as:

$$LDCR = \frac{\text{Long term Debt}}{\text{Long term debt} + \text{share holders equity}}$$

Hypothesis 4: There is positive and significant relationship between long term debt capitalization ratio and profitability

Furthermore, the interrelation between the liquidity and profitability in subject companies is considered. The two leverage and liquidity indicators used in this regard are Short term debt to Total liability (SDTL).

The ratios and respective hypothesis are as follows:

$$SDTL = \frac{\text{Total short term liability}}{\text{Total Liability}}$$

Hypothesis 5: There is negative and significant relationship between short term debt to total liability and profitability.

Control variables

The model has also included other firm level explanatory control variables to enhance the validity of the model. These include, Size (SZ), Sales growth rate (SG) and Tangibility (TN) represented as;

$$\text{Size (SZ)} = \text{Natural log of (TA)}$$

$$\text{Sales growth rate (SG)} = \frac{\text{Current year sale} - \text{Previous year sale}}{\text{Previous year sale}}$$

$$\text{Tangibility} = \frac{\text{Fixed Assets}}{\text{Total Assets}}$$

Profitability

Profitability is considered as Return on Capital Employed (ROCE). Capital employed is defined as total assets or total equity of shareholders minus short term debt liabilities. Therefore, it is similar to the return on equity, or ROE ratio, except it additionally includes debt liabilities. Hence adding strength to the ratio; since in ROE,

disproportionate amount of debt in a company's capital structure would translate into a smaller equity base. Thus, a small amount of net income could still produce a high ROE off a modest equity base.

The model can be mathematically expressed as follows;

$$\text{Profit} = f(\text{capital structure}) \quad (1)$$

$$\text{ROCE} = \beta_0 + \sum_{i=t}^n \beta_i \chi_{it} + \varepsilon \quad (2)$$

Where:

ROCE = the measure of profitability which is return on capital employed;

β_0 = the regression constant (i.e. intercept of equation);

β_i = the change coefficient for χ_{it} variables;

χ_{it} = the different independent variables for profitability of the corporate firms i and t ;

t = is the time period for the series;

ε = the random error term which captures other explanatory variables;

The general least square equation (2) above will be restated with the specified variables as below;

$$\text{ROCE} = f(\text{ICR,DR,DE,LDCR,SDTL,SZ,SG,TN,}) \quad (3)$$

Where:

ROCE = Return on capital employed;

ICR = Interest coverage ratio;

DR = Debt ratio;

DE = Debt to Equity ratio;

LDCR= Long term debt capitalization ratio

SDTL = Short term debt to total liability ratio;

SZ = Size;

SG = Sales growth rate;

TN = Tangibility;

The final equation to be estimated from equation 3 is:

$$\text{ROCE} = \beta_0 + \beta_1 \text{ICR} - \beta_2 \text{DR} - \beta_3 \text{DE} - \beta_4 \text{LDCR} - \beta_5 \text{SDTL} + \beta_6 \text{TN} + \beta_7 \text{SZ} + \beta_8 \text{SG} + \varepsilon \quad (4)$$

Chapter Four: Data Interpretation and Analysis

Introduction

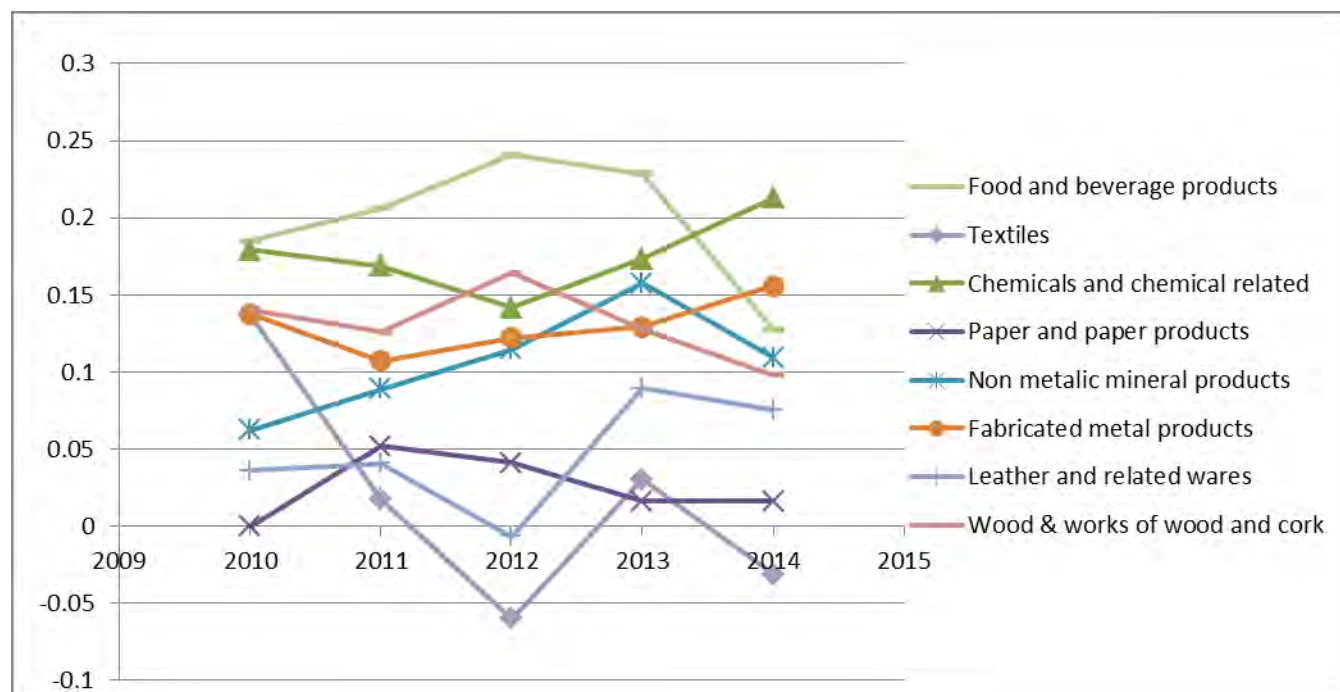
This chapter presents the results of the data analysis and the findings from the study in relation to the research objectives and in consistence with the literature reviewed in chapter two. The analyses are based on secondary data obtained from annual financial reports of the subject companies under study. The first subsection presents descriptive statistics of the survey data then the relationship between the variables was ascertained by various econometric methods. Finally, the findings were interpreted in relation to the research objectives.

4.1. Descriptive Statistics

Descriptive analyses were used to describe patterns of behavior or relevant aspects of phenomena and detailed information about each variable with respect to the industry under study. Thus, it shows the mean, maximum, minimum and standard deviation of the variables of interest in the study among the various descriptive statistics methods.

4.1.1. Dependent variable analysis-Return on Capital Employed (ROCE)

Figure 9: Mean ROCE ratios of Sub-sectors from 2010-2014



(Source: Financial statements of target companies 2010-2014)

Return on capital employed (ROCE) measures how efficiently and effectively management has deployed the resources available to it, irrespective of how those resources have been financed. This ratio is especially useful when comparing the performance of two or more companies, or when reviewing a company's performance over a number of years.

The data findings presented in annex one were arrived by stratifying the sample in sub-sectors according to the classification of Ethiopian Standard Industrial Classification (ESIC). According to the findings food and beverage sub-sector scores the highest in both mean profit returns and variation being followed by fabricated metal products sector implying these business types are more profitable, though returns vary across companies. Furthermore, chemical & related products subsector and fabricated metal products subsector showed appreciation of mean profitability on the contrary food & beverages

and wood work sub sector show some decline through the years (cf., annex 1 and figure 9).

4.1.2. Independent variables analysis

From literatures we have observed that, when used properly, debt can allow a company to earn a higher level of profits for a given level of owner equity. However, interest on debt must be paid whether or not a company is profitable; so too much debt may force a company into bankruptcy if cash flow dries up. In addition, the market's appetite for debt can change over time, making it more difficult and expensive to borrow.

One of the major debt ratios constituted in this study is interest coverage ratio (ICR). According to data findings interest coverage ratio scored the highest mean 126.33 or 126% in the year 2013 and the lowest mean 3.45 or 3% in the year 2011. The standard deviation also was the maximum in 2013 while the minimum was in the year 2012 scoring 255.51 and 76.39 respectively (cf., annex 1.B).

The debt-equity ratio is another leverage ratio that we use to compare a company's total liabilities to its total shareholders' equity. The ratio showed (cf., annex 1.B.) minimum variation on the year 2014 and highest one on 2012. The mean debt to equity ratio was the highest in 2012 scoring 4.6 and the lowest 0.91 in the year 2014. On the other hand debt ratio showed rather lower variation though the years scoring the highest mean 0.48 or 48% 2012 and the lowest mean 0.40 or 40% in the year 2010. The data findings were arrived at by expressing the total liabilities (both long term and short term) as a proportion of the total funding. The ratios imply most of the firms' assets are financed by equity financing.

The other major independent variable constituted is Short-term liabilities to total debt ratio; defined as debt with a maturity of less than one year with respect to total liabilities of the firm. According to the data findings the year 2012 has the highest mean of 0.86 or 86% and STDEV of 24% while year 2014 has the lowest mean of 0.77 or 77% and

STDEV of 31%, cf. annex 1.B. This ratio is inverse mirror image of long-term debt to total debt proportion decisions of the firm. The data findings imply the manufacturing sector in Ethiopia is not highly dependent on long term debt as compare to short-term funding. Fear of risky investments by Ethiopian banks and lack of active secondary financial market in the country was presented as one justification by (Abera, 2012). This result is also consistent with previous empirical findings of researches which compared developing countries versus developed countries; showing firms in developing countries are more dependent on short term debt contrary to firms in developed countries which are highly dependent on long term debt (Essays, UK., 2013).

The other main explanatory variable derived by dividing the long term debt with the total capital available of a company is Long-term debt capitalization ratio. This ratio allows the investors to identify the amount of control utilized by a company and compare it to other companies to analyze the total risk experience of that particular company. The companies that fund a greater portion of capital through debts are known to be riskier than those with lower finance ratios. From the data findings (cf. annex 1.B) the companies under observation had highest mean 0.16 or 16% and STDEV of 0.25 in the year 2013 and the lowest mean was scored 0.12 or 12% and STDEV of 0.19 in the year 2010. Due to deficit net worth the highest maximum i.e. 1.03 or 103% was scored in the year 2014. A deficit net worth can negatively influence future financing opportunities and stifle future business growth. Though, (Fernandez, 2007), recommend us to refrain from such conclusions. He argued that since such traditional methods determine value from static viewpoint, it does not take into account the company's possible evolution or money's temporary value. Neither do they take into account other factors that also affect the value that do not appear in the accounting statements.

Other constituted variables in our model in control form are size or volume of the company, asset structure or tangibility and sales growth rate. Generally in the previous empirical studies, such as (Velnampy and Nimalathasan, 2010); researchers found a negative relationship between firm's size and its profitability. Although we will analyze

these relationships econometrically in subsequent sections, the analysis of secondary data generated is presented in tabular form in annex 1.B.

4.2. Econometric analysis

In order to answer our research questions, it is to be recalled that the paper constructed econometric model in the previous chapter. We also know theoretically, an econometric model should pass pre and post estimation tests or diagnostic tests. In the way to make sure the model is valid, consistent and reliable the researcher applied the following tests.

4.2.1. Distributional and Specification Tests

Tests for Normality

Before applying statistical methods that assume normality such as least square regression, it is necessary to perform a test on residuals for normality. We hypothesize that the data follows a normal distribution, and only reject this hypothesis if we have strong evidence to the contrary i.e. if the test is significant, the distribution is non-normal. To achieve normality the researcher used log transformation on the dependent variable - return on capital employed (ROCE) and also added one dummy variable for 12th observation which was outlier. Since the proxy is for profits; it will have negative values which consequently bring about more missing values. So we used common technique for handling negative values by rebasing values which have negative values. First the researcher arranged the series with negative values in ascending order from smallest to largest. The smallest value, which is the largest absolute negative value, was then added in all series members, which created a series of positive integers.

There are three ways of testing normality in e-views: Skewness and Kurtosis, Jarque-Bera test. According to the reported summary statistics in, the residuals happen to have slightly positively skewed and leptokurtic; though, it passed the test so we fail to reject our null hypothesis which presumes normality (cf., annex 2.A.).

Multi-collinearity Test

Another implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be *orthogonal* to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. Though in real scenarios some level collinearity is expected, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as *multicollinearity*. Furthermore, (Brooks, 2008) confers two classes of multicollinearity: perfect multicollinearity and near multicollinearity.

Perfect multicollinearity occurs when there is an exact relationship between two or more variables. In this case, it is not possible to estimate all of the coefficients in the model. Perfect multicollinearity will usually be observed only when the same explanatory variable is inadvertently used twice in a regression. whereas, *Near multicollinearity* is much more likely to occur in practice, and would arise when there was a non-negligible, but not perfect, relationship between two or more of the explanatory variables.

To check for the presence of multicollinearity in the model, we have used the correlation matrix presented in the annex 2.B. The result of the test implies that there is the no problem of multi-collinearity in the model being the highest correlation coefficient 0.76 or 76% between SDTL and LDCR.

Hausman Specification Test

Under this section we carry out some diagnostic tests to examine which estimation technique fits the model and the data well (Fixed effect or random effect). The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results.

Annex 2.C shows the Hausman specification test that is used to choose between the fixed effect and random effects model. The test result suggests that random effect is the appropriate methodology.

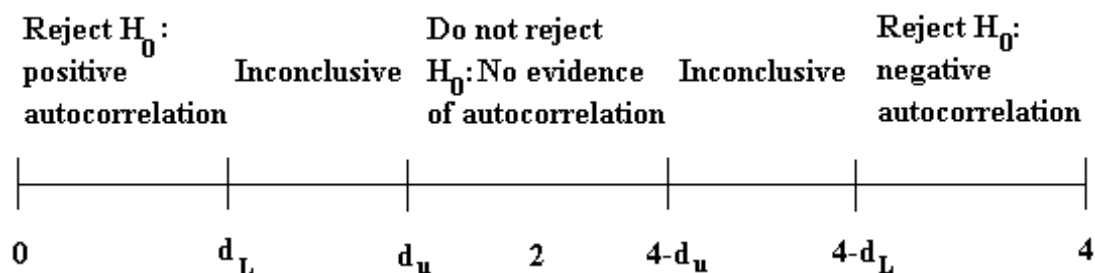
Test for Heteroscedasticity

As discussed in (Brooks, 2008) another important assumption for classical linear regression model is that the disturbances appearing in the population regression are homoscedastic that means the variance of the error term is consistent. If errors do not have a constant variance (not homoscedastic), they are said to be Heteroskedastic. Whereas, (Haq, 2013) explains Heteroscedasticity is not a problem in panel data because panel data itself is a solution for heteroscedasticity. It is really convincing since panel data have a pull-in effect even without log transformed variables which basically rescales the data.

Testing for Serial Correlation

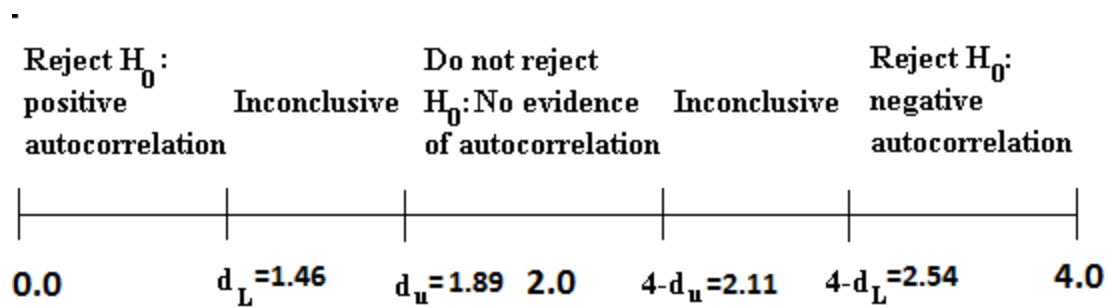
To test for autocorrelation, in this study we used the modified Durbin-Watson test designed by Bhargava, Franzini and Narendranathan (1983). The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation.

Figure 10: Rejection and Non-Rejection Regions for DW Test



Plotting the calculated values from standard DW stat table against the critical values, for $\alpha = 5\%$, $n = 100$, and $k = 10$, we get $d_l = 1.462$ and $d_u = 1.898$; we get

Figure 11: Calculated values from standard DW stat table against the critical values



(Source: Author's computation)

The Durbin Watson statistic was found to be 1.67 (cf., annex 2.F.) suggesting the test is inconclusive. We can conclude neither that there is positive serial correlation of the residuals, nor that there is not.

To avoid incorrect conclusions the researcher further conducted Breusch–Godfrey serial correlation LM test. This test is more general and powerful than DW stat which is only valid for non-stochastic regressors and for testing the possibility of a first-order autoregressive model (e.g. AR (1)) for the regression errors. The null hypothesis is there is no serial correlation of any order. The test result shows as depicted in table 5 in the annex we fail to reject our null hypothesis at even 10% significance.

4.2.2. Regression Model

Table 1: Regression Model

	Unstandardized Coefficients		Exponentiated values B ^e	t	Sig.	95% confidence interval	
	B	Std. Error				Lower bound	Upper bound
Cons.	0.226186	0.132903	1.253809	1.701885	0.0918		
SDTL	0.301297	0.097601	1.351611	3.087019	0.0026	0.81	0.90
TN	-0.28929	0.080398	0.748799	-3.59816	0.0005	0.20	0.33
SG	0.014021	0.013631	1.01412	1.028651	0.3061	0.11	0.37
LDCR	0.319735	0.134602	1.376763	2.375411	0.0194	0.06	0.14
ICR	0.000236	7.08E-05	1.000236	3.338085	0.0012	87.82	170.54
DE	-0.0007	0.002171	0.999298	-0.32318	0.7472	-0.41	2.31
DR	-0.05209	0.039988	0.949247	-1.30253	0.1956	0.37	0.49
Size	0.004483	0.01505	1.004493	0.297858	0.7664	7.63	8.19
R-square		Adjusted R square		Std. error of the estimate		P(f-stat)	
0.435594		0.386277		0.093595		0.000000	

(Source: author's computation and E view result)

Table 1 above presents the regression output on return on capital employed regression model. Exponentiated values less than one reflect negative relationship whereas values greater than one denote positive relationships. According to the findings depicted in the table the intercept is 1.25, while the coefficients t for short-term debt to total liabilities ratio will be 1.35, long-term debt capitalization ratio 1.37, interest coverage ratio 1.0002, debt-equity ratio 0.99, and debt ratio 0.95.

$$\begin{aligned} \text{LOG(ROCE)}_t = & 0.22618 + 0.00024 * \text{ICR}_t - 0.00071 * \text{DE}_t - 0.05209 * \text{DR}_t + 0.00448 * \text{SZ}_t \\ & (0.1329) (7.08\text{E-}05) (0.00217) (0.03999) (0.01505) \\ & - 0.28928 * \text{TN}_t + 0.30129 * \text{SDTL}_t + 0.31973 * \text{LDCR}_t + 0.01402 * \text{SG}_t + \epsilon_t \\ & (0.08039) (0.09760) (0.13460) (0.01363) \end{aligned}$$

For assessing magnitude, the easiest way is to determine the change from these values as percentage change in ROCE i.e. $\% \Delta \text{ROCE} = (\text{Exponentiated coefficient value} - 1) * 100$; which we will use in the following discussions.

As shown in table 1 above the data analysis is presented in two forms i.e. in p values and confidence intervals. Whereas, the p-value allows assessment of whether or not the findings are ‘significantly different’ or ‘not significantly different’ from some reference value (which in our case is this is value reflecting ‘no effect’ or “zero effect”); confidence intervals provide different information from that arising from hypothesis tests i.e. a range about the observed effect size. This range is constructed in such a way that we know how likely it is to capture the true but unknown effect size. So this means that 95% of the time the confidence intervals should contain the true mean of the variable of interest. This corresponds to our hypothesis testing with p-values, with a cut-off for p of less than 0.05

The value of R is 0.44; which means the model explains 44% of the variation in dependent variable. This indicates the data contain an inherently higher amount of unexplained variability other than explanatory variables included in our model; such as perhaps macro-economic variables, industry characteristics, management style etc. Even though R-squared seems low, low P values still indicate a real relationship between the significant predictors and the dependent variable which makes further interpretations and hypothesis tests valid.

4.3. Hypothesis decision and discussion of results

Table 2: Hypothesis Analysis summary

Hypothesis	Statement of Hypothesis	Decision
H1	There is positive and significant relationship between Interest coverage ratio and profitability.	Fail to reject
H2	There is negative and significant relationship between Debt ratio and profitability.	Rejected
H3	There is negative and significant relationship between Debt-to-equity ratio and profitability.	Rejected
H4	There is positive and significant relationship between long term debt capitalization ratio and profitability.	Fail to reject
H5	There is negative and significant relationship between short term debt to total liability and profitability	Rejected

(Source: Based on Author's analysis of table 1 above)

A. Return on Capital Employed with Interest Coverage Ratio

The interest coverage ratio is computed by dividing earnings before interest and taxes (EBIT) by interest charges. (Pandey, 2010), explains interest coverage ratio or the times interest earned is used to test the firms' debt servicing capacity. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of the interest charges. A higher ratio is desirable, but too high a ratio indicates that the firm is very conservative in using debt and that it is not using credit to the best advantage of shareholders. A lower ratio indicates excessive use of debt or inefficient operations. The firm should make efforts to improve the operating efficiency or relieve debt to have a comfortable coverage ratio.

In the descriptive statistics section above and in annex 2.B. we have observed higher mean values of interest coverage ratio. It is mainly because the subject firms are large tax payer and we have also seen there is low level of long term debt usage in the sampled

groups. This mainly implies subject companies are not utilizing their debt capacity to the level that maximizes shareholders wealth.

According to our regression model an increase in Interest coverage ratio leads to 1.000236 or 0.02% positive change on ROCE. The test statistics from our regression model Interest coverage ratio has positive influence on profits (0.02%) at 5% significant level keeping other variables held the same. The result is consistent with the findings of (Enekwe, 2015) and others. This is absolutely normal, if reverse will be strange mainly due to the characteristics of the variable. Therefore, we will reject our null hypothesis which presumes no relationship.

B. Return on Capital Employed with Debt Ratio

The other independent variable from our model is debt ratio which we hypothesized negative impact on profitability of manufacturing firms. This ratio can be interpreted as the proportion of a company's assets that are financed by debt. Though the test result indicated this variable has 0.95% negative influence similar to the findings of (Mohammad et al, 2012), Abor's (2005), and Gill, et al., (2011), the t-stat is not significant even at 10%. Since, no statistically significant linear dependence was detected we fail to reject the null hypothesis.

This is basically an implication of the firms under study are either low-growth companies, which do not have highly profitable investment opportunities and tend to respond more strongly to the disciplinary effect of debt and restrain overinvestment or; it shows that the negative impact of the total debt ratio on investment tends to be smaller at high-growth companies with ample investment opportunities than at average companies which makes it difficult to gauge significant relationship.

C. Return on Capital Employed with Debt to Equity Ratio

The debt to equity ratio is a financial ratio indicating the relative proportion of equity and debt used to finance a company's assets which is an indicator of the financial leverage. It

is equal to total debt divided by shareholders' equity taken from the firm's balance sheet. This is a useful measure as it helps the investor see the way management has financial operations. A high debt to equity ratio generally means a company has been aggressive in financing its growth with debt. This can result in volatile earnings as a result of the additional interest expenses as well as volatile cash flow as principal payment on debt come due. If a lot of debt is used to finance increased operations (high debt to equity) the company could potentially generate more earnings per share than it would have without this outside financing. If this were to increase earnings by a greater amount than the interest on debt, then the shareholders benefit as more earnings are being spread among the same amount of stock. However, as stated, increased interest and the need to repay the principal on borrowed fund can far outweigh the benefit, it is used to measure the net worth of the organization.

This ratio is mostly used as risk indicator just like our other independent variable long term debt capitalization ratio; showing risk factor per stock holders equity. It is also used interchangeably with debt ratio when the purpose is to evaluate how the firm finances its projects as well as operations.

Based on previous literatures, this ratio was predicted to have positive impact on performance proxy return on capital employed (ROCE). Though the sign of the coefficient is as predicted, the test result is insignificant. We can therefore perhaps infer debt to equity proportion is not significant factor on firms profitability based on sample taken from manufacturing firms in Ethiopia. Consequently, we fail to get sound evidence to reject null hypothesis or accept the alternative. Most of the researches we covered in literature review such as (Winston Pontoh, 2013), (Koech, 2013), (Singh, 2013) and (Opoku et al, 2014) found significant relationship between debt to equity ratio and profitability proxies, our study is rather consistent with the findings of (Kim et al, 2014); which basically concluded there is no significant relationship between capital structure variables and financial performance.

D. Return on Capital Employed with Long-Term Debt Capitalization Ratio

According to the multivariate regression results long term debt capitalization ratio has significant positive relationship with profits. This ratio showing the financial leverage of firms' is highly related to risk level of companies being compared to other companies' in the same industry. This relationship aligns with the fourth hypothesis which predicted positive relationship. The test statistics found to be significant at 5% indicating 37.6% positive effect on profits per one unit change. This can be ample and convincing ground for firms to take long-term debt options than what they currently do.

E. Return on Capital Employed with Short-Term Debt-to-Total Liability Ratio

Research hypothesis 5 predicts a negative relationship between ROCE and SDTL. In contrast to the hypothesis; the results indicate positive and significant influence on profits (cf., annex 2.E). This result contradicts also with previous research findings like (Uremandu, 2012).

This relation implies the fact that every unitary change (increase or decrease) in the SDTL ratio keeping the other variables constant has a resultant change of 26.8% on the profit proxy ROCE in the positive direction of change. This relationship perhaps implies manufacturing share companies which highly dependent on short term debt are more profitable.

Chapter Five: Conclusions, Implications and Recommendation of the Study

Introduction

This chapter discusses conclusions and implications drawn from the findings discussed in the previous chapters in relation to the objectives of the study which was to establish the effect of capital structure on profitability of large tax payer manufacturing firms in Ethiopia.

5.1. Conclusions

To achieve this profit, companies must utilize all of its resources optimally. The problem arises when the resource is insufficient, and companies decide to obtain debt with consideration of profitability and risk of bankruptcy. The study has examined the relationship between capital structure and profitability of large tax payer manufacturing firms in Ethiopia in period 2010-2014. The main objective was to provide empirical evidence on the financing behavior of these firms and perhaps its impact on their financial performance or profitability.

Accordingly, the study established significant and positive relationship between (short-term liabilities to total liabilities ratio, long-term debt capitalization ratio and interest coverage ratio) and profitability. The study has failed to gauge significant relationship between the other leverage indicators debt to equity ratio, and debt ratio. Based on the research findings pecking order theory and signaling theory would better reflect the current corporate capital structure strategies of large tax payer manufacturing firms in Ethiopia.

The research was based on a financial statements of large tax payer manufacturing firms in Ethiopia that demonstrate what can be done even with the limitations of currently available data. There is clearly enormous scope for more research that can build an understanding of how the capital is structured, how it connects with the profitability and what elements of capital structure make a difference.

5.2. Implication and Recommendation of the Study

The manufacturing sector Ethiopia has expanded by 11.3 percent and it contributed about 30.8 percent to real GDP growth (NBE, 2014). One crucial decision for these firms is how to finance their projects as well as run daily operations. However, it is essential to recognize that this decision can only be wisely taken if these firms know how debt policy influences their profitability. Therefore, manufacturing firms should take into considerations the following matters in order to increase their profitability;

- A. An appropriate mix of capital structure should be adopted in order to increase the profitability of manufacturing firms. The research findings revealed that short term debt rather than long term ones are correlated with positive financial performance.
- B. It is important that manufacturing firms look for long term debt potentials. Even where internal financing would be used, these firms should search for low interest-bearing loans so that advantages of the loan will exceed the financial distress associated with it.

5.3. Areas for Further Studies

As this empirical research only examined twenty four large tax payers manufacturing share companies in the country, a more comprehensive larger dataset of firms perhaps a comparison between other sectors may give more accurate results. Separating the firms into specific industries and analyzing the different industries and how the determinants affect them then comparing the results with other countries empirical findings could be an interesting way of investigating both firm specific effects along with country specific factors.

In addition, the researcher believes further examination is required into other determinants of capital structure. This could be done by including variables that deemed difficult to measure such as tax shield, company risk, level of concentrated ownership and probability of bankruptcy.

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Appendix One: Sample Companies Detail

Name of the Firm	Address H.O	Tel.
A.A. Bootle And Glass S.C.	A.A. Kolfe Keranio Sub-city	0112 701474
A.A. Tannary S.C.	A.A. Kolfe Keranio Sub-city	0911 201451
Adami Tulu Pesticide Processing S.C.	A.A. Bole Sub-city	01 1 62 46 56
Akaki Spare Parts And Hand Tools S.C.	A.A. Akaki Kality Sub-city	0114 340422
Amce S.C.	A.A. Bole Sub-city	
Anbessa Shoe S.C.	A.A. Lideta Sub-city	
Awash Wine S.C.	A.A. Lideta Sub-city	0113 201391
Bahir Dar Textile S.C.	Bahirdar	0115539742
Bedele Brewery S.C.	Oromia Region, Illubabor Zone Bedele City	0474450147 / 48
East african bottling s.c	A.A. Lideta Sub-city	0112756382
East Cement S.C.	A.A Yeka Sub-city	0116 452100
ECAFCO S.C.	A.A. Nifas silk lafto Sub-city	
Ethiopian Crown And Can Manufacturing S.C	A.A. Akaki Kality Sub-city	
Ethiopian Pulp & Paper S.C	A.A. Kirkos Sub-city	0118 591366
Fafa Food S,C	A.A. Akaki Kality Sub-city	0114 343061
Harar Brewery S.C.	Harar	
Horizon Addis Tyre (Mathador) S.C	A.A. Akaki Kality Sub-city	0114-421555
Kality Metal Industry S.C	A.A. Akaki Kality Sub-city	0114 340162
Kaliy Food S.C	A.A. Akaki Kality Sub-city	0114 390144
Meta Abo Brewery S.C.	A.A. Kirkos Sub-city	
Moha Soft Drinks S.C	A.A. Lideta Sub-city	011 2750122
National Tobacco Enterprise (Ethiopia) S.C.	A.A. Lideta Sub-city	
Repi Soap and Detergent S.C.	A.A. Kolfe Keranio Sub-city	
Tikur Abay Shoe S.C.	A.A. Kolfe Keranio Sub-city	

Appendix Two: Descriptive Statistics:**2.A. Sub-sector wise Dependent Variable Analysis**

Industrial group	Number of Firms	Number of Observations	Profit rate	
			Mean	STDEV
Food and beverage products	7	35	0.39	0.47
Textiles	2	10	0.02	0.08
Chemicals and chemical products	3	15	0.31	0.36
Paper and paper products	1	5	0.04	0.03
Non-metallic mineral products	2	5	0.16	0.05
Fabricated metal products	3	20	0.36	0.34
Leather, luggage, handbags and foot wares	4	20	0.09	0.11
wood and products of wood and cork	2	10	0.18	0.07
Total	24	120		

2.B. Independent Variables ME, MI, MX and STDEV (2010-2014)

Year	particulars	ICR	DE	DR	SDTL	LDCR	SZ	TN	SG
2010	ME	45.9	1.56	0.4	0.81	0.12	7.2	0.32	0.35
	MI	1.47	0.06	0	0	0	4.6	0.02	-0.2
	MX	516.79	13.85	0.93	1	0.6	8.99	0.89	3
	STDEV	119.77	2.83	0.26	0.29	0.19	1.45	0.22	0.67
2011	ME	3.45	1.81	0.45	0.85	0.14	7.05	0.3	0.44
	MI	-456.75	0.04	0.04	0.08	0	4.48	0.02	-0.33
	MX	268.75	16.83	0.94	1	0.75	9.16	0.85	5.63
	STDEV	133.72	3.4	0.24	0.23	0.23	1.59	0.2	1.19
2012	ME	45.84	4.6	0.48	0.86	0.15	7.17	0.32	0.34
	MI	-28.89	0.05	0.05	0.01	0	4.44	0.02	-0.68
	MX	264.94	61.88	0.98	1	0.98	9.26	0.83	1.76
	STDEV	76.39	12.94	0.26	0.24	0.29	1.57	0.23	0.5
2013	ME	126.33	1.93	0.45	0.8	0.16	7.24	0.34	0.29
	MI	-10.5	0.1	0.09	0.02	0	4.63	0.01	-0.4
	MX	923.53	23.21	0.96	1	0.96	9.3	0.82	4.04
	STDEV	255.51	4.61	0.22	0.29	0.25	1.57	0.22	0.83
2014	ME	74.55	0.91	0.44	0.77	0.15	7.18	0.31	0.13
	MI	-0.31	0.12	0.1	0.01	0	4.34	0.01	-0.49
	MX	741.89	2.89	1.03	1	1.03	9.34	0.73	1.2
	STDEV	180.38	0.74	0.22	0.31	0.24	1.73	0.21	0.35

Appendix Three: Econometrics Output

Figure 12: Normality Test

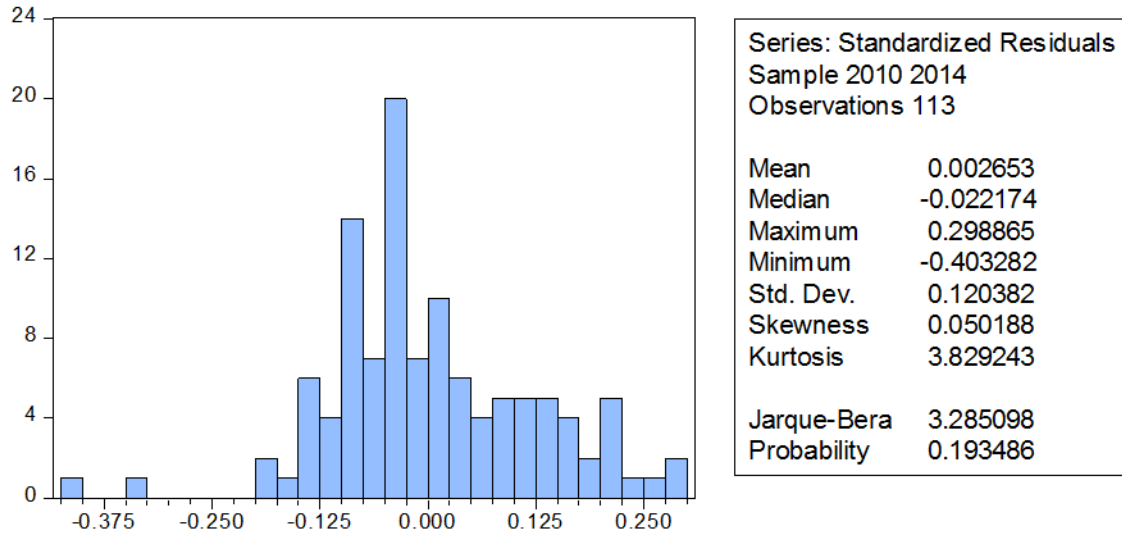


Table 3: Correlation Matrix

	DE	DR	ICR	SG	SZ	TN	LDCR	SDTL
DE	1.000000							
DR	0.332595	1.000000						
ICR	-0.062235	-0.035840	1.000000					
SG	0.090853	-0.034622	-0.033624	1.000000				
SZ	-0.078609	0.076818	0.441663	0.027851	1.000000			
TN	0.100637	0.016809	-0.077620	0.125436	0.081091	1.000000		
LDCR	0.647597	0.481654	-0.001222	-0.053529	0.038205	0.178580	1.000000	
SDTL	-0.397601	-0.149006	0.052456	0.110683	0.209247	-0.296401	-0.764346	1.000000

Table 4: The Hausman Specification Test

Correlated Random Effects - Hausman Test
Equation: EQ01LOGROCE
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.819514	8	0.5562

Table 5: Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	8.470811	Prob. F(2,94)	0.0004
Obs*R-squared	16.18700	Prob. Chi-Square(2)	0.0003

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 03/21/16 Time: 10:22

Sample: 2 120

Included observations: 106

Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004743	0.037869	0.125258	0.9006
ICR	8.43E-06	2.30E-05	0.366960	0.7145
SZ	-0.000934	0.003999	-0.233426	0.8159
TN	0.001221	0.026675	0.045782	0.9636
SG	0.004488	0.006881	0.652299	0.5158
LDCR	0.008749	0.044969	0.194551	0.8462
SDTL	0.000923	0.038898	0.023725	0.9811
DR	-0.006431	0.017149	-0.374976	0.7085
DE	-6.19E-05	0.000656	-0.094420	0.9250
D12	-0.016843	0.024565	-0.685630	0.4946
RESID(-1)	0.382475	0.125709	3.042546	0.0030
RESID(-2)	0.138946	0.130919	1.061311	0.2913

R-squared	0.152708	Mean dependent var	5.56E-18
Adjusted R-squared	0.053556	S.D. dependent var	0.050508
S.E. of regression	0.049137	Akaike info criterion	-3.082140
Sum squared resid	0.226957	Schwarz criterion	-2.780618
Log likelihood	175.3534	Hannan-Quinn criter.	-2.959931
F-statistic	1.540147	Durbin-Watson stat	1.736464
Prob(F-statistic)	0.130219		

Table 6: Regression Output

Dependent Variable: LOG(ROCE)
 Method: Panel EGLS (Cross-section random effects)
 Date: 01/10/16 Time: 11:32
 Sample: 2010 2014
 Periods included: 5
 Cross-sections included: 24
 Total panel (unbalanced) observations: 113
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.226186	0.132903	1.701885	0.0918
TN	-0.289285	0.080398	-3.598156	0.0005
ICR	0.000236	7.08E-05	3.338085	0.0012
DE	-0.000702	0.002171	-0.323181	0.7472
SZ	0.004483	0.015050	0.297858	0.7664
SDDL	0.301297	0.097601	3.087019	0.0026
SG	0.014021	0.013631	1.028651	0.3061
DR	-0.052086	0.039988	-1.302534	0.1956
LDCR	0.319735	0.134602	2.375411	0.0194
D12	0.488213	0.108512	4.499180	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.093080	0.4948
Idiosyncratic random		0.094054	0.5052

Weighted Statistics			
R-squared	0.435594	Mean dependent var	0.196970
Adjusted R-squared	0.386277	S.D. dependent var	0.117539
S.E. of regression	0.093595	Sum squared resid	0.902288
F-statistic	8.832514	Durbin-Watson stat	1.678302
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.581656	Mean dependent var	0.471039
Sum squared resid	1.668798	Durbin-Watson stat	0.907427

