



Addis Ababa University
Graduate Studies
School of Business and Public Administration
Department of Accounting and Finance

The Determinants of Capital Structure in
Ethiopian Small Scale Manufacturing Co-
operatives

By
Daniel Kebede

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Approved by:

Advisor

Signature

Date

Examiner

Signature

Date

Abstract

The purpose of the study is investigating the determinants of capital structure for Small Scale Manufacturing Co-operatives (SSMCs) in Ethiopia. Hypotheses utilizing trade-off, pecking order and agency theories are empirically examined using a series of firm characteristics: size, tangibility, profitability, earning volatility, growth and age. A structured record review was made to collect a panel data, which include 13 SSMCs year observations of five years over the period 1998 – 2002 E.C. The findings suggest that size, age, tangibility, and growth variables are the most important determinants of capital structure of SSMCs in Ethiopia. The findings also reveal that the dominant capital structure theories (trade-off, pecking order, and agency theories) appear indeed to be valid for Ethiopian SSMCs' capital structure; in fact, trade-off theory best explains Ethiopian SSMCs' capital structure. All firm specific variables except earnings volatility variable seem to have an effect on the level of leverage in Ethiopian SSMCs.

Key words: Capital structure; Small Scale Manufacturing Co-operatives

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Acronyms

AACGFEDB: Addis Ababa City Government Finance & Economic Development
Bureau

AACTICODCP: Addis Ababa City Trade and Industry, Co-operatives
Organizing and Development Core Process

AG: Age

DW: Durbin-Waston

EC: Ethiopian Calendar

EV: Earning Volatility

GDP: Gross Domestic Product

GR: Growth

LEV: Leverage

PR: Profitability

SSMCs: Small Scale Manufacturing Co-operatives

SZ: Size

TG: Tangibilit

CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

In overall economic development, a critically important role is played by micro, small and medium enterprises in Ethiopia. The country relies on these enterprises (to which small scale manufacturing Co-operatives belong) to insure the sustainability of the economic growth.

As of the year 2000 EC, there were 2,221 macro and small scale co-operatives in Addis Ababa city with approximately 31,509 members. From this total number of co-operatives manufacturing of wood and metal, garment and textile, and food processing account for approximately 40% (872), i.e., 17%, 16%, and 7% respectively. SSMCs' contribution to the growth and sustainability of the country's economy both in terms of GDP and employment creation is vital (AACGFEDB, 2010). However, they are still facing difficulty in accessing capital to finance their operation. Thus, this needs to raise a question as to what factors determine their capital structure (an important concern to improve financial policies to support the small business sector).

Macro and Small Enterprises Agency of Addis Ababa City defines SSMCs as:

“establishments with a paid up capital of more than Birr 20,000 but not exceeding Birr 500,000.”

Manufacturing is defined here according to International Standard Industrial Classification of All Economic Activities (ISIC Rev. 3.1 code D) (2002) as:

“the physical or chemical transformation of materials or components into new products, whether the work is performed by power - driven machines or by hand, whether it is done in a factory or in the worker’s home, and whether the products are sold at wholesale or retail. The assembly of the component parts of manufactured products is also considered as manufacturing activities.”

Cooperatives, as economic enterprises and as self-help organizations, play a meaningful role in uplifting the socio-economic conditions of their members and their local communities. They are member-owned businesses. The simplest way to understand them is that they aggregate the market power of people who on their own could achieve little or nothing, and in so doing they provide ways out of poverty and powerlessness.

The Federal Negarit Gazeta (1998) defines a cooperative Society as:

“an autonomous association established by individuals on voluntary basis to collectively solve their economic and social problems and to democratically manage same.”

According to Abor, 2005, capital structure of a firm is a mix of different securities issued by firms to finance their operations. In general, firms can choose among many alternative capital structures. They can arrange lease financing, issue a large or small amount of

debt, sign forward contracts or trade bond swaps. They can issue dozens of distinct securities in combinations; however, they attempt to find the particular combination that minimizes the firm's cost of capital and thus maximizes firm value (optimal capital structure).

Capital structure decisions are crucial for the financial well-being of any firm. Financial distress, liquidation and bankruptcy are the ultimate consequences lay ahead if any major misjudgment occurred following financing decision of firms'. Thus, firms with high leverage need to allocate an efficient mixture of capital that will finally reduce its cost (Kila and Mahmood, 2008).

Literatures show that the determination of capital structure appeared to existence since Modigliani and Miller (1958) introduced their capital structure irrelevance preposition in their seminal paper. Since then the determination of capital structure has been one of the most controversial issues in the finance literature. Following the path-breaking work of Modigliani and Miller (1958, 1963), several theories have been advanced to explain capital structure, though studies in the area of capital structure are dominated by three theories: trade-off, pecking order and agency theories. Trade-off theory suggests that firms balance tax savings resulted from debt against bankruptcy costs associated with debt (Myers, 1984). Pecking order theory suggests that firms follow a financing hierarchy: internal finance, where information asymmetry does not exist is preferred first, then, the safest security (debt), and equity as a last option (Myers, 1984). According to Jensen and Meckling (1976), agency theory suggests that equity-holders of levered firms can potentially extract value from debt-holders by increasing investment risk to maximize

equity value after debt is in place; this leads to conflict of interest between debt-holders and equity-holders, thereby causes agency costs.

Several studies have been conducted in the field of capital structure, though no one could found the optimal capital structure. Myers (2001) states that there is no universal theory of debt-equity choice, and there is no reason to expect. In fact there are several useful conditional theories. Moreover, Kila and Mahmood (2008) suggest that the key to choose appropriate and acceptable level of financial leverage is still debatable, i.e., there are no specific guidelines to assist the attainment of efficient mixture of debt and equity.

1.2. PROBLEM STATEMENT

Capital structure theories, such as trade-off theory, pecking order theory, and agency theory have been developed to explain capital structure. These theories were initially developed referring to the characteristics of large firms (Daskalakis and Thanou, 2010). Most of studies on capital structure theories are conducted using the data set of large firms. These studies have contributed a lot to these theories, i.e., evidence based upon these firms tends to support these theories. However, the validity of these theories in the small firms' context has been given little attention. The little evidence obtained through empirical investigation of small firms in developed nation (such as Michaelas et al., 1999 who investigated Financial Policy and Capital Structure Choice in U.K. Small and Medium Enterprises (SMEs); and Cassar and Holmes, 2003 who investigated Capital Structure and Financing of Australian SMEs) suggest that most of the determinants of capital structure presented by the aforementioned theories appear to be valid for the small firms. The validity of these theories to small firms in Ethiopia (one of the developing

nations), however, has received a very limited attention; to the researcher's knowledge, there is no study conducted on determinants of capital structure in Ethiopian small firms. This fact reveals a great need for studies to update the existing evidence. This study, therefore, attempts to test the validity of these theories to Ethiopian SSMCs with their data set.

1.3. OBJECTIVES OF THE STUDY

The study aims at investigating the determinants of capital structure of SSMCs in Ethiopia, thereby attempts to test the validity of dominant capital structure theories to these co-operatives. Specifically, the study attempts to address the following objectives:

- ✓ the variability of capital structure with the size of the firms;
- ✓ the influence of tangibility of firms' assets on capital structure;
- ✓ the extent to which profitability influences the capital structure of the firms;
- ✓ the influence of earnings volatility on firms' capital structure;
- ✓ the variability of capital structure with the growth of the firms; and
- ✓ the influence of firms' age on its capital structure.

1.4. SIGNIFICANCE OF THE STUDY

SSMCs play a vital role in Ethiopian economy both in terms of contribution to GDP and employment creation. Thus, the study alerts the government to strive to set up a financial infrastructure to support these co-operatives.

Studies in the area of capital structure are enormous, though they are limited in emerging economies like Ethiopia. Thus, in explaining the determinants of capital structure of

Ethiopian SSMCs, the findings turn out to be relevant to add knowledge to the existing literature. Moreover, the study serves as a benchmark for further studies in the area of capital structure determinants.

1.5. ORGANIZATION OF THE PAPER

The remaining chapters of this paper are organized as follows: the next chapter reviews some of the theoretical and empirical literatures; chapter three presents the research methodology; chapter four reports the data analysis and discussion; finally, the fifth chapter presents the conclusions and recommendations that derived from the findings.

CHAPTER TWO

2. LITERATURES REVIEW

2.1. INTRODUCTION

This chapter reviews the theoretical and empirical literature on capital structure of firms. The next section (section 2.2.) presents definitions and the general theories of capital structure. This is followed by the review of the empirical literature related to the determinants of capital structure choice in section 2.3. Finally, conclusions on the literature review and knowledge gaps are presented in section 2.4.

2.2. THEORIES OF CAPITAL STRUCTURE

In corporate finance, as the literature indicated, one of the most important questions about capital structure today is whether firms have target debt ratios or not (Graham and Harvey, 2001). To examine such issues, the path-breaking works of Modigliani and Miller (1958; 1963) has paved the way for the development of capital structure theories.

The seminal work of Franco Modigliani and Merton Miller (1958, 1963) made a significant contribution to the understanding of the corporate debt policy. MM (1958) initiate the theory of capital structure in their path-breaking work on the effects of capital structure on the firms value. They demonstrated that in a world of no income taxes, the capital structure is irrelevant for determining the value of firms, rather the value of firms

depends on their operating income; thus levered and unlevered firms should have similar value.

Their next paper, MM (1963) demonstrated that the introduction of corporate taxes allowed firms to deduct interest on debt in computing taxable profit. This is the tax benefit created as the interest payments associated with debt are tax deductible. Thus, firms maximize their values by maximizing the use of debt. This suggests that tax advantages derived from debt leads firms to be completely financed through debt. However, the fact that this proposition is not in accordance with reality, led the authors themselves to argue for the relevance for bankruptcy costs. Pettit and Singer (1985) cited in Abor (2008) also argue that increasing debt results in an increased probability of bankruptcy. Hence, the optimal capital structure represents a level of leverage that balances bankruptcy costs and benefits of debt finance. Moreover, Jensen and Meckling (1976) argue that bankruptcy costs are not the only costs; agency costs are also relevant to a firm's capital structure. Accordingly, because of the unrealistic assumptions in MM irrelevance theory, researches on capital structure gave birth to other theories.

Following the path-breaking work of Modigliani and Miller (1958, 1963) on capital structure, the following three conflicting theories of capital structure have been developed: trade-off, pecking order, and agency theories.

2.2.1. TRADE-OFF THEORY

The theoretical foundation for the trade-off theory comes from Modigliani and Miller (1963), which suggests that the optimal capital structure is all debt because of the tax deductibility of interest expense. Castanias (1983) extends the Modigliani and Miller

(1963) theorem by including the possibility of financial distress costs. Thus, the idea of the trade-off theory is that an optimal capital structure at which the firm maximizes its value and minimizes its cost of capital exists; it can be attained when the benefits and costs of debt exactly offsets (Myers, 1984). Miller (1977), however, argues that bankruptcy costs are too small to affect optimal capital structure; he also argues that taxes are irrelevant to the firms' debt to equity choice.

Pettit and Singer (1985) cited in Kashefi-Pour and Lasfer (2010) argue that for small firms, the tax advantages of debt may be negligible. They argue that small firms tend to operate in less concentrated markets. Greater competitive pressures and lower profits margins would result in lower tax rates. Therefore, they may not take the tax benefits of debt. While large firms are those firms with diversified business lines and higher profits margins resulting in greater tax advantages.

2.2.2. PECKING ORDER THEORY

Pecking order theory is from Myers (1984) and Myers and Majluf (1984). The pecking (preference) order theory of capital structure is among the most influential theories of capital structure. Its concept is that firms follow a certain hierarchy of preferences for different types of finance, reflecting their relative costs with the ranking being: internal finance is preferred first, then, the safest security (debt), and equity as a last option. Internal financing is preferred first because it incurs no flotation costs and requires no disclosure of the firms' financial information that may include firms' potential investment opportunities and gains that are expected to accrue as a result of undertaking

such investments. Thus, this theory suggests that profitable firms, firms with significant amount of retained earnings, tend to maintain low level of debt in their capital structure.

Myers and Majluf (1984) and Myers (1984) consider the asymmetric information to observe the pecking order theory under which leverage increases with the extent of information asymmetry. They argue that in imperfect capital markets, there are information asymmetries between firm insiders and outsiders (investors). Insiders might have more information about the firms' assets in place and its future investment opportunities. This is not reflected in the stock price since outside investors have only access to public information. Thus, according to the pecking order theory, external sources of capital are subject to adverse selection. Outsiders are aware of their relative ignorance and demand a premium on their investment returns. For this reason, firms prefer to finance their investments with the least information sensitive securities, such as internal funds or riskless debts.

In contrast, Rajan and Zingales (1995) argue that informational asymmetries between firm insiders and the capital markets are lower for large firms. So large firms should be more capable of issuing informationally sensitive securities like equity, and should have lower debt.

In small firms context, Pettit and Singer (1985) cited in Kashefi-Pour and Lasfer (2010), argue that asymmetric information is typically significant for smaller firms. It is more costly for small firms to provide audited information, and thus outsiders do not have sufficient information about firms' value. Thus, small firms follow pecking order theory.

2.2.3. AGENCY THEORY

Agency theory initiated by Jensen and Meckling (1976) suggests that agency costs arise from the conflict of interest between debt-holders and equity-holders. Commonly, managers, being part of the owners, tend to collaborate with equity-holders, thus if the firm is approaching financial distress, equity-holders may encourage managers to pass decisions, which, in effect, extract wealth from debt-holders to equity-holders (Buferna *et al.*, 2005). If managers pass the decision to invest the raised fund in the risky investment in an intention to extract wealth from debt-holders, then the conflict of interest arises. According to Myers (1977), if the investment is successful, the benefits are enjoyed solely by equity-holders, i.e., debt-holders receive only the fixed interest on the capital they invested. In contrast, if the investment fails, the firm may default on debt, and then debt-holders suffer a lot since they cannot look beyond the assets of the corporation for satisfaction of their claims. This is because the liability is limited to the corporation. Thus, sophisticated debt-holders tend to monitor the firms' behavior. Consequently, costly monitoring devices are included into debt agreements, thereby increasing the cost of capital offered to the firm. Thus, firms with relatively higher agency costs tend to maintain lower level of debt. However, the agency problem can be mitigated if the debt is secured with collateralizable tangible assets (Esperanca, 2003). This indicates that financiers may not be the losers, if the borrower firm goes bankrupt, i.e., at least the principal amount can be compensated by selling the collateralized tangible asset.

2.3. THE DETERMINANTS OF CAPITAL STRUCTURE

According to Harris and Raviv (1991), theories of capital structure have identified a large number of potential determinants that might have an impact on debt levels. Among these factors, which have been found by a large number of studies to influence the firms' capital structure are size, tangibility, profitability, risk, non-debt tax shield, growth, uniqueness, dividends, free cash flow, liquidity, age, and regulation.

This section briefly discusses what theories of capital structure suggest about the relationship between capital structure determinants considered in this study (size, tangibility, profitability, earning volatility, growth, and age) and leverage. It also discusses both theoretical and empirical evidence related to the determinants of capital structure.

2.3.1. SIZE

Trade-off theory states that large firms will have more debt since larger firms are more diversified and have lower default risk; as a result, they tend to have higher leverage (Frank and Goyal, 2008). On the other hand, smaller firms tend to have lower debt ratio when the relative bankruptcy costs are an inverse function of the firms' size (Titman and Wessels, 1988).

According to pecking order theory by Myers (1984) and Myers and Majluf (1984), in imperfect market firms rely on less information-sensitive securities (such as internal funds and riskless debts) when insiders and outsiders suffer from asymmetric information. Thus, firms tend to issue debt than equity.

In contrast, Frank and Goyal (2008) suggest that the pecking order theory is usually interpreted as predicting an inverse relation between leverage and firm size. The argument is that large firms have been around longer and are better known. Thus, they face lower adverse selection and can more easily issue equity compared to small firms where adverse selection problems are severe. Referring to agency theory, they also suggest that large firms have a reputation in debt markets and consequently face lower agency costs of debt.

Titman and Wessels (1988) find a negative relation between size and long-term debt and positive relation between size and short term debt. They argue that cost of issuing debt and equity securities is also related to firm size. In particular, small firms pay much more than large firms to issue new equity and also somewhat more to issue long-term debt. This suggests that small firms may be more leveraged than large firms and may prefer to borrow short term rather than long-term debt because of the lower fixed costs associated with this alternative.

The impact of size on leverage is ambiguous. Several empirical studies, however, reveal a positive relationship between size and leverage of the firms, i.e., support the trade-off and agency theories (Hovakimian *et al.*, 2004; Buferna *et al.*, 2005; Nguyen and Ramachandran, 2006; Eriotis *et al.*, 2007; Saeed, 2007; Abor, 2008; Salawu and Agboola, 2008; Smith, 2010; Yazdanfar, n.d.; Bhaird and Lucey, n.d.; and Munyo, n.d.). Their results suggest that smaller firms are more likely to use equity finance, while larger firms are more likely to issue debt. In contrast, Kila and Mahmood, 2008; and Ramlall, 2009, suggest a negative relationship between size and leverage of the firm, i.e., support the pecking order theory.

Cardone-Riportella and Cazorla-Papis (2001) measuring size by the number of employees, volume of sales and volume of assets found a negative relationship between size and total borrowing ratio. Gidey (2005) suggests that size of average income measured in logarithmic function indicates a negative relationship with debt financing. Thus, he concluded that Micro and Small Enterprises finance their capital requirements from equity sources and later on may raise debt finance when they grow. Shah and Khan (2007) also by studying the determinants of capital structure of Karachi Stock Exchange listed non-financial firms for the period 1994-2002 based on Pakistani panel data, found a negative relationship between size and leverage. Then, they suggest that as debt increases the chances of bankruptcy, hence smaller firms should have lower debt ratio.

Cassar and Holmes (2003), Esperança *et al.* (2003), Hutchinson (2003) and Hall *et al.* (2004) found a positive association between firm size and long-term debt ratio, but a negative relationship between size and short-term debt ratio. This indicates that large sized firms use long-term debt rather than short-term debt to finance their operation. Beyene (2005) by studying the determinants of capital structure decision of Medium Enterprises in Ethiopia based on a cross sectional data over the period 1991 - 1996 EC, found a positive relationship between size and leverage. Thus, he suggests that as firms grow in size, they tend to become a candidate for debt.

Kashefi-Pour and Lasfer (2010) basing on the panel data they found size being positively related to leverage across firms' sizes (small, medium, and large firms). Thus, they concluded that large firms use more debt in their capital structure compared to small companies. Bas *et al.* (2009) also by examining the differences in the determinants of capital structure decisions of private and listed firms, and small and large firms in

developing countries, found size being positively related to leverage. Thus, they concluded that as firms get larger, their debt increases. This conclusion indicates that large firms have positive association with leverage, while small firms have negative association.

Morri and Cristanziani (2009) found a positive relationship between size and leverage. Thus, they suggest that bigger firms can borrow at more favorable rates because they are perceived as less risky. Moreover, the economies of scale reached in case of debt issues by bigger firms by smoothing the amount of fix costs over a larger mass, represent a considerable cost advantage that can redirect financing choices.

Daskalakis and Thanou (2010) by examining a number of hypotheses relating to the capital structure decision in relation to the firms' size, i.e., distinguishing among micro, small and medium firms they found size of the firm being positively related to leverage. And, concluded that larger firms are associated with higher debt, as found by other studies and supported by theoretical considerations.

2.3.2. TANGIBILITY

Agency theory suggests that equity-holders of leveraged firms have an incentive to invest in risky investment to expropriate wealth from the firm's debt-holders. If debt can be collateralized, the borrowers are restricted to use the funds for a specified project. Since no such guarantee can be used for projects that cannot be collateralized, creditors may require more favorable terms. This reveals a positive relation between debt ratios and the capacity of firms to collateralize their debt (Jensen and Meckling, 1976).

Titman and Wessels, (1988) referring to the trade-off theory suggest that the extent to which the firm's assets are tangible results in the firm having a greater liquidation value. This reduces the degree of financial loss incurred by financiers if the firm defaults. Consequently, firms with assets that have greater liquidation value tend to have relatively easier access to finance with lower costs of financing.

Under the pecking order theory, Harris and Raviv (1991) argue that the low information asymmetry associated with tangible assets makes equity financing less costly, resulting in a negative relation between leverage and tangibility.

According to Nguyen and Ramachandran (2006), firms with high collateralizable tangible assets tend to have easier access to debt by pledging those assets as collateral. Shah and Khan (2007) suggest that firms with large amount of fixed assets tend to incur debt at relatively lower rate of interest by providing these assets to creditors as an assurance. Thus, firms with higher percentage of fixed asset tend to borrow more as compared to firms whose cost of borrowing is higher because of having less fixed assets. Bradley *et al.* (1984) also suggest that firms that invest a lot in tangible assets have higher financial leverage since they borrow at lower interest rates if their debt is secured with such assets.

Most of empirical studies suggest a positive relationship consistent with theoretical argument between tangibility and leverage of the firms, i.e., support the trade-off and agency theories (Bradley *et al.*, 1984; Esperança *et al.*, 2003; Hovakimian *et al.*, 2004; Shah and Khan, 2007; Salawu and Agboola, 2008; Ramlall, 2009; Teker *et al.*, 2009; and Smith, 2010). In contrary, Buferna *et al.* (2005) and Nguyen and Ramachandran (2006)

suggest a negative relationship between tangibility and leverage, i.e., support the pecking order theory.

Beyene (2005) by studying the determinants of capital structure decision of Medium Enterprises in Ethiopia based on a cross sectional data over 1991 to 1996 EC, found a negative relationship between tangibility and leverage. Thus, he suggests that as Ethiopian Medium firms kept more and more fixed assets, they become attractive to debt. Daskalakis and Thanou (2010) in examining a number of hypotheses relating to the capital structure decision in relation to the firms' size, i.e., distinguishing among micro, small and medium firms they found tangibility being negatively correlated with leverage. This result leads them to the conclusion that firms view tangible assets as a stable source of return which provides more internally generated funds and leads firms to use less debt, following the pecking order theory.

Kashefi-Pour and Lasfer (2010), in contrast, found that consistent with the trade-off theory, strong evidence concerning the significant positive relationship between debt ratio and tangibility across firms' sizes listed in the U.K Main and AIM markets.

Hutchinson (2003), Cassar and Holmes (2003), Hall *et al.* (2004), Yazdanfar (n.d.) and Bas *et al.* (2009) specifically suggest a positive relationship between tangibility and long-term debt, and a negative relationship between tangibility and short-term debt. The conclusion of their finding is that firms with a large proportion of fixed assets tend to maintain a higher long-debt than other firms. Esperança *et al.* (2003), however, suggest a positive relationship between tangibility and both long-term and short-term debt.

Marsh (1982) agrees that firms with few fixed assets are more likely to issue equity, thus, positive relationship between tangibility and leverage. Munyo (n.d.) also found

tangibility of assets being positively related to long-term debt, thus, suggests that firms with a bigger proportion of tangible assets are more likely to be finance through debt.

2.3.3. PROFITABILITY

The pecking order theory explains the relationship between firm profitability and capital structure. It suggests that firms prefer internal finance first, and then, if external financing is required, they issue the safest security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last resort (Myers 1984). According to this theory, firms that are profitable and therefore generate high earnings use less debt capital than those generate low earnings, thus it suggests an inverse relationship between profitability and leverage.

Consistent to this theory, Titman and Wessels (1988) suggest that firms with high profit tend to maintain relatively lower debt ratios since they generate funds from internal sources (retained earnings).

In contrast, trade-off theory predicts that profitable firms have more debt since bankruptcy costs are lower and interest tax shields are more valuable for profitable firms (Frank and Goyal 2008). Profitable firms are more attractive to financial institutions as lending prospects; therefore they can always take on more debt capital (Ooi 1999). This theory suggests a positive relationship between profitability and debt.

Empirical studies typically seem to be consistent with the pecking order theory, i.e., several studies found a negative relationship between profitability and leverage (Cassar and Holmes, 2003; Esperança *et al.*, 2003; Hutchinson, 2003; Hall *et al.*, 2004; Frielinghaus *et al.*, 2005; Buferna *et al.*, 2005; Nguyen and Ramachandran, 2006; Saeed,

2007; Shah and Khan, 2007; Morri and Cristanziani, 2009; Bas *et al.*, 2009; Ramlall, 2009; Smith, 2010; Yazdanfar, n.d.; and Munyo, n.d.). In contrast, the findings of Salawu and Agboola (2008), Teker *et al.* (2009), and Kashefi-Pour and Lasfer (2010) are consistent with trade-off theory suggesting a positive association between Profitability and leverage.

Daskalakis and Thanou (2010) by examining a number of hypotheses relating to the capital structure decision in relation to the firms' size, i.e., by distinguishing among micro, small and medium firms they found profitability being negatively related to leverage. Having this result, they concluded that firms that generate relatively high internal funds tend to avoid debt financing. Beyene (2005) in examining the determinants of capital structure decision in Medium Enterprises in Ethiopia using a cross sectional data over 1991 to 1996 EC, found a strong negative relationship between profitability and leverage because of the accessibility of internal funds.

Abor (2005) evaluated the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five-year period (1998-2002). His results revealed a positive association between short-term debt and profitability, suggesting that profitable firms use more short-term debt to finance their operation. His results also revealed a negative association between long-term debt and profitability. Regarding the relationship between total debt and profitability, his regression results revealed a positive association between total debt and profitability. This suggests that profitable firms depend more on debt as their main financing option.

2.3.4. EARNINGS VOLATILITY

Tradeoff theory suggests that earnings volatility is a proxy for the probability of financial distress and firms are expected to pay risk premium to outside fund providers. Thus, it predicts an inverse relationship between earnings volatility and leverage. The pecking order theory also predicts the same and it suggests that to reduce costs of capital caused by earnings volatility, firms tend to use internally generated funds first and then outside funds.

According to Cassar and Holmes (2003), if firms are likely to be exposed to agency and bankruptcy costs, they tend to reduce the level of debt within their capital structure. One factor that impacts such exposure is firms operating risk, i.e., the more volatile firms earnings streams, the greater the chance of the firms defaulting and being exposed to such costs. Consequently, these firms with relatively higher operating risk will have incentives to have lower leverage than firms with more stable earnings.

Shah and Khan (2007) also suggest that the magnitude of earnings volatility is a sign of expected bankruptcy. Firms with higher volatility are considered risky because they can go bankrupt. The cost of debt for such firms should be more and thus these firms tend to employ low level of debt within their capital structure.

Kim and Sorensen (1986) state that it is sometimes argued that firms with high degrees of business risk have less capacity to sustain high financial risk, and thus will use less debt.

In contrast, Myers (1977) states that “We have an interesting, perhaps surprising, conclusion. The impact of risky debt on the market value of the firm is less for firms holding investment options on assets that are risky relative to the firms’ present assets. In this sense we may observe risky firms borrowing more than safe ones”. In addition,

Michaelas *et al.* (1999) pointed out that bankruptcy costs are not significant enough to ensure a negative relationship between risk and leverage. Thus, suggest positive relationship between risk and leverage.

Empirical studies seem to be contradictory. Some studies have indicated an inverse relationship between risk and leverage, i.e., support both the tradeoff and the pecking order theories (Bradley *et al.*, 1984; Titman and Wessels, 1988; Cassar and Holmes 2003). In contrary, Kim and Sorensen (1986), Jordan *et al.* (1998), Michaelas *et al.* (1999) and Esperança *et al.* (2003) suggest a positive relationship.

Abor (2008), by comparing the capital structures of publicly quoted firms, large unquoted firms, and small and medium enterprises (SMEs) in Ghana, found an inverse relationship between risk and long-term debt ratio in all the sample groups, implying that firms with high risk levels exhibit low long-term debt ratios. And he suggests that such firms avoid accommodating more financial risk by employing less long-term debt. For SMEs and the quoted firms' samples, however, his results indicate a positive relationship between risk and short-term debt ratio. And he suggests that higher risk may force firms to demand short-term debt.

2.3.5. GROWTH

The pecking order theory suggests that firms with higher growth opportunities need external finance to cover their investments when they do not generate enough internal funds (Myers and Majluf, 1984). Moreover, this theory predicts that firms with more investments should accumulate more debt over time (Frank and Goyal, 2008). Thus, according to this theory, growth and leverage are expected to be positively related.

In contrast, both the trade-off and agency theories predict a negative relation between leverage and growth. The former suggests growth firms lose more of their value when they go into distress, and the latter suggests as growth options increase, asset substitution problems also become more severe. In high growth firms, it is easier for equity-holders to increase project risk and it is harder for debt-holders to detect such changes. Thus, debt is more costly for firms with high growth opportunities.

Myers (1977), referring to agency theory, holds the view that firms with growth opportunities will have a smaller proportion of debt in their capital structure. This is because conflicts of interest between debt and equity holders are especially serious for assets that give the firm the option to undertake such growth opportunities in the future. The benefits of this growth, if realized, will not be enjoyed by lenders who will only recover the amount of their loans, resulting in a clear agency problem. This will be reflected in increased costs of debt that leads firms to maintain low level of debt in their capital structure. Titman and Wessels (1988) also suggest that equity-controlled firms have a tendency to invest borrowed funds in risky investments to transfer wealth from the firm's debt-holders to equity-holders. The costs associated with this agency problem are likely to be higher for firms in growing industries, which have more flexibility in their choice of future investments. In addition, growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income. These arguments suggest a negative relationship between growth and leverage.

Empirical evidence seems inconclusive. Most of studies found negative relationships between growth and leverage, i.e., support the trade-off and agency theories (Buferna *et al.*, 2005; Eriotis *et al.*, 2007; Shah and Khan, 2007; Kila and Mahmood, 2008; Salawu

and Agboola, 2008; Morri and Cristanziani, 2009; Ramlall, 2009; and Yazdanfar, n.d.). In contrast, Michaelas *et al.* (1999), Hutchinson (2003), Cassar and Holmes (2003) Hall *et al.* (2004), Nguyen and Ramachandran (2006), Saeed (2007) and Smith (2010) suggest positive relationship between growth and leverage, i.e., support the pecking order theory. Bas *et al.* (2009) found growth being positively related to long-term debt ratio, while negatively related to short-term debt ratio.

Hall *et al.* (2004) suggest that growth tends to place a greater demand on internally generated funds and push the firm into borrowing. Marsh (1982) also suggests that firms with high growth tend to maintain relatively higher debt ratios.

Daskalakis and Thanou (2010) in examining a number of hypotheses relating to the capital structure decision in relation to the firms' size, i.e., distinguishing among micro, small and medium firms they found growth being positively related to debt for all groups of firms. The result leads them to the conclusion that high-growth firms are most likely to exhaust internal funds and use debt as a good alternative in their search for additional capital, as raising equity may be difficult and time-consuming for smaller firms.

Beyene (2005) in examining the determinants of capital structure decision of medium enterprises in Ethiopia based on a cross sectional data over 1991 to 1996 EC, found a negative relationship between growth and leverage. Thus, suggests that as Ethiopian Medium Enterprises desire to expand their operation increases, their desire to use debt declines. Kashefi-Pour and Lasfer (2010) with respect to the agency conflict between share-holders and debt-holders, also found a negative relationship between leverage and growth opportunities in large companies, whereas, positive relationship in small companies.

2.3.6. AGE

It is believed that as firms continue longer in business, they establish themselves as an ongoing business, thus increase their capacity to access more debt. Esperanca *et al.* (2003), referring to agency theory suggest that financiers use reputation of the firms as a measure of their creditworthiness. Reputation refers to the good name firms have built up over the years (historical) and which is understood by the market, which has observed their ability to meet their obligations in a timely manner. Managers concerned with a firms' reputation tend to avoid riskier investments in favor of safer investments, even when equity-holders do not approve the safer investment, thus reducing debt agency cost. Johnson (1997) also argues that the reputational capital of older firms is sufficient to ensure they will avoid actions harmful to lenders even though they are unmonitored, and thus can borrow in public debt markets. These arguments indicate a positive association between age of the firm and leverage.

In contrast, referring to pecking order theory, Hutchinson (2003) suggests that older firms are able to accumulate funds and need less to borrow either long-term or short-term. In other words, a new firm will not have had time to retain funds and may be forced to borrow. Consequently age is likely to be negatively related to both short-term and long-term debt.

Hall *et al.* (2004) found age being positively related to long-term debt but negatively related to short-term debt, i.e., support agency theory in relation to long-term debt, and pecking order theory in relation to short-term debt. Esperança *et al.* (2003), however, found age being negatively related to both long-term and short-term debt. Hutchinson (2003) also found age being negatively related to short-term debt, but insignificant

relation with long-term debt. Both the findings of Esperança *et al.* (2003) and Hutchinson (2003) support the pecking order theory.

2.4. CONCLUSION

Empirical studies revolving around the relationship between the capital structure determinants considered in this study (size, tangibility, profitability, earning volatility, growth and age) and leverage seem inconclusive, i.e., some studies found positive association, while the others found negative association. For instance, concerning size, Hovakimian *et al.* (2004) found a positive relation between size and leverage, while Ramlall (2009) found a negative relation; regarding tangibility, Esperanca (2003) found a positive relationship, while Nguyen and Ramachandran (2006) found a negative relationship; concerning profitability, Frank and Goyal (2008) found a positive relationship, while Cassar and Holmes (2003) found a negative relationship; regarding earnings volatility, Bradley et al. (1984) found a negative relationship, while Kim and Sorensen (1986) found a positive relationship; concerning growth, Hall *et al.* (2004) found a positive relationship, while Titman and Wessels (1988) found a negative relationship; regarding age, Esperanca (2003) found a positive relationship, while Hutchinson (2003) found a negative relationship.

Most of the empirical studies reviewed in the area of capital structure determinants revolve around large firms. And, they tend to support the theories developed to explain capital structure of firms. The little evidence obtained through empirical investigation of small firms in developed nation (such as Michaelas *et al.*, 1999; and Cassar and Holmes, 2003) suggests that most of the theories of capital structure appear to be valid for the

small firms. The validity of these theories to small firms in Ethiopia (one of the developing nations), however, has received a very limited attention. This fact reveals the need for studies to update the existing evidence.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. SCOPE AND LIMITATION OF THE STUDY

The scope of the study is limited to investigating the firm specific determinants of capital structure of SSMCs. In addition, it is limited to the SSMCs located in Addis Ababa city. Addis Ababa city is chosen as a population sample area because it is acknowledged that most SSMCs are located in it.

Inadequacy of SSMCs' audited financial data has led the researcher to limit the number of cross-sections to 13. Almost all of SSMCs maintain only two financial statements: balance sheet and income statement. In addition, they do not maintain separate account for short-term and long-term rather they report their debt as total debt. There are also no figures that show dividend account at all, and most of them do not have interest expense account in their financial statements. All these facts led the researcher to minimize the potential firm specific determinants of capital structure to six.

3.2. HYPOTHESES

Empirical studies on capital structure have identified various firm level characteristics that influence firms' capital structure. This section attempts to apply some of these characteristics in the small firms, and develops testable hypotheses that examine the

determinants of capital structure of Ethiopian SSMCs. The firm specific variables considered in this study are size, tangibility, profitability, earning volatility, growth and age.

3.2.1. SIZE

Trade-off theory states that large firms will have more debt since they are more diversified and have lower default risk; as a result, they tend to have higher leverage (Frank and Goyal, 2007).

According to pecking order theory by Myers (1984) and Myers and Majluf (1984), in imperfect market firms rely on less information-sensitive securities (such as internal funds and riskless debts) when insiders and outsiders suffer from asymmetric information. Thus, firms tend to issue debt than equity. Based on these theories, the researcher hypothesizes that:

Hypothesis 1: *There is a positive relationship between size of the firm and debt ratio.*

3.2.2. TANGIBILITY

Titman and Wessels (1988), referring to trade-off theory, suggest that the extent to which the firms' assets are tangible results in the firm having a greater liquidation value. This reduces the degree of financial loss that financiers may suffer if the firm defaults. Consequently, firms with assets that have greater liquidation value tend to have relatively easier access to debt financing with lower costs by pledging their fixed assets as collateral.

Agency theory suggests that equity-holders of leveraged firms have an incentive to invest in risky investment to expropriate wealth from the firm's debt-holders. However, if the

debt can be collateralized, the borrower is restricted to use the funds for a specified project. This indicates positive relation between leverage and the capacity of firms to collateralize their debt (Myers, 1977). Based on these theories, the researcher hypothesizes that:

Hypothesis 2: *There is a positive relationship between tangibility of the firm's assets and debt ratio.*

3.2.3. PROFITABILITY

Pecking order theory suggests that firms prefer internal finance first, and then, if external financing is required, they issue the safest security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last option (Myers 1984). Thus, according to this theory, firms that are profitable and therefore generate high earnings are expected to use less debt capital than those generate low earnings. Consistent with this theory, Titman and Wessels (1988) also suggest that firms with high profit tend to maintain relatively lower debt ratios since they generate funds from internal sources (retained earnings). Benchmarking this theory, the researcher hypothesizes that:

Hypothesis 3: *There is a negative relationship between profitability of the firm and debt ratio.*

3.2.4. EARNINGS VOLATILITY

Earnings volatility is considered to be either the inherent business risk in the operations of a firms or a result of inefficient management practices. In either case earnings volatility is proxy for the probability of financial distress and the firm will have to pay

risk premium to outside fund providers. To reduce the costs of capital, firms will first use internally generated funds and then outside funds. This suggests that earnings volatility is negatively related with leverage. This is the combined prediction of trade-off theory and pecking order theory. Following the prediction of these theories, the researcher hypothesizes that:

Hypothesis 5: *There is a negative relationship between earnings volatility of the firm and debt ratio.*

3.2.5. GROWTH

According to agency theory, equity-controlled firms have a tendency to invest in risky investments to extract wealth from the firm's debt-holders. The cost associated with this agency problem is likely to be higher for firms in growing industries, which have more flexibility in their choice of future investments. In addition, growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income (Titman and Wessels, 1988). According to Daskalakis and Thanou (2010), high-growth firms are most likely to exhaust internal funds and use debt as a good alternative in their search for additional capital, as raising equity may be difficult and time-consuming for smaller firms. Basing on these arguments, the researcher hypothesizes that:

Hypothesis 4: *There is a negative relationship between growth of the firm and debt ratio.*

3.2.6. AGE

According to agency theory of Jensen and Meckling (1976), financiers use reputation of the firms as a measure of their creditworthiness. Managers concerned with a firm's

reputation tend to avoid riskier investments in favor of safer investments, even when equity-holders do not approve the safer investment, thus reducing debt agency cost. Given this, the firm's reputation become a valuable asset in the management of relations between equity-holders and debt-holders. Thus, benchmarking this theory, the researcher hypothesizes that:

Hypothesis 5: There is a positive relationship between age of the firm and debt ratio.

3.3. RESEARCH APPROACH

A study employs quantitative research approach. A quantitative approach is one in which the investigator primarily uses postpositive claims for developing knowledge, i.e., cause and effect relationship between known variables of interest (Cresswell 2003). In line with this, quantitative research tests the theoretically established relationship between variables using sample data with the intention of statistically generalizing for the population under investigation.

Cresswell (2003) further noted that a quantitative research approach employs strategies of inquiry such as experiments and surveys, and collect data on predetermined instruments that yield statistics data. Quantitative research employs a review of the existing literature to deductively develop theories and hypotheses to be tested i.e., in this approach, the research problem is translated to specific variables and hypotheses (Yesegat 2009).

Specifically, this study employs a survey design administered through structured record review. It is employed in order to generalize from a sample to population and thereby to infer about the population. Survey method is preferred because of its high-speed in data collection and its being economical. A structured record review was made to collect a

panel data, which include 13 SSMCs year observations of five years over the period 1998 – 2002 EC. A panel data comprises both time series and cross-sectional elements, i.e., it embodies information across both time and space. The advantage of using the panel data set is that, because of the several data points, collinearity among the explanatory variables is reduced, thus improving the efficiency of econometric estimates and it takes into account a greater degree of the heterogeneity that characterizes firms (Daskalakis and Psillaki (2008).

Unstructured interview has also been made with the concerned bodies in order to get overall information about SSMCs operating in Addis Ababa city.

3.4. SAMPLING DESIGN

How well a sample represents a population depends on the sample frame, the sample size and the specific techniques of selecting potential respondents (Yesegat 2009).

In respect of sample frame, the importance of sampling frame during the data collection process is vital. In a study with the intent of statistically generalizing about a population, the sample frame from which potential respondents are to be chosen ought to be representative of the population.

According to Churchill (1992) cited in Nguyen and Ramachandran (2006), the perfect correspondence between the sampling frame and the target population is rare. Therefore, the sampling frame may not correspond perfectly to the population, but it does represent the target population.

In this study, a list of SSMCs in Addis Ababa city, available from AACTICODCP has served as a sampling frame because it is acknowledged that this city embraces large number of SSMCs.

The other consideration in sample design is the sample size. The choice of a sample size is relevant to the reliability of a study.

For the choice of the desired sample size, Fowler (1984) noted that although there is no a single right way for the determination of sample size, a sample of 150 people will describe a population of 15,000 or 15 million with virtually the same degree of accuracy, assuming all other aspects of the sample design and sampling procedures are the same. Moreover, Sarantakos (2005) cited in Yesegat (2009) states that large samples do not always guarantee a high degree of precision, validity and success in general. In this light and taking the available audited financial data into account, the researcher selected 13 SSMCs operating in Addis Ababa city.

Regarding the specific techniques used to select potential respondents, to allow all target population groups to be represented in the final sample, the population was stratified into three strata: textile and garment manufacturing, wood and metal manufacturing, and food processing. The main reason why the researcher focused on these manufacturing sub-sectors is that they have got better emphasis of the government due to their large market size for their product, absorption of large number of unemployment and short period of return on investment. This better emphasis has been facilitating timely auditing service for them, thus it is easy to access their audited financial statement.

On the merits of stratified sampling, Sarantakos (2005) cited in Yesegat (2009) noted that such samples are employed when there is a need to represent all groups of the target population in the sample, and when the researcher has a special interest in certain strata. In this sense, the method is very economical, and offers a high degree of representativeness.

Then, a purposive sampling technique was made to draw a sample of 13 SSMCs, i.e., 6 from textile and garment manufacturing, and 4 from wood and metal manufacturing, and 3 from food processing. Purposive sampling technique was preferred considering the availability and quality of audited financial data for a time period of five years (1998 – 2002 EC). On the merits of purposeful sampling, Creswell (2003) noted that it helps to select participants or sites that best help the researcher to understand the issues under study.

The sample includes both financially sound co-operatives and co-operatives in financial distress to avoid survival bias, as the probability of bankruptcy may have a significant impact on a co-operatives' financing decisions. The data set used in the analysis was constructed by merging cooperatives' balance sheet and income statement data obtained from both the cooperatives organizing and development core processes of five sub-cities (Arada, Addis Ketema, Bole, Gulele and Yeka) and the co-operatives themselves.

3.5. VARIABLES IN THE STUDY

The study consists of seven variables, i.e., only one dependent variable (leverage) and six independent variables (size, tangibility, profitability, earning volatility, growth and age). In accordance with the argument of Myers (1984), all these variables are measured based

on book value. The theoretical justification about preference of book value in Mayer (1984) is that book values are related to the values of assets already in place which are used to support debt. While market value of firm depends on present value of growth opportunities, that are not collateralizable and supports less debt. Hence in debt contracts, firms likely to use book value. So the researcher measures debt in terms of book values rather than market values.

3.5.1. DEPENDENT VARIABLE

3.5.1.1. LEVERAGE

The total debt ratio is considered as a proxy for leverage because it is impossible to split total debt of the SSMCs into long-term and short-term. The leverage ratio is computed by dividing total debt to the total assets of the firm. In equation, it can be expressed as below:

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

The total debt ratio is employed to explain the amount of leverage being used by a firm. A high percentage reveals that the firm is highly leveraged while low percentage represents the inverse. In general, the higher the ratio, the riskier the firm is to default on payment of debt, thus tends to face financial distress and eventually bankruptcy.

3.5.2. INDEPENDENT VARIABLES

Both theoretical and empirical capital structure studies have generated many results that attempt to explain the determinants of capital structure. As a result of these studies, some

broad categories of capital structure determinants have emerged. Titman and Wessels (1988), however, point out that the choice of suitable explanatory variables is potentially contentious.

This study utilizes six explanatory variables as a proxy for the determinants of capital structure (which have discussed in the section 2.3): size, tangibility, profitability, earning volatility, growth, and age. The researcher's intention with these variables is investigating the validity of dominant capital structure theories for the capital structure choice in Ethiopian SSMCs. Inadequacy of SSMCs' financial data coupled with their wide acceptance in the capital structure researches led the researcher to use these variables as determining factors in this study. For instance, Michaelas et al., 1999; Esperança et al., and 2003; Abor, 2008 have included these six determinants in their study.

3.5.2.1. SIZE

Total assets appear to be a good proxy for firm size. Furthermore, because there is large variation on the total assets of firms, a direct comparison may cause heteroscedasticity (the violation of homoscedasticity assumption that the variance of the errors is constant) (Brooks 2008). Thus, to homogenize the measure of size, natural logarithm of total assets has been used. Several previous studies have used similar measures (for instance, Michaelas *et al.* 1999; Cassar and Holmes 2003; and Buferna 2005).

3.5.2.2. TANGIBILITY

Tangibility is measured as the ratio of tangible fixed assets to total assets.

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

Several previous studies have used similar measures (for instance, Buferna 2005; and Frank and Goyal 2008).

3.5.2.3. PROFITABILITY

Return on Assets (ROA) is the most commonly used measure of the performance of the firm. This measures the amount of profit generated by the assets employed by dividing the profit before tax by the total assets. Instead of using profit before interest and tax (EBIT), profit before tax (EBT) is utilized to calculate ROA, the measure of profitability, because interest expenses are not presented in most of Ethiopians SSMCs' income statements.

$$\text{ROA} = \frac{\text{Earnings before Taxes (EBT)}}{\text{Total Assets}}$$

Several previous studies have used similar measures (for instance, Titman and Wessels 1988; Buferna 2005; and Yazdanfar n.d.).

3.5.2.4. EARNING VOLATILITY

Earnings volatility is measured by the standard deviation of earnings before tax (EBT). Several previous studies have used similar measures (for instance, Jordan *et al.* 1998; and Nguyen and Ramachandran 2006).

3.5.2.5. GROWTH

Growth of a firm is measured by the percentage change in total assets.

$$\text{Percentage Change in Total Assets} = \frac{\text{Total Assets}_t - \text{Total Assets}_{t-1}}{\text{Total Assets}_{t-1}}$$

Several previous studies have used similar measures (for instance, Titman and Wessels 1988; and Buferna 2005).

3.5.2.6. AGE

Age is measured by subtracting the co-operatives' year of establishment from each year under study. Several previous studies have used similar measures (for instance, Johnson 1997; Hall *et al.* 2004; and Yazdanfar n.d.).

3.6. DATA ANALYSIS

As identified in section 3.4.2 above, the study involves more than one explanatory variable, i.e., the study examines the effect of the explanatory variables on the explained variable. Thus, the multivariate regression equation was used to analyze the data obtained through a structured records review using E-Views (Econometric Views) statistical package.

The functional form of the model is as follows:

$$\text{LEV} = \alpha + \beta_1 (\text{SZ}) + \beta_2 (\text{TG}) - \beta_3 (\text{PR}) - \beta_4 (\text{EV}) - \beta_5 (\text{GR}) + \beta_6 (\text{AG}) + u$$

Where α = constant term

β s = regression parameters

u = an error term

With the above multivariate regression equation, the impact of each explanatory variable on leverage was assessed in terms of the statistical significance of the coefficients ' β s'. Using a 1%, 5%, and 10% level of significance, an estimated coefficient was considered to be statistically significant: at 1%, if $p\text{-value} \leq 0.01$, at 5%, if $p\text{-value} \leq 0.05$ and at 10%, if $p\text{-value} \leq 0.1$. It is conventional to use a 5% significance level, but 10% and 1% are also commonly used (Brooks 2008). The signs in the model reveal the expected relationship between the dependent variable, and independent variables.

CHAPTER FOUR

4. RESULTS AND DISCUSSIONS

4.1. DESCRIPTIVE STATISTICS

Table 1 provides a summary of the descriptive statistics of the dependent and independent variables. The mean of debt ratio of the sample firms is 0.148046. It reveals that debt represents nearly 14% of the capital of SSMCs. In other word, SSMCs maintain less debt in their capital structure. The reason for this low leverage ratio could be the fear SSMCs have towards debt, i.e., they are doubtful of their ability to pay the principal plus interest when debt matures.

The mean of the natural logarithm of total assets over the period 1998 to 2002 is 11.585 with a standard deviation of 0.533. This reveals that the average size of SSMCs was nearly birr 107,516 in terms of assets, ranging from birr 335,706 maximum value to birr 29,085 minimum value. The average fixed assets accounts for nearly 25% of total assets value. It reveals that SSMCs maintain small amount of tangible assets. This could be barrier for them to get loan, since financiers require guarantee for their investment.

Table 1: Descriptive Statistics of the Variables

	LEV	SZ	TG	PR	EV	GR	AG
Mean	0.148	11.585	0.251	0.377	18294.45	0.34	4.462
Maximum	0.545	12.724	0.748	1.688	42759.14	1.6583	13.00
Minimum	0.000	10.278	0.000	-0.575	1368.810	-0.544	1.000
Std. Dev.	0.156	0.534	0.229	0.399	11368.37	0.456	2.488

Source: Eviews output

4.2. CORRELATIONS BETWEEN THE VARIABLES

Table 2 below depicts a correlation matrix of the variables. It shows the relationship between the dependent variable and independent variables as well as the relationship among independent variables. The table reveals that size and tangibility have a statistically significant positive correlation with leverage. This implies that large-sized firms and firms with high levels of tangible assets tend to use more debt. In contrast, profitability, earning volatility, growth and, age have a statistically insignificant inverse relationship with leverage. This implies that profitable, risky, growing, and old-aged firms use less debt. The correlation coefficients for size, tangibility, profitability, earning volatility, and growth variables confirm the researcher's hypotheses, whereas a correlation coefficient for age variable contrasts with the hypothesis.

When we come to the correlation among explanatory variables, the result shows that size, earnings volatility and growth are positively related to profitability, while, tangibility and

age have a negative relationship with it. This implies that large-sized, risky, and growing firms tend to have higher profitability, whereas, old-aged firms and firms with high level of tangible assets tend to have less profitability. Table 2 also reveals a little evidence for multicollinearity (a problem that occurs when the explanatory variables are very highly correlated with each other). The highest correlation (nearly 45 %) observed between tangibility variable and earnings volatility variable is not even significant enough to cause multicollinearity. According to Brooks (2008), in any practical context, the correlation between explanatory variables will be non-zero, i.e., a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision.

Table 2: Correlation Matrix of Variables

	LEV	SZ	TG	PR	EV	GR	AG
LEV	1.00	0.518	0.239	-0.035	-0.065	-0.098	-0.039
SZ	0.518	1.00	0.208	0.103	-0.073	-0.094	0.357
TG	0.239	0.208	1.00	-0.367	-0.452	-0.237	0.386
PR	-0.034	0.103	-0.367	1.00	0.408	0.106	-0.083
EV	-0.064	-0.073	-0.452	0.408	1.00	0.067	-0.317
GR	-0.098	-0.094	-0.237	0.106	0.067	1.00	-0.339
AG	-0.039	0.357	0.386	-0.083	-0.316	-0.339	1.00

Source: Eviews output

4.3. STEPWISE REGRESSION

The stepwise regression was run to choose variables that are jointly the most important explanatory variables from a set of variables. Table 3 shows that size, age, tangibility and growth variables have all been included as the most important explanatory variables, while the profitability and earnings volatility variables have been omitted.

Table 3: The Most Important Explanatory Variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.791	0.357	-5.014	0.000
SZ	0.174	0.032	5.499	0.000
AG	-0.024	0.007	-3.209	0.002
TG	0.161	0.075	2.143	0.036
GR	-0.039	0.037	-1.071	0.288
R-squared	0.392	Prob (F-statistic)		0.000
Adjusted R-squared	0.351	Durbin-Watson stat		1.314
F-statistic	9.664			

Source: Eviews output

4.4. TESTS FOR THE FIVE ASSUMPTIONS

4.4.1. ASSUMPTION ONE: THE ERRORS HAVE ZERO MEAN ($E(\varepsilon) = 0$)

According to Brooks (2008), if a constant term is included in the regression equation, this assumption will never be violated. Thus, since the regression model used in this study includes a constant term, this assumption is cannot be violated.

4.4.2. ASSUMPTION TWO: HOMOSCEDASTICITY (VARIANCE OF THE ERRORS IS CONSTANT ($\text{var}(\varepsilon) = \sigma^2 < \infty$))

If the errors do not have a constant variance, it is said that assumption of homoscedasticity has been violated. This violation is termed as heteroscedasticity.

Table 4: Heteroscedasticity Test: White

F-statistic	4.26	Prob. F(6,58)	0.001
Obs*R-squared	19.883	Prob. Chi-Square(6)	0.003
Scaled explained SS	12.699	Prob. Chi-Square(6)	0.048

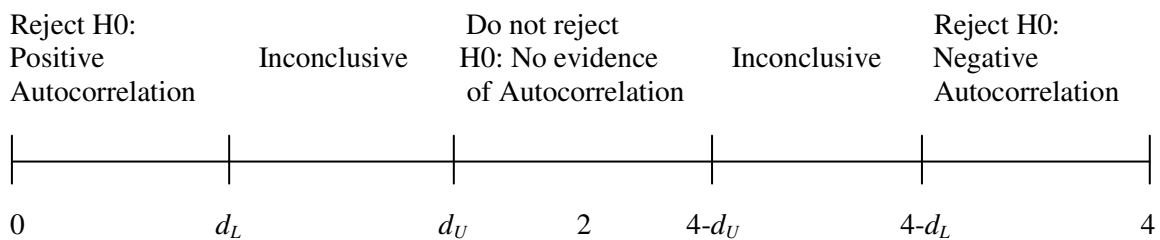
Source: Eviews output

The F-, χ^2 , and Scaled explained SS versions of the test statistic give the same conclusion that reveals the presence of heteroscedasticity, since the p-values are considerably less than 0.05. Wooldridge (2002) argues that heteroscedasticity does not affect the consistency of the estimator, and it is only a minor trouble for inference. Even in the presence of heteroscedasticity, more efficient estimation is possible.

4.4.3. ASSUMPTION THREE: COVARIANCE BETWEEN THE ERROR TERMS OVER TIME IS ZERO ($\text{Cov}(\varepsilon_i, \varepsilon_j) = 0$ for $i \neq j$)

This is an assumption that the errors are linearly independent of one another (uncorrelated with one another). If the errors are correlated with one another, it would be stated that they are autocorrelated. To test this assumption, the DW stat value in the main regression table should be considered.

Figure 1: Rejection and Non-Rejection Regions for DW Test



According to Brooks (2008), DW has 2 critical values: an upper critical value (d_U) and a lower critical value (d_L), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 1.

So, the null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value; the null hypothesis is rejected and the

existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value; the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper and 4 minus the upper limits; the null hypothesis is neither rejected nor not rejected if DW is between the lower and the upper limits, and between 4 minus the upper and 4 minus the lower limits.

The DW test statistic value in the multivariate regression result table is 1.30. There are 65 yearly observations in the regression. The relevant critical values for the test are $d_L = 1.28$, $d_U = 1.61$, so $4 - d_U = 2.39$ and $4 - d_L = 2.72$. The test statistic is clearly between the lower and the upper critical values and thus the null hypothesis of no autocorrelation is neither rejected nor not rejected, i.e., it is inconclusive.

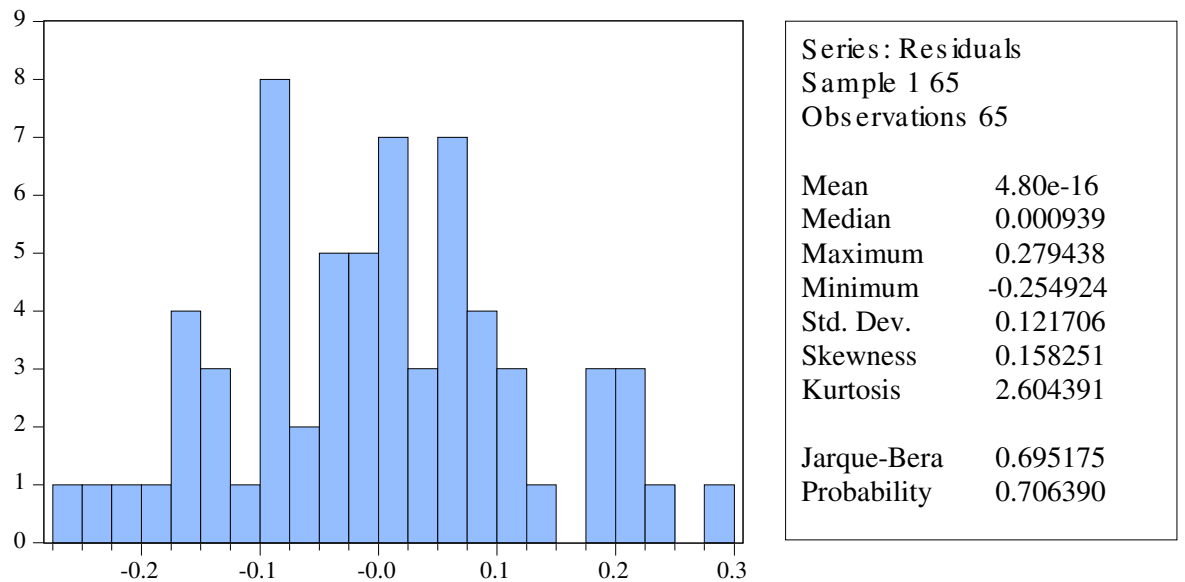
4.4.4. ASSUMPTION FOUR: COVARIANCE BETWEEN THE ERROR TERMS AND THE CORRESPONDING X VARIATE IS ZERO ($\text{cov}(\varepsilon_t, x_t) = 0$)

As long as assumption one holds, assumption four can be equivalently written $E(x_t \varepsilon_t) = 0$. Both formulations imply that the regressor is orthogonal (unrelated) to the error terms (Brooks, 2008).

4.4.5. ASSUMPTION FIVE: NORMALITY (ERRORS ARE NORMALLY DISTRIBUTED ($\varepsilon_t \sim N(0, \sigma^2)$))

According to Brooks (2008), if the residuals are normally distributed, the histogram should be bell-shaped and the Bera--Jarque statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05 to not reject the null of normality at the 5% level.

Diagram 1: Normality Test Result



The above diagram witnesses that normality assumption holds, i.e., it implies that the inferences the researcher makes about the population parameters from the sample parameters tend to be valid.

4.5. REGRESSION MODEL EVALUATION

Regression model evaluation can be made by testing for significance to establish if the relationship between the dependent and the explanatory variables is linear.

4.5.1. TEST FOR SIGNIFICANCE

The test for significance can be done by examining the F-Statistic value and the p -value of zero attached to it that obtained from the regression result. The regression F-statistic

tests the null hypothesis that all of the coefficients except the intercept coefficient are zero. This test is sometimes called a test for ‘junk regressions’, since if this null hypothesis cannot be rejected, it would imply that none of the independent variables in the model was able to explain variations in the dependent variable (Brooks, 2008). As per the regression result in table 6 below, the regression F-statistic takes a value of 6.268 while the p -value attached to it takes a value of zero; and these figures reveal that the null hypothesis should be rejected. Thus, a linear relationship between leverage and the explanatory variables can be accepted, i.e., the independent variables in the model are capable of explaining variations in the dependent variable.

4.5.2. ROBUSTNESS TEST

To test the robustness of the model (to test for linearity between the dependent and independent variables) the Ramsey RESET test has been used.

Table 5: Ramsey RESET Test:

F-statistic	5.404	Prob. F(1,57)	0.024
Log likelihood ratio	5.887	Prob. Chi-Square(1)	0.015

Source: Eviews output

Both F - and χ^2 versions of the test are found being significant at 5% significance level, thus since there is no apparent non-linearity in the regression equation, it can be concluded that the linear model for leverage is appropriate.

4.6. DISCUSSION OF THE REGRESSION RESULTS

Table 6: Multivariate Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.799	0.367	-4.901	0.00
SZ	0.176	0.033	5.381	0.00
TG	0.146	0.086	1.701	0.094
PR	-0.01	0.046	-0.224	0.823
EV	0.00	0.00	-0.223	0.824
GR	-0.04	0.038	-1.062	0.293
AG	-0.024	0.008	-3.123	0.003
R-squared	0.393	Prob (F-statistic)		0.00
Adjusted R-squared	0.331	Durbin-Watson stat		1.305
F-statistic	6.268			

Source: Eviews output

The results of the least squares regression between the dependent variable and the independent variables are presented in table 6. The R-squared value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008). The adjusted R^2 value in the above table indicates that more than 33% of the total variability of capital structure of SSMCs in Ethiopia is explained by the model, so it can be concluded that the independent variables provide good explanatory power. The regression f-statistic (6.268) and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model are able to explain variations in the dependent variable.

All of the hypotheses, except for age variable, have been confirmed by the regression result. Half of the explanatory variables (size, age, and tangibility) have been found being statistically significant at 1%, 1%, and 10% significance level respectively, whereas growth, profitability, and earnings volatility variables found being statistically insignificant.

4.6.1. SIZE

Size has a statistically significant positive coefficient of 0.176 at 1% significance level. It has the highest t-value of 5.381 against a very low p-value of 0.00. This reveals that size variable is the first most important explanatory variable of leverage. The finding confirms to the first hypothesis that firms' size is positively related to debt ratio. This finding is consistent with the trade-off theory that suggests leverage increases as the firms' size

grows up because, large firms are more diversified and exposure for distress cost is lower. It is also consistent with the agency theory. Agency theory suggests that large firms have a reputation in debt markets and consequently face lower agency costs of debt (Frank and Goyal, 2008).

In contrast, it disagrees with the pecking order theory, which suggests large firms have been around longer and are better known. Thus, they face lower adverse selection and can more easily issue equity compared to small firms where adverse selection problems are severe (Frank and Goyal, 2008).

The finding reveals that rising debt finance is easier for large firms than small ones. It also reveals the behavior of financiers in Ethiopia. That is, they trust large firms much more than small ones; this may be the result of the poor attitudes of financiers towards small firms, which results from a belief that strong negative correlation exists between firm size and the probability of insolvency. Thus, smaller firms face more problems in an attempt to raise debt.

The finding is consistent with Hovakimian *et al.* (2004); and Nguyen and Ramachandran (2006) who reported a positive correlation between the size of the firm and the total debt ratio. And it contrasts with Kila and Mahmood (2008); and Ramlall (2009) who suggested an inverse correlation.

4.6.2. TANGIBILITY

Tangibility variable also has a statistically significant positive coefficient of 0.146 at 10% significance level. It has the third highest t-value of 1.701 against a third lowest p-value of 0.094. This shows that tangibility variable is the third most important explanatory variable of leverage ratio in Ethiopian SSMCs. Thus, the researcher's second hypothesis that tangibility has positive relation with leverage is confirmed by the statistically significant positive relationship between tangibility and debt ratio. The hypothesis was in an expectation that firms that own a considerable amount of collateralizable fixed assets tend to have potential access to debt financing. This finding confirms to both the trade-off theory, which suggests that firms with large tangible assets tend to have greater liquidation value, thus they tend to have relatively easier access to debt finance with lower costs of financing, and the agency theory, which suggests that if debt can be collateralized, the borrower is restricted to use the borrowed funds for a specified project, thereby reduces the agency problem. In contrast, it disagrees with the pecking order theory that suggests the low information asymmetry associated with tangible assets makes equity financing less costly, resulting in a negative relation between leverage and tangibility.

The reason why tangibility is positively related to debt ratio is quite obvious. The main benefit of debt investment to creditors is that they receive uninterrupted stream of income except in case of bankruptcy. If the firm is performing well, creditors are then relaxed about the interest payment by the firm. To avoid the loss of both principal and interest in the case of bankruptcy, creditors ask for the security of fixed assets like land,

building, machinery etc. Thus, creditors will be more willing to advance credit to those firms that have got more fixed assets to be presented as security against debt. The finding agrees with the finding of Esperanca *et al.* (2003); and Bradley (1984) who report positive correlation and contrasts with Nguyen and Ramachandran (2006); and Daskalakis and Thanou (2010) who report an inverse relationship between tangibility and leverage.

4.6.3. PROFITABILITY

Profitability variable, which has the t-statistics of -0.224 and p-value of 0.823, is statistically insignificant; and it's the second least important explanatory variable. The coefficient is -0.01. The negative sign validates the acceptance of the third hypothesis that profitability and leverage have an inverse correlation because of the lower cost and accessibility of internal fund. The inverse relationship reveals that Ethiopian SSMCs rely less on debt as profitability gets better. The finding is consistent with the pecking order theory, which predicts a negative relationship between profitability and leverage. This theory suggests that internal funds and external funds are used hierarchically, i.e., internal funds and then outside funds. In contrast, the finding disagrees with the trade-off theory that suggests profitable firms tend to have more debt since bankruptcy costs are lower and interest tax shields are more valuable for profitable firms.

This finding agrees with Titman and Wessels (1988); and Cassar and Holmes (2003) who report inverse relationship. And contrasts with Frank and Goyal (2008); and Abor (2005) who found a positive relationship and suggest high profit level gives rise to a higher debt capacity.

4.6.4. EARNING VOLATILITY

Earnings volatility has a statistically insignificant negative coefficient of -0.00 . It has the lowest t-value of 0.223 against a very high p-value of 0.824. This reveals that earnings volatility variable is the first least important explanatory variable of leverage. The negative coefficient validates the acceptance of the fourth hypothesis that earnings volatility and leverage have an inverse correlation.

The finding is consistent with both trade-off and pecking order theories that state earnings volatility is a proxy for the probability of financial distress and firms will have to pay risk premium to outside fund providers. Thus, to reduce the cost of capital, firms will first use internally generated funds and then outside funds.

From this finding it can be concluded that financiers in Ethiopia consider variation in income for the repayment of loan and interest by SSMCs. This is because they expect SSMCs with higher volatility of income to go bankrupt. As a result, the cost of debt for such firms will be more and thus SSMCs tend to maintain low level of debt.

4.6.5. GROWTH

The regression coefficient of -0.04 with t-statistics of -1.062 and p-value of 0.293 suggests that the growth variable has a statistically insignificant negative relation with leverage. This finding agrees with the researcher's fifth hypothesis that growth is inversely related to leverage. An inverse prediction was based on the argument that equity-controlled firms have a tendency to invest in risky investments to extract wealth from the firm's debt-holders. The cost associated with this agency problem is likely to be

higher for firms in growing industries, which have more flexibility in their choice of future investments. The finding tells that pecking order theory that suggests growing firms are more likely to issue debt to fund their financing deficits is not pertinent in Ethiopian SSMCs. On the other hand, the finding agrees with the trade-off theory. Trade-off theory suggests growing firms lose more of their value when they go into distress (Frank and Goyal, 2008). It also agrees with the agency theory that suggests agency costs are likely to be higher for firms in growing industries. The finding implies that financiers in Ethiopia do not encourage growing SSMCs by providing them with loan to enable them finance their investment opportunities. This negative coefficient also implies the fact that growing SSMCs rely less on debt to finance their expansion.

The finding is consistent with the result of Myers (1977); and Titman and Wessels (1988) who found a negative relationship. And it contrasts with Marsh (1982); and Hall et al. (2004) who found a positive relationship and suggest growth tends to place a greater demand on internally generated funds and push the firm into debt.

4.6.6. AGE

Age variable is included in the model in an intention that good image or reputation has a positive effect on the firms' creditworthiness. The regression result, however, contrasts with this expectation; age is found being statistically significant at 1% significance level and negatively related to leverage with a coefficient of -0.024. It is the second most important explanatory variable of leverage with the f-statistics value of -3.123 and p-value of 0.003. The finding rejects the researcher's sixth hypothesis that age of the firm is

positively related to leverage. This inverse relationship reveals the attractiveness of newer firms to financiers for extending credit, while older firms are less attractive. It may also reveal that older SSMCs are able to accumulate funds, thus they rely less on debt. In other words, newer firms may not have had time to retain funds, thus may rely more on debt. The finding indicates also that newly established SSMCs are favored regarding debt financing; this is may be in an intention to encourage new investment considering the role being played by these co-operatives. The finding is consistent with the pecking order theory that suggests older and more experienced firms need less external financing as they can rely more on internally generated funds during previous experiences. In contrary, the finding is against the agency theory that suggests as firms grow old they develop reputation and this reputational capital is sufficient to ensure that they will avoid actions harmful to lenders even though they are unmonitored, and thus can borrow high debt.

The finding agrees with Hutchinson (2003) who found a negatively relationship. And it contrasts with Esperanca (2003) who suggest positive relationship.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. CONCLUSIONS

This paper examines the determinants of capital structure choice of SSMCs in Ethiopia. Previous researches mainly focus on large firms, and have assured the validity of capital structure theories. Researches those focus on small ones, however, suggest mixed evidence. Thus, the main focus of this study is on the small firms. The researcher discusses the capital structure choice of SSMCs covering 65 observations (five years financial data of 13 SSMCs). The findings of this paper contribute towards a better understanding of financing behavior in Ethiopian SSMCs. Hypotheses regarding the six explanatory variables: size, tangibility, profitability, earning volatility, growth and age were developed to test which capital structure theories best explain Ethiopian SSMCs' capital structure.

Major conclusions drawn from the findings are the following. Firm characteristics such as size, age, tangibility and growth are found being the most important determinants of SSMCs' capital structure. There is also a weaker evidence for profitability variable, while there is no evidence for earnings volatility variable as determinants for capital structure choice. Size seems to be a major discriminatory factor for access to debt financing, i.e.,

larger firms are favored in an intention that they are diversified and have stable cash flows. Thus, firms with small size tend to maintain low debt level within their capital structure. The ability to provide collateralizable tangible assets is also a determinant factor for raising debt. Firms with large collateralizable tangible assets tend to maintain high level of debt. Internal funds have a negative impact on the debt financing decisions of SSMCs; even if it is not significant, profitability also influences firms to maintain low leverage. Growing firms have a tendency to incur less debt to finance their growth, i.e., growth leads SSMCs to maintain low debt ratio. The younger SSMCs in Ethiopia are highly dependent on debt, because they do not have accumulated revenues generated by past investment.

There is a strong support for the trade-off theory that predicts a positive coefficient for the size and tangibility variables and a negative coefficient for earning volatility, growth, and age variables, while there is no support for its positive coefficient prediction for profitability variable. There is a support for the pecking order theory that predicts a negative coefficient for profitability, earning volatility, and age variables, while there is no support for its negative coefficient prediction for size and tangibility variables and positive coefficient prediction for growth variable.

There is also a support for agency theory that predicts a positive coefficient for size and tangibility variables, and a negative coefficient for growth variable, while there is no support for its positive coefficient prediction for age variable. Therefore, it can be concluded that agency costs arising due to conflict of interest between debt-holders and

equity-holders, is a problem for Ethiopian SSMCs and in fact the relationships supporting the agency theory have been confirmed by the findings of this study.

In general, the findings suggest that the dominant capital structure theories (trade-off, pecking order, and agency theories) that developed in reference to large firms appear indeed to be valid for Ethiopian SSMCs' capital structure; in fact, trade-off theory best explains Ethiopian SSMCs' capital structure. All firm specific variables except earnings volatility variable seem to have an effect on the level of leverage in Ethiopian SSMCs.

5.2. RECOMMENDATIONS

On the basis of the findings of this study, the researcher has drawn some recommendations:

- 1) Everyone admits the vital contributions being made by SSMCs to the growth and sustainability of the country's economy. As the finding suggests there is a significant positive association between size of the firms and debt financing, i.e., larger firms are attractive to financiers much more than small ones. Thus, it is uneasy job for SSMCs to raise debt to finance their existing operations as well as future expansion. So considering their vital role for socio-economic development of the country, the government should strive to set up a financial infrastructure to support them.
- 2) While the study's little contribution to the understanding of the capital structure of SSMCs in Ethiopian is not denied, it is recommended that further studies should consider increasing both the period and the number of cross-sections under study. Because, maximizing the number of observations is believed to give better inference.

In addition to this, considering macroeconomic variables in the model may also strengthen an inference.

- 3) Lack of databases constitutes the major barrier on conducting capital structure research in Ethiopian small firms. Using such databases may help to examine and identify additional variables that could determine the capital structure choice of Ethiopian SSMCs. Thus, there is a need to develop validated databases to make more data become available in future.

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APPENDICES

APPENDIX 1

TABLE 1: MULTIVARIATE REGRESSION RESULT

Dependent Variable: LEV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.798875	0.367044	-4.900984	0.0000
SZ	0.176390	0.032779	5.381122	0.0000
TG	0.146297	0.086002	1.701091	0.0943
PR	-0.010345	0.046096	-0.224415	0.8232
EV	-3.79E-07	1.69E-06	-0.223321	0.8241
GR	-0.040201	0.037842	-1.062339	0.2925
AG	-0.024400	0.007812	-3.123381	0.0028
R-squared	0.393346	Mean dependent var	0.148046	
Adjusted R-squared	0.330589	S.D. dependent var	0.156258	
F-statistic	6.267742	Durbin-Watson stat	1.304717	
Prob (F-statistic)	0.000040			

Table 2: Stepwise Regression

Dependent Variable: LEV

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	-1.791099	0.357198	-5.014310	0.0000
SZ	0.174309	0.031700	5.498723	0.0000
AG	-0.024050	0.007493	-3.209568	0.0021
TG	0.161249	0.075259	2.142576	0.0362
GR	-0.039596	0.036963	-1.071230	0.2884
R-squared	0.391837	Mean dependent var		0.148046
Adjusted R-squared	0.351293	S.D. dependent var		0.156258
S.E. of regression	0.125853	Akaike info criterion		-1.233593
Sum squared resid	0.950346	Schwarz criterion		-1.066332
Log likelihood	45.09177	Hannan-Quinn criter.		-1.167598
F-statistic	9.664447	Durbin-Watson stat		1.313944
Prob(F-statistic)	0.000004			

Table 3: Heteroscedasticity Test: White

Heteroscedasticity Test: White

F-statistic	4.260216	Prob. F(6,58)	0.0013
Obs*R-squared	19.88342	Prob. Chi-Square(6)	0.0029
Scaled explained SS	12.69991	Prob. Chi-Square(6)	0.0481

Test Equation:

Dependent Variable: RESID^2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.049876	0.024084	-2.070914	0.0428
SZ^2	0.000488	0.000179	2.724569	0.0085
TG^2	0.053450	0.015576	3.431453	0.0011
PR^2	-0.001985	0.005280	-0.376001	0.7083
EV^2	1.98E-12	4.83E-12	0.411185	0.6825
GR^2	-0.001919	0.003799	-0.505097	0.6154
AG^2	-0.000272	7.35E-05	-3.705905	0.0005

R-squared	0.305899	Mean dependent var	0.014584
Adjusted R-squared	0.234095	S.D. dependent var	0.018617
S.E. of regression	0.016293	Akaike info criterion	-5.294733
Sum squared resid	0.015397	Schwarz criterion	-5.060569

Log likelihood	179.0788	Hannan-Quinn criter.	-5.202340
F-statistic	4.260216	Durbin-Watson stat	1.775322
Prob(F-statistic)	0.001274		

Table 4: Ramsey RESET Test

Ramsey RESET Test:

F-statistic	5.403536	Prob. F(1,57)	0.0237
Log likelihood ratio	5.887094	Prob. Chi-Square(1)	0.0153

Test Equation:

Dependent Variable: LEV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.119012	0.897738	0.132569	0.8950
SZ	-0.010887	0.086541	-0.125799	0.9003
TG	0.005345	0.102719	0.052031	0.9587
PR	0.004282	0.044883	0.095408	0.9243
EV	6.88E-07	1.70E-06	0.405611	0.6865
GR	-0.005832	0.039364	-0.148153	0.8827
AG	0.003845	0.014295	0.268948	0.7889
FITTED^2	3.966460	1.706334	2.324551	0.0237

R-squared	0.445877	Mean dependent var	0.148046
Adjusted R-squared	0.377826	S.D. dependent var	0.156258
S.E. of regression	0.123253	Akaike info criterion	-1.234341
Sum squared resid	0.865901	Schwarz criterion	-0.966724
Log likelihood	48.11607	Hannan-Quinn criter.	-1.128749
F-statistic	6.552170	Durbin-Watson stat	1.398972
Prob(F-statistic)	0.000011		

APPENDIX 2

THE DATA

Year	Co-operatives	LEV	SZ	TG	PR	EV	GR	AG
1998	BTGWMW	0.165	11.331	0.23	0.132	26,786.55	0.833	1
1999	BTGWMW	0.463	11.639	0.28	0.4318	26,786.55	0.36	2
2000	BTGWMW	0.142	12.043	0.347	0.114	26,786.55	0.498	3
2001	BTGWMW	0.339	12.43	0.094	0.218	26,786.55	0.472	4
2002	BTGWMW	0.211	12.591	0.08	0.23	26,786.55	0.175	5
1998	DTMWMW	0.131	11.672	0.044	0.724	16,404.18	0.396	1
1999	DTMWMW	0.274	11.849	0.023	0.441	16,404.18	0.193	2
2000	DTMWMW	0.239	12.073	0.005	0.754	16,404.18	0.251	3
2001	DTMWMW	0.31	12.063	0.032	-0.075	16,404.18	-0.009	4
2002	DTMWMW	0.175	12.013	0.033	0.677	16,404.18	-0.049	5
1998	RWMW	0	11.536	0.204	0.915	42,759.14	1.6583	1
1999	RWMW	0	11.947	0.127	0.998	42,759.14	0.509	2
2000	RWMW	0.27	11.7	0.15	-0.575	42,759.14	-0.219	3
2001	RWMW	0.331	11.497	0.174	0.458	42,759.14	-0.184	4
2002	RWMW	0.067	11.358	0.169	0.961	42,759.14	-0.13	5
1998	YWMW	0.214	11.477	0.612	0.486	19,440.73	1.023	2
1999	YWMW	0.376	11.604	0.748	0.678	19,440.73	0.136	3

2000	YWMW	0.545	11.935	0.578	0.447	19,440.73	0.392	4
2001	YWMW	0.499	12.146	0.515	0.529	19,440.73	0.234	5
2002	YWMW	0.469	12.698	0.291	0.808	19,440.73	0.738	6
1998	HST	0.008	11.489	0.409	-0.009	17,478.88	0.508	4
1999	HST	0.01	11.184	0.431	-0.355	17,478.88	-0.263	5
2000	HST	0.017	10.399	0.747	0.189	17,478.88	-0.544	6
2001	HST	0.014	10.831	0.456	-0.206	17,478.88	0.54	7
2002	HST	0.043	11.656	0.146	0.499	17,478.88	1.282	8
1998	AFT	0.113	12.065	0.639	0.124	6,639.13	0.116	9
1999	AFT	0.09	12.094	0.572	0.068	6,639.13	0.03	10
2000	AFT	0.131	12.118	0.646	0.084	6,639.13	0.024	11
2001	AFT	0.164	12.133	0.57	0.105	6,639.13	0.015	12
2002	AFT	0.021	12.26	0.453	0.257	6,639.13	0.135	13
1998	IBGTW	0.011	10.909	0.009	-0.098	30,460.20	1.436	2
1999	IBGTW	0.049	11.058	0.012	0.595	30,460.20	0.16	3
2000	IBGTW	0	11.271	0	0.975	30,460.20	0.238	4
2001	IBGTW	0.042	11.456	0.011	0.466	30,460.20	0.203	5
2002	IBGTW	0.05	11.481	0.01	0.719	30,460.20	0.025	6
1998	AS	0	11.529	0.56	-0.014	3,110.00	0.296	2
1999	AS	0.085	11.631	0.506	0.027	3,110.00	0.107	3
2000	AS	0.091	11.572	0.536	0.073	3,110.00	-0.057	4
2001	AS	0	11.546	0.551	0.031	3,110.00	-0.026	5

2002	AS	0	11.559	0.543	0.045	3,110.00	0.013	6
1998	KALS	0.129	10.998	0.096	0.045	1,368.81	1.11	2
1999	KALS	0.264	11.31	0.196	0.009	1,368.81	0.366	3
2000	KALS	0.451	11.894	0.534	0.024	1,368.81	0.793	4
2001	KALS	0.446	11.904	0.527	0.002	1,368.81	0.01	5
2002	KALS	0.447	11.902	0.529	0.037	1,368.81	-0.003	6
1998	TIS	0	11.504	0.211	0.458	15,301.56	0.882	2
1999	TIS	0	11.823	0.163	0.492	15,301.56	0.376	3
2000	TIS	0.329	12.271	0.192	0.526	15,301.56	0.566	4
2001	TIS	0.208	12.724	0.136	0.672	15,301.56	0.573	5
2002	TIS	0.343	12.227	0.22	0.739	15,301.56	-0.392	6
1998	IBBDF	0.19	11.082	0.048	0.27	29,078.27	0.397	2
1999	IBBDF	0	10.842	0.082	1.148	29,078.27	-0.214	3
2000	IBBDF	0.121	11.23	0.056	0.426	29,078.27	0.475	4
2001	IBBDF	0	11.541	0.062	0.771	29,078.27	0.364	5
2002	IBBDF	0.181	11.671	0.138	1.688	29,078.27	0.139	6
1998	AHDF	0.046	10.957	0.113	0.323	17,901.93	1.482	2
1999	AHDF	0.063	11.065	0.088	-0.106	17,901.93	0.114	3
2000	AHDF	0	11.189	0.081	0.533	17,901.93	0.132	4
2001	AHDF	0	11.365	0.11	0.839	17,901.93	0.192	5
2002	AHDF	0.048	11.609	0.077	0.689	17,901.93	0.277	6
1998	ADF	0.043	10.278	0.015	0.379	11,098.42	0.91	2

1999	ADF	0.067	10.636	0.017	0.642	11,098.42	0.432	3
2000	ADF	0	10.383	0.03	-0.232	11,098.42	-0.224	4
2001	ADF	0.048	11.126	0.028	0.605	11,098.42	1.102	5
2002	ADF	0.04	11.677	0.024	0.57	11,098.42	0.734	6

Declaration

This thesis is my original work and has not been presented for any reason in any other University and that all the sources of materials used for the thesis have been acknowledged.

Name: Daniel Kebede

Signature: _____

Date: _____

Confirmed by the Advisor:

Name: Gebremedhin Gebrehiwot (Assistant Professor)

Signature: _____

Date: _____