Financial Structure Analysis of Private Limited Manufacturing Companies

Evidence from Selected Companies in Mekelle, Ethiopia

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Abstract
Lack of proper financial structure is the cause of failure for many firms in developing countries. In countries like Ethiopia, where financial market is less developed, the range of financial instruments available is narrow. Thus, companies in such countries face many challenges that affect their financial structure decisions. To this end, the aim of this study was to assess how companies finance their assets, what challenges they face and to identify the determinants of financial structure. Both primary and secondary data were used. Secondary data were collected from Ethiopian revenue and custom authority. Financial statements reported for the years 2004-2012 were collected from 10 purposively selected companies out of 25 companies found in the area. Primary data were collected using questionnaires which were distributed to finance managers of the companies.
The collected data were analyzed using descriptive statistics and Ordinary least square multiple regression model. The descriptive statistics results depict that majority of the firms finance their assets using short-term debt such as trade credits and bank over-drafts. Collateral is the major constraint for many of the companies, however, larger firms use more long-term loans. Furthermore, the multiple regression findings show that, profitability, size, and tangibility of assets are found to be significant determinants of long term debt, while liquidity has a strong significant effect on short-term debt. Thus, the results are found to be consistent with pecking order theory.
Keywords: Financial structure, manufacturing PLC, financing Assets, determinant

1. Introduction

Finance is the blood of any organization playing a significant role for sustainability and its structure is represented on the left side of the balance sheet of a company (Myers, 1977). Financial structure varies across countries; it depends on the economic development and policies of countries (Suhaila, Mansour & Wan-Mansor, 2008) and may also vary from industry to industry or company to company, indicating that there are firm specific, industry specific and macroeconomic characteristics. The goal of the management in financing decision should be maximizing the firm's value. Thus, this needs a careful understanding about the environment where the firm is operating in (Myers, 1977), because, the source of failure for many firms in developing countries is lack of access and high cost of finance (Lahcen & Jawad, 2008; Suhaila et al. 2009). Most of the literature on financial structure focuses on companies of developed countries (e.g., Brian, 2002; Demirguc & Ross, 2000).
The studies reviewed so far have not discussed the impact of firm specific characteristics on financial structure in the context of countries like Ethiopia. Moreover, there are different factors that are expected to shape the financial structure decisions; those factors may not equally affect the financial structure decisions in developing and under developed countries (Brian, 2002; Hall, Hutchinson, & Michaelas, 2004; Lahcen & Jawad, 2008). In countries like Ethiopia, the financial market is less developed and only banks are suppliers of finance and the range of financial instruments available is narrow. Hence, companies in such countries face many challenges that affect their financial structure decisions.
Most importantly, the problem will be highly pronounced in manufacturing companies working in developing countries which are recently highly recognized as an important component of the economy. Therefore, it is important to analyze and identify the determinants of financial structure and challenges the companies are facing in financing their assets.

2. Literature Review

2.1. Theories of Capital Structure

Capital structure is a debatable topic and there are three types of capital structure theories which are widely noted in finance literature. Pecking order theory emphasizes that firms should use different sources of finance in sequential order based on their costs. The theory depicts that companies prefer internal and cheap capital than external capital which is costly. It is revealed that external funding and most importantly, debt have an impact on the required rate of return by investors and its interest and bankruptcy related risks can also impact performance of the companies (Myers, 1977). Trade-off theory on the other hand, argues that there is an optimal capital structure that helps to maximize value of the firm. It depicts that using debt financing can maximize value of a firm through its tax shield advantage. Nonetheless, excessive use of debt can increase financial distress and bankruptcy costs (Jensen, 1986). Agency cost theory on the other hand reveals that an optimal capital structure of a firm should mitigate conflicts between shareholders and managers; and shareholders and debt holders. The

theory argues that the capital structure choice of a firm should satisfy the needs of different stakeholders. Higher leverage is associated with higher profitability of a firm; as a result an agency cost of outside equity is reduced. Furthermore, the higher profitability position motivates managers to act on the interests of shareholders to increase value of the firm, while reducing agency costs (Jensen 1986; Myers 1977).

2.2. Determinants of Capital structure

Profitability

The empirical studies and literatures on capital structure pointed out that there is a conflicting result as to the relationship between profitability and financial structure. The trade-off theory support that profitable firms are on the verge of using tax-shield advantage and moreover, their earning capacity can determine their capacity to pay their obligations. To the contrary, pecking order theory depicts that when firms are profitable, they prefer to use internal funding retained from previous profits than external funding. Thus, a negative relationship is expected (Myers & Majluf, 1984; Rajan & Zingales 1995; Chen, 2004 & Gaud et al., 2005). Various indicators are used to measure profitability among them Titman and Wessels (1988) have used operating income divided by total assets, Rajan & Zingales, (1995) and Ozkan (2001) have used return on assets. Consistent with Rajan & Zingales, (1995) and Ozkan (2001), Return on asset is used as a measure of profitability in this study.

Growth

Several indicators are used to measure growth. For example change in total assets over years was used by Titman & Wessels, (1988) and Chen, (2004). In this study growth were defined as percentage change in total sales from previous to current year. A conflicting result is shown in different studies about the relationship between growth and financial structure. Ozkan (2001), Rajan & Zingales (1995) and Titman & Wessels (1988) indicated that growth is negatively related to financial structure. This is consistent with the theoretical predictions of trade-off theory, where, firms with growth opportunities should use less debt to reduce cost of financing and bankruptcy. However, Chen (2004) depicted a positive association between growth and financial structure in china. In support of this, the pecking order theory suggests that firms with relatively high growth tend to look external funding to finance their growth and new investments.

Firm Size

Several studies (see Gaud et al. 2005; Rajan and Zingales, 1995; Titman and Wessels, 1988,) reveal that there is a positive relationship between size and financial structure. These results are consistent with trade-off theory, emphasizing that large companies may have an easier access to financial markets and benefit from better financial services. They are considered to have low earning variability and have the capacity to manage risk. As a result, lenders are willing to lend to large firms than to small firms. On the other hand, Titman & Wessels (1988) and Chen (2004) noted a negative relationship which is consistent with pecking-order theory. It is pointed out that when firms are getting larger, they prefer to use internal fund than external, because they have the capacity to generate high profit and most importantly retain much of it for further use. Several ways were used to measure size of a company for example, Titman and Wessels, (1988) and Rajan & Zingales (1995) have used logarithm of net sales and natural logarithm of total assets were used by Padron et al., (2005). Thus, consistent with Padron et al., (2005), in this study size is measured using natural logarithm of total assets.

Asset Structure

Asset structure of a company is measured using the volume of fixed assets owned. The degree to which the firm's assets are tangible, companies are able to pledge assets as securities to access finance at lower cost. Many studies such as Booth et al. (2001), Gaud et al. (2005), Rajan & Zingales, (1995) and Titman & Wessels (1988) indicated that asset structure of a company is positively related to financial structure. The above empirical results are consistent with pecking-order and trade-off theory. In most of the studies asset structure is measured using fixed assets divided by total assets, thus, it is not an exception for this study.

Liquidity

Liquidity measures the potential of the company to meet its short-term debt obligations. Less liquid firms are less likely to access debt, since bankruptcy costs associated are high. The trade-off theory therefore predicts a positive relationship between liquidity and debt level (Jensen 1986). Hence, companies with higher liquidity ratios might support a relatively higher debt ratio due to greater ability to meet short-term obligations. On the other hand, firms with high liquidity may use them to finance their investments. Therefore, the companies' liquidity level exerts a negative impact on its leverage ratio (Ozkan, 2001).Thus, consistent with pecking-order theory, firms with high liquidity prefer to use internal to external funding.

3. Materials and Methods

3.1. Description of the Study Area

Mekelle is found at 2000-2200 Meters high above sea level. Its average annual rainfall size is 50-250mm and has a daily average temperature of 19^{o}c. Its total land size is 53 km^2 and it is 780kms far from Addis Ababa. In 2007, the number of population in Mekelle City was estimated to be 200,000 of which 51.4% were females and 48.6% were males. According to the statistics of Bureau of finance and Economic development(BOFED), the dwellers of the city follow different religions which constitute 90.8% are Orthodox, 7.7% Muslims and 1.5% other

religions. The Special Zone of Mekelle has been divided into two administrative Woredas (Northern and Southern) and further subdivided into 20 Tabias and 7 sub-city administrations (BOFED, 2009).

3.2. Sampling Design and Sample Size

For the purpose of this study, Population was defined in terms of private limited manufacturing companies operating in Mekelle. Companies which were established prior to the year 2004 and have reported adequate financial statements were purposively selected. Out of the total twenty five private limited manufacturing companies, ten were selected purposively. Finance managers of the selected companies, who were assumed to have a better knowledge to explain the financial structure of the companies were selected purposively to administer a questionnaire.

3.3. Method of Data Collection

For the purpose of this study, both primary and secondary data were used. The primary data were collected from finance managers of the companies using a questionnaire. Secondary data which are the significant source of this study were collected from Ethiopian Revenue and Custom authority, Mekelle branch by reviewing and observing financial statements.

3.4. Specification of the Model

Balanced panel data which reported for the years 2004-2009 were used. The collected data were analyzed using descriptive statistics and ordinary least square (OLS) multivariate regression model. Furthermore, financial ratio analyses were also used to analyze the financial structure of the companies.

Several empirical studies and theoretical literature on capital structure were reviewed. Consequently, consistent with theories and several empirical studies, the following models were developed.

$$DR_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 SOA_{i,t} + \beta_3 AVPROF_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 COMPDUMMY_{i,t} + \varepsilon_{i,t}$$

$$CLR_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 SOA_{i,t} + \beta_3 AVPROF_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 COMPDUMMY_{i,t} + \varepsilon_{i,t}$$

$$LDR_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 SOA_{i,t} + \beta_3 AVPROF_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 COMPDUMMY_{i,t} + \varepsilon_{i,t}$$

WHERE: **DR, CLR and LDR$_{i,t}$** = the Total debt, current liability and long term debt ratios of the Company i at time t

SIZE$_{i,t}$ = the Size of the Company 'i' at time't'

SOA$_{i,t}$ = the Structure of Asset of the Company 'i' at time 't'

AVPROF$_{i,t}$ = the Average Profit of the Company 'i' at time 't'

Growth, t = the growth of the company 'i' at time't'

LIQ$_{i,t}$ = the Quick ratio of the Company 'i' at time 't'

COMPDUMMY$_{i,t}$ = Company Dummy refers to difference in leverage ratio of the Companies, where 1 if the company have > 30% total debt ratio at t time and 0 if the Company has < 30% leverage.

$\varepsilon_{i,t}$ = the error term and β_0 = is the constant term of the model.

4. Analysis and Discussion

4.1. Sources and Types of Financial Resources

To assess the sources and types of finance used by the manufacturing PLC, the survey result depict that all of the companies use banks as the major sources of finance, with private banks taking the major role. It is emphasized that government banks, which are the largest in terms of capital and outreach discriminate start-up and small companies. Nevertheless, they give priority to government, government affiliated and large companies. However, private banks are found to be flexible in lending because they need to increase their market share. With regard to the types of financial resources the companies use for their operation, the respondents were asked to rank different sources of finance as most and easily accessible to least accessible, thus, most of the companies prefer debt type of finance. 60% of the respondents have ranked debt as the first priority and only 20% of the companies under study preferred equity as their first priority and the remaining 20% has preferred operational credit as their first preference. Equity is least accessible because the companies are not public enterprises, thus, they cannot sale shares and contribution by the private shareholders is minimal.

4.2. Financing Firm's Activities

During the survey, many questions have been raised with regard to financing activities of the companies. The response of the respondents on how the companies finance their activity is summarized as follows in table 1.

Table 1. Response of respondents for financing company's activities

	Activities to be financed		
Types of Finance	**Working capital**	**Fixed assets**	**Projects**
Short term loan	40%	40%	20%
Long term Loan	20%	10%	40%
Operational Credit	20%	-	-
Equity	-	-	-
Retained earnings	-	10%	20%
Leasing	-	20%	-
A Combination of d/t sources	20%	20%	20%

Source: Summarized and computed from questionnaire

40% of the companies use short-term bank loans to finance their working capital and fixed assets. Furthermore, 40% of the companies finance their projects using long term loans, and only 20% of them use short term loans. Nevertheless, Only 20% of the companies use leasing to finance fixed assets. The study results indicate that most of the companies use debt to finance their activities with short term loans taking the highest percentage. This is due to the fact that companies use bank over drafts and Account payables as their significant source of short-term financing, but limited access to long-term loans and equity.

4.3. Challenges the Private Limited Manufacturing Companies face

The theoretical literature depict that internal sources of finance are cheaper than external sources. Companies which are actively involved in the market and are able to increase their sales and profitability are able to take the advantage of using internal sources. Having this theoretical base, a question have been raised with regard to either the companies have faced market problem during the years under study. 80% of the companies have replied that, they have faced market problem. Those who have faced market problems indicated that their leverage position has been increasing. The reasons for a decline in sales were lack of raw material, electricity rationing and high production cost in Mekelle. Size of the collateral requirement is found to be significant constraint in accessing finance. 80% of the companies responded that loan is borrowed 50-74% of its collateral value. Furthermore, the respondents were asked about the convenience of the loan procedures and requirements. Thus, 60% of them have responded the requirements and procedures are convenient and only 40% has responded the requirements and procedures are inconvenient. However, 80% of the respondents have indicated the financial products available are limited and inadequate. The reasons of inconvenience were higher interest rate, high collateral requirement and lack of financial literacy support. Corruption in financial institutions is also a major constraint in accessing finance. The survey results indicate that 60% of the companies have indicated corruption as a significant problem, thus, corruption in some cases has increased their cost of financial structure decision.

4.4. Descriptive Analysis

Table 2. How Manufacturing PLC finance their assets (Data accumulated for the years 2004-2012)

	Average(Mean)				Standard deviation			
Year	EQ/TA (%)	TD/TA (%)	CL/TA (%)	LD/TA (%)	EQ/TA (%)	TD/TA (%)	CL/TA (%)	LD/TA (%)
2004	48.80	50.20	15.24	34.80	42	42	11	41
2005	38.40	61.60	18.24	43.40	37	39	9	34
2006	43.70	56.30	25.06	31.24	28	28	13	30
2007	48.82	51.18	29.46	21.72	21	21	14	12
2008	48.80	51.12	34.18	16.94	18	18	22	19
2009	49.26	50.74	28.80	21.94	16	16	10	15
2010	49.41	50.59	30.22	20.68	37	22	15	12
2011	48.90	51.10	31.54	19.56	35	27	20	24
2012	49.32	50.68	32.36	18.32	29	31	18	35

Note: EQ=equity**, TA**= total assets, **TD**= total debt, **CL**= Current liability, **LD**= Long term liability

Source: Own computation from secondary data

According to Table 2, majority of the companies under study were financed through Debt, (50.2%) of which long current liability took the highest proportion. It also shows that there is higher difference among companies in long term debt proportion. The year to year equity ratio is increasing from 38.4% in 2005 to 49.32% in 2012. This shows that the companies are creating value, in which they are able to retain part of their profit; as a result they are able to finance their assets with equity.

Debt ratio is showing almost constant average except for the year 2005 and 2006, where it had reached 61.60% and 56.30 respectively. However, the proportion of current liability is increasing from 15.24% in the year 2004 to 32.36% in 2012. Nevertheless, the proportion of long term debt is declining from 34.80% in 2004 to18.32% in 2012. Thus, this might prove the difficulty the companies are facing to access long term debt.

Table 3: Short term debt composition on the periods under study

	Average(Mean)			Standard deviation	
Year	BOD ratio (%)	A/P ratio (%)	others (%)	BOD ratio (%)	A/P ratio (%)
2004	31.32	37.70	30.98	26	37
2005	30.80	48.96	20.24	39	35
2006	31.68	49.18	19.14	36	23
2007	30.20	62.04	7.76	40	12
2008	39.80	34.92	25.28	36	32
2009	32.40	44.98	22.62	43	29
2010	34.51	43.96	21.53	45	26
2011	36.42	45.10	18.48	42	31
2012	33.59	46.10	20.31	38	33

Source: *Own computation from secondary data*

Note: BOD ratio= Bank overdraft/total current liability, **A/P ratio**= Account payable/total current liability and others= other current liability like accrued payables and payable to associates

The results shown in table 3 depict that the major sources of short-term liabilities are Account payable and bank overdraft. Other current liabilities are also important sources of short-term liability. During the periods of study, nearly 35% of the short-term loans were financed using Bank overdraft and the remaining part of the short-term liability were financed using a spontaneous credits like account payable and other current liabilities. The proportion of bank overdraft and Account payable has increased year to year. Hence, it can be depicted that using a spontaneous credit helps the companies to save cost of funding and remove covenants related to lending.

4.5. Econometric Analysis

Multiple Regression Analysis

Financial market in Ethiopia is underdeveloped and information asymmetries are expected to be particularly severe. As a result, the pecking order theory might be more appropriate theory to explain capital structure decisions of firms. Moreover, the companies considered for this study are private limited companies; hence, Agency cost theory is not applicable. Thus, the hypothesized impacts of the explanatory variables on leverage under these two theories are given below.

Table 4: Capital structure theory and expected sign of relationship between leverage and explanatory variables.

	Trade-off theory	**Pecking order theory**
Firm Size	+	-
Structure of asset	+	+
Profitability	+	-
Growth	-	+
Liquidity	+	-

Source: Compiled from Aswath (1997)

Discussion on regression results

Under this section, the regression results of the three models namely, total debt ratio (TDR), long- term debt ratio (LDR) and current liability ratio (CLR) were discussed. The detail analysis and discussion for the three models are presented below as follows.

Total debt ratio (Total debt/Total assets) Model

Explanatory variables such as size measured using natural logarithm of assets, growth(change in annual sales), average profit(average profit/total assets),liquidity(quick ratio),structure of asset(tangibility) and company dummy which shows the companies difference in total debt ratio were regressed against total debt ratio, thus, the following results have been found from the regression.

Total Debt ratio (TDR) = β0 + β1SIZE i, t + β2 SOA i, t+ β3AVPROFi, t +β4GROWTHi, t +β5 LIQ i, t + β6COMPDUMMYi,t + εi,t

Table 5: Total debt regression results

Variable	Coefficient	t-test
Constant	-1.0543	-4.63***
Size	0.2164	9.12***
Structure of Assets	0.1275	0.59*
Average Profit	-1.6057	-7.68***
Growth	-0.0158	-1.15
Liquidity	-0.2468	-5.19
Company dummy	0.4123	10.57***
R-square		75.26%
No. of Observations		90

Source: stata output

**** Significant at 1% level, ** Significant at 5% level,* Significant at 10% level*

As it is shown in Table 5, the regression results depict that size, structure of assets and average profit are found to be the significant determinants of total debt. Moreover, the companies' difference in leverage measured using

a dummy variable shows a significant difference in leverage among firms. Results for size confirm tradeoff theory, emphasizing a positive relationship between size and leverage. According to Trade-off theory, size is positively related to leverage, arguing that larger firms need more funds to finance their activity, as a result following the financing pattern; they go for external finance, when internal finance is not sufficient. The result of size is consistent with other studies conducted (Ozkan, 2001; Rajan and Zingales, 1995; Titman and wessels, 1988). Furthermore, the regression result reveals that average profit is negatively associated with total debt and it is consistent with pecking order theory. More profitable firms have the ability to retain more; as a result, they will be less prone to external finance. The results are consistent with different empirical studies such as Suhaila, et al. (2009). In addition, structure of assets is positively related to total debt and significant at 10%. This might imply that tangibility of assets have less impact on leverage due to undervaluation of collateral.

Long term debt ratio (Total long term debt/total assets)

To run this regression similar explanatory variables like for total debt ratio were used to determine how these explanatory variables affect long term debt ratio using the following equation.

Long term Debt ratio (TDR) = β0 + β1SIZE i, t + β2 SOA i, t+ β3AVPROFi, t +β4GROWTHi, t +β5 LIQ i, t + β6COMPDUMMYi,t + εi,t

Table 6: Long term debt model regression results

Variable	Coefficient	t-test
Constant	-1.5612	-6.13***
Size	0.1746	7.31***
Structure of Assets	0.1275	2.45*
Average Profit	-2.2057	-4.82***
Growth	0.0118	0.36
Liquidity	-0.0484	-2.46
Company dummy	0.3153	4.75***
R-square		69.82%
No. of Observations		90

Source: stata output

**** Significant at 1% level, ** Significant at 5% level,* Significant at 10% level*

The regression results shown in table 6 depict that size, structure of assets and average profit are significant determinants of long term debt. Moreover, the company difference in leverage measured using a dummy variable is significant emphasizing a significant difference in leverage among firms. The result for size is consistent with tradeoff theory and it is also consistent with other studies conducted (see Rajan and Zingales, 1995; Titman and wessels, 1988). The result on size emphasize that larger firms use more external loans than smaller firms. Furthermore, the result of the regression shows a positive relationship between structure of assets and long term debt, emphasizing fixed assets are important to be used as collateral, which might show the underestimation of the collateral value. Different empirical studies show similar signs of association between assets structure and long term debt (e.g., Titman and wesseles, 1988). Average profit is found to be negatively related to long-term debt and is consistent with pecking order theory. Profitable firms prefer to use internal sources of finance to external funding. The results are consistent with different empirical studies such as Myers and Majiluf, (1984), Rajan and Zingales, (1995).

Current liability ratio (total current liability/total assets

The following equation is used to estimate the predictive power of the explanatory variables.

Current liability ratio (CLR)i, t = β0 +β1SIZE i, t +β2 SOA i,t+ β3AVPROFi, t +β4GROWTHi, t+β5 LIQ i, t + + β6COMPDUMMYi,t + εi,t

Table 7: Current liability ratio model regression results

Variable	Coefficient	t-test
Constant	0.6122	3.13**
Size	-0.0514	-1.45
Structure of Assets	0.0126	0.08
Average Profit	0.2487	1.42
Growth	-0.1123	-0.46
Liquidity	-0.0652	-3.15**
Company dummy	0.0281	1.24
R-square		51.36%
No. of Observations		90

Source: stata output

**** Significant at 1% level, ** Significant at 5% level,* Significant at 10% level*

As it is shown in Table 7, the regression results show that liquidity is significant at 5% and negatively associated with short-term debt which is consistent with pecking order theory. The remaining variables are insignificant. The company difference in leverage measured using a dummy variable is insignificant indicating there is no

significant difference in current liability among firms. The negative relationship depict that companies with high liquidity prefer to use their liquid assets than external funding.

5. Conclusions

This study analyzed the financial structure of private limited manufacturing companies in Mekelle. Financing patterns and challenges of the companies were assessed and the determinants of financial structure decisions were also examined. Overall, Short-term debt constitutes a relatively high proportion of the total debt of firms under study. Current liabilities such as account payable and bank over-draft followed by accruals are the major sources of short-term liabilities. The results indicated that larger firms in terms of size are more likely to rely on long-term debt finance. Moreover, Majority of the companies finance their working capital and fixed assets using short term debt and projects using long term debt and retained earnings. Other sources of finance such as leasing are not exploited and equity is found to be the least accessible. Some of the major challenges affecting financial structure decisions of the companies are undervaluation of collateral asset, discrimination by lending institutions, corruption, limited financial products and long waiting period for processing loan application. Size, structure of assets and average profit were found to be significant determinants of total debt and long term debt, and liquidity is significant to determine current liability. Generally, the results of this study seem to support the pecking order theory. The issue of financial structure is an important strategic financing decision that firms have to make. Thus, Policy makers should give emphasis to the development of financial system to enable financial institutions provide a variety and flexible products.

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