Journal of Poverty, Investment and Development www.iiste.org
ISSN 2422-846X An International Peer-reviewed Journal
Vol.16, 2015

Impact of Financial Distress on the Profitability of Selected Manufacturing Firms of Ethiopia

Andualem Ufo
Wolaita Sodo University, Department of Accounting & Finance
W/sodo-Arbaminch No.1 Road, 138, Wolaita Sodo, SNNPR, Ethiopia

Abstract
In recent decades manufacturing sectors are suffering from financial distress. Profitability is presumed to play a role in addressing this problem. With this in mind, the main objective of the study is to determine the relationship between financial distress and profitability of manufacturing firms in Ethiopia for the period from 1999 to 2005. Due to non-homogeneity data, non-continuity and because the Hausman test favors it over the Random Effect technique, the panel data General Least Square (GLS) regression method is used. The result proves that profitability has positive and significant influence on debt service coverage as proxy for financial distress. Banks should supervise the profitability of firms at time of loan approval to avoid default risk caused by operational insolvency. The appropriate firm executives should consider improving profitability of firm through replacement of departments, products or lines of the business. FD have a negative impact on profitability and leading firms to insolvency and shortage of cash flow for current payment of debts and results in several consequential effects.
Keywords: Financial Distress, Profitability, Ethiopia

1. Introduction

Financial distress is a situation where firm's financial capacity is deteriorating step by step and its inability to pay current obligation to creditors. It is a topic that appeared with global financial crises and financial instability of the global financial system. Financial distress studies conducted in various countries across the globe. The sizable literature in area of financial distress in sub-Saharan Africa is still lacking. Financial distress impinges on the profitability of the firms of any industry and results in loss of income at its early stage and loss of company at its late stage.

The Financial distress in the firm adversely affects the performance of the firm and results in profitability ratio. It can be said that the impact of financial distress on profit is negative and the early stage of financial distress could be revenue reduction. The profitability of the firm is declining due to decline in cash inflow and expense exceeds revenue of the firm.

FD may have a negative effect on the profitability of a firm if they give rise to low return on investment or asset. FD affects firm's profitability which is measured by GP to TS. After all, one may ask, why are we concerned about the profitability? The GP to TS ratio, ROA or ROE are an important indicator of any firm's profitability and it plays several roles in financial policy decision. Primarily, its significance stems from the fact that the profitability components, reflecting the income-asset ratio, are closely related to the status of the firm's Short term solvency. Further, a firm's profitability includes the manipulation of its GP to TS ratio within the firm. Lastly, since the profitability ratio has great contribution for firm's solvency.

2. Background of the study

Now, let's see the nature of profitability and its components in the case of manufacturing companies to the rest of the industries. Profitability is the firm's ability of generating excess cash covering expenses and over its revenue. The components of profitability gross profit to sales are used in this study.

The firm's FD is the early stage of business failure and the symptoms of FD are the firm is desperately short of cash, the firm's suppliers are pushing for faster payments but the borrowings are at or close to the maximum and the firm's monthly accounts, show that the business is losing money consistently (Brealey etal, 2000).

Profitability is recognized to play momentous role through curtailing the occurrence of FD. One of the mechanisms is through its effect on profitability. As can be seen from Figure 1 DSC to profitability is positive. For that matter if the firm has higher DSC the prevalence of FD is minimal. Two questions are imminent in relation to the relationship among these variables; to what extent does FD affect profitability of firms?

With this in mind, this study tries to see the effect of FD on profitability of Ethiopian manufacturing firms using econometric methods. Regression techniques are employed to see the effect of FD on GP to TS ratio. The paper is organized as follow; the next section deals with literature review on the interplay of the financial variables. The third section covers the econometric analysis. Results are interpreted in the fourth section and finally, conclusions are drawn and recommendations are forwarded in the last chapter.

3. Literature review

3.1. Previous studies

several research have been carried out on the topic of factors determining profitability as taking itself as a subject of study or by breaking down to its components, namely total sales to total asset, operating income to total asset, net income to equity in all cases it represent the profitability ratio.

Based on the conceptual framework developed by Pranow (2010), formulated a comprehensive theory describing linkages between profitability as proxy for DSC and financial distress permits studying determinants of financial distress. Pranow argues that a decrease in profitability occurs as a result of declining the volume of sales relative to total assets generating sales, which, is facilitated by FD.

Different empirical researches have come up with similar conclusions on the relationship of FD and profitability. To the best knowledge of the author, there is hardly any panel study on FD-Profitability nexus for manufacturing firms in Ethiopia. There are studies on other countries and blocks of countries in this regard. For instance, Denis and Denis (1995) find support for the widely held belief that increased levels of FD negatively affect profitability (pre-operating income or net income) of firms.

The studies conducted by Pranowo etal. (2010) too indicated that FD actually has a negative effect on profitability of manufacturing firms. Using a panel data least square method, fixed effect model set for 200 non-financial companies listed in Indonesian stock exchange for period from 2004-2008 finds that inward FD has a negative effect on Debt service coverage.

The hypothesis of the FD and Profitability is studied by previous studies. There is a positive relationship between Profitability and DSC. The profitability of the firm increases, the FD decreases. On the other hand the more unprofitable company, the higher probability of failing (Pranowo etal, 2010; Altman 1968).

3.2. Theoretical framework

3.2.1. Profitability and Financial distress

Studies on effect of FD on profitability are scant. FD in each stage can influence the firm's profitability. FD plays a significant role in a firm's operation and profitability through the influence of cost implications, such as administrative and legal costs associated with the bankruptcy process (both direct& indirect FD costs) (Betker 1997; Beaver 1966).

FD leads firms to low level of profitability and shortage of cash. A firm is considered to be financially distressed if one of the following events occurs: it experiences several years of negative net operating income or the suspension of dividend payments, financial restructuring or massive layoffs (Platt and Platt 2002). FD should not be analyzed by financial ratios at balance sheet only, but also by analyzing profit and loss and cash flow of the companies (Pranowo etal, 2010**)**.

Furthermore, FD may stimulate profitability problem on firms through cash flow deterioration and deterioration of revenue or operating income perpetually. FD is expected to affect operating income causes short term insolvency effect, reduces the firm's ability by constraining working capital and increasing indebtedness.

Furthermore, the increase in profitability resulting from increase in Gross profit to total sales ratio increases the firm's solvency, thus increasing DSC. In addition to these effects, low GP to TS ratio also provide a firm with low probability of FD, which is indicates firms in the track of FD.

Thus, for a variety of reasons, FD decreases firm's profitability. DSC increment improves a firm's profitability and hence the occurrence of FD is low.

3.2.2. Debt service coverage and Financial distress

FD is determined by DSC ratio, because the firm is classified as distressed if in any of two consecutive years its EBITDA is lower than eighty percent of the firm's interest expense. This marker incorporates the fact that a firm facing FD usually experiences a decline in profitability, is over leveraged or has insufficient cash flows to cover current obligations (Asquith et al. 1994).

FD may facilitate problem of liquidity, profitability, leverage and efficiency on firms through failure and insolvency as a result of unremitting losses.

Furthermore, FD may impact on DSC, because FD causes the cessation of operation, nonpayment of current obligations due to cash flow problems, the firm's total liabilities are in excess of total assets, and the formal declaration of bankruptcy (Altman 1983).

Thus, for an assortment of reasons, FD decreases firm's DSC. DSC increment improves a firm's profitability, liquidity, leverage, efficiency and hence FD effect on firm is very minimal.

4. Methods of data collection and Analysis

Profitability is a single ratio representing firm's performance. In finance profitability is assumed to be a function of: (i) total gross profit of the firm; (ii) the total sales of the firm, (iii) other variables such as macroeconomic conditions.

This study examines the relationship between profitability and FD in Ethiopian manufacturing firms for the period from 1999 through 2005. The study examines FD on profitability as DSC is used as proxy for FD. Profitability is determined by GP to TS ratio, and other variables are used as proxy to DSC to show overall factors affecting financial distress, even if it is not the intent of this study.

A dynamic model type is formulated:

FD=βo+β1LEVit+ β2LIQit+ β3PROFSit +β4EFFit + β5 FSIZEit +εit.................. (1)

LIQit = the firm's holding of liquid assets to cover short term debts;

PROFSit = the profitability of the firm;

SIZEit = the natural logarithm of the firm size measured in terms of volume of assets;

EFFit t = efficiency of the firm;

LEVit = the level of the firm leverage

In line with (Pranow etal, 2010)

DSC= (EBIDA)/ (TD)...(2)

EBIDA= is earning before interest depreciation and amortization

TD= principal plus interest or coupon

Profitability=GP/TS…………………………………………………………………….(3)

For the formulation of the above model (1) we used (Chris brook 2008) econometrics for finance is to capture idea.

Data used for this study are collected from individual manufacturing firms, beverage and metal manufacturing firms of Ethiopia. Annual data from manufacturing firms is collected for the period between 1999 and 2005. Study subject selection is dictated solely by data availability among manufacturing firms. For descriptive statistics of the raw data you may refer to Table 1. The profitability amount as determinants is used for this analysis as the ratio takes care of the differences.

Generalized Least Square techniques (GLS) and Random Effect Methods (R EM) are preferred to infer the better relationship between the variables under the situation. Hausman test is performed to choose from the two and Random Effect (RE) model is found to give superior result than the random effect. In addition to that, the objective of the study is to determine the effect of the factors under consideration on manufacturing firms, not to explain the inter-firm difference. This makes RE more desirable than the RE. Following the works of (reference-model) Random panel effect (RE-GLS) regression method is applied to determine the significance of the effect of the explanatory variables on the dependent variables.

5. Empirical Results

5.1. Profitability Determinant

It is well known that the appreciation of the gross profit in the firm relative to total sales (GP/TS) increases profitability (Altman 1983) hence, a positive link between the increases of GP to TS and profitability is expected. In other words appreciation of GP to TS ratio increases the profitability of the firms.

The positive coefficient of GP to TS for the regression output implies that the increase of the gross profit to total sales affects the firm's profitability. Converse, the increase of GP to TS helps the profitability of firms.

This is in line with both theoretical reasoning in corporate finance and findings of previous empirical studies (Pranow etal, 2010). The result shows the p-value 0.0000 & 0.7778155percent. A one point increase in GP to TS results in a 0.7778155percent increase in Profitability. Though the coefficient is small, the effect is statistically significant. This implies GP to TS that targeting may help the profitability subsector of the firm.

6. Conclusions and Recommendations

Currently the manufacturing firm's profitability slowly declining. Several factors appear to have contributed to this phenomenon including financial distress. However, to date there has not been that much attempt to investigate the role of FD on profitability. Using Panel data for the Period of 1999-2005 for 11 Ethiopian manufacturing firms, this issue is investigated.

GP to TS ratio has positive and significant effect on both profitability and DSC. In other word it means there is an inverse relationship between profitability and financial distress.

In general the FD has negative effect on profitability, the net effect on DSC is found to be in the direction of effect on the positive or direct. Firms in the early stage of financial distress, would loss profit is declining and firm would quickly enter into insolvency. Hence, in this regard, company should have to take appropriate action and adjust its financing scheme.

In general, Banks have upper hand to supervise the profitability of firms through application of various techniques during granting loans. The appropriate executors should consider improving profitability through replace or drop departments, products or lines of the business.

Reference

Altman, E. (1968). 'Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy'. The

Journal of Finance, 22(4), 589-609.
Altman, E. (1983). Corporate Financial Distress and Bankruptcy. 1st Edition, New York: John Wiley & Sons.
Asquith, P., Gertner, R. & Sharfstein, D. (1994). 'Anatomy of Financial Distress'. An Explanation of Junk Bond Issuers: The Quarterly Journal of Economics, 109, 625-658.
Brealey, R. Meyers, S. (2000). Principles of Corporate Finance, 6th Edition, McGraw-Hill, New York.
Brook, C. (2008). Introductory Econometrics for Finance. Second Edition, The ICMA Centre, University of Reading, Published in the United States of America by Cambridge University Press, New York
Denis, D., Denis, D. (1995). 'Causes of Financial Distress Following Leveraged Recapitalizations. 'Journal of Financial Economics, 37, 129-157.
Opler and Titman. (1994).'Financial Distress and Corporate Performance.' The Journal of Finance, Vol.XLIX. No.3 July 1994.
Platt, H., Platt, M. (2002). 'Predicting Corporate Financial Distress.' Reflections on Choice-Based Sample Bias, Journal of Economics and Finance, 26(2), 184-199.
Pranowo, K. Azam, N. Achsani, Manurung, AH., Nuryartono, N. (2010). 'Determinant of Corporate Financial Distress in an Emerging Market Economy.' Empirical Evidence from the Indonesian Stock Exchange 2004-2008.

Appendix : Regression results

Table 1. Panel Data Regression Random Effect Model Result

```
Random-effects GLS regression                   Number of obs      =        76
Group variable: firms                           Number of groups   =        11

R-sq:  within  = 0.7630                         Obs per group: min =         6
       between = 0.9413                                        avg =       6.9
       overall = 0.9013                                        max =         7

Random effects u_i ~ Gaussian                   Wald chi2(7)       =    316.52
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

dsc	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
profit	.7778155	.2222335	3.50	0.000	.3422458	1.213385
eff	.7198798	.229787	3.13	0.002	.2695056	1.170254
liqud	.0623445	.010382	6.01	0.000	.0419961	.0826928
leve	-.4762632	.0771539	-6.17	0.000	-.6274821	-.3250443
fsize	.0558841	.0287628	1.94	0.052	-.00049	.1122583
opervi	.0192333	.0118305	1.63	0.104	-.003954	.0424207
gcg	-.0026728	.0069413	-0.39	0.700	-.0162775	.010932
_cons	-1.132389	.4616602	-2.45	0.014	-2.037226	-.2275517
sigma_u	.06476254					
sigma_e	.07073068					
rho	.45603781	(fraction of variance due to u_i)				

Source: regression result of panel data.

Table 2. Hausman specification test for model fitness final

. hausman fixed

	Coefficients (b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
profit	.7256655	.7778155	-.0521501	.1282198
eff	.5719943	.7198798	-.1478855	.1418454
liqud	.0668977	.0623445	.0045533	.0063746
leve	-.5033271	-.4762632	-.0270639	.0296322
fsize	.0859889	.0558841	.0301047	.0330301
opervi	.0219268	.0192333	.0026934	.0051822

```
                          b = consistent under Ho and Ha; obtained from xtreg
           B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        9.83
                Prob>chi2 =      0.1318
```

Table 3. BREUSCH AND PAGAN LAGRANGIAN MULTIPLIER TEST FOR HETROSKEDASTICITY

```
Breusch and Pagan Lagrangian multiplier test for random effects

        dsc[firms,t] = Xb + u[firms] + e[firms,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+-----------------------------
                     dsc |   .0774336       .2782689
                       e |   .0050028       .0707307
                       u |   .0041942       .0647625

        Test:   Var(u) = 0
                             chi2(1) =     9.84
                         Prob > chi2 =     0.0017
```

.

Table 4. Tests for multicollinearity problem using correlation matrix

	dsc	profit	eff	liqud	leve	fsize	opervi	gcg
dsc	1.0000							
profit	0.6747	1.0000						
eff	0.5707	0.8477	1.0000					
liqud	0.5759	0.0254	-0.1526	1.0000				
leve	-0.6523	-0.1069	0.0625	-0.7149	1.0000			
fsize	0.0502	-0.4927	-0.4103	0.1856	-0.1202	1.0000		
opervi	0.4917	0.4280	0.5637	0.0719	-0.0697	0.2666	1.0000	
gcg	-0.1072	-0.0001	-0.0685	0.0506	0.2245	0.0644	-0.0011	1.0000

Autocorrelation Tests based on Durban Watson (DW)

```
Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        homoskedastic
Correlation:   no autocorrelation

Estimated covariances      =         1          Number of obs      =        76
Estimated autocorrelations =         0          Number of groups   =        11
Estimated coefficients     =         8          Obs per group: min =         6
                                                               avg =  6.909091
                                                               max =         7
                                                Wald chi2(7)       =    777.76
                                                Prob > chi2        =    0.0000
```

dsc	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
profit	.9177531	.1723939	5.32	0.000	.5798674	1.255639
eff	.8445023	.1778558	4.75	0.000	.4959113	1.193093
liqud	.0529561	.0086854	6.10	0.000	.035933	.0699793
leve	-.4800109	.0693894	-6.92	0.000	-.6160115	-.3440103
fsize	.0692916	.0183235	3.78	0.000	.0333781	.105205
opervi	.0002053	.0111451	0.02	0.985	-.0216387	.0220493
gcg	-.0022535	.0032756	-0.69	0.491	-.0086736	.0041667
_cons	-1.116937	.2810325	-3.97	0.000	-1.667751	-.5661236

.
. sum

Variable	Obs	Mean	Std. Dev.	Min	Max
firms	77	6	3.183014	1	11
year	77	2002	2.013115	1999	2005
dsc	77	.3785697	.2846163	.0137864	1.142032
profit	76	.2419149	.1207847	.0211472	.4633958
equity	77	.4861284	.2224185	.1729034	.9391285
eff	77	.1869522	.1262358	.0109197	.4085041
liqud	77	2.135935	1.72031	.4903508	9.23599
leve	77	.5085471	.2202952	.0611014	.8269072
fsize	77	18.39809	.8091785	16.96834	20.65224
opervi	77	15.93089	1.398243	9.401043	18.23706
age_in_year	77	38.09091	28.83765	1	85
gcg	77	15	3.183014	10	20
d1	77	.4935065	.5032363	0	1
_est_fixed	77	.987013	.1139606	0	1