**An Investigation into the Impact of Debt Financing on the Profitability of Small Manufacturing Firms in Bulawayo, Zimbabwe.**

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**Abstract**

Small businesses are the engines for economic development of several developed countries such as the US and Japan. Developing countries such as Zimbabwe have also identified the potential of small businesses to turn economies with negative growth to become vibrant ones. For this reason, several governments in developing countries offer funding to small businesses either directly or by guaranteeing the payment of such loans as lack of funding is cited as one of the major challenges faced by small businesses. Due to limitation of resources by governments, not all small business owners receive funding from the government, therefore, the other option would be to go for bank loans. It is not known whether the use of these loans would result in better returns than equity funding or not because only a few studies on this topic were conducted in sub-Saharan Africa. The aim of this paper is to determine if there is any advantage of using debt as a source of financing to small firms compared to the use of equity.

**Introduction**

Of recently, there has been an increase in the recognition of the role played by small firms in the national economy. Their contribution to job creation and poverty alleviation has been recognised by several governments of developing countries to the extent that they now include them in their development plans. Among the support structures include offering funding to the small firm's sector, usually at concessionary rates. But whether the use of such debt improves the profitability, thereby enhancing sustainability, is not well known.

This paper investigates the effects of debt financing on the value of small manufacturing firms in Bulawayo, Zimbabwe. It is based on the theory of capital structure put forward by Franco Modigliani and Merton Miller in 1963. The purpose of the study is to

determine if the use of debt (leverage) by small firms in Zimbabwe leads to an increase in the returns generated by a firm with the intention of improving the value of small manufacturing firms through capital structure.

Apart from determination of the impact of debt on the profitability of small manufacturing firms, the paper will also aim at identifying causes of high debt inaccessibility rates by small firms from financial markets as portrayed by several studies. The purpose is to identify the extent of the effect the factors with the aim of addressing these challenges. Questions such as "are small firms able to access debt?" and "does the product produced affect debt accessibility?" have to be answered to improve on the value of the study. This study will, therefore, link debt usage to its accessibility and this will assist in optimum utilisation of debt by small firms.

Value of the small firms, for this paper, will be determined in terms of profitability[1] ratios. The ratios that will be used include return on assets (ROA) and return on equity (ROE) and they will be expressed as percentages. Book value of assets will be used for calculation of ROA. Capital structure of the small firms will be determined by the use of debt ratios, thus, dividing total debt by the value of total assets of a firm.

Though the manufacturing sector is very important to the economy of Zimbabwe, it is being constrained by capacity underutilisation, inadequate research and development, reduced agricultural output, price controls since 2001, shortage of foreign currency, fuel, coal and electricity. The metal fabrication sub-sector is affected by lower output from Zimbabwe Steel Company (Zisco), garment production affected by reduced cotton crop and high lint exports whilst the food industry is being affected by lower grain and dairy products as there is a reduction in commercial herd (Mandiwanza, 2007).

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[1] Profitability refers to the return on funds invested by the owners and achieved by the efforts of management (Ainsworth, *et al,* 1997:829).

**The Theory**

The theory of capital structure by Modigliani and Miller states that the capital structure that a firm chooses does not affect its value, that is, whether the firm uses more of debt than equity or either 100% debt or 100% equity, the value will not be affected except for the deductibility of interest payments when calculating taxable income. The theory therefore assumes that a firm's value will be maximised when it employs more of debt in its capital structure than equity. When debt is used in the capital structure, the average cost of capital is reduced and profitability enhanced (Modigliani & Miller, 1963: 434).

The definition of a small manufacturing firm depends on the purpose for which it is being made. Various definitions that are proposed are generally based on numbers of employees, asset base and structure and at times turnover levels or revenue (Ngwenya & Ndlovu, 2003: 12). A small manufacturing firm is described as a business employing not more than 50 workers but more than 4, having an asset base of less than 12 million Zimbabwean dollars and with a formal legal structure (SMMEs, 2002:6) and (Kapoor, Mugwara & Chidavaenzi, 1997:4). For the purpose of the study, a small manufacturing firm refers to a business entity with a legal structure, employing workers between 4 and 51 and engaged in any of the following activities: food processing such as baking, oil processing and grain milling; metal fabrication; garment production; carpentry; beer brewing; pottery; brick-making and plastic production using recycled materials (Kapoor, Mugwara & Chidavaenzi, 1997:6). The study will not include any firms that are informal and employing less than 5 full time employees. The asset base will not be used as it is difficult to attach a fixed value to assets as the value is constantly changing due to high inflation rates prevailing in Zimbabwe.

**The Effect of use of Debt on Firm Performance**

The use of high levels of debt in the capital structure leads to an increase or decrease in the return on shareholders' capital (ROE). ROE refers to the return/monetary gain by shareholders in return for the capital they would have offered to firms. Debt is always desirable if a firm achieves relatively high profits as it results in higher returns to shareholders (positive leverage). If a firm incurs a major drop in income, employing more

debt in the capital structure will be detrimental as the firm won't be able to cover the cost of debt (negative leverage).

Leverage is a financing strategy designed to increase the rate of return on owners' investment by generating a greater return on borrowed funds than the cost of using the funds. Leverage would be positive if ROA is greater than the before-tax interest rate paid on debt. Negative leverage occurs when a firm generates a ROA that is less than the before-tax interest on debt (Damodaran, 1999:103).

The major advantage of using debt is its low cost compared to the cost of equity. The actual cost of debt to the firm is the after-tax cost of debt, which is market interest rate less the marginal tax rate proportion. The actual cost of debt would therefore be:

$$Kd = I\ (1\text{-}t)$$

Where: Kd = cost of debt

    I = interest rate payable (Market interest rate)

    T = the marginal tax rate

    (Correia, Flynn, Uliana & Wormald, 2005:7-5).

The use of debt therefore reduces the amount of tax to be paid by a firm and increases the return to shareholders whilst the use of equity does not enjoy such benefit.

Besides the tax advantage, cost of debt is generally low as compared to equity due to the lower risk associated with debt as debt holders has the first claim in the case of insolvency (Damodaran, 1999:103). Debt also makes planning easy because interest cost on debt is usually fixed which allows efficient planning as the cost will be known. As long as the interest on debt is lower than the return that can be earned on the funds supplied by creditors, this excess return will accrue to the owners of the firm as their benefit of using debt (Bernstein, 1993:610).

Though debt has its fair portion of benefits, it does not come without costs. The major costs associated with debt include bankruptcy, agency costs and loss of flexibility (Damodaran, 1999:229-237).

**Cost of Debt**
The cost of debt refers to the money that has to be paid for the use of debt. It measures the current cost to the firm of borrowing funds to finance projects. Cost of debt is the same as the expected return by the lenders to compensate them for taking on a certain degree of risk or opportunity cost for lending money (Kriek, Beekman & Els, 2005:127).

Generally the cost of debt is determined by the current level of interest rates and the tax advantage associated with the debt. As the level of interest rates and the level of default risk increase, so does the cost of debt. Interest is a product of expected inflation, expected liquidity (preference) and expected risk premium (Myddelton, 2000:13) and (Blake, 1997:44). The cost of debt is primarily determined by the risk associated with the intended use of debt (Brealey, Myers and Marcus, 1999:283). But since it is difficult to separate the risk of the use of funds and the risk of the firm, lenders usually use the business risk and the financial risk of the firm in pricing their funds.  Besides the interest rate and taxation, there are also non-interest fees which banks charge and affect the pricing of loans by commercial banks to firms (Heffernan, 1996:164).

**AFTER-TAX COST OF DEBT TO SMALL FIRMS**

$$\text{R}dr = \frac{1 + M(1-t)}{1+i} - 1$$

Where: R = the real cost of debt

M = the nominal cost of debt or interest rate

i = the inflation rate

t = tax rate

(Correia *et al.*, 2003:140).

The formula indicates that cost of debt is a function of interest rate, inflation rate and the tax rate. Any change in each of these components will have an effect on the cost of debt. The higher the interest and inflation rates, the higher the cost of debt. Unlike the effect of interest and inflation, an increase in the tax rate lowers the cost of debt.

In Zimbabwe, the company tax rate is 30%. There are however, some incentives for small manufacturing firms that lead to a reduction in the tax rate. Small manufacturing firms located at growth point areas are taxed at 10% for the first five years. Manufacturing firms that export 50% or more of its outputs are taxed at 20% (ZIMRA, 2007). Therefore, the after-tax cost of debt for the firms paying 30%, 20% and 10% will be different; with the firm paying 30% having a lowest after-tax cost of debt and the one paying 10% tax rate having a highest after-tax cost of debt making the ones paying the higher tax rate to enjoy more debt advantages.

**Similar Studies on the use of Debt**

Studies on the effect of debt on returns have generated mixed results ranging from those supporting a positive relationship hypothesis to those opposing it. Some of the studies did not come up with any effect on returns, that is, they found out that capital structure did not portray any relationship with the returns of a firm.

Abor (2005) conducted a study on the effect of debt on firms in Ghana which indicated a significantly positive association between total debt and total assets and return on equity. The results therefore portrayed a positive leverage. According to Berkivitch and Israel (1996), a firm's debt level and its value will be positively related especially when shareholders have absolute control over the business of the firm and it will be negatively related when debt holders have the power to influence the course of the business. The impact of debt on value of firms therefore, depends on the balance of power within a firm. If shareholders have more power, a positive leverage will prevail and if debt holders have more power, a negative leverage would take place.

Although Modigliani and Miller's theory suggests that the use of debt will lead to a tax advantage because of tax deductibility of interest payments as supported by the studies identified beforehand, a study on Zimbabwe by Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001: 96) established no fundamental tax advantage of debt over equity. A similar study which related leverage to profitability of firms was done by Zhengfei,

Lansink and Alfons, (2006). The research was carried out on Dutch farms and the result also indicated that debt did not have any impact on return on equity.

A couple of studies also carried out on leverage reached a different conclusion, which is the use of debt leads to negative leverage. A study carried out by Zou and Xiao (2006), on financing behaviour of listed Chinese firms resulted in a conclusion that a negative relationship between profitability and firm leverage exists. Another similar research by Lin and Rowe, (2006) also supports the same conclusion.

Even if debt might lead to a positive leverage, several studies identified accessibility of debt as a major constraint to the effective use of debt to increase the return to shareholders. These findings and causes of low leverage in small firms' capital structure are briefly discussed below.

**Studies Relating Debt to Accessibility**
Several studies in developing and developed economies found that the size of a firm affects their accessibility to debt finance (Biggs & Srivastava, 1996), (Schiffer & Weder, 2001), (Kumar & Francisco, 2005) and (Raj & Sutthisit, 2003). Access to debt finance is closely related to firm size and small firms tend to receive far less formal credit compared to larger firms. The reason is that small firms are perceived as high risk clients by lenders.

A lack of collateral, unknown financial background and a lack of economies of scale are some of the reasons cited for high risk (Biggs & Srivastava, 1996:5). Statistics on Zimbabwe by Biggs and Srivastava (1996:7-9) indicate that the number of small firms who received bank loans is 32%, whilst medium firms were 53% and large firms 62%. Small firms who obtained bank overdrafts is 50% compared to 83% and 90% for medium and large firms respectively. Although there are a considerable percentage of firms obtaining formal debt, the average maturity of that debt is 17 months compared to 40 and 47 months for medium and large manufacturing firms respectively.

Kochhar and Hitt (1998) also supported that accessibility to a particular type of financing such as debt depends on firm size. The funding of small firms by banks is limited and banks usually charge significant premiums on debt interest. Interest leveled on loans for small firms is often high, simply because of the perception that they are more likely to fail and therefore more risky. The other reason for limited bank loans to small firms is that administrative costs of maintaining smaller loans are relatively higher than for bigger loans. Small firms also lack detailed information required by banks to acquire a loan.

Though several studies highlighted access to debt as the primary challenge facing small firms, some studies found that many small firms diversify away from bank financing even if banks are willing to lend more. The reason is that when a bank makes a loan to a firm, it gains access to the internal records and will be able to influence the activities of the firm. Therefore, for firms to avoid this, they diversify away from the use of bank loans (Rajan, 1992: 1367-1371).

**Methodology**

Value of a firm refers the worth of a firm and it is a futuristic concept, that is, value is derived from a firm's future benefits. Value of a firm to the owners of a firm is the worth of their equity in the firm. Together, owners and lenders view value as the total worth of the firm's assets. This therefore entails that the value of a firm is equal to the total capital employed which is also equal to the employment of that capital. Any decisions that are made within a firm should be done to maximize the value of a firm and minimise the risk of the firm. Decisions that maximize the value of a firm will result in greater returns being generated by the firm (Kriek, Beekman & Els, 2005:108). In other words, it can be deduced that a change in the value of a firm can be determined by comparing returns to shareholders. An increase in returns to shareholders implies an increase in the value of a firm and a decrease implies a decrease in value, all things being constant.

**Data Collection**

A quantitative research method of data collection will be followed in conjunction with a descriptive research methodology which refers to a research methodology that is used to

describe a problem or opportunity in detail. Self-administered questionnaires will be used to gather primary data. The questionnaires will be given to owners/managers of small manufacturing firms to complete and a fieldworker will assist with any misinterpretations. Self-administered questionnaires are free from interviewer bias and the respondents enjoy the convenience of completing the questionnaires at their own pace. In addition, respondents who might otherwise be inaccessible can be accessed.

The population of the small manufacturing firms for the research study is $400^2$ adhering to the definition applied to this study (Central Statistics Office, Zimbabwe, 2006). The database for the selection of respondents will be provided by the Ministry of Small and Medium Enterprises of Zimbabwe.

The participants will be selected using the probability sampling method which constitutes a method that uses random selection to identify respondents. The sample will constitute 200 respondents from the total population of small manufacturing firms identified. The formula below was used for the calculation of the sample since it is relevant to studies where a probability sampling method is used (Roberts-Lombard, 2006:87).

n ≥ N/ (1+Nd2/10 000), where:

N= Total population

d= error estimate with a confidence interval of 95% (5% statistical error)

n= sample size

Therefore, n≥ 400/ [1+400(5)2/10000]   which implies that   n ≥ 200

Stratified random sampling will be used to select respondents from the list provided. The population will initially be categorized into different strata and then simple random sampling will be used thereafter. The reason for the use of this method is for the researcher to be able to achieve the third objective which is unattainable if simple random sampling is used (determination of the impact of product manufactured on accessibility of debt to small firms).

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[2] The approximate number of small firms in Bulawayo is 700. the population number was determined by the intuition tat manufacturing sector constitute 64% of all urban small business activities (Liedholm and Mead, 1999:3).

**Data Analysis Procedure**

The initial stage for data analysis is to determine ROA, ROE and debt ratio. ROA will be used to determine the effect of leverage; ROE will be used to determine the effect of debt on profitability whilst the debt ratio will determine the capital structure. ROA is calculated by dividing income before interest and tax by average total assets and then multiply by 100 to get the percentage. ROE will be calculated by dividing net income with equity and multiply by 100. Debt ratio is total debt divided by total assets/capital (Damodaran, 1999:153-154).

An increase in ROE therefore reflects an increase in the value of a business. It should be noted that debt in the capital structure increases risk and can only benefit the value of the firm if $\dfrac{EBIT}{TotalAssets}$ is greater than before tax interest rate on debt. If not, leverage is negative and the value of the firm will be alternatively affected.

The data collected will be analysed initially by the use of profitability ratios (ROE and ROA).The debt and profitability ratios will further be regressed to determine the statistical significance of the relationship between debt and profitability of small manufacturing firms. Apart from regressing the profitability ratios, regression analysis will also be used to determine the relationship between debt accessibility to small firms and its products and size.

**Regression Equations**

Two regression equations will be used to determine the pattern and strength of the relationship that exist between leverage and value/profitability of a small firm and between debt accessibility and size and product. To determine the impact of debt on profitability of a firm, a two-variable regression equation will be used. For debt accessibility and size and product, a multiple-variable regression equation will be used.

These regression equations are outlined below.

- **Two-variable regression equation**

$P = \alpha + \beta_1 \text{Debt ratio} + \varepsilon$

Where P refers to profitability

$\alpha$ is a constant.

$\beta_1$ measures association between profitability (P) and debt ratio thus, the amount by which P changes on average when debt ratio changes by one unit

$\varepsilon$ is the error or disturbance term

- **Multiple-variable regression equation**

$D = \alpha + \beta_1 \text{Size} + \beta_2 \text{Product} + \varepsilon_1$

Where, D refers to debt accessibility

$\beta_1$ is the amount by which debt (D) changes on average when size changes by one unit and all the other explanatory variables remain constant. It measures the association between size and debt accessibility adjusted for all other explanatory variables.

**Expected Results of Regression Equations**

These regression equations are likely to result in mixed results. For firms without access to government debt that is offered at concessionary rates, there is a possibility that debt would be negatively related to value that is, a negative co-relationship will prevail. Apart from high interest rates, bankruptcy costs are likely to be high due instability of the Zimbabwean economy as a whole. Though the use of debt can result in higher returns being obtained, the real value of the returns are likely to be low as the nominal rates will be inclusive of inflation. It is also likely that the size of the firm is going to impact on debt accessibility negatively. The products manufactured could also affect the accessibility of debt to small firms. Firms that manufacture higher value products which

are easy to market are likely to be more favoured by financial institutions than those manufacturing low value products and products that are difficult to sell.

For small firms that are able to acquire cheap government debt with an interest rate pegged at 50%, there are higher chances that their use of debt will lead to increases in firm value. This is because the cost of government debt is far much lower than the market rate which implies that the government is earning losses on these debts. Put differently, the government is subsidizing interest to small manufacturing firms that acquire the government loans.

**Recommendations**

Selection of debt as a source of capital finance should be done in line with the costs and benefits associated with its use. Costs such as interest, bankruptcy and agency should be weighed against the tax benefits of debt. The initial phase to assess the impact of using debt on firms' returns should start by comparing expected ROA to the estimated cost of debt. If the return on assets is higher than the before-tax interest on debt (interest rate), small business owners/managers can then go on to assess any other costs presented as a result of using debt.

To increase the accessibility of loans to them, small business owners can pool their resources together and approach banks as a single entity. This can only be possible if there is mutual trust between members. A thorough market analysis to determine the marketability of products can also assist in the reduction of risks associated with small firms. Market analysis can as well be done by combining resources and perform the analysis together. Apart from the pooling of resources, small business owners/managers should be able to thoroughly analyse the industry in which they are operating. The analysis of the extent of competition among firms in the same industry helps small business owners to invest in best investment at the same time reducing risks of business.

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