

# Unlocking shareholder value by moving closer to the optimal capital structure

Johannes vH de We; Kivesh Dhanraj

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## Synopsis

This article explores the different current capital structure theories, indicates how significant amounts of value can be unlocked by moving closer to the optimum level of gearing, using a listed company, Mr Price, as an example. Furthermore, it explains why it may be preferable to try to operate within a certain acceptable interval for financial gearing rather than to try to attain the absolute optimum capital structure.

**T**he essence of financial management is the creation of shareholder value. According to Ehrhardt and Brigham (2003:442), the value of a business based on the going concern expectation is the present value of all the expected future cash flows to be generated by the assets, discounted at the company's weighted average cost of capital (WACC). From this it can be seen that the WACC has a direct impact on the value of a business.

The WACC is calculated in relation to the mix of debt to equity of a company. The sources of long-term capital determine the average cost of capital and the lower the WACC, the higher the value of the company (theoretically, at least). Currently there are four theories that try to explain how to arrive at the optimal capital structure (which directly impacts on WACC and hence on the value of a business). Smart, Megginson and Gitman (2004:418) mention these four predominant capital structure theories as follows:

- The trade-off theory.
- The pecking order theory.
- The signaling theory.
- The managerial opportunism theory. ✉

## The trade-off theory

This theory was first developed by financial management pioneers Modigliani and Miller in 1958 and has since been revised considerably to date. The initial theory, under certain strict assumptions, showed that the capital structure has no impact on the WACC and hence no impact on the value of the company. However, as these assumptions were relaxed, it indeed appeared that the capital structure did affect the WACC of a company. If an optimal capital structure does exist, greater attention should be given to the areas that were initially just regarded as assumptions. These areas were:

- there are no brokerage costs;
- there are no taxes;
- there are no bankruptcy costs;
- investors can borrow at the same rate as corporations;
- all investors have the same information as management about the firm's future investment opportunities; and
- EBIT (earnings before interest and tax) is not affected by debt.

It can be deduced from the above assumptions that the inputs determining the WACC are very dynamic and are affected by an ever-changing environment. Hence, a specific optimal structure cannot exist for a long period of time. Instead, a range of optimal capital structures should be determined. This can be seen in South Africa for example, as we move from a period of good economic growth and low inflation and interest rates (over past 5 to 6 years), to a period of high inflation and interest rates.

## Pecking Order Theory

This theory can be described as the raising of finance in a specific order by (internal) management. This "pecking order" is to utilise retained earnings first, then debt, then convertible debt and preference shares, and as a last resort new issues of equity.

The reasoning of this order links directly with the signaling theory and information portrayed to the market investors. As a result, no target capital structure is pursued, but rather a resultant structure of management's decisions. These decisions are conveyed to the market, which will ultimately agree or disagree on the methods of financing by comparing it to its own perceptions of the ideal range of capital structures.

## Signaling theory

Management's internal perception may be different to the investor market, and management may use certain decisions (e.g. financing decisions) to signal certain information to the market.

The reasoning behind the signaling theory is based on the contention that the only way in which a manager of an undervalued firm can convince investors of the true value of the firm is to send a costly signal. This signal must be hard to mimic for a manager of a less valuable firm. Issuing debt is such a signal. Investors would react to increased debt by bidding up the share price, thereby increasing the value of the firm.

## Managerial opportunism theory

This is currently one of the latest theories developed to explain the optimal mix of debt to equity. This theory explains that the capital structure is a resultant of the past decisions of management to take advantage of the company's economic environment, i.e. to issue or buy back shares when the share price is high or low.

Companies try to issue shares when share prices are high and issue debt when share prices are low. Consequently, a company's capital structure just reflects the cumulative effect of managers' past attempts to issue shares at times when prices were high.

## Optimal capital structure for a listed company

The latest available financial statements for Mr Price (2006) were used in the analysis, and the model presented by Ehrhardt and Brigham (2003:494) was applied to determine the optimal capital structure. The five steps specified by Ehrhardt and Brigham (2003:494) to be used in the analysis are:

- estimate the interest rate the firm will pay;
- estimate the cost of equity;
- estimate the weighted average cost of capital;
- estimate the free cash flows and their present value, which is the value of the firm; and
- deduct the value of the debt to find the shareholders' wealth, which is to be maximised.

Table 1 shows the analysis for Mr Price. In the first column of the table the percentage of long-term debt financing is indicated. Intervals of 5% were used, up to a maximum of 60% debt. In the second column, the debt/equity ratio for that level of gearing is calculated, for instance, if debt is 50% and equity is 50%, then the debt/equity ratio is 50%/50% equalling 100%. In the third column, the before-tax cost of debt is specified. This percentage was estimated by dividing the interest paid by the total interest-bearing debt for each company.

In order to adjust interest rates for financial distress at higher levels of debt, 0,25% was added (according to the researcher's own judgment) to the before-tax interest rate for each increase of 5% in debt from a debt level of 40% for Mr Price (a retailing company); then 0,5% was added from a debt level of 50% and 1% at a debt level of 60%. In the fourth column, the after-tax interest rate is calculated by multiplying the percentage in column 3 by (1 - tax rate of 29%).

All the financial data was obtained from the McGregor Bureau for Financial Analysis (BFA). For the calculation of the cost of equity, the well-known capital asset pricing model (CAPM), which is the model most widely accepted according to Killian (2005:56), was used. The RSA 153 government bond rate, which stood at 8,02% on 20 June 2006, was used as a risk-free rate. The market risk premium was set at 6%, which is considered appropriate for the South African share market. The beta was estimated using five years of historical monthly data to 20 June 2006 and with the FTSE JSE free-float overall index as the proxy for the market.

The beta for each company was first u-levered and then levered for each level of gearing by using the formulas developed by Hamada (1969:19) and refined by Conine and Tamarkin (1985:55). The formulas are the following:

$$\begin{aligned}\beta_L &= \beta_U [1 + (1 - T)D/S] \\ \beta_U &= \beta_L / [1 + (1 - T)D/S]\end{aligned}$$

where

$$\begin{aligned}\beta_L &= \text{beta of levered company;} \\ \beta_U &= \text{beta of unlevered company;} \\ T &= \text{tax rate;} \\ D &= \text{market value of debt and} \\ S &= \text{market value of stock value (equity).}\end{aligned}$$

In column 6 of Table 1, the cost of equity is calculated and in column 7, the WACC is determined, based on the appropriate weights. In column 8, the value of the firm is estimated using the method proposed by Erhardt and Brigham (2003:497), which involves dividing the net operating profit after tax by the WACC.

Table 1: Mr Price – Capital structure and value of firm

Percentage	Market	Before-tax	After-tax	Estimated	Cost of	Weighted	Value of
debt	debt/equity	cost debt	cost debt	beta	equity	cost of cap.	firm
$w_d$	D/S	$r_d$	$(1 - t)r_d$	$\square$	$r_s$	WACC	V (R mil.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0%	0%	10,20%	7,24%	0,7939	12,78%	12,78%	3356
5%	5%	10,20%	7,24%	0,8236	12,96%	12,68%	3385
10%	11%	10,20%	7,24%	0,8565	13,16%	12,57%	3414
15%	18%	10,20%	7,24%	0,8934	13,38%	12,46%	3443
20%	25%	10,20%	7,24%	0,9348	13,63%	12,35%	3473
25%	33%	10,20%	7,24%	0,9818	13,91%	12,24%	3504
30%	43%	10,20%	7,24%	1,0355	14,23%	12,14%	3535
35%	54%	10,20%	7,24%	1,0974	14,60%	12,03%	3567
40%	67%	10,45%	7,42%	1,1697	15,04%	11,99%	3578
45%	82%	10,70%	7,60%	1,2551	15,55%	(Min) 11,97%	(Max) 3584
50%	100%	11,20%	7,95%	1,3576	16,17%	12,06%	3558
55%	122%	11,70%	8,31%	1,4828	16,92%	12,18%	3522
60%	150%	12,70%	9,02%	1,6394	17,86%	12,55%	3418

Figure 1: Mr Price – Cost of capital at different capital structures

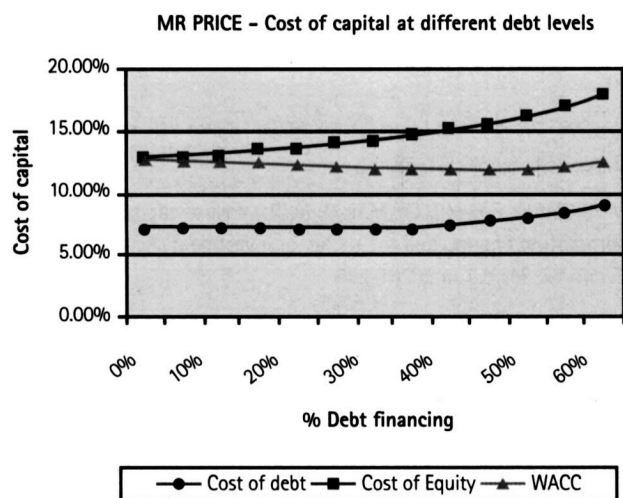
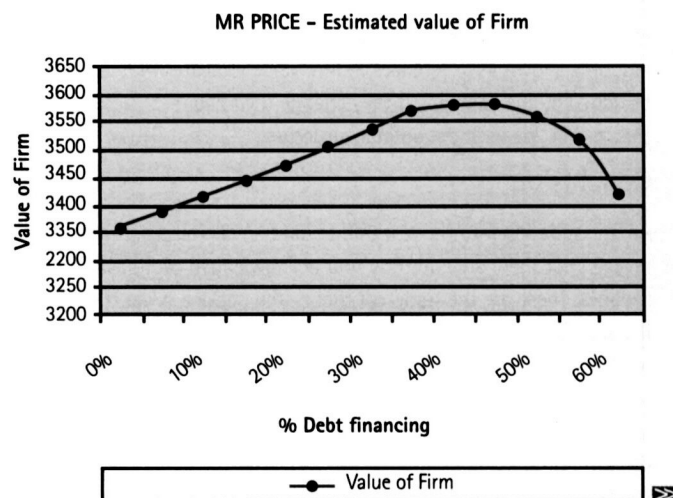


Figure 2: Mr Price – Value of the firm at different capital structures





The results of the analysis depicted on the graphs in Figures 1 and 2 clearly indicate how the value of the firm can be increased with increased levels of debt, starting from an all-equity (zero-debt) situation. At the financial structure that yields the lowest WACC, the value of the firm as a whole is also maximised. A comparison of the actual debt to total capital ratios (based on market values), as opposed to the optimal level of debt, reveals the following:

Company	Current debt financing %	Optimal %	Current firm value	Optimal firm value	Difference in firm value
Mr Price	2%	45%	R3 356m	R3 584m	R228m

The estimates of the current values for the firm were based on the current debt financing percentage (rounded to the nearest 5%) and the estimated amounts produced by the analysis. Theoretically, the amounts shown as differences in firm value indicate what value could be added by the company if they change their capital structure so that it is in line with the optimal structure.

## Conclusion

An investigation into the research to date on capital structures reveals that there are currently four acknowledged capital structure theories. These are the trade-off theory, the pecking order theory, the signaling theory and the managerial opportunism theory. The work of Modigliani and Miller (1958:261), incorporating subsequent adjustments, is still regarded as groundbreaking and relevant in the modern business environment. The trade-off theory has the most support currently, although the pecking order theory has become a strong rival in explaining capital structures.

Many factors determine the way in which a company raises finance. These, in turn, influence its capital structure. New loans and share issues are usually raised in "lumpy" amounts, making it almost impossible for a company to remain at an optimal capital structure. The trade-off model as illustrated can be used as a point of departure to assist companies to engineer their capital structures in such a way that it remains in an optimal interval (zone) and maximises value for the shareholders. [258](#)

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Johannes vH de We, BAcc (hons), CA(SA), MBA, DCom, is an associate professor in the Department of Financial Management in the Faculty of Economic and Management Sciences at the University of Pretoria. Kivesh Dhanraj, BCom (hons) is a Trainee accountant at Deloitte.