The relationship between the accounting sustainable growth rate and the cash flow sustainable growth rate

J.H. Burger & W.D. Hamman
Graduate School of Business, University of Stellenbosch, P.O. Box 610, Bellville, 7353 South Africa

Received August 1999

The accounting sustainable growth rate is used by financial managers and bankers to determine possible financing needs and investment opportunities for companies. However, the authors contend that as this rate is based upon accrual figures that do not reflect the cash position of a company, it could lead to situations in which the company could grow itself into cash problems. In this regard they suggest a cash flow sustainable growth rate (CFSGR), which is defined as the rate at which the company can grow whilst still maintaining a target cash balance in the balance sheet. The relationship between the accounting SGR and CFSGR is then investigated. The authors found that while the accounting SGR is not affected by the non-cash components of working capital, nor by any changes in the non-cash components of working capital, the CFSGR is. Both rates are influenced by the profitability of the company. The accounting SGR is influenced by the growth in sales, while CFSGR is not. The authors do not contend that the CFSGR should replace the accounting SGR, but that it is in the company's best interest to take cognizance of the CFSGR and its implications for the company's growth and cash position.

Introduction

Strategic planners differentiate between so-called strategic objectives and financial objectives. Thompson & Strickland (1998: 37–38) refer to strategic objectives as being relevant for the long-term health of a company, whilst financial objectives refer to the shorter term. However, when distinguishing between the two types of objectives, they mention growth as an example in both categories. Growth is defined *inter alia*, as growth in market share (strategic objective), growth in profitability (financial objective) and growth in turnover (financial objective).

Kaplan & Norton (1996: 4) link financial objectives to a business' life cycle. One such stage in the life cycle is the growth stage, during which the business is at the early stage of its life cycle, with products or services with significant growth potential. They make the point that the exploitation of such growth opportunities may consume more cash than can be generated by the existing products, services, and customers. They are of the opinion that the overall financial objective for growth-stage businesses will be percentage growth rates in revenues, and sales growth rates in targeted markets, customer groups, and regions.

This approach or opinion is not new. In the field of strategic planning and analysis, the Boston Consulting Group developed a strategic planning matrix in the 1960s that looks at a firm's market share and its growth rate. More recently, Donaldson (as stated in Ross, Westerfield & Jaffe, 1996: 691) reported on the pervasiveness of stating corporate goals in terms of growth rates.

Although this is by no means an exhaustive exposition on the importance and role of growth as a corporate objective, it does serve to emphasize the frequent use of growth as a means of stating corporate strategic and financial objectives. However, as Van Horne states,

> 'the management of growth requires careful balancing of the sales objectives of the firm with its operating efficiency and financial resources' (1997: 743).

In this regard, the 'sustainable growth rate' (SGR) has been defined as the

> 'maximum annual percentage increase in sales that can be achieved based on target operating, debt, and dividend payout ratios' (Van Horne, 1997: 744).

If this growth rate is exceeded, the underlying target ratios will not hold and it could lead to increased debt, equity and even bankruptcy.

However, it is the intention of this article to show that there is another growth rate of similar or even greater importance, namely the cash flow sustainable growth rate (CFSGR). This is the rate at which the company can grow whilst still maintaining a certain target cash balance in the balance sheet.

The next section of this article will consist of a discussion of the accounting SGR. It is followed by an explanation and discussion of the CFSGR. By means of a comprehensive generic example the relationship between the accounting SGR and CFSGR will be shown. The article ends with a section of the most important conclusions regarding the SGR and CFSGR.

Accounting Sustainable Growth Rate

As stated in the previous section, the SGR is the maximum annual percentage increase in sales that can be achieved based on certain target ratios. According to Ross, Westerfield, Jordan & Firer the SGR illustrates the

> 'explicit relationship between the firm's four major areas of concern: its operating efficiency as measured by profit margin, its asset use efficiency as measured by net asset turnover, its financial policy as measured by the debt/equity ratio, and its dividend policy as measured by the retention ratio' (1996: 94–95).

If the firm has a stated policy in respect of these four factors, there is only one ratio at which the firm can grow, namely the SGR.

Ross *et al.* (1996: 92) expressed the equation for the SGR as:

$$SGR = \frac{bxROE}{1-(bxROE)} \quad (1)$$

Where:

ROE = Return on equity
b = retention ratio [(attributable profit – dividends)/ attributable profit]

Various other authors have also developed formules for the SGR, based upon different assumptions. However, the formula as presented by Ross *et al.* will suffice for the purpose of this article.

The SGR is a planning instrument that can be used by a firm's financial managers and bankers alike. Bankers will use the SGR to determine possible financing needs, as well as investment opportunities for companies. They can also use the SGR to explain to inexperienced managers that it is necessary to keep the growth of the firm and its profitability in proper balance to maintain its long-term viability. Furthermore, bankers can compare actual growth rates with the SGR to gain a better understanding of why a loan applicant needs funds, as well as the duration of the requirement (Ross *et al.*, 1996: 93).

A firm's financial managers can use the SGR to ensure internal consistency among the firm's various goals. Also, the SGR can be used to test the feasibility of a planned growth rate. Should the planned growth rate exceed the SGR, the firm will need to relook its profit margin, asset turnover, financial leverage and dividend policy (Ross *et al.*, 1996: 95).

Cash Flow Sustainable Growth Rate (CFSGR)

In calculating the accounting SGR, entries in the income statement and balance sheet are used. These figures are based on the accrual principle, and do not reflect the true cash position of the company. The balance sheet will show that cash increased or decreased, but not why. In order to show why the cash balance increased or decreased the cash flow statement is used. The three main sections of the cash flow statement are cash flow from operating activities, cash flow from investing activities and cash flow from financing activities. The inflow/outflow of cash in these three sections explain the increase/decrease of the cash balance in the balance sheet.

It is general knowledge that a company can have very high profits, but still file for bankruptcy due to a lack of cash. Therefore, it is obvious that ratios/rates based on the income statement and balance sheet could lead to a distorted picture of the company's cash position. It is thus possible that a company could grow at below the SGR, but still experience cash problems.

The difference between the entries in the income statement (profit) and the cash retained in the cash flow statement has primarily to do with the increase/decrease in the non-cash component of working capital (debtors, creditors, stock). It is the contention of the authors that the SGR has to be adjusted to provide for the changes in the non-cash components of working capital (ΔNCC:WC). This adjustment would lead to the development of the CFSGR. This rate is defined as that rate at which the company can grow whilst still maintaining a target cash balance in the balance sheet.

The accounting SGR has as one of its elements the sales-to-asset ratio, which is a composite of the debtors' period, inventory turnover ratio, fixed asset management, and liquidity management. However, it is possible that certain elements in this ratio could dominate others to such an extent that the impact of the ΔNCC:WC is underestimated. Furthermore, it will be shown that the assumption as stated does not provide for ΔNCC:WC. Therefore, the SGR will not reflect ΔNCC:WC.

The question that is to be answered is the following: if the activity periods of a company are to be kept constant, at what rate could a company grow if the cash balance is to be kept constant? Before the question will be answered, it is first necessary to investigate the basic premise of the traditional growth models *versus* that of the CFSGR-model.

The basic balance sheet is as follows:

Equity + Debt	Fixed assets
Current liabilities (Creditors)	Current assets (Debtors, stock and cash)

The traditional growth models postulate that:

- Fixed assets are a function of turnover (varies directly proportional);
- Current assets are a function of turnover (varies directly proportional); and
- Current liabilities (creditors) are a function of turnover (varies directly proportional).

It is then obvious that equity plus debt also have to vary directly proportional with turnover (is therefore also a function of turnover).

The CFSGR-model, however, postulates that fixed assets are not a function of turnover, but is a result of a capital budget. Furthermore, the level of current assets (debtors and stock) is a function of a working capital policy which will determine the credit policy as well as the levels of stock. It will be shown that the cash balance is very sensitive to the growth rate in sales (all things being equal), and that the primary reason for this is the ΔNCC:WC.

In order to demonstrate the impact of growth in turnover on the cash balance given a certain policy in respect of debtors, stock and creditors, the following basic income statement and balance sheet is used as shown in Table 1.

The following activity periods can be calculated:

- Stock period: $\frac{300}{1200} \times \frac{12}{1} = 3 months$
- Debtors' period: $\frac{200}{1200} \times \frac{12}{1} = 2 months$
- Creditors' period: $\frac{100}{1200} \times \frac{12}{1} = 1 months$

Assuming the company increases its sales by 50% and wants to maintain its activity periods, what will happen to cash? See Table 2.

Table 1 Basic income statement and balance sheet

Income Statement for the year to 31 December 1997		
Sales	1200 units at R4 =	4800
Opening Stock	300 units at R3 = 900	
Purchases	1200 units at R3 = 3600	
	4500	
Closing stock	300 units at R3 = 900	
Cost of sales	1200	3600
Gross profit		1200
Operating costs		700
Profit before tax		500
Taxation (40%)		200
Profit after tax		R300
Balance Sheet at 31 December 1997		
Stock	300 units at R3	900
Debtors	200 units at R4	800
Cash		300
Total assets		R2000
Share capital		1000
Retained income		700
Shareholders' interest		1700
Creditors	100 units at R3	300
Total liabilities and equity		R2000

Although profit increased from R300 to R450, the cash balance in the balance sheet decreased from R300 to R50. In this balance sheet, the cash balance is the plug. The cash flow statement will show that the decrease was brought about by the ΔNCC:WC :

$$\text{Cash flow from operations (CFO)} = \text{PAT} - \Delta\text{NCC:WC.} \quad (2)$$
$$= 450 - 700$$
$$= -250$$

The negative CFO of –R250 led to the reduction of the cash balance from R300 to R50.

What would the situation have been if the company still grew at 50%, but changed its activity periods as follows?:

- Stock period : 3 months
- Debtors' period: 3 months
- Creditors' period: 1 month

See Tabel 3.

Take note that as in the previous case, the cash balance is the plug. In the last example (Table 3), a growth rate of 50% together with a change in the debtors' period from 2 months to 3 months has lead to a decrease in the cash balance from R300 in 1997, to an overdraft of R550 in 1998! From this it is obvious that the growth rate of a company together with the policy in respect of activity periods is crucial for the cash balance of a company. Table 1 showed that should a company maintain its operating efficiency, a growth in sales could lead to a decrease in the cash balance. Table 2 showed that this effect was aggravated by a decrease in operating efficiency. The opposite is also true, however, namely that should a company decrease its stock and/or debtors' period, and increase its creditors' period, it could grow at higher rates without negatively affecting its cash balance. Each time the change in the cash balance is brought about by an opposite change in the NCC:WC. The changes in the NCC:WC is a function of the

Table 2 Basic income statement and balance sheet

Income Statement for the year to 31 December 1998		
Sales	1800 units at R4 =	7200
Opening Stock	300 units at R3 = 900	
Purchases	1950 units at R3 = 5850	
	2250 units at R3 = 6750	
Closing stock	450 units at R3 = 1350	
Cost of sales	1800	5400
Gross profit		1800
Operating costs		1050
Profit before tax		750
Taxation (40%)		300
Profit after tax		R450
Balance Sheet at 31 December 1998		
Stock	450 units at R3	1350
Debtors	300 units at R4	1200
Cash		50
Total assets		R2600
Share capital		1000
Retained income (700+450)		1150
Shareholders' interest		2150
Creditors	150 units at R3	450
Total liabilities and equity		R2600

Table 3 Basic income statement and balance sheet

Income Statement for the year to 31 December 1998		
Sales	1800 units at R4 =	7200
Opening Stock	300 units at R3 = 900	
Purchases	1950 units at R3 = 5850	
	2250 6750	
Closing stock	450 units at R3 = 1350	
Cost of sales	1800	5400
Gross profit		1800
Operating costs		1050
Profit before tax		750
Taxation (40%)		300
Profit after tax		R450
Balance Sheet at 31 December 1998		
Stock	450 units at R3	1350
Debtors	450 units at R4	1800
		3150
Share capital		1000
Retained income (700+450)		1150
Shareholders' interest		2150
Creditors	150 units at R3	450
Overdraft		550
		R3150

cash cycle and the growth in sales, where the cash cycle = Stock (months) + Debtors (months) – Creditors (months) = CC.

The increase in the NCC:WC. can be calculated as follows:

$$\frac{Sales_{98}}{12}(S_{98} + D_{98} - C_{98}) - \frac{Sales_{97}}{12}(S_{97} + D_{97} - C_{97}) \qquad (3)$$

Where: S = stock period in months
= stock/average sales per month
D = debtors' period in months
= debtors/average sales per month
C = creditors' period in months
= creditors/average sales per month

Applied to the first example where $CC_{98} = CC_{97}$:

$$\Delta NCC:WC = \frac{7200}{12}(2.25 + 2 - 0.75) - \frac{4800}{12}(2.25 + 2 - 0.75)$$
$$= 600\ (3.5) - 400\ (3.5)$$
$$= 700$$

This corresponds with the data already obtained from the income statement and balance sheet.

Applied to the second example where CC_{98} changed, the increase in the NCC:WC is as follows:

$$\Delta NCC:WC = \frac{7200}{12}(2.25 + 3 - 0.75) - \frac{4800}{12}(2.25 + 2 - 0.75)$$
$$= 600\ (4.5) - 400\ (3.5)$$
$$= 1300$$

The next question to be answered is at what percentage can sales be expected to grow in order for the cash balance to remain constant. The problem can be reduced to:

- Good news (Profit after tax); and
- Bad news (Increase in NCC:WC).

The cash balance will remain constant if the good news = the bad news. The cash balance of R300 will remain constant if:

Good news = Bad news

In order to simplify the calculations of the calculated break-even point, all the activity ratios will be expressed in terms of sales. The simplification will have the effect that the calculated periods will be greater than would be the case if cost of sales (for stock) and purchases (for creditors) were used. However, as it is the trend that is important, the simplification would not undo the validity of the results. Take the 1997 Income Statement and Balance Sheet.

$$\text{Stock period} = \frac{Stock \times 12}{Sales}$$
$$= \frac{900 \times 12}{4800}$$
$$= 2.25 \text{ months}$$

$$\text{Debtors' period} = \frac{Debtors \times 12}{Sales}$$
$$= \frac{800 \times 12}{4800}$$
$$= 2 \text{ months}$$

$$\text{Creditors' period} = \frac{Creditors \times 12}{Sales}$$
$$= \frac{300 \times 12}{4800}$$
$$= 0.75 \text{ months}$$

The cash cycle = Stock + Debtors – Creditors (months)
= 2.25 +2–0.75
= 3.5 months

Let the annual growth rate in sales in 1998 be g%

	1997	1998
Sales	4800	4800 (1 + g)
Cost of sales	3600	3600 (1 + g)
Gross profit	1200	1200 (1 + g)
Operating costs	700	700 (1 + g)
Profit before tax	500	500 (1 + g)
Taxation (40%)	200	200 (1 + g)
Profit after tax	300	300 (1 + g)

In this specific case all the items in the income statement of 1997 vary in direct proportion to sales. In stead of rewriting the income statement for 1998 in terms of (1 + g), one could only write the bottom line 300 (in 1997) as 300 (1 + g) in 1998. If, however, the income statement includes fixed costs (that is costs which remain constant if sales change), then the full income statement must be rewritten on a line for line basis in terms of (1 + g) and 1.

As stated, the cash balance will remain constant if the profit after tax for 1998 is equal to the ΔNCC:WC. Stated in equation form:

Profit after tax 1998 = ΔNCC:WC 1998

$$PAT_{97}(1 + g) = \frac{Sales_{97}(1 + g)}{12}(CC_{98}) - \frac{Sales_{97}}{12}(CC_{97})$$

$$\therefore PAT_{97} + PAT_{97}(g) = \left[\frac{Sales_{97}}{12} + \frac{Sales_{97}}{12}(g)\right](CC_{98}) - \frac{Sales_{97}}{12}(CC_{97})$$

$$\therefore \frac{Sales_{97}}{12}(CC_{98}) + \frac{Sales_{97}}{12}(g)(CC_{98}) - \frac{Sales_{97}}{12}(CC_{97}) = PAT_{97} + PAT_{97}(g)$$

$$\therefore \frac{Sales_{97}}{12}(g)(CC_{98}) - PAT_{97}(g) = PAT_{97} - \frac{Sales_{97}}{12}(CC_{98}) + \frac{Sales_{97}}{12}(CC_{97})$$

$$\therefore g = \frac{PAT_{97} + \frac{Sales_{97}}{12}(CC_{97}) - \frac{Sales_{97}}{12}(CC_{98})}{\frac{Sales_{97}}{12}(CC_{98}) - PAT_{97}} \qquad (4)$$

This g is the growth rate of sales at which a constant cash balance in the balance sheet can be sustained. It is therefore the equation for the CFSGR. Calculating g for 1998:

$$g = \frac{300 + \frac{4800}{12}(3.5) - \frac{4800}{12}(3.5)}{\frac{4800}{12}(3.5) - 300}$$

$$= \frac{300 + 1400 - 1400}{1100}$$

$$= \frac{300}{1100}$$

$$= 27.27\%$$

In order to test the validity of this CFSGR, the original income statement and balance sheet is revisited and grown at 27.27%:

PAT_{98} = 300(1+0.2727)
= 381.8181

(See Table 4.)

Table 4

Balance Sheet at 31 December 1998	
Stock (grown at 27.27%)	1145.45
Debtors (grown at 27.27%)	1018.18
Cash	300
Total	R2463.63
Share capital	1000.00
Retained income (700+381.81)	1081.81
Shareholders' interest	2081.81
Creditors (grown at 27.27%)	381.82
	R2463.63

Cash is the plug. It has remained at R300, while sales and the other variable items on the income statement and balance sheet have grown at 27.27%.

The following conclusions are valid:

- If growth in sales = 0%, then ΔNCC:WC = 0 regardless of the cash cycle.
- If the cash cycle = 0, then ΔNCC:WC = 0 regardless of growth in sales.

Comparing the CFSGR of 1998 with the accounting SGR of 1998 reveals the following:

$$SGR_{98} = \frac{ROE \times b}{1 - (ROE \times b)}$$

$$= \frac{\left(\frac{300}{1700}\right) \times 1}{1 - \left(\frac{300}{1700} \times 1\right)}$$

$$= \frac{0.1764}{0.8235}$$

$$= 21.43\%$$

In this specific case the accounting SGR is lower than the CFSGR. The reasons are found in the following factors:

- The capital structure of the company
- The dividend policy of the company
- The profitability of the company
- The role of ΔNCC:WC

These reasons are based in the drivers of the accounting SGR, that is ROE and the dividend payout ratio. ROE is driven by profitability, asset turnover and gearing. The higher the ROE, the higher the accounting SGR. If the company pays no dividends, the accounting SGR will be even higher. If the balance sheet and income statement had been weaker, the calculated accounting SGR could have been less than the CFSGR. Also, had the ΔNCC:WC been more pronounced (greater) the CFSGR would have decreased to a value below that of the accounting SGR.

If the company had grown at 21.43% (a rate lower than the CFSGR), the cash balance in the balance sheet would have increased:

PAT_{98} = 300 × (1.2143)
= 364.29

$Stock_{98}$ = 900 × (1.2143)
= 1092.87

$Debtors_{98}$ = 800 × (1.2143)
= 971.44

$Creditors_{98}$ = 300 × (1.2143)
= 364.29

CFO_{98} = PAT_{98} – ΔNCC:WC
= 364.29 – (192.87 + 171.44 – 64.29)
= 64.27

It is therefore evident that the cash balance at the end of 1998 would amount to R364.27, given a growth rate in sales of 21.43%.

Should the company have grown at a rate higher than the CFSGR of 27.27%, say at 30%, it would have led to a reduction in the cash balance.

PAT_{98} = 300 × (1.30)
= 390

$Stock_{98}$ = 900(1.3)
= 1170

$Debtors_{98}$ = 800(1.3)
= 1040

$Creditors_{98}$ = 300(1.3)
= 390

CFO_{98} = PAT_{98} – ΔNCC:WC
= 390 – (270 + 240 – 90)
= 390 – 420
= –R30

Up until this point, the cash cycle of 1997 has been kept constant. Should this variable change, it would affect the CFSGR. To demonstrate this, the debtors' period of 1997 (2 months) is increased to 3 months. For 1998:

$$CFSGR_{98} = \frac{PAT_{97} + \frac{Sales_{97}}{12}(CC_{97}) - \frac{Sales_{97}}{12}(CC_{98})}{\frac{Sales_{97}}{12}(CC_{98}) - PAT_{97}}$$

$$= \frac{300 + \frac{4800}{12}(3.5) - \frac{4800}{12}(4.5)}{\frac{4800}{12}(4.5) - 300}$$

$$= \frac{300 + 1400 - 1800}{1500}$$

$$= -6.67\%$$

From this it appears that sales have to be reduced by 6.67% if the cash balance is to remain at R300 and the cash cycle is increased from 3.5 months to 4.5 months! This is an extreme example. However, it is a truism that a change in the cash cycle elements will have an effect on the CFSGR!

CFSGR: a comprehensive generic example

In order to investigate the relationship between the accounting SGR and the CFSGR, the following variables were used:

- Operating profit
- Cash cycle (stock period + debtors' period – creditors' period)

Table 5

Income Statement for the year to 31 December 1994		
Sales		R90000
Opening Stock	R15000	
Purchases	69000	
	84000	
Closing stock	R30000	
Cost of sales		54000
Gross profit		36000
Operating costs		31500
Profit before tax		4500
Taxation 35%		1575
Profit after tax		2925
Ordinary dividends		0
Retained income		R2925
Balance Sheet at 31 December 1994		
Stock		R30000
Debtors		15000
Cash		5000
Total assets		R50000
Share capital and premium		R27500
Non-distributable reserves		2000
Retained income		13000
Shareholders' interest		42500
Creditors		7500
Overdraft		0
Total liabilities and equity		R50000
Cash Flow Statement at 31 December 1994		
Cash flow from operation		
EBIT		4500
Non-cash items		0
ΔNCC:WC		
(Increase)/Decrease in stock		(3000)
(Increase)/Decrease in debtors		(3500)
(Increase)/Decrease in creditors		750
Cash flow generated from operating activities (CF02)		(1250)
Tax paid		(1575)
Cash flow available from operating activities (CF03)		(2825)
Dividends paid		0
Cash flow retained from operating activities (CF04)		R(2825)

- Sales growth

The effect of changes in these variables on the following balances/ratios were noted:

- Accounting SGR
- CFSGR
- Cash balance in the balance sheet
- Cash available from operating activities (CFO 3)
- Debt/Equity ratio

The following base income statement, balance sheet and cash flow statement were used (see Table 5).

For the purposes of this example, a detailed Cash Flow Statement is not required. The following activity ratios were calculated using Sales as the denominator:

- Stock period $= \frac{30000}{90000} \times \frac{12}{1} = 4 months$
- Debtors' period $= \frac{15000}{90000} \times \frac{12}{1} = 2 months$
- Creditors' period $= \frac{7500}{9000} \times \frac{12}{1} = 1 month$

Therefore the cash cycle = 4 + 2 – 1 = 5 months.

- Debt/Equity ratio = $\frac{7500}{42500} = 0.18$
- Operating profit margin = $\frac{4500}{90000} \times 100 = 5 percent$

The following scenario was investigated at operating profits of 5% and 20%:

- Cash cycle = 5 months
  - Sales growth = 0%
  - Sales growth = 70%
  - Sales growth = 7.39 (Accounting SGR)
- Cash cycle = 2 months
  - Sales growth = 0%
  - Sales growth = 70%
  - Sales growth = 7.39% (Accounting SGR)

The results for the years 1995 to 1998 are as illustrated in Tables 6 and 7.

From both Tables 6 and 7 the following are evident:

- Sales growth changes have no impact on the CFSGR, but it does influence the accounting SGR.
  - Note that where the sales growth was below the accounting SGR, the latter decreased over time.
  - Where the sales growth was higher than the accounting SGR, the latter increased over time.
  - It is therefore possible to increase the accounting SGR merely by growing at a higher rate than the accounting SGR.
- It is also clear that if sales growth takes place at a rate other than the accounting SGR, the Debt/Equity ratio decreases when the rate is lower than the accounting SGR, while it increases if the rate is higher than the accounting SGR. This is to be expected, as the accounting SGR is based upon this premise.

Table 6 Scenario 1: Operating Profit = 5%

Operating profit	Cash cycle	Sales growth	Year	Acc SGR	CFSGR	Cash balance	CFO2	CFO3	D/E Ratio
5%	5 mths	0%	1995	7.39	8.46	7925	4500	2925	0.17
			1996	6.88	8.46	10850	4500	2925	0.16
			1997	6.44	8.46	13775	4500	2925	0.15
			1998	6.05	8.46	16700	4500	2925	0.14
5%	5 mths	70%	1995	7.39	8.46	(16278)	(18600)	(21278)	0.61
			1996	11.70	8.46	(52449)	(31620)	(36172)	1.33
			1997	17.81	8.46	(113941)	(53754)	(61492)	2.15
			1998	25.70	8.46	(218478)	(91382)	(104536)	2.97
5%	5 mths	7.39%	1995	7.39	8.46	5370	2061	370	0.17
			1996	7.39	8.46	5766	2213	397	0.17
			1997	7.39	8.46	6193	2377	426	0.17
			1998	7.39	8.46	6650	2553	458	0.17
5%	2 mths	0%	1995	7.39	210.56	30425	27000	25425	0.17
			1996	6.88	24.22	33350	4500	2925	0.16
			1997	6.44	24.22	36275	4500	2925	0.15
			1998	6.05	24.22	39200	4500	2925	0.14
5%	2 mths	70%	1995	7.39	210.56	21973	19650	16973	0.27
			1996	11.70	24.22	12576	(4845)	(9397)	0.39
			1997	17.81	24.22	(3399)	(8237)	(15974)	0.57
			1998	25.70	24.22	(30555)	(14002)	(27157)	0.98
5%	2 mths	7.39%	1995	7.39	210.56	29533	26224	24533	0.18
			1996	7.39	24.22	31715	3999	2183	0.18
			1997	7.39	24.22	34059	4295	2344	0.18
			1998	7.39	24.22	36577	4612	2517	0.18

- Changes in the cash cycle have no impact on the accounting SGR, but it does influence the CFSGR. The longer the cash cycle, the lower the CFSGR.
- Changes in operating profit influence both the accounting SGR and the CFSGR.
- It is furthermore clear that if the sales growth differs from the CFSGR, the cash balance in the balance sheet changes:
  - Where the actual sales growth is higher than the CFSGR, the cash balance decreases.
  - Where the actual sales growth is lower than the CFSGR, the cash balance increases.

In order to determine the effect of growth at the accounting SGR on the cash balance when the former is higher than the CFSGR, data from Table 6 was used:

- Operating profit : 5%
- Cash cycle : 5 months
- Sales growth : 70%

After growing at 70% for 1995, growth is cut back to the accounting SGR for 1996, namely 11.70%. The corresponding CFSGR is 8.46%. The cash balance at the end of 1995 is equal to (R16278). The results are as follows:

- Growth at 11.70%: cash: 1996 = (R18182)
  1997 = (R20309)
  1998 = (R22685)
  - Accounting SGR: 1996 –1998 = 11.70%
  - Debt/equity ratio: 1996–1998 = 0.61% (as for 1995)
- Growth at 8.46%: cash: 1996 = (R16278)
  1997 = (R16278)
  1998 = (R16278)
  - CFSGR: 1996–1998 = 8.46%
  - Debt/equity ratio: 1996 = 0.57
    1997 = 0.53
    1998 = 0.50

It is therefore quite clear that growth at the accounting SGR could lead to a situation where, although the debt/equity ratio remains unchanged, the cash position of the company becomes precarious. Growing at the CFSGR will bring about a constant cash balance. Although not always the case, it has lead to a reduction in the debt/equity ratio in this particular example (reason: the CFSGR was lower than the accounting SGR).

It is evident from Table 6 and Table 7 that there are cases where the accounting SGR is lower than the CFSGR (possibilities are endless and depend on the structure of the income statement and balance sheet). When sales growth takes place at the higher CFSGR, the target cash balance will be maintained, but the debt/equity ratio will increase. The following examples will illustrate this point (using data from Table 6):

- Operating profit : 5%
- Cash cycle : 5 months
- Accounting SGR : 7.39%
- CFSGR : 8.46%
- Cash balance 1994 : R5000

Table 7 Scenario 2: Operating Profit = 20%

Operating profit	Cash cycle	Sales growth	Year	Acc SGR	CFSGR	Cash balance	CFO2	CFO3	D/E Ratio
20%	5 mths	0%	1995	7.39	8.46	16700	18000	11700	0.14
			1996	27.53	45.35	284000	18000	11700	0.11
			1997	21.59	45.35	40100	18000	11700	0.10
			1998	17.75	45.35	51800	18000	11700	0.08
20%	5 mths	70%	1995	7.39	8.46	(1360)	4350	(6360)	0.23
			1996	46.80	45.35	(12172)	7395	(10812)	0.35
			1997	54.20	45.35	(30552)	12572	(18380)	0.44
			1998	59.75	45.35	(61799)	21372	(31247)	0.49
20%	5 mths	7.39%	1995	7.39	8.46	14793	16559	9793	0.15
			1996	29.56	45.35	25310	17783	10517	0.13
			1997	24.50	45.35	36604	19097	11294	0.11
			1998	21.14	45.35	48733	20508	12129	0.11
20%	2 mths	0%	1995	7.39	210.56	39200	40500	34200	0.14
			1996	27.53	354.55	50900	18000	11700	0.11
			1997	21.58	354.55	62600	18000	11700	0.10
			1998	17.75	354.55	74300	18000	11700	0.08
20%	2 mths	70%	1995	7.39	210.56	36890	42600	31890	0.20
			1996	46.80	354.55	52853	34170	15963	0.23
			1997	54.20	354.55	79990	58089	27137	0.24
			1998	59.75	354.55	126123	98751	46133	0.25
20%	2 mths	7.39%	1995	7.39	210.56	38956	40722	33956	0.15
			1996	29.56	354.55	51259	19569	12303	0.13
			1997	24.50	354.55	64471	21015	13212	0.11
			1998	21.14	354.55	78660	22568	14189	0.10

When growth took place at the accounting SGR, the cash balances for 1995 to 1998 were as follows:

- 1995 : R5370
- 1996 : R5766
- 1997 : R6193
- 1998 : R6650

The debt/equity ratio for the relevant years were 0.176.

When growth took place at the CFSGR, the cash balances for 1995 to 1998 remained at the 1994 balance of R5000. However, the debt/equity ratios for the relevant years changed from 0.176 to:

- 1995 : 0.178
- 1996 : 0.180
- 1997 : 0.181
- 1998 : 0.182

Although the changes in the debt/equity ratio are minimal, it does confirm the point that growth at rates higher than the accounting SGR will lead to a change in the capital structure of the company. As this structure influences the cost of capital (including the risk profile) of the company, it may be that the change in the debt/equity ratio is not to the advantage of the company. This is a decision the company has to take consciously. However, there could be situations where growth at the CFSGR will generate so much more cash than growth at the accounting SGR (due to the fact that the former is much higher than the latter), that the excess cash could be used to decrease debt to the required debt/equity level.

In order to demonstrate the last point, data from Table 7 is used:

- Operating profit : 20%
- Cash cycle : 2 months
- Sales growth : 70%
- Accounting SGR: 1995 : 7.39%
  1996 : 46.80%
  1997 : 54.20%
  1998 : 59.75%
- CFSGR: 1995 : 210.56%
  1996 : 354.55%
  1997 : 354.55%
  1998 : 354.55%
- Debt/equity ratio: 1994 : 0.18
  1995 : 0.20
  1996 : 0.23
  1997 : 0.24
  1998 : 0.25

The 70% growth rate in sales is higher than the accounting SGR and therefore the debt/equity ratio increases. On the other hand it is less than the CFSGR and therefore the cash balance increases. Bearing in mind that the cash balance in 1994 was R5000, the following cash balances are applicable for the years 1995 to 1998:

- 1995: R36890
- 1996: R52853
- 1997: R79990

- 1998: R126123

If the target debt/equity ratio of 0.18 is to be maintained, the maximum debt allowed for the relevant years are as follows:

- 1995: $\frac{Debt}{Equity} = 0.18$

$$\frac{x}{62390} = 0.18$$

$$\therefore x = 11010$$

After growing sales at 70% for 1995, debt is equal to R12750. A reduction of debt to the amount of R1740 is therefore required to reduce the debt/equity ratio to 0.18. The same principle holds true for the years 1996 to 1998. Bearing in mind the huge cash surpluses due to the growth in sales of 70% (which is considerably less than the CFSGR), it is therefore quite straightforward to maintain a target debt/equity ratio and have enough cash to finance further growth.

Conclusion

The CFSGR is a rate which deserves careful consideration in the planning efforts of a company. It is not meant to replace the accounting SGR, but to complement it. Ignorance of the role and value of the CFSGR could lead to a company experiencing financial difficulties even when growing at or below the accounting SGR.

It has been shown that the accounting SGR is not affected by the non-cash components of working capital, nor by any changes in the non-cash components of working capital. The profitability of the company does have an effect on the accounting SGR, as does the growth rate in sales.

The CFSGR is affected by the changes in the non-cash components of working capital, as well as by the profitability of the company. It is not affected by the growth rate in sales.

If the company has an accounting SGR that is lower than the CFSGR, growth at the former will lead to an increase in cash. If the accounting SGR is higher than the CFSGR, growth at the former will lead to a decrease in cash. In both cases the debt/equity ratio will remain constant (all things equal).

Growth at the CFSGR where it is higher than the accounting SGR will keep the cash balance constant, but it will lead to an increase in the debt/equity ratio. It is possible that in some cases there will be sufficient cash surpluses to reduce the debt/equity ratio to the target level and still have enough cash available to finance growth projects without jeopardizing the target debt/equity ratio.

Growth at the CFSGR where it is lower than the accounting SGR will keep the cash balance constant, but it will lead to a decrease in the debt/equity ratio.

It must be emphasized that the CFSGR is influenced by factors such as the structure of the balance sheet and profitability of the operations of the company. Whether the CFSGR will be higher or lower than the accounting SGR will be determined by these and other factors. Companies will therefore have to determine their CFSGR and accounting SGR on an individual basis, and use these rates as a guide in their long-term strategic and financial planning. Failure to do so could lead to serious financial problems.

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