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# Cash-flow tells a story

How can cash-flow patterns assist analysts in investigating a company's financial health?

— by Wilna Steyn Bruwer and Willie Hamman

Cash has been called the lifeblood of a business. A company's ability to generate cash from its activities is a critical determinant of its survival and growth. Moreover, companies that consume cash consistently are on the way to disaster.

This makes the cash-flow statement a vital set of information for assessing financial health. It reveals a company's ability to generate sufficient cash to repay loans, to fund expansion and to pay dividends, and also enables analysts to understand how much profit is realised in cash.

Past research has established that there are distinct cash-flow patterns that can be associated with the life-cycle phases of companies. Life-cycle theory suggests that companies go through phases of start-up, growth, maturity and decline. In each phase they face different operational circumstances which give rise to different cash-flow patterns.

This research, conducted at the University of Stellenbosch Business School (USB), used empirical data to show how analysts can study a company's cash-related variables and ratios and, by comparing them with expected patterns, gain a broader understanding of the company and its relative level of maturity. The study found that listed South African industrial companies displayed predictable occurrences of cash-flow patterns associated with start-up, growing and mature enterprises. It also found that certain patterns are only sustainable over short periods. Companies exhibiting these are at the end of their life cycle, and will either disappear or be restructured.

## Vital signs: CFO, CFI and CFF

The cash-flow statement consists of three components: cash-flow from short-term operating activities (CFO), cash-flow from long-term investment in assets (CFI), and cash-flow from long-term financing activities (CFF). The statement reflects the net change in cash in a financial year.

The CFO is a very important variable as it represents the cash generated before dividend payouts, and it should generally be positive to signify a healthy company. A company must generate sufficient cash from operational activities (CFO inflow) to repay loans and pay out dividends (CFF outflow), and to replace long-term assets (CFI outflow). Otherwise, it has to obtain

cash through new loans or share issues (CFF inflow). If the CFO remains negative for too long, the confidence of investors and financiers drops.

Some analysts maintain that CFO must be positive while both CFI and CFF must be negative. This pattern shows a company that generates enough cash to finance investment and redeem debts.

However, caution is advised when one observes these patterns. Under normal circumstances, CFI is expected to be negative as companies should regularly be replacing long-term assets and investing in new growth opportunities. A positive CFI then indicates that the company is selling long-term assets to finance daily activities and, hence, may be depleting its operational resource base. But, a positive CFI may be acceptable if it flows from restructuring, for example the sale of a subsidiary.

Likewise, a positive CFF is questionable when CFO is negative, implying that long-term financing is necessary to fund daily activities. But positive CFF may be fair enough when CFO is positive and the company is securing external finance as leverage.

A simplistic view of the signs of these cash-flow components is therefore not adequate.

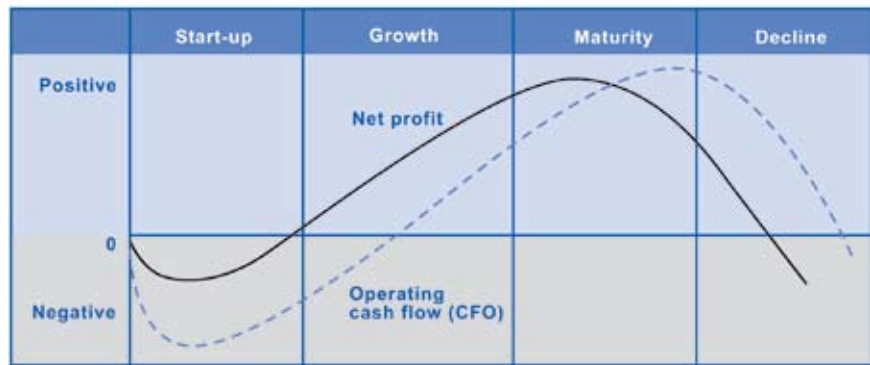
## When a company starts showing both a negative profit and a negative CFO, the chances of liquidation become greater.

### Life-cycle phases hold clues to cash-flow patterns

Life-cycle theory is helpful for understanding why these patterns may be different over time. The diagram (to right) explains the company life-cycle concept, from the start-up phase through successive phases of growth, maturity and decline. It also shows the expected patterns of net profit and operating cash flow (CFO) as a company progresses through the stages.

CFO is a function of net profit minus, *inter alia*, the net increase in working capital.

**Start-up phase:** A company will probably not show a profit because the establishment costs exceed income. This, together with the growing



Net profit and CFO through a company's life cycle

requirements for working capital, causes a strongly negative CFO. New loans and share issues are used to finance the shortfall in CFO and investment in long-term assets. This phase continues until the company starts earning enough income to show a profit. At that point the growth phase commences, but CFO will still lag net profit in becoming positive.

**Growth phase:** Although the company may show a net profit by now, the CFO may still be negative if sales growth is too high and the working-capital structure causes net investment

remain positive. As the accounts receivable are collected, the decline in CFO will lag the decline in net profit. When a company starts showing both a negative profit and a negative CFO, the chances of liquidation become greater. However, some companies rejuvenate themselves through new product lines or technologies, or by restructuring. A company in decline will usually sell some long-term assets to obtain funding, since external financing may be harder to source.

Analysts note that CFF will probably be positive early in the life cycle and negative during maturity and decline. It is to be expected that the CFI is negative in the first three phases and positive during the decline phase. High growth in sales and investment is characteristic of the early phases. During these periods dividend payments are low, as the available cash is needed to finance expansion.

### What do different patterns reveal?

With the different cash streams as a basis for analysis, there are eight possible patterns to consider. Some previous researchers have studied these patterns and made certain links between them and different life-cycle phases, as shown in the table on the right.

### Evidence from South African companies

The USB study examined the distribution of patterns among the entire population of South African industrial companies listed on the JSE Securities Exchange for which the necessary cash-flow information was available.

To compare patterns under different economic

in working capital to grow faster than profit generated from sales.

**Maturity phase:** A mature company is profitable and generates enough positive cash flow from its operations for extended periods. As sales start slowing down, profits will also slow down. Inventory levels decrease and accounts receivable begin to show a net inflow. This causes the CFO to exceed profit. Investment in long-term assets (CFI) will probably be for replacement rather than for expansion purposes. A mature company uses the excess cash to pay dividends and settle loans.

**Decline phase:** Profits decrease, but may

Pattern	Cash from operations (CFO)	Cash from investment (CFI)	Cash from financing (CFF)	Comment	Life-cycle phase
1	+	+	+	Extraordinary pattern – can only be temporary.	n/a
2	+	-	-	A healthy company that generates sufficient CFO to fund day-to-day activities, some investment in expansion, and settlement of debt.	Characteristic of a <b>mature, successful and moderately growing</b> company.
3	+	+	-	The company generates a positive CFO, but is selling long-term assets or investments, perhaps to settle debt or buy back shares.	This can be a company in <b>decline</b> , but also a restructuring company.
4	+	-	+	Positive cash is generated by operations, but not enough to fund investment.	Typical of a company in its <b>later growth</b> phase.
5	-	+	+	Extraordinary pattern. The company does not generate a positive CFO and funds the deficit by selling assets, obtaining loans or issuing new shares.	Most likely the <b>end of its life cycle</b> in its current form.
6	-	-	+	The company does not generate enough cash to fund day-to-day activities. Loan debt and new share issues are used to finance current and long-term capital expansion.	Typical of a young company in its <b>start-up or early growth</b> phase.
7	-	+	-	Long-term assets are sold to offset a negative CFO and redeem loan debt. This pattern cannot continue without leading to liquidation.	The company is in deep <b>decline</b> .
8	-	-	-	Also extraordinary – only possible if the company has internal cash reserves. This pattern spells financial trouble and can only persist for a limited period.	n/a

conditions, calculations were performed for financial periods ending in 1993 (the turning point after a downward economic cycle) and in 1996 (the last part of an upward cycle and the turning point thereafter). The calculations were also done for the periods ending in 2002 (part of a prolonged upward cycle), for a comparison with the current economic cycle. One-year cash-flow patterns were calculated, as well as cumulative patterns over periods of three, five and ten years.

**Findings were based on calculating the median for each of these variables:**

- profitability as net profit as a percentage of sales (NP%)
- cash from operations as a percentage of sales (CFO%)
- dividend payout as a percentage of net profit (Div)
- the size of the company as total assets in rand (TA in R)
- percentage growth in sales
- percentage growth in assets
- cash from investment as a percentage of

- sales (CFI%)
- cash from financing as a percentage of sales (CFF%)
- total debt to total assets (TD:TA)

**The findings**

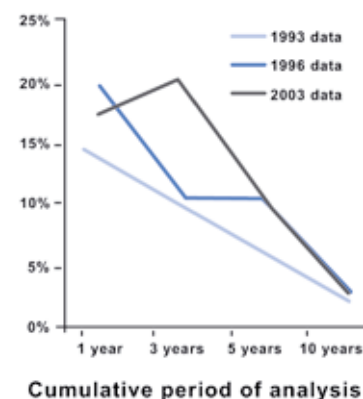
From the results of previous studies into the occurrence of different patterns, it was expected that the South African companies should display similar characteristics. A number of particular expectations were examined.

**Expectation 1:** *Companies may report negative CFOs over the short term, but to remain healthy, they should generate positive CFOs over the longer term.*

This was found to be true. The only exception to the trend of decreasing occurrence of negative CFOs over a longer cumulative period was the three-year period ending in 2002, which had a

higher incidence of negative CFOs than the one-year period, as displayed in the graph below.

**Percentage of companies with a negative CFO**

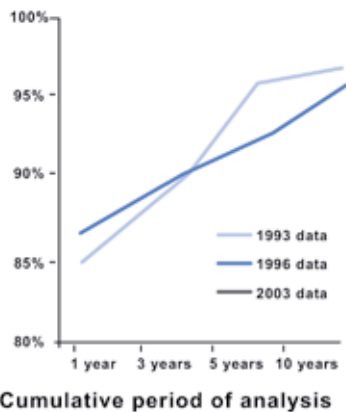


***Companies may report negative CFOs over the short term, but to remain healthy, they should generate positive CFOs over the longer term.***

**Expectation 2:** *A normal solvent company tends to invest in long-term assets and investments over the long term. Companies would therefore display positive CFIs over the short rather than the longer term. Alternatively, the frequency of negative CFIs should increase the longer the investigation period.*

This reasoning was supported as the incidence of negative CFIs increased with each successive longer period of investigation, as shown in the graph below.

**Percentage of companies with a negative CFI**



**Expectation 3:** *Under positive economic conditions, the sentiment of investors and finance providers will carry companies that do not generate a positive CFO for longer than in a negative climate.*

All the periods ending in 1996 (the more positive economic climate) showed a higher occurrence of negative CFOs than those ending in 1993 (at the end of the cyclical downturn), during which companies in financial distress would have failed (see the graph *Percentage of companies with a negative CFO*). This confirms the expectation that a positive economic climate will support companies in distress longer before they fail.

**Expectation 4:** *Pattern-2 companies (+ - -), the mature companies, should show the highest net-profit and CFO percentages and have the highest total assets. They would have cash to*

*spare, and would therefore pay out the highest dividends.*

The findings supported most of these expectations. Contrary to expectations, however, pattern-4 companies reported the highest total assets in most of the periods.

## ... a positive economic climate will support companies in distress longer before they fail.

**Expectation 5:** *Pattern-4 companies (+ - +), the growing companies, should display the highest growth in sales and total assets as well as in inventories, accounts receivable and accounts payable. With a positive CFO that can be used for investment and a favourable profile for investors to supply additional financing (positive CFF), their investment cash outflow (negative CFI) should be the highest.*

Almost all these expectations were confirmed. The exception was that growth in accounts receivable was shared between pattern-4 and pattern-6 companies.

**Expectation 6:** *Pattern-6 companies (- - +), the start-up companies, should display the highest inflow of cash from financing (positive CFF) since they do not yet generate a positive CFO and need external funds to invest in growth opportunities. Total debt in proportion to total assets should also be the highest, as they do not yet have many assets in place.*

Both expectations were found to be justified. CFF (positive) and total debt to total assets were the highest in this type of company for all the periods.

**Expectation 7:** *Patterns 1, 5, 7 and 8 are extraordinary – such companies would either improve conditions or fail. These patterns would be rare, especially over longer periods.*

These patterns were indeed found to be few and declining over longer cumulative periods.

### Heeding the signs

The study shows how important it is for analysts to take note of the signs of the different

cash-flow categories, and how they indicate the life-cycle stage of a company, before departing on a more detailed investigation of its financial health.



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the USB published this research as an article, *Cash flow patterns in listed South African industrial companies*, in *Meditari Accountancy Research*, 2005, 13(1). It was based on work done as part of doctoral research by Wilna Bruwer under the supervision of Prof Hamman. The dissertation, titled *Die gebruik van kontantvloe- en winsgegewens by die beoordeling van genoteerde industriële RSA-maatskappye se finansiële stabiliteit*, was presented to the University of Stellenbosch in December 2005.