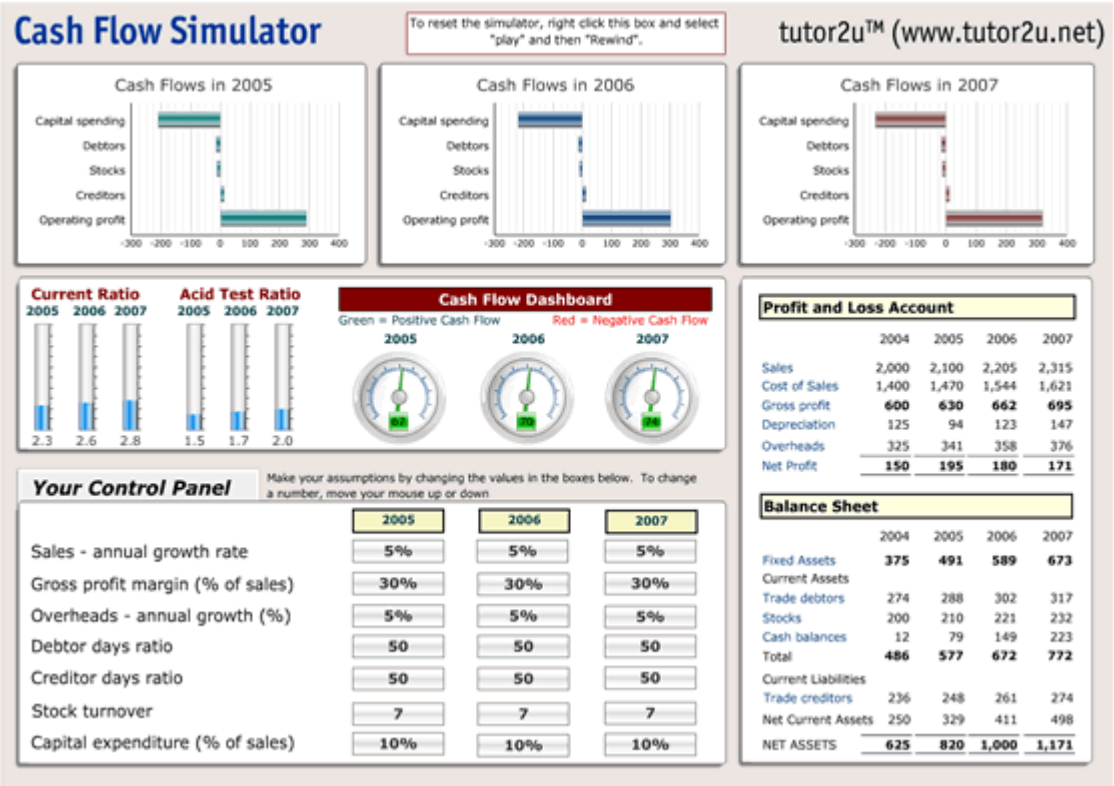
tutor2u™

Supporting Teachers: Inspiring Students

Interactive Business Simulations

Finance: Cash Flow Management



Note: this interactive simulator is designed to be viewed using an up-to-date internet browser. Users must also have Macromedia Flash Player Version 6 or 7 installed

tutor2u™

http://www.tutor2u.net

Introduction

This worksheet supports the new tutor2u interactive business simulation on cash flow management. It will help you develop your understanding of the factors that affect how much cash a business generates and keeps.

The simulator provides a fully working cash flow forecast based on a fictitious but realistic business. It allows you to decide the key assumptions that affect the profit and cash flow growth of the simulated business. You make these decisions via a simple **control panel** – and then sit back to let the simulator do all the calculations for you!

The simulator automatically provides the following outputs to help you see how the business is performing:

- Forecast profit and loss account for the next 3 years (2005 – 2007)

- Forecast balance sheets for each of the next 3 years (2005 – 2007)

- Cash flows by category for each year (including capital expenditure and working capital)

- Key liquidity ratios (current ratio and acid-test or "quick" ratio)

Overview

Cash is essential to a business. Every business needs adequate cash resources to be able to carry out its day-to-day operations. It needs enough cash to pay wages and salaries as they fall due and to pay creditors. This is known as "working capital". The overall strength of the cash position of a business is often referred to as "liquidity". A business is said to have "liquidity" problems if it struggles to generate enough cash to pay its way.

Cash is not always the same as profit. Even a profitable business may fail if it does not have adequate cash flow to meet its liabilities as they fall due.

When a business expands – it does not automatically follow that cash increases too. For example, increased production tends to mean the need to hold additional stocks of raw materials and work in progress. Increased sales usually mean that the level of debtors will increase. A general increase in the firm's scale of operations tends to imply a need for greater levels of cash.

Therefore, when businesses make investment decisions they must not only consider the financial outlay involved with acquiring the new machine or the new building, etc, but must also take account of the additional current assets that are usually involved with any expansion of activity.

What Level of Working Capital?

Different industries have different optimum working capital profiles, reflecting their methods of doing business and what they are selling.

- Businesses with a lot of cash sales and few credit sales should have minimal trade debtors. Supermarkets are good examples of such businesses;

- Businesses that exist to trade in completed products will only have finished goods in stock. Compare this with manufacturers who will also have to maintain stocks of raw materials and work-in-progress.

- Some finished goods, notably foodstuffs, have to be sold within a limited period because of their perishable nature.

- Larger companies may be able to use their bargaining strength as customers to obtain more favourable, extended credit terms from suppliers. By contrast, smaller companies, particularly those that have recently started trading (and do not have a track record of credit worthiness) may be required to pay their suppliers immediately.

- Some businesses will receive their monies at certain times of the year, although they may incur expenses throughout the year at a fairly consistent level. This is often known as “seasonality” of cash flow. For example, travel agents have peak sales in the weeks immediately following Christmas.

You should also appreciate that working capital needs fluctuate during the year

The amount of funds tied up in working capital would not typically be a constant figure throughout the year.

For example, many businesses operate in industries that have seasonal changes in demand. This means that sales, stocks, debtors, etc. would be at higher levels at some predictable times of the year than at others.

Note: in this tutor2u simulator, the cash flows are calculated on an annual basis – so you can ignore seasonal fluctuations.

Monitoring cash flow performance

An important part of cash flow management is to look at various performance ratios. These indicate how effectively a business is generating and managing cash.

The main ratios are as follows:

Stock Turnover

Calculation: Cost of Sales / Stock Value

Stock turnover helps answer questions such as "have we got too much money tied up in stocks"? An decreasing stock turnover figure or one which is much lower than the "average" for an industry may indicate poor stock management.

Debtor Days

Calculation: (Trade debtors / Sales) x 365

The "debtor days" ratio indicates how long trade customers are being given before they settle their accounts. A high figure (more than the industry average) may suggest general problems with debt collection or the financial position of major customers.

Creditor Days

Calculation: ((Trade creditors + accruals) / (cost of sales + other purchases)) x 365

The creditor days ratio is a similar calculation to that for debtor days. The creditor days ratio gives an insight into whether a business is taking full advantage of trade credit available to it. This ratio should not be pushed too high, however, since creditors may be less willing to do business on the same terms if too long is taken to pay bills.

Current Ratio

Calculation: Current Assets / Current Liabilities

This is a simple measure that estimates whether the business can pay debts due within one year from assets that it expects to turn into cash within that year. A ratio of less than one is often a cause for concern, particularly if it persists for any length of time.

Quick Ratio (or "Acid Test")

Calculation: Cash and near cash (short-term investments + trade debtors)

Not all assets can be turned into cash quickly or easily. Some - notably raw materials and other stocks - must first be turned into final product, then sold and the cash collected from debtors. The Quick Ratio (sometimes also called the “acid test” ratio) therefore adjusts the Current Ratio to eliminate all assets that are not already in cash (or "near-cash") form.

Using the Simulator

You should now launch the interactive business simulator in your Internet browser:

http://www.tutor2u.net/assets/simulations/cashflow_simulator_v1.swf

The simulator creates a cash flow forecast for three years (2005 – 2007) based on growth assumptions applied to the most recent financial results for 2004.

The simulator provides an interface for you to enter your assumptions for the key cash flow drivers: these are

- Sales growth (how fast will sales grow compared with 2004?)
- Gross margin (what gross profit margin will the business earn on sales?)
- Overheads (how fast will overheads grow?)
- Debtor days (how much credit will the business allow its customers to take?)
- Creditor days (how long will the business take to pay its creditors?)
- Stock turnover (how often will stock be turned over during the year?)
- Capital expenditure / sales (what proportion of sales is reinvested in fixed assets?)

By setting these assumptions for each of 2005, 2006 and 2007, you can see the effect on the trading and cash flow forecasts of the business. Some assumptions will mean cash flows out of the business. Other assumptions will mean the business generates a healthy cash flow. That is what cash flow forecasting is all about

To help guide you through the simulator, we have provided a couple of exercises that you could work through. These are set out on the following two pages

You will find the answers to the exercises at the end of this document.

This free simulator is brought to you by tutor2u™ - the leading online resource for students and teachers of economics and business studies. tutor2u™'s website – http://www.tutor2u.net attracts over 20,000 unique users per day and serves over 1.5 million pages of free educational content every week.

To contact tutor2u™ about this simulator and other related resources please email:

jimriley@tutor2u.net

Cash Flow Simulator – Exercises

Exercise 1: Finding your way around! The following questions relate to the initial data presented when the simulator first loads in your browser. To reset the simulator to this data, simply place your mouse anywhere on the screen, left click and then select "Play", left-click again and then select "Rewind".	
Looking at the profit and loss account: in which year is net profit forecast to be highest?	
What rate of growth is assumed for sales in each year?	Growth rate assumed: ….%
What is the forecast cash balance at the end of 2007?	Cash balance at 2007: £…….
What is the stock value at the 2004 balance sheet date and how are stocks forecast to change?	
Debtor days are forecast to be the same as creditor days: true or false?	
Using the cash flow dashboard: in which year is cash flow forecast to be highest?	
Using the cash flow dash board again; what is the value of the Current Ratio and the Acid Test Ratio for 2006?	Current ratio: ….. Acid test ratio: ……
Looking at the cash flow charts at the top of the simulator: what is the main cash outflow (i.e. cash going out of the	

business) in each year?	

Exercise 2 In this exercise we are going to make some changes to the assumptions in the model and see what effect that they have on cash flow. Make your assumptions by changing the values in the boxes in the control panel. To change a number, position your mouse over a number, hold down the left click button and drag your mouse up or down as required Follow each step carefully and see if you can get all the answers right in this exercise!	
Change the assumed sales growth to 10% in **each** of 2005, 2006 and 2007. What kind of cash flows arise from changes to debtors, stocks and creditors as a result of making this assumption? [hint: look at the cash flow graphs towards the top of the screen	
Is the overall cash flow for each year still positive?	
What is the forecast net profit in 2007? And how much cash is the business forecast to have by the end of 2007?	Forecast net profit in 2007: £……. Forecast cash balance at 2007: £…….
Now – reduce the gross profit margin (%) assumption to 25% in **each** of 2005, 2006 and 2007. After making this assumption: answer the same two questions as above: i.e. What is the forecast net profit in 2007? And how much cash is the business forecast to have by the end of 2007?	Forecast net profit in 2007: £……. Forecast cash balance at 2007: £…….
Now – let's change two more of the assumptions – each of which should make the cash flow worse. Make the following changes to the simulator: (1) Assume that overheads grow by 5% per year (change the overhead growth assumption for each year in the control panel) (2) Assume that the business has to	

invest 10% of its sales in new fixed assets (change the capital spending / sales ratio for each year in the control panel The answer the following three questions:	
What is the cash flow in 2005? [Hint – look at the dashboard]	2005: £……..
What is the main reason for the fall in cash balances in 2005?	
What is the acid test ratio in 2007?	
Finally we are going to change some of the other working capital assumptions to see what happens to cash flow. Make the following changes to the simulator: (1) Assume that debtor days rise to 60 in each of 2005, 2006 and 2007 (in other words, customers take longer to pay) (2) Assume that creditor days fall to 40 (in other words, suppliers demand that the business pay its liabilities quicker – perhaps because they have a concern than the business is experiencing liquidity problems) Now answer the following two questions:	
What are the cash balances in 2005, 2006 and 2007?	2005: £…….. 2006: £…….. 2007: £……..
What is the net profit in 2005, 2006 and 2007	2005: £……..

	2006: £…….. 2007: £……..

Exercises – Outline Answers

Exercise 1: Finding your way around! The following questions relate to the initial data presented when the simulator first loads in your browser. To reset the simulator to this data, simply place your mouse anywhere on the screen, left click and then select "Play", left-click again and then select "Rewind".	
Looking at the profit and loss account: in which year is net profit forecast to be highest?	**2007: net profit of £247,000**
What rate of growth is assumed for sales in each year?	**0%** **Sales are assumed to stay constant at £2 million per year. You will see the effect on cash flow of some sales growth in the next exercise**
What is the forecast cash balance at the end of 2007?	**£909,000** This figure can be found by looking at the 2007 balance sheet
What is the stock value at the 2004 balance sheet date and how are stocks forecast to change?	**Stocks at 2004 are £200 (get this from the balance sheet)** **Stocks are forecast stay constant at that level – since there is no change in sales assumed or in the stock turnover ratio.**
Debtor days are forecast to be the same as creditor days: true or false?	**True** Both debtor days and creditor days are forecast to be 50 in each of the three forecast years. In other words, the business will be paid by its customers (debtors) after the same period of time as the business pays it suppliers
Using the cash flow dashboard: in which year is cash flow forecast to be highest?	Cash flow is forecast to be **same** in each year – i.e. £300,000. This is because profit before depreciation is forecast to remain constant at £300,000 each year and there are no changes in the working capital assumptions such as debtor days and stock turnover.
Using the cash flow dash board again; what is the value of the Current Ratio and the Acid Test Ratio for 2006?	Current ratio: 4.7 Acid test ratio: 3.8 Remember, the acid test ratio is lower because it excludes stocks
Looking at the cash flow charts at the top of the simulator: what is the main cash outflow (i.e. cash going out of the business) in each year?	Another trick question! At the moment there are no cash outflows. Capital spending is assumed to be zero (0% of sales) and there are no changes in working capital items such as stocks, debtors and creditors.

Exercise 2 In this exercise we are going to make some changes to the assumptions in the model and see what effect that they have on cash flow. Make your assumptions by changing the values in the boxes in the control panel. To change a number, position your mouse over a number, hold down the left click button and drag your mouse up or down as required Follow each step carefully and see if you can get all the answers right in this exercise!	
Change the assumed sales growth to 10% in **each** of 2005, 2006 and 2007. What kind of cash flows arise from changes to debtors, stocks and creditors as a result of making this assumption? [hint: look at the cash flow graphs towards the top of the screen	**In each year there is:** **- An INCREASE in debtors (i.e. a cash outflow – debtors owe the business more money)** **- An INCREASE in stocks (i.e. a cash outflow because more money is tied up in stocks)** **- An INCREASE in creditors (i.e. a cash inflow – the business has saved cash by owing its suppliers more)**
Is the overall cash flow for each year still positive?	Yes: the cash flows are: 2005: £332,000 2006: £395,000 2007: £464,000 [Hint: you can check the overall cash flow each year simply by looking at the three gauges on the dashboard. If the number is green, then cash flow is POSITIVE. If the number turns RED then cash flow is NEGATIVE
What is the forecast net profit in 2007? And how much cash is the business forecast to have by the end of 2007?	**Forecast net profit: £446,000** [Hint: get this from the profit and loss account] **Forecast cash balance at 2007: £1,200,000** **- Over a £1 million of cash in the bank – very healthy!** [Hint: get this from the balance sheet]
Now – reduce the gross profit margin (%) assumption to 25% in **each** of 2005, 2006 and 2007. After making this assumption: answer the same two questions as above: i.e. What is the forecast net profit in 2007?	**Forecast net profit: £313,000** **Net profit has fallen because we have assumed that the business will make lower profit margins on each pound of sales. This feeds through directly into lower cash flow too!**

And how much cash is the business forecast to have by the end of 2007?	[Hint: get this from the profit and loss account] **Forecast cash balance at 2007: £835,000** **- Down quite a lot from £1.2 million – but still healthy!** [Hint: get this from the balance sheet]
Now – let's change two more of the assumptions – each of which should make the cash flow worse. Make the following changes to the simulator: (3) Assume that overheads grow by 5% per year (change the overhead growth assumption for each year in the control panel) (4) Assume that the business has to invest 10% of its sales in new fixed assets (change the capital spending / sales ratio for each year in the control panel The answer the following three questions:	
What is the cash flow in 2005? [Hint – look at the dashboard]	**£-12,000 (negative!)** That means that the cash balances of the business have fallen in 2005. You can check this by looking at the balance sheets for 2004 and 2005
What is the main reason for the fall in cash balances in 2005?	**Capital spending of £220,000** The business is having to invest heavily in new fixed assets – perhaps as replacements for existing machinery? Note that this spend is higher than the depreciation charge.
What is the acid test ratio in 2007?	**1.2** **Not too healthy**
Finally we are going to change some of the other working capital assumptions to see what happens to cash flow. Make the following changes to the simulator: (3) Assume that debtor days rise to 60 in each of 2005, 2006 and 2007 (in other words, customers take longer to pay) (4) Assume that creditor days fall to 40 (in other words, suppliers demand	

that the business pay its liabilities quicker – perhaps because they have a concern than the business is experiencing liquidity problems) Now answer the following two questions:	
What are the cash balances in 2005, 2006 and 2007?	2005: £-117,000 (negative) 2006: £-125,000 (negative) 2007: £- 117,000 (negative) **In other words – the business has run out of cash. It will need an alternative source of finance (e.g. a bank overdraft facility) if it is to continue trading**
What is the net profit in 2005, 2006 and 2007	2005: £141,000 2006: £149,000 2007: £164,000 **In other words – the business is still profitable. However, other factors are using up all the cash.** **That is why cash flow management is so important.**