Finance for the Non Financial Manager II

Exercise Book With Solutions

Duncan Williamson

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Contents

1 Introduction

Exercises 1–14: what do you know already?

Let's begin with a quiz: if you don't know any of the answers, don't worry; because that will spur you on when you realise that by the end of this course you WILL know the words, you WILL understand them and you WILL be able to use and apply them.

1. A bookkeeper is someone who spends their working hours cataloguing the books in the company library. True or false?
2. A bookkeeper spends his working hours collecting accounting information, classifying it and recording it in a systematic way. True or false?
3. An accountant is someone who takes the work of a bookkeeper and then prepares financial statements for the business owners. True or False?
4. An accountant is just a bean counter who doesn't need to know or understand anything about business. True or False?
5. This financial statement is an example of a balance sheet. True or false?

Sales/Revenue	100,000
- Cost of goods sold	55,000
= Gross Profit	**45,000**
- Expenses	20,000
= Net Profit	**25,000**

6. This financial statement is an example of part of a balance sheet. True or false?

Assets		
Fixed Assets/Non Current Assets		
land	265,000	
buildings	300,000	
machinery	75,000	
equipment	50,000	
Total Fixed Assets		690,000
Current Assets		
stocks/inventory	50,000	
debtors/accounts receivable	75,000	
prepayments	5,000	
short term investments	25,000	
bank	5,000	
cash/cash and cash equivalents	15,000	
Total Current Assets		175,000
Total Assets		**865,000**

7. A fixed asset is an asset we hope to sell within one year. True or false?
8. Liabilities and Shareholders' funds are the same things because it means money owing to outsiders. True or false?
9. The relationship between total sales and net profit tells us a great deal about the health of a business. True or false?
10. The net profit margin is found this way: net profit/total sales * 100. True or false?
11. The asset turnover ratio tells us how many of our assets we have sold. True or false?
12. A KPI is a Kool Performance indicator in text speak. True or false?
13. All of these are part of the features of a valid KPI:
    1) Nonfinancial measures (not expressed in dollars, yen, Dollars, euros, etc.)
    2) Measured frequently (e.g. daily or 24/7)
    3) Acted on by the junior management team only True or false?
14. The Balanced Scorecard is a bookkeeping tool to ensure the ledgers are balanced. True or false?

How did you do? Here are the answers to exercises 1 to 14:

Question	Correct Response	Question	Correct Response
1	FALSE	8	FALSE
2	TRUE	9	TRUE
3	TRUE	10	TRUE
4	FALSE	11	FALSE
5	FALSE	12	FALSE
6	TRUE	13	FALSE: only 1 and 2 are true
7	FALSE	14	FALSE

2 Building the Accounting Picture

Exercise 15

Choose the answer you believe to be correct:

The bookkeeping and accounting cycle comprises

a) Invoices, returns notes, petty cash vouchers, journals vouchers
b) A logical time frame and a Gantt Chart is an ideal way of showing it
c) Comprised rather technical ideas best left to the accountant and his team

Exercise 16

Choose the answer you believe to be correct:

In the section we call the *Paper Trail* there are three statements named, which of the following could we also have added?

a) Statement of Comprehensive Balances and Statement of Changes in Equity
b) Statement of Comprehensive Income and Statement of Changes in Equity
c) Statement of Comprehensive Equity and Statement of Changes in Income

Exercise 17

Choose the answer you believe to be correct:

a) The Income Statement is a period statement while the Balance Sheet is a Flow Statement
b) The Income Statement is a period statement while the Balance Sheet is a Position Statement
c) The Income Statement is a position statement while the Balance Sheet is a period Statement

Exercise 18

Choose the answer you believe to be correct:

a) Total Assets = Total Liabilities – Capital
b) Total Assets = Total Liabilities / Capital
c) Total Assets = Total Liabilities + Capital

Exercise 19

Choose the answer you believe to be correct:

In a balance sheet, the word current means

a) Something will be received/paid within one year from the balance sheet date
b) Something will be received/paid more than one year from the balance sheet date
c) Something will be received/paid whenever time permits

Exercise 20

What do you think is meant by the winding up basis in the context of the going concern concept?

Exercise 21

Imagine two expenses that a business might incur today but only pay for in a week's time or even later.

Exercise 22

The idea of prepayments are important here too: where we pay for something before we use it. Give an example of when a business might prepay an expense.

Exercise 23

a) Try to find the names of two methods of calculating depreciation.
b) Show how the two depreciation methods you have found in your answer to part a) of this question might work for, for example, a motor vehicle that costs $25,000, has a useful, working, life of 10 years might be sold for $5,000 after the ten years of use.

Exercise 24

Give an example of how the prudence concept might work in reality.

Exercise 25

Give an example of an objective decision being taken by an accountant by first thinking about a subjective decision he might take.

Exercise 26

Suggest what the dual effects of buying an asset by a business would be if the business bought the asset

- for cash
- from a creditor

Suggest what might be the dual effects of a sale of goods by a business for cash.

Exercise 27

Suggest an example of why the entity concept is so important for a business.

Exercise 28

If assets and expenses are not included at cost value, what could they be included as?

Exercise 29

What are the implications of the money measurement concept for the bookkeeper and accountant?

Exercise 30

Try to find an example of how bookkeepers and accountants use the concept of materiality.

Exercise 31

Give an example of when a newspaper seller realises a sale and an example of when a car dealership realises a sale if that business receives cars from the manufacturer on a sale or return basis.

How did you do? Here are the answers:

Exercise 15 a
Exercise 16 b
Exercise 17 b
Exercise 18 c
Exercise 19 a
Exercise 20

The winding up basis means that we value our assets and liabilities according to what we can get for them, assets; and what we can negotiate with, liabilities. For example, in the non current asset section we might have a building valued at $100,000 but on the winding up basis, because everyone knows our business is in trouble, we might only be able to sell it for, say, $55,000. With a current liability, for example, we might owe $17,500 to a supplier but when they understand our problem they might accept, say $5,000 on the basis that it's the best we can do!

Exercise 21

Imagine two expenses that a business might incur today but only pay for in a week's time or even later.

- Electricity costs: typically we use electricity which is recorded on a meter and pay for it a month or two later.
- Salaries are usually earned in one month and then paid for in the following month.

The purpose of the accruals concept is that it allows the bookkeeper to **match** the costs to the activities when they were carried out. That is, we need to know the cost of electricity when it was **used**, not when it was **paid**. Expenses paid in arrears must be shown in the current period's profit statement.

Exercise 22

The idea of prepayments are important here too: where we pay for something before we use it. Give an example of when a business might prepay an expense.

A good example of an expense that is prepaid is rent of buildings and equipment, which is often paid in advance. Such costs relate to a future period must be carried forward as a prepayment for that period and not charged in the current profit statement.

Exercise 23

c) *Try to find the names of two methods of calculating depreciation.*
d) *Show how the two depreciation methods you have found in your answer to part a) of this question might work for, for example, a motor vehicle that costs $25,000, has a useful, working, life of 10 years might be sold for $5,000 after the ten years of use.*

Depreciation is the writing down of the cost of a motor vehicle and it might be calculated using. If we buy a motor vehicle for $25,000, for example, and we think that this vehicle has a useful life of 10 years after which we think we might sell it for $5,000, we could charge ($25,000 – $5,000)/10 years = $2,000 per year for depreciation: that is, we can use **the straight line method**.

Alternatively, we might depreciation the motor vehicle by using the **reducing balance method** and for that we would depreciate the motor vehicle at the rate of 14.866% per year. That would be $25,000 * 14.866% for year one = $3,716.50 and for year two is would be ($25,000 – $3,716.50) * 14.866% = 3,164.01…

The point here, consistency, is that if we used the straight line method for year one, we would calculate $2,000 for year one and ($25,000 – $2,000) * 14.866% = $3,419.18 for year two: that is not consistent and is not allowed.

Exercise 24

Give an example of how the prudence concept might work in reality.

There are many possible answers to this question. If we imagine that our medium to large sized business sells goods or services on credit, it would not be prudent to pretend that pretend that all of our debtors will pay everything they owe us.

The prudent accountant will create an account for possible doubtful debts. This means that are ready to cancel some of those debts and profits and the balance sheet will reflect that.

Exercise 25

Give an example of an objective decision being taken by an accountant by first thinking about a subjective decision he might take.

A subjective decision might be that the accountant says, I think that motor vehicle will be sold for $10,000 in three years' time…he THINKS…on what basis?

An objective decision might be that the accountant says, I have gone through Parker's Car Price Guide and checked with our auditors and we agree, that motor vehicle should be shown as having a resale value of $7,500 three years from now.

Exercise 26

Suggest what the dual effects of buying an asset by a business would be if the business bought the asset

- *for cash*
- *from a creditor*

Suggest what might be the dual effects of a sale of goods by a business for cash

When an asset is bought, another asset cash (or bank) is also and simultaneously decreased OR a liability such as creditors is also and simultaneously increased.

When a sale is made the asset of stock is reduced as goods leave the business and the asset of cash is increased (or the asset of debtors is increased) as cash comes into the business.

Exercise 27

Suggest an example of why the entity concept is so important for a business.

The best example here concerns that of the sole trader or one man business. The sole trader will often take money out of the business for his personal expenses by way of *drawings*. Even though it's his business and apparently his money, there are still two bookkeeping aspects to the transaction: the **business** is 'giving' money and the **individual** is 'receiving' money. So, the affairs of the individuals behind a business must be kept separate from the affairs of the business itself.

Exercise 28

If assets and expenses are not included at cost value, what could they be included as?

Modern accounting uses the phrase fair value. Until relatively recently, every company in the world, with exceptions, used the cost or historic cost concept. Fair value really means that assets might be shown at their current market value rather than their historic cost.

Exercise 29

What are the implications of the money measurement concept for the bookkeeper and accountant?

Let's think of an extreme example: imagine that we are trying to do business together. You want to sell me some fuel for my motor vehicle but I don't have any money. I do have 100 kilogrammes of rice. If we agree that I can have 100 litres of fuel in exchange for 100 Kg of rice, that's one thing.

How will your bookkeeper enter this sale in the books? At what value? How will he find that value? Suppose there is no one else on earth who wants or needs that rice?

If we cannot value the rice then there can be no bookkeeping transaction to record.

Exercise 30

Try to find an example of how bookkeepers and accountants use the concept of materiality.

One simple way to see how bookkeepers and accountants use the concept of materiality is to look at, for example, a balance sheet of a medium sized to large business. You will see something like this:

DW plc Balance Sheet as at 31st December 2014		
Fixed Assets	**$'000**	**$'000**
Land	1,500	
Buildings	7,650	
Total Fixed Assets		9,150

Notice the column headings…$'000: here we see that this company has rounded off its balance sheet values to the nearest thousand Dollars. For example, $1,468 might have been rounded up to $1,500 and $7,652 might have been rounded down to $7,650. The company believes it is only material to show thousands of Dollars. Larger businesses might round off to the nearest million Dollars…

Exercise 31

Give an example of when a newspaper seller realises a sale and an example of when a car dealership realises a sale if that business receives cars from the manufacturer on a sale or return basis.

Selling a newspaper for cash means that the sale is realised as soon as you or I walk up to the seller, give him the money and take away the newspaper. Most retail sales are like this.

As far as the car dealership is concerned, this might be complicated. However, the dealership realises a sale when a customer buys a car. On the other hand, the car manufacturer cannot realise all sales of all cars until the time when all of the cars have been sold, or the sale or return period has expired when it can realise the sales or take back the cars from the dealership.

3 Building Financial Statements

3.1 Case Study: David Tasker

For the rest of this section we will work through the David Tasker Case Study. The purpose of this case study is to walk through a whole series of events in the life of an imaginary business. As we work through the events we will determine whether a transaction is a bookkeeping transaction. We will also apply the basic accounting concepts and conventions to each transaction.

By the end of this case study we will have a good grasp of how and why a transaction should or should not enter the world of the bookkeeper!

David Tasker operates a wholesale operation. The company employs (among others) Jack Smith as a Sales Manager. **By filling in the templates that follow, draw up the final accounts of the business after each of the following transactions: *where necessary*.**

Jan 1	Tasker starts the business with $7,000 in a bank account for the business
Jan 2	the company buys fixtures and fittings by cheque $3,000
Jan 3	Smith resigns
Jan 4	Tasker withdraws $1,000 from the bank for his personal use
Jan 5	the company buys land for $7,000: $2,000 is paid by cheque immediately and $5,000 is paid for by means of taking out a mortgage secured on the property
Jan 6	the company buys goods on credit for $1,000
Jan 7	Tasker is offered $7,000 for his business but refuses to sell
Jan 8	the company sells for cash for $600, goods which had cost $500
Jan 9	Tasker is told that land similar to his was sold recently for $8,000: whilst Tasker is interested in this news, he takes no action on it.
Jan 10	goods are sold on credit for $600, which had cost $500
Jan 11	debtors pay their debts in cash $600
Jan 12	a customer, Sandy Bedds, pays $1,200 cash for goods to be supplied after 10 days
Jan 13	the company pays $2,100 cash into the bank and draws a cheque for $1,000 to pay for goods bought on the 6th
Jan 14	goods are bought on credit for $2,000
Jan 15	goods costing $1,000 were delivered to Sandy Bedds in full settlement of the outstanding advance of the 12th
Jan 15	Tasker decides to calculate his profit so far. He reads the electricity meter and finds the business has used $10 worth of electricity. The electricity bill will not be received until the end of January
Jan 15	salaries to date paid in cash $50

Jan 15 the rate of interest on the mortgage is 12% pa, payable on 31st December. Tasker calculates the appropriate charge for the month to be $25: charge this amount in full

Jan 15 Tasker assesses the value of the use of the fixtures and fittings to be $25

Exercise 32 Indicate in which of the principal financial statements each item appears

Item	Balance Sheet	Income Statement	Statement of Cash Flows
Accounts Payable			
Accumulated Depreciation			
Capital Expenditures			
Change Cash and Equivalents			
Ordinary Shares Issued			
Current Debt: Changes			
Direct Operating Activities			
Financing Activities: Net Cash Flow			
Gross Plant, Property and Equipment			
Income before Extraordinary Items			
Indirect Operating Activities			
Interest Paid: Net			
Investing Activities			
Long Term Debt Due In One Year			
Receivables			
Operating Activities: Net Cash Flow			
Preference Shares: Non redeemable			
Pre tax Income			
Retained Earnings			
Disposal of Property, Plant and Equipment			
Selling, General and Administrative Expense			
Stock Equivalents			
Total Current Assets			
Total Income Taxes			
Total Preference Shares			

Exercise 33 Indicate in which of the principal financial statements each item appears

Item	Balance Sheet	Income Statement	Statement of Cash Flows
Accrued Expenses			
Cash and Equivalents			
Ordinary Shareholders 'Equity			
Cost of Goods Sold			
Dividends per Share			
Earnings per Share			
Financing Activities			
Funds from Operations: Other			
Income Taxes Paid			
Interest Expense			
Inventories			
Investing Activities: Other			
Long Term Debt			
Net Plant, Property and Equipment			
Other Assets			
Other Current Liabilities			
Preference Share Dividends			
Prepaid Expenses			
Total Assets			
Total Equity			
Total Liabilities and Equity			

How did you do? Here are the answers:

Exercise 32 Indicate in which of the principal financial statements each item appears

Item	Balance Sheet	Income Statement	Statement of Cash Flows
Accounts Payable	X		
Accumulated Depreciation	X		
Capital Expenditures			X
Change Cash and Equivalents			X
Ordinary Shares Issued	X		
Current Debt: Changes			X
Direct Operating Activities		X	
Financing Activities: Net Cash Flow			X
Gross Plant, Property and Equipment	X		
Income before Extraordinary Items		X	
Indirect Operating Activities			X
Interest Paid: Net			X
Investing Activities			X
Long Term Debt Due in One Year	X		
Receivables	X		
Operating Activities: Net Cash Flow			X
Preference Shares: Non redeemable	X		
Pre tax Income		X	
Retained Earnings	X	X	
Disposal of Property, Plant and Equipment			X
Selling, General and Administrative Expense		X	
Stock Equivalents	X		
Total Current Assets	X		
Total Income Taxes		X	
Total Preference Shares	X		

Exercise 33 Indicate in which of the principal financial statements each item appears

Item	Balance Sheet	Income Statement	Statement of Cash Flows
Accrued Expenses	X		
Cash and Equivalents	X		
Ordinary Shareholders 'Equity	X		
Cost of Goods Sold		X	
Dividends per Share		X	
Earnings per Share		X	
Financing Activities			X
Funds from Operations: Other			X
Income Taxes Paid			X
Interest Expense		X	X
Inventories	X		
Investing Activities: Other			X
Long Term Debt	X		
Net Plant, Property and Equipment	X		
Other Assets	X		
Other Current Liabilities	X		
Preference Share Dividends		X	X
Prepaid Expenses	X		
Total Assets	X		
Total Equity	X		
Total Liabilities and Equity	X		

4 Business Analysis

Credit Analysis

Exercise 34 Complete the following table of ratios:

	L	M	N	O	P
16	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Creditors Turnover	from morningstar.com	23.63		

The creditors' turnover ratio tells us on average how many days it takes amazon.com to pay its accounts payables: in 2014, an average of 95.73 days or by the 96th day. What are the results for 2012 and 2013?

Exercise 35 The table below shows the new payables figure for amazon.com and then the revised ratio table showing creditors' turnover and trade creditors' turnover **for you to complete**:

	L	M	N	O	P
16	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
17	Creditors Turnover	accounts payable/average daily cost of sales	95.73		
18	Trade Creditors Turnover	trade accounts payable/average daily cost of sales	86.16		

	L	M	N	O	P
16	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Creditors Turnover	from morningstar.com	23.63	30.2	37.68

Note: these are not amazon.com's true trade creditors figures, they are for illustration only.

Exercise 36 Here is the table of fully worked payables turnover data for ten years for amazon.com: what comments do you have?

	L	M	N	O	P	Q	R	S	T	U	V	W	X
16	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**	
17	Creditors Turnover	accounts payable/average daily cost of sales	95.73	101.95	105.74	109.09	110.64	107.80	88.06	88.85	80.30	77.29	
18	Trade Creditors Turnover	trade accounts payable/average daily cost of sales	86.16	90.73	90.94	102.55	106.21	95.94	77.50	87.07	74.67	76.52	

Accounts Receivable

We can look at accounts receivable, debtors, in a similar way to the accounts payable and here are the debtors' turnover results we need to look at amazon.com's position:

	L	M	N	O	P	Q	R	S	T	U	V	W	X
18	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**	
19	Debtors Turn	accounts receivable/average daily credit sales	32.64	32.11	26.71	25.17	21.81	19.00	20.26	22.41	17.64	15.50	
20	Trade Debtors	trade accounts receivable/average daily credit sales	16.13	23.99	24.57	38.79	63.71	55.64	20.42	17.49	41.44	47.47	

Exercise 37 What do you make of those results?

Analysis of Shares

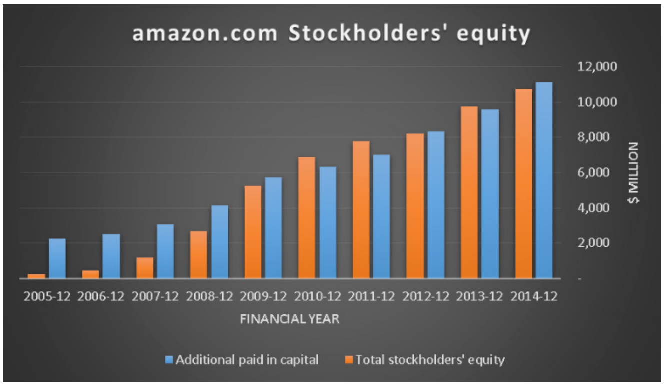
Exercise 38 Summarise the equity section of Apple Inc's balance sheet from the following:

	A	B	C	D	E	F	G	H	I	J	K
1	**Stockholders' equity**	**2014-09**	**2013-09**	**2012-09**	**2011-09**	**2010-09**	**2009-09**	**2008-09**	**2007-09**	**2006-09**	**2005-09**
2	Common stock	23,313	-	-	-	-	-	7,177	5,368	4,355	3,521
3	Additional paid-in capital	-	19,764	16,422	13,331	10,668	8,210	-	-	-	-
4	Retained earnings	87,152	104,256	101,289	62,841	37,169	23,353	13,845	9,101	5,607	4,005
5	Accumulated other comprehensive income	1,082	(471)	499	443	(46)	77	8	63	22	(60)
6	**Total stockholders' equity**	**111,547**	**123,549**	**118,210**	**76,615**	**47,791**	**31,640**	**21,030**	**14,532**	**9,984**	**7,466**
7											
8		**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
9	Basic Weighted average shares outstanding (i	6,086	6,477	6,544	6,470	6,366	6,251	6,171	6,052	5,908	5,659

Exercise 39 Find examples of companies that have treasury stock and how that came about. Give real examples of unrealised gains and losses that might appear in the line item *accumulated other comprehensive income.*

Exercise 40 Trends in Equity Shares?

Consider the following graph, showing share premium and total shareholders' equity for amazon.com:



Note: at an almost constant $5 million, it is hardly worth showing the par value on that graph.

Create the stockholders' equity graph for Apple Inc that you see above for amazon.com and comment on what you have found. In addition, create a graph of issued ordinary shares of Apple Inc and comment on what you have found.

Exercise 41 In the last ten years Apple Inc has generated total sales of $647,391 million and its closing balance on retained earnings at the start of those ten years was $4,005 million and at the end of those 10 years it is $87,152 million. Prepare your analysis of Apple Inc's profit retention policy by creating a graph of sales, net income and retained earnings for the ten years for which you have full data:

Financial period	Net sales ($ million)	Net profits ($ million)	Retained Earnings
2005	13,931	1,328	4,005
2006	19,315	1,989	5,607
2007	24,578	3,495	9,101
2008	37,491	6,119	13,845
2009	42,905	8,235	23,353
2010	65,225	14,013	37,169
2011	108,249	25,922	62,841
2012	156,508	41,733	101,289
2013	170,910	37,037	104,256
2014	182,795	39,510	87,152

Exercise 42 Think of at least three other possible users of business analysis or financial data: name them or their position and suggest what it is that they might want to know.

4.1 Business Activities

A company carries out many activities as it tries to provide a saleable product or service and to yield a satisfactory return on investment. Its financial statements and related disclosures tell us about the four major activities of the company:

- Planning
- Financing
- Investing and
- Operating

It is important to understand each of these major business activities before we can effectively analyse a company's financial statements in detail.

Exercise 43 Suggest two activities you can find under each of these four headings

4.2 Planning Activities

Also for amazon.com, additional discussion appears in the section in their annual report entitled ***Management's Discussion and Analysis of Financial Condition and Results of Operations***.

These two sources are excellent starting points in constructing a company's business plan and in performing a business environment and strategy analysis.

Important questions here are, can amazon.com be

- certain of the future of consumer and business computing needs?
- certain its input costs will not increase?
- sure how competitors will react?

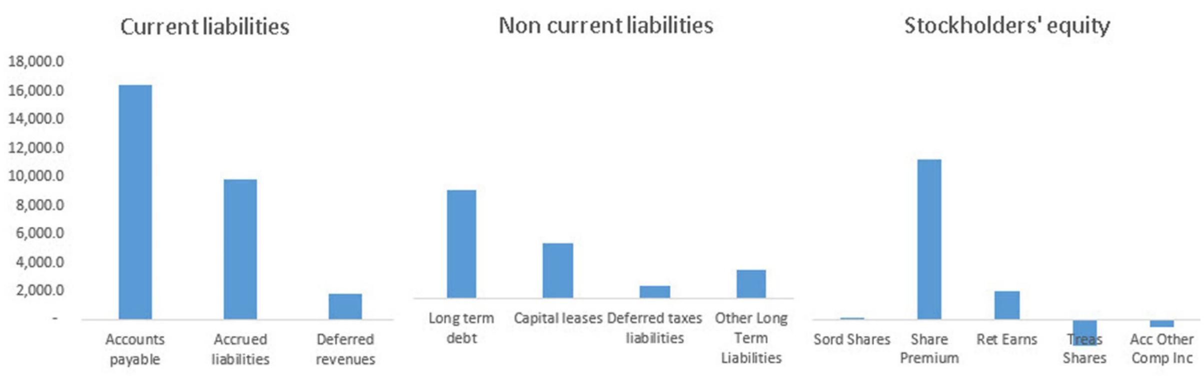
These and other questions add risk to our analysis. While all actions involve risk, some actions involve more risk than others. Financial statement analysis helps us estimate the degree of risk, or uncertainty and helps us to be better informed and to take better decisions.

While information taken from financial statements does not provide perfect answers, it does help us to gauge the soundness of a company's business opportunities and strategies and to better understand its financing, investing and operating activities.

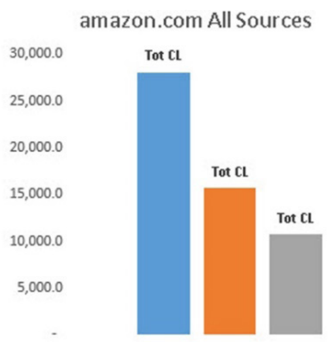
Exercise 44 Explore the various sources we have just mentioned for amazon.com and highlight what you consider are the main points for us to focus on.

Exercise 45 Create a graph or other illustration that tells us the sources of finance of our two companies, amazon.com and Apple Inc. Keep your illustrations simple but consider the message you are trying to convey as you construct them. Include current liabilities, non current liabilities and total equity in your illustrations and take just the final year's data from your database.

Here is my suggestion: a panel chart for amazon.com



Alternatively, also for 2014:



Exercise 46 Fill in the gaps in the following sentences:

Looking at the results of ***exercise 45*** we can see that amazon.com's balance sheet shows total creditor financing of $____ billion, which is about __% of its total financing. Of this amount, around $____ billion is long term liability financing, while the remaining $____ billion is operating creditor financing.

Exercise 47 We already know a great deal about amazon.com and Apple Inc so let's explore the relationship between loan coupons and the success or otherwise of the business. Compare coupon rates for amazon.com and Apple Inc and make any comments you think are appropriate.

4.3 Investing Activities

Exercise 48 Fill in the gaps in the following text by referring to amazon.com's 2014 financial statements. Amazon.com invested $____ billion in current assets (___% of total assets) and $____ billion in property, plant and equipment (___% of total assets). Its remaining assets include other long term assets and intangibles and they amount to $ ____ billion.

4.4 Operating Activities

Exercise 49 Fill in the gaps for 2014 for amazon.com. amazon.com earned net income of $_______ billion in 2014. This number by itself is not very meaningful. Instead, it must be compared with the level of investment used to generate these earnings. amazon.com's return on start of year total assets of $_____ billion is ____% (that is, $_______ billion/$_______ billion): which is a **superior/inferior** return.

How did you do? Here are the answers:

Exercise 34 Complete the following table of ratios:

The creditors' turnover ratio tells us on average how many days it takes amazon.com to pay its accounts payables: in 2014, an average of 95.73 days or by the 96th day. What are the results for 2012 and 2013?

Ratio Name	Ratio Formula	2014-12	2013-12	2012-12
Creditors Turnover	accounts payable/average daily cost of sales	95.73	101.95	105.74

Exercise 35 The table below shows the new payables figure for amazon.com and then the revised ratio table showing creditors' turnover and trade creditors' turnover **for you to complete**:

Ratio Name	Ratio Formula	2014-12	2013-12	2012-12
Creditors Turnover	accounts payable/average daily cost of sales	95.73	101.95	105.74
Trade Creditors Turnover	trade accounts payable/average daily cost of sales	86.16	90.73	90.94

	2014-12	2013-12	2012-12
Trade Creditors	14,813	13,468	11,453

Note: these are not amazon.com's true trade creditors figures, they are for illustration only

Exercise 36 Here is the table of fully worked payables turnover data for ten years for amazon.com: what comments do you have?

	L	M	N	O	P	Q	R	S	T	U	V	W	X
16	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**	
17	Creditors Turnover	accounts payable/average daily cost of sales	95.73	101.95	105.74	109.09	110.64	107.80	88.06	88.85	80.30	77.29	
18	Trade Creditors Turnover	trade accounts payable/average daily cost of sales	86.16	90.73	90.94	102.55	106.21	95.94	77.50	87.07	74.67	76.52	

Overall the situation seems to be fine in that the company is taking quite a while to pay its creditors and whilst 96 days is a long time, it was 111 days in 2010 so their suppliers must be happier now.

The trade creditors figure gives us a better picture of supplier payment days and that is about 10 days quicker than creditors' turnover, again with a peak in 2010.

Accounts Receivable

We can look at accounts receivable, debtors, in a similar way to the accounts payable and here are the debtors' turnover results we need to look at amazon.com's position:

Ratio Name	Ratio Formula	2014-12	2013-12	2012-12	2011-12	2010-12	2009-12	2008-12	2007-12	2006-12	2005-12	
Debtors Turn	accounts receivable/average daily credit sales	32.64	32.11	26.71	25.17	21.81	19.00	20.26	22.41	17.64	15.50	
Trade Debtor	trade accounts receivable/average daily credit sales	16.13	23.99	24.57	38.79	63.71	55.64	20.42	17.49	41.44	47.47	

Exercise 37 What do you make of those results?

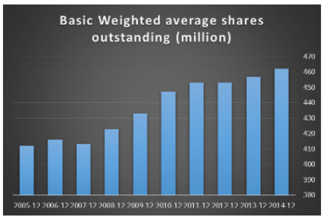
Retail customers rarely get credit from a retailer and there is no reason to think amazon.com is any different. So, all debtors here will be corporate debtors: that is, companies buying on credit terms from amazon.com. Since we have not looked for the segmental information here, the overall averages here are almost certainly wrong but they give us an idea of what is happening. Contrast the overall 33 days with the equivalent 96 days for creditors.

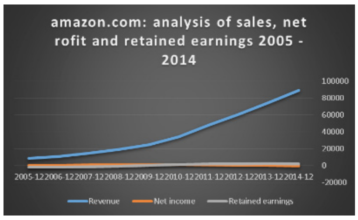
Analysis of Shares

Exercise 38 Summarise the equity section of Apple Inc's balance sheet from the following:

	A	B	C	D	E	F	G	H	I	J	K
1	**Stockholders' equity**	**2014-09**	**2013-09**	**2012-09**	**2011-09**	**2010-09**	**2009-09**	**2008-09**	**2007-09**	**2006-09**	**2005-09**
2	Common stock	23,313	-	-	-	-	-	7,177	5,368	4,355	3,521
3	Additional paid-in capital	-	19,764	16,422	13,331	10,668	8,210	-	-	-	-
4	Retained earnings	87,152	104,256	101,289	62,841	37,169	23,353	13,845	9,101	5,607	4,005
5	Accumulated other comprehensive income	1,082	(471)	499	443	(46)	77	8	63	22	(60)
6	**Total stockholders' equity**	**111,547**	**123,549**	**118,210**	**76,615**	**47,791**	**31,640**	**21,030**	**14,532**	**9,984**	**7,466**
7											
8		**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
9	Basic Weighted average shares outstanding (i	6,086	6,477	6,544	6,470	6,366	6,251	6,171	6,052	5,908	5,659

I created graphs for this exercise:

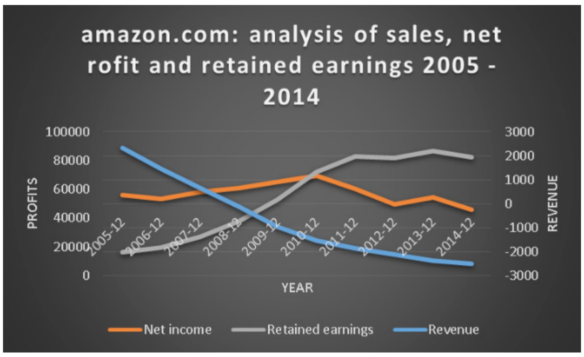




To help with the third graph, I prepared this summary table:

Year	Revenue	Net income	Retained earnings
2014-12	88,988	-241	1,949
2013-12	74,452	274	2,190
2012-12	61,093	-39	1,916
2011-12	48,077	631	1,955
2010-12	34,204	1152	1,324
2009-12	24,509	902	172
2008-12	19,166	645	-730
2007-12	14,835	476	-1,375
2006-12	10,711	190	-1,837
2005-12	8,490	359	-2,027

By the way, I know that amazon.com is a break even company so I have left the graph so that the profit lines are right at the bottom of the graph: that makes them difficult to see. As an alternative, then, you might put the revenue line on the secondary axis, like this:



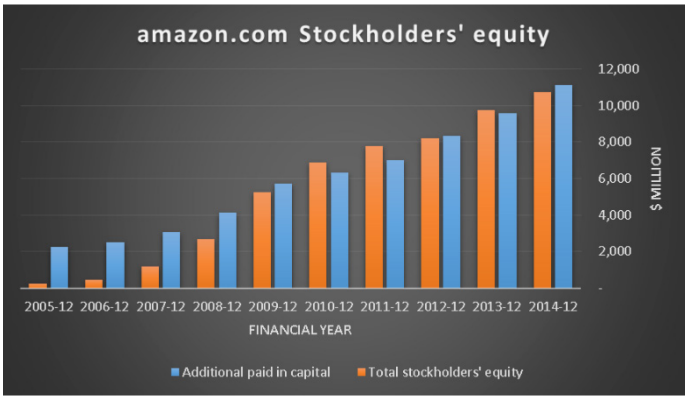
Is that new graph better? You decide!

Exercise 39 Find examples of companies that have treasury stock and how that came about. Give real examples of unrealised gains and losses that might appear in the line item *accumulated other comprehensive income.*

There are many companies with treasury shares or stock: they often come about when a company has a lot of cash on its balance sheet but with no idea of how to spend it. In this case, some companies return the cash to their shareholders and treasury shares come about at that time.

Trends in Equity Shares?

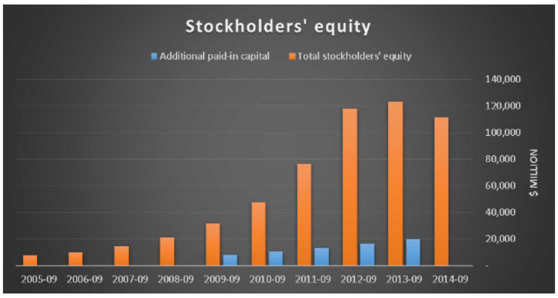
Consider the following graph, showing share premium and total shareholders' equity for amazon.com:

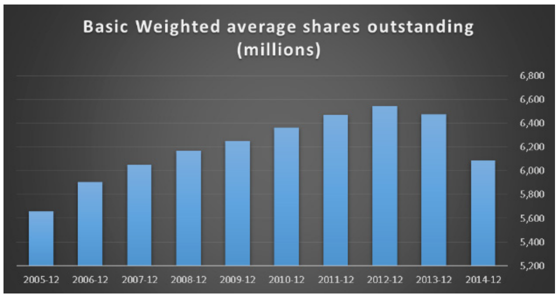


Note: at an almost constant $5 million, it is hardly worth showing the par value on that graph.

Exercise 40 Create the stockholders' equity graph for Apple Inc that you see above for amazon.com and comment on what you have found. In addition, create a graph of issued ordinary shares of Apple Inc and comment on what you have found.

Here are the graphs I have prepared for this exercise:





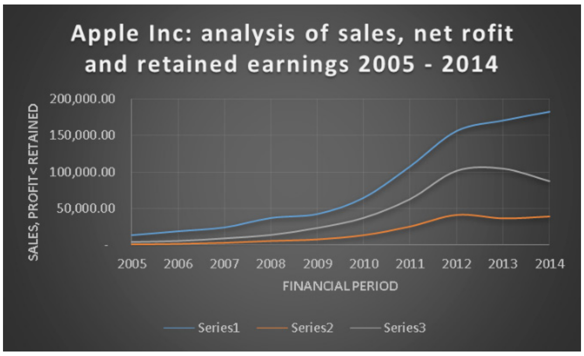
We can see with amazon.com that most of its equity capital is in the form of share premium whereas it sees fair to say that Apple Inc's share premium is much less than equity capital and that is much better for the company.

Notice that Apple Inc has reduced the number of shares it has issued over the last two years of so as it is returning cash to shareholders.

Exercise 41 In the last ten years Apple Inc has generated total sales of $647,391 million and its closing balance on retained earnings at the start of those ten years was $4,005 million and at the end of those 10 years it is $87,152 million. Prepare your analysis of Apple Inc's profit retention policy by creating a graph of sales, net income and retained earnings for the ten years for which you have full data:

Financial period	Net sales ($ million)	Net profits ($ million)	Retained Earnings
2005	13,931	1,328	4,005
2006	19,315	1,989	5,607
2007	24,578	3,495	9,101
2008	37,491	6,119	13,845
2009	42,905	8,235	23,353
2010	65,225	14,013	37,169
2011	108,249	25,922	62,841
2012	156,508	41,733	101,289
2013	170,910	37,037	104,256
2014	182,795	39,510	87,152

Here is the graph I have prepared for this exercise:



Exercise 42 Think of at least three other possible users of business analysis or financial data: name them or their position and suggest what it is that they might want to know.

- The business community
- Regulatory authorities such as the stock exchange
- Legal authorities

4.5 Business Activities

A company carries out many activities as it tries to provide a saleable product or service and to yield a satisfactory return on investment. Its financial statements and related disclosures tell us about the four major activities of the company:

- Planning
- Financing
- Investing and
- Operating

It is important to understand each of these major business activities before we can effectively analyse a company's financial statements in detail.

Exercise 43 Suggest two activities you can find under each of these four headings

Planning

Planning for production
Planning for cash requirements

Financing

Considering the amounts of cash to raise by means of a share issue
Setting the selling price of shares and therefore the share premium

Investing

How and when to finance the paying off of the long term debt
Working out the amount of dividend to pay

Operating

Planning to buy more equipment to help with production
Reviewing whether to dispose of the fleet of cars being used by the sales team

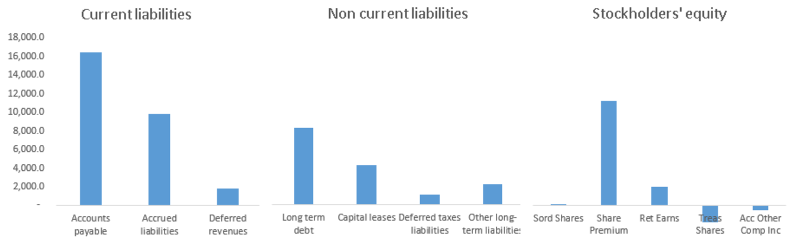
Exercise 44 Explore the various sources we have just mentioned for amazon.com and highlight what you consider are the main points for us to focus on.

You must read the chairman's letter to appreciate the answer to this question. I have included this letter in the materials for this course and you need to concentrate on what the chairman says under the four headings I have already given:

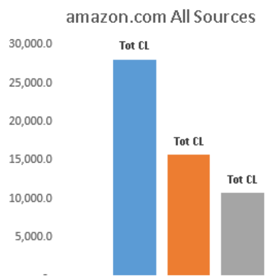
- Marketplace
- Amazon Prime
- Amazon Web Services
- Career Choice

Exercise 45 Create a graph or other illustration that tells us the sources of finance of our two companies, amazon.com and Apple Inc. Keep your illustrations simple but consider the message you are trying to convey as you construct them. Include current liabilities, non current liabilities and total equity in your illustrations and take just the final year's data from your database.

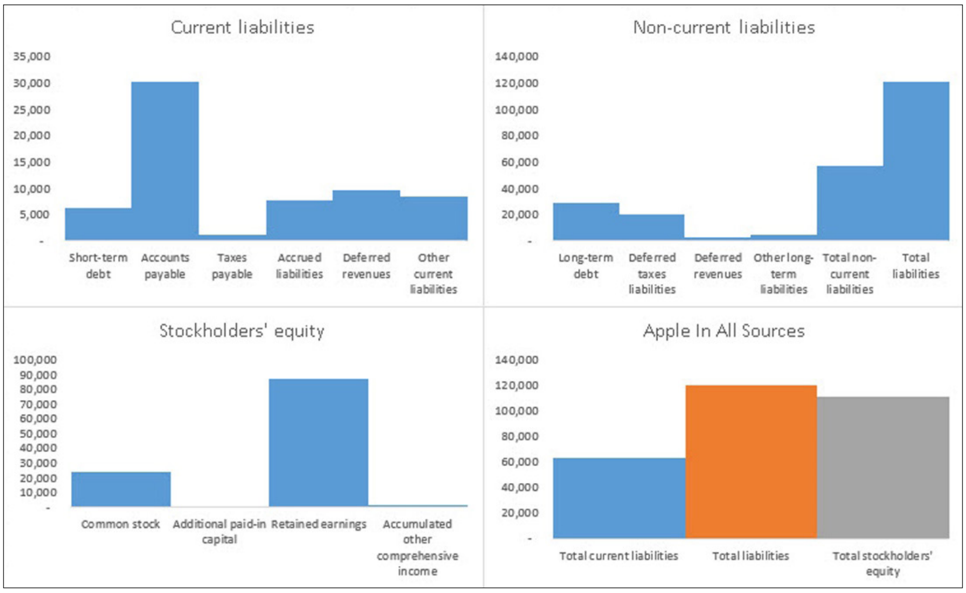
Here is my suggestion: a panel chart for amazon.com



Alternatively, also for 2014:



For Apple,the same examples, albeit with different formatting for one of them:



Exercise 46 Fill in the gaps in the following sentences:

Looking at the results of ***exercise 45*** we can see that amazon.com's balance sheet shows total creditor financing of $____ billion, which is about __% of its total financing. Of this amount, around $____ billion is long term liability financing, while the remaining $____ billion is operating creditor financing.

Suggested solution:

Looking at the results of ***exercise 45*** we can see that amazon.com's balance sheet shows total creditor financing of **$43.764 billion**, which is about **80.29%** of its total financing. Of this amount, around **$15.675 billion** is long term liability financing, while the remaining **$28.089 billion** is operating creditor financing.

Exercise 47 We already know a great deal about amazon.com and Apple Inc so let's explore the relationship between loan coupons and the success or otherwise of the business. Compare coupon rates for amazon.com and Apple Inc and make any comments you think are appropriate.

By combining the amazon.com and Apple Inc coupon and maturity dates I prepared this graph.

What you should notice is that the coupons for amazon.com are generally higher than the coupons for Apple Inc. What this suggests is that the bond market sees Apple Inc as a safer company to lend money to that amazon.com. Remember the idea: the greater the risk, the greater return.

Exercise 48 Fill in the gaps in the following text by referring to amazon.com's 2014 financial statements. Amazon.com invested $____ billion in current assets (___% of total assets) and $____ billion in property, plant and equipment (___% of total assets). Its remaining assets include other long term assets and intangibles and they amount to $ ____ billion.

Suggested Solution*

Amazon.com invested $31.327 billion in current assets (57.48% of total assets) and $7.150 billion in property, plant and equipment (13.12% of total assets). Its remaining assets include other long term assets and intangibles and they amount to $16.028 billion.

***Note**: I have taken the question to refer to end of year figures and not increases from the previous year.

Exercise 49 Fill in the gaps for 2014 for amazon.com. amazon.com earned net income of $_______ billion in 2014. This number by itself is not very meaningful. Instead, it must be compared with the level of investment used to generate these earnings. amazon.com's return on start of year total assets of $_____ billion is ____% (that is, $_______ billion/$_______ billion): which is a **superior/inferior** return.

Suggested Solution

amazon.com earned net income of $(0.241) billion in 2014. This number by itself is not very meaningful. Instead, it must be compared with the level of investment used to generate these earnings. amazon.com's return on start of year total assets of $54,505 billion is (0.44)% (that is, $(0.241) billion/$54.505 billion): which is a **seriously inferior** return.

5 Correlation and Correlation Matrices

Exercise 50 Take the table that follows and use Excel to find the coefficient of correlation, r, for X1 v Y1 and X1 v Y2. Plot the data on one or two graphs and interpret your results.

X	Y1	Y2
2	22.9	-22.9
10	45.78	-45.78
7	33.49	-33.49
17	49.77	-49.77
14	40.94	-40.94
16	36.18	-36.18
3	21.05	-21.05
12	50.57	-50.57
11	31.32	-31.32
15	53.76	-53.76
18	55.66	-55.66
3	27.61	-27.61
4	11.15	-11.15
1	10.11	-10.11
6	37.90	-37.9
5	31.08	-31.08
13	45.48	-45.48
19	63.83	-63.83
20	63.60	-63.6
9	27.01	-27.01

Exercise 51 Take the table that follows and use Excel to find the coefficient of correlation, r, for X v Y1 and X v Y2. Plot the data on two graphs and interpret your results as we are trying to find the best relationship between Machine (X1) and Labour Hours (X2) and Indirect Labour Costs (Y).

Week	Machine Hours (X1)	Direct Labour Hours (X2)	Indirect Factory Labour Costs (Y)
1	68	30	1,190
2	88	35	1,211
3	62	36	1,004
4	72	20	917
5	60	47	770
6	96	45	1,456
7	78	44	1,180
8	46	38	710
9	82	70	1,316
10	94	30	1,320
11	68	29	752
12	48	38	963

Exercise 52, Find the values of r for the three variables in exercise 51.

Exercise 53 Here are the correlation matrices of our two companies, amazon.com and Apple Inc insofar as they relate to sales, net income and retained earnings. Explain what these two correlation matrices might be telling us about those two companies.

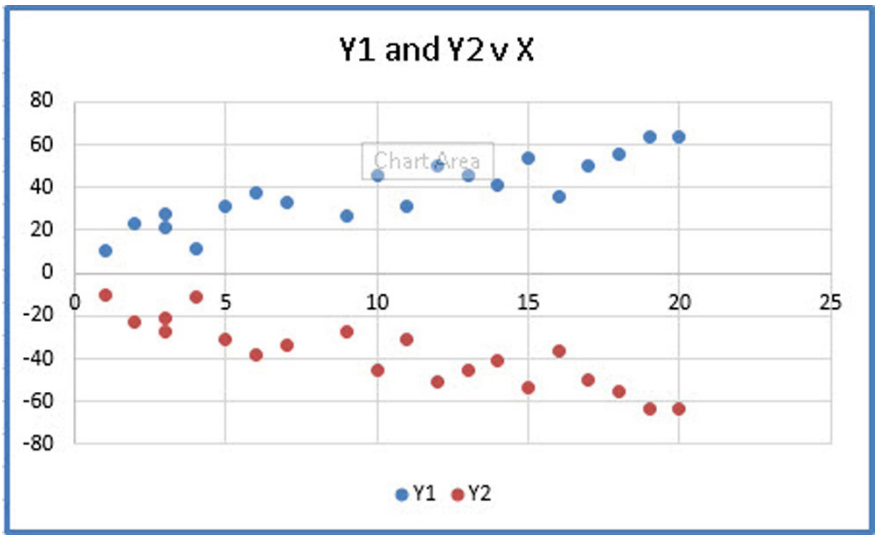
amazon.com	Revenue	Net income	Retained earnings	Apple Inc	Revenue	Net income	Retained earnings
Revenue	1			Revenue	1		
Net income	-0.5053	1		Net income	0.9894	1	
Retained earnings	0.8879	-0.1187	1	Retained earnings	0.9815	0.9902	1

Here are the solutions!

Exercise 50 Take the table that follows and use Excel to find the coefficient of correlation, r, for X1 v Y1 and X1 v Y2. Plot the data on one or two graphs and interpret your results.

X	Y1	Y2
2	22.9	-22.9
10	45.78	-45.78
7	33.49	-33.49
17	49.77	-49.77
14	40.94	-40.94
16	36.18	-36.18
3	21.05	-21.05
12	50.57	-50.57
11	31.32	-31.32
15	53.76	-53.76
18	55.66	-55.66
3	27.61	-27.61
4	11.15	-11.15
1	10.11	-10.11
6	37.9	-37.9
5	31.08	-31.08
13	45.48	-45.48
19	63.83	-63.83
20	63.6	-63.6
9	27.01	-27.01

Your graphs could look like this, with Y1 nd Y2 both on the same graph:



Exercise 51 Take the table that follows and use Excel to find the coefficient of correlation, r, for X v Y1 and X v Y2. Plot the data on two graphs and interpret your results as we are trying to find the best relationship between Machine (X1) and Labour Hours (X2) and Indirect Labour Costs (Y).

Week	Machine Hours (X1)	Direct Labour Hours (X2)	Indirect Factory Labour Costs (Y)
1	68	30	1,190
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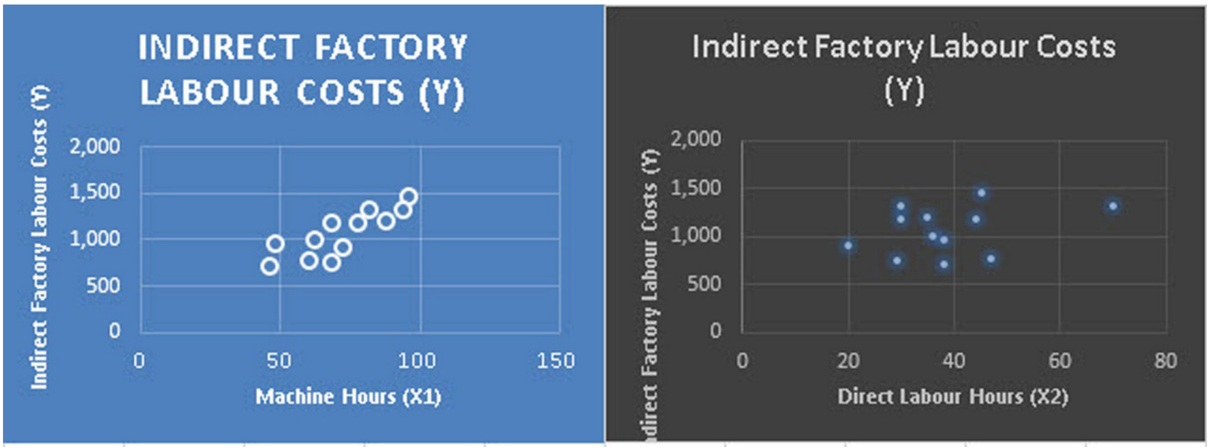


Exercise 52

We can put the answer to this exercise in the form of a correlation matrix:

Correlation Matrix

	Machine Hours (X1)	Direct Labour Hours (X2)	Indirect Factory Labour Costs (Y)
Machine Hours (X1)	1		
Direct Labour Hours (X2)	0.1237	1	
Indirect Factory Labour Costs (Y)	0.8256	0.3187	1

You need to use the **Data Analysis ToolPak** for this and your first task is to install that add in and then use it! You will see the instructions on how to install the **ToolPak** starting on page 4 of the notes for section *Correlation and Correlation Matrices*.

Exercise 53 Here are the correlation matrices of our two companies, amazon.com and Apple Inc insofar as they relate to sales, net income and retained earnings. Explain what these two correlation matrices might be telling us about those two companies.

amazon.com	**Revenue**	**Net income**	**Retained earnings**	**Apple Inc**	**Revenue**	**Net income**	**Retained earnings**
Revenue	1			**Revenue**	1		
Net income	-0.5053	1		**Net income**	0.9894	1	
Retained earnings	0.8879	-0.1187	1	**Retained earnings**	0.9815	0.9902	1

amazon.com

r = -0.5053 for revenue v net income tells us that as revenue increases, net income falls. A result of -0.5053 is a significant value of r.

Retained earnings are highly correlated with revenue but they are negatively correlated with net income, albeit in a relatively minor way.

Apple Inc

r = 0.9894 for revenue v net income tells us that as revenue increases, net income increases too. In this case, the value of r is very high, almost equal to 1 which suggests a very strong relationship.

Retained earnings are highly correlated with revenue and also highly positively correlated with net income.

We would conclude by saying that Apple Inc is doing a much better job of dealing with profits that amazon.com.

6 Technical and Fundamental Analysis

Exercise 54 As a warm up exercise, take a look at any company with which you are familiar and try to answer the questions just shown under the fundamental analysis heading:

1. Is the company's revenue growing?
2. Is it actually making a profit?
3. Is it in a strong enough position to beat…its competitors in the future?
4. Is it able to repay its debts?
5. Is management trying to "cook the books"?

Here are the solutions!

Exercise 54 As a warm up exercise, take a look at any company with which you are familiar and try to answer the questions just shown under the fundamental analysis heading:

1. Is the company's revenue growing?
2. Is it actually making a profit?
3. Is it in a strong enough position to beat…its competitors in the future?
4. Is it able to repay its debts?
5. Is management trying to "cook the books"?

Some of these questions seem simple to answer but others, such as questions three and five in that list, can be difficult and sometimes impossible for an outsider to answer.

If you don't have any company data of your own, apply the questions again to amazon.com and Apple Inc. Otherwise, take a look at these web sites that provide a lot of free financial information:

https://www.google.com/finance
http://finance.yahoo.com/market-overview/
http://www.morningstar.com/
http://markets.ft.com/research/markets/companies-research

This was meant to be a research project but just looking at amazon and Apple Inc will also do:

amazon.com

1. yes
2. no
3. with its constant very high levels of growth we might say yes to this
4. interesting question as it has started to take on a lot of debt recently. In terms of liquidity, however, the answer is yes
5. I don't see any evidence for saying yes to this!

Apple Inc

1. yes
2. yes
3. yes but the markets it operates in means that there is always intense competition
4. yes
5. I don't see any evidence for saying yes to this!

7 Financial Statements: basis of analysis

Exercise 55 Prepare graphs to illustrate the asset, liability and equity situation of Apple Inc for 2014 and comment on any differences between amazon.com and Apple Inc.

Exercise 56 Fill in the missing information in the sentences that follow.

The income statement of amazon.com, titled statement of income, for the three years 2012 to 2014 is shown above.

amazon.com's revenues in 2014 amounted to $____ billion. Of this amount, $____ billion are costs of operations and other expenses, yielding net income of $____ billion. amazon.com's earnings have been _________ during these three years despite a healthy increase in revenues, suggesting that the company is still __________ __________ __________.

Exercise 57 Fill in the missing information in the sentences relating to the Consolidated Statement of Stockholders' Equity that follow.

During this period, shareholders' equity changes were due mainly to __________ __________ __________, repurchasing stock (treasury shares) and __________ __________. amazon.com details these changes under _____ headings:

7.1 Statement of Comprehensive Income

amazon.com includes separate information for **comprehensive income**. Comprehensive Income is a measure of the ultimate *bottom line* income, that is, changes to shareholder's equity excluding transactions involving exchanges with shareholders. amazon.com's 2014 comprehensive income is $(567) billion. In addition to net income, comprehensive income includes certain adjustments classified as other comprehensive income. The largest constituent of other comprehensive income, is $325 billion for Foreign Currency Translation Adjustments, Net of Tax.

AMAZON.COM, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in millions)

	Year Ended December 31, 2014	2013	2012
Net income (loss)	$ (241)	$ 274	$ (39)
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of tax of $(3), $(20), and $(30)	(325)	63	76
Net change in unrealized gains on available-for-sale securities:			
Unrealized gains (losses), net of tax of $1, $3, and $(3)	2	(10)	8
Reclassification adjustment for losses (gains) included in "Other income (expense), net," net of tax of $(1), $(1), and $3	(3)	1	(7)
Net unrealized gains (losses) on available-for-sale securities	(1)	(9)	1
Total other comprehensive income (loss)	(326)	54	77
Comprehensive income (loss)	$ (567)	$ 328	$ 38

Exercise 58 Compare changes in Net Income and changes in Comprehensive Income for amazon.com for the period 2012 to 2014: both in $ and % terms and.

Exercise 59 Fill in the missing information in the sentences relating to amazon.com's statement of cash flows, as shown below.

amazon.com's 2014 cash balance increases by $_______ billion, from $_______ billion to $_______ billion. Of this increase in net cash, amazon.com's operating activities provided $_______ billion, its investing activities used $_______ billion and its financing activities provided/used $_______ billion.

Exercise 60: getting ready for detailed analysis

See the file *ex_60_students.xlsx* that has been set up for this exercise and the video too, *ex_60_students_publish.mpg4*

Before we work through the formal analysis of financial statements, let's take a look at some structured and basic exercises first:

Accounting Information	**Company A**	**Company B**
Sales	21,546.36	2,387.09
Total Costs	13,205.07	1,192.69
Profit as a percentage of sales		

	Company A	Company B	Company C	Company D
Contract costs	52,839.00	81,610.00	135,514.00	107,732.00
Mark up %				
Mark up $				
Selling price of contract	85,176.47	104,379.19	235,523.33	263,081.54
Profit Margin				

	Company 1	Company 2	Company 3	Company 4
Sales	150,717.82	221,435.49	108,405.79	258,819.48
Operating Costs	78,458.00	136,773.00	62,990.00	108,338.00
Mark up %				
Mark up $				
Profit Margin				

SABIC Income Statement for the years ended 31st December	20X1	20X0	Change $	Change %
Sales	189,898	151970		
Cost of Sales	127,768	103423		
Gross Profit	**62,130**	**48547**		
Selling, General and Administration Expenses	13,292	10654		
Profit from Operations	**28,838**	**37893**		
Investment and Other Income	2,039	1256		
Financial Charges	2,992	3394		
Net Profit before Interest and Taxation	**47,885**	**35754**		

SABIC Profit Margin Schedule	20X1	20X0
Gross Profit margin		
Profit from Operations Margin		
NPIT Margin		

Exercise 61

1. Express the following income statement information in common size percentages and assess whether this company's situation is favourable or unfavourable.

Harbison Corporation		
Comparative Income Statements		
for the years ended 31st December	**2016**	**2015**
Sales	720,000	535,000
Cost of Goods Sold	475,200	280,340
Gross Profit	**244,800**	**254,660**
Operating Expenses	151,200	103,790
Net Income	**93,600**	**150,870**

2. Common size and trend percentages for JBC Company's sales, cost of goods sold and expenses follow:

	COMMON SIZE %			TREND %		
	2016	**2015**	**2014**	**2016**	**2015**	**2014**
Sales	100.0%	100.0%	100.0%	104.4%	103.2%	100.0%
Cost of goods sold	62.4	60.9	58.1	112.1	108.2	100.0
Expenses	14.3	13.8	14.1	105.9	101.0	100.0

Determine whether net income increased, decreased, or remained unchanged in this three year period.

3. Selected comparative financial statements of Cohorn Company follow:

COHORN COMPANY Comparative Income Statement ($000) For Years Ended December 31, 2010–2016							
	2016	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Sales	1,594	1,396	1,270	1,164	1,086	1,010	828
Cost of goods sold	1.146	932	802	702	652	610	486
Gross profit	**448**	**464**	**468**	**462**	**434**	**400**	**342**
Operating expenses	340	266	244	180	156	154	128
Net income	**108**	**198**	**224**	**82**	**278**	**246**	**214**

COHORN COMPANY Comparative Balance Sheet ($000) December 31, 2010–2016							
Assets	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Cash	68	88	92	94	98	96	99
Accounts receivable, net	480	504	456	350	308	292	206
Merchandise inventory	1,738	1,264	1,104	932	836	710	515
Other current assets	46	42	24	44	38	38	19
Long-term investments	0	0	0	136	136	136	136
Plant and equipment, net	2,120	2,114	1,852	1,044	1,078	960	825
Total assets	**4,452**	**4,012**	**3,528**	**2,600**	**2,494**	**2,232**	**1,800**
Liabilities and Equity							
Current liabilities	1,120	942	618	514	446	422	272
Long-term liabilities	1,194	1,040	1,012	470	480	520	390
Common stock	1,000	1,000	1,000	840	840	640	640
Other contributed capital	250	250	250	180	180	160	160
Retained earnings	888	780	648	596	548	490	338
Total liabilities and equity	**4,452**	**4,012**	**3,528**	**2,600**	**2,494**	**2,232**	**1,800**

Required

a) Compute trend percentages for the individual items of both statements using 2000 as the base year.
b) Analyse and comment on the financial statements and trend percentages from part a.

4. Assume you are an analyst evaluating Mesco Company. The following data are available in your financial analysis (unless otherwise indicated, all data are as at 31st December Year 5):

Retained earnings, 31st December Year 4	$98,000
Gross profit margin ratio	25%
Acid test ratio	2.5 to 1
Noncurrent assets	$280,000
Days' sales in inventory	45 days
Days' sales in receivables	18 days
Shareholders' equity to total debt	4 to 1
Sales (all on credit)	$920,000
Common stock: $15 par value; 10,000 shares issued and outstanding; issued at $21 per share	

Required

Using these data, construct the 31st December Year 5, balance sheet for your analysis. Operating expenses (excluding taxes and cost of goods sold for Year 5) are $180,000. The tax rate is 40%. Assume a 360 day year in ratio computations. No cash dividends are paid in either Year 4 or Year 5. Current assets consist of cash, accounts receivable and inventories.

5. You are an analyst reviewing Foxx Company. The following data are available for your financial analysis (unless otherwise indicated, all data are as at 31st December Year 2):

Current ratio	2	Days' sales in inventory	36 days
Accounts receivable turnover	16	Gross profit margin ratio	50%
Beginning accounts receivable	$50,000	Expenses (excluding cost of goods sold)	$450,000
Return on end of year common equity	20%	Total debt to equity ratio	1
Sales (all on credit)	$1,000,000	Non current assets	$300,000

Required

Using these data, construct the 31st December Year 2, balance sheet for your analysis. Current assets consist of cash, accounts receivable and inventory. Balance sheet classifications include cash, accounts receivable, inventory, total noncurrent assets, total current assets, total current liabilities, total noncurrent liabilities and equity.

6. You are planning to analyse Voltek Company's 31st December Year 6, balance sheet. The following information is available:

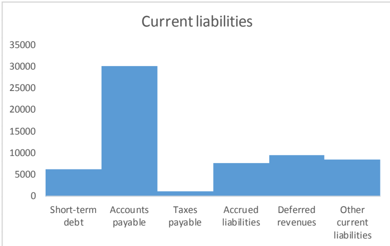
1. Opening and closing balances are identical for both accounts receivable and inventory.
2. Net income is $1,300.
3. Times interest earned is 5 (income taxes are zero). Company has 5% bonds outstanding and issued at par.
4. Net profit margin is 10%. Gross profit margin is 30%. Inventory turnover is 5.
5. Days' sales in receivables is 72 days.
6. Sales to end of year working capital is 4. Current ratio is 1.5.
7. Acid test ratio is 1.0 (excludes prepaid expenses).
8. Plant and equipment (net) is $6,000. It is one third depreciated.
9. Dividends paid on 8% non participating preferred stock are $40. There is no change in common shares outstanding during Year 6. Preferred shares were issued two years ago at par.
10. Earnings per common stock are $3.75.
11. Common stock has a $5 par value and was issued at par.
12. Retained earnings at 1st January Year 6, are $350.

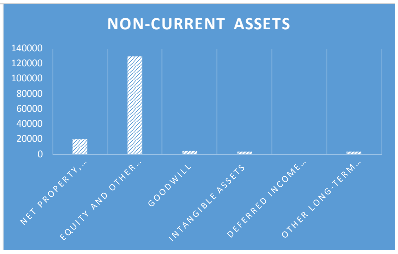
Required

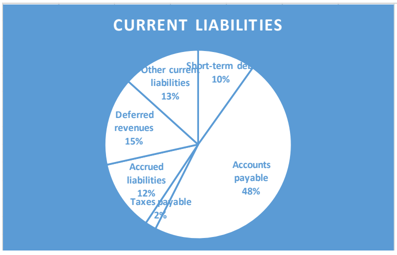
a) Given the information available, prepare this company's balance sheet as at 31st December Year 6 (include the following account classifications: cash, accounts receivable, inventory, prepaid expenses, plant and equipment (net), current liabilities, bonds payable and stockholders' equity).
b) Determine the amount of dividends paid on common stock in Year 6.

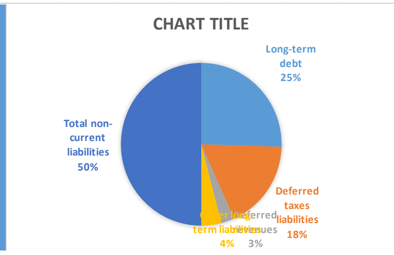
Here are the Solutions!

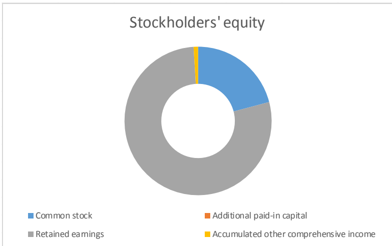
Exercise 55 Prepare graphs to illustrate the asset, liability and equity situation of Apple Inc for 2014 and comment on any differences between amazon.com and Apple Inc.



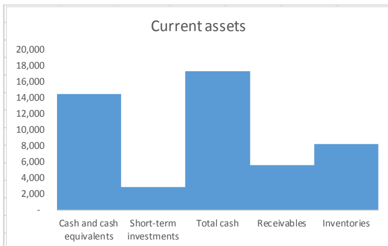


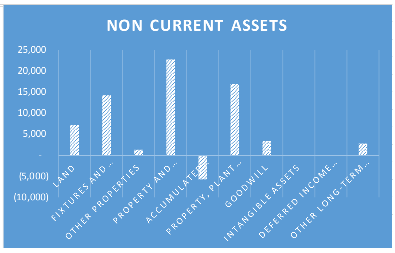


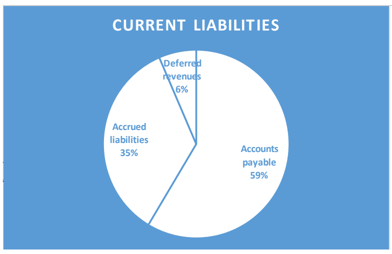


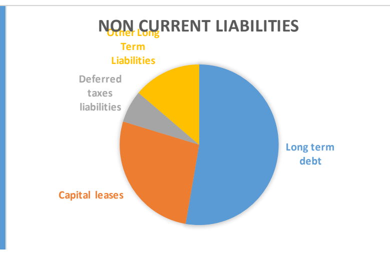


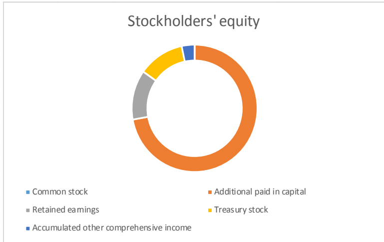
Amazon.com 2014











Comments:

The Apple balance sheet is 4.25 times bigger than the amazon balance sheet: total assets of $231839 v $54,505 million

Apple's retained earnings are 45 times larger than amazon's at $87.2 billion

Where amazon has greater value in its balance sheet includes,

Cash although Apple has 4 times the value of short term investments than amazon

Inventories

Accruals: both companies have billions of dollars in accruals, but amazon wins that race!

You can see the table I created for these comparisons in the *apple_results.xlsx file*

Exercise 56 Fill in the missing information in the sentences that follow.

The income statement of amazon.com, titled statement of income, for the three years 2012 to 2014 is shown above.

amazon.com's revenues in 2014 amounted to $____ billion. Of this amount, $____ billion are costs of operations and other expenses, yielding net income of $____ billion. amazon.com's earnings have been _________ during these three years despite a healthy increase in revenues, suggesting that the company is still __________ __________ __________.

Suggested solution

amazon.com's revenues in 2014 amounted to $88.988 billion. Of this amount, $26.058 billion are costs of operations and other expenses, yielding net income of $(0.241) billion. amazon.com's earnings have been very weak during these three years despite a healthy increase in revenues, suggesting that the company is still seeking to maximize sales growth.

Exercise 57 Fill in the missing information in the sentences relating to the Consolidated Statement of Stockholders' Equity that follow.

During this period, shareholders' equity changes were due mainly to ____________________________ and the repurchasing stock (treasury shares) and. amazon.com details these changes under _____ headings:

Suggested solution

During this period, shareholders' equity changes were due mainly to **stock based compensation and issuance of employee benefit plan stock**, repurchasing stock (treasury shares) and. amazon.com details these changes under **seven** headings:

7.1 Statement of Comprehensive Income

amazon.com includes separate information for **comprehensive income**. Comprehensive Income is a measure of the ultimate *bottom line* income, that is, changes to shareholder's equity excluding transactions involving exchanges with shareholders. amazon.com's 2014 comprehensive income is $(567) billion. In addition to net income, comprehensive income includes certain adjustments classified as other comprehensive income. The largest constituent of other comprehensive income, is $325 billion for Foreign Currency Translation Adjustments, Net of Tax.

AMAZON.COM, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in millions)

	Year Ended December 31, 2014	2013	2012
Net income (loss)	$ (241)	$ 274	$ (39)
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of tax of $(3), $(20), and $(30)	(325)	63	76
Net change in unrealized gains on available-for-sale securities:			
Unrealized gains (losses), net of tax of $1, $3, and $(3)	2	(10)	8
Reclassification adjustment for losses (gains) included in "Other income (expense), net," net of tax of $(1), $(1), and $3	(3)	1	(7)
Net unrealized gains (losses) on available-for-sale securities	(1)	(9)	1
Total other comprehensive income (loss)	(326)	54	77
Comprehensive income (loss)	$ (567)	$ 328	$ 38

Exercise 58 Compare changes in Net Income and changes in Comprehensive Income for amazon.com for the period 2012 to 2014: both in $ and % terms and.

	2013–2014		2012–2013	
Net Income/(Loss)	-$515	-188%	$313	803%
Comprehensive Income (Loss)	-$895	-273%	$290	763%

Exercise 59 Fill in the missing information in the sentences relating to amazon.com's statement of cash flows, as shown below.

amazon.com's 2014 cash balance increases by $_______ billion, from $_______ billion to $_______ billion. Of this increase in net cash, amazon.com's operating activities provided $_______ billion, its investing activities used $_______ billion and its financing activities provided/used $_______ billion.

Suggested solution

amazon.com's 2014 cash balance increases by $5.899 billion, from $8.658 billion to $14.557 billion. Of this increase in net cash, amazon.com's operating activities provided $6.842 billion, its investing activities used $-5.065 billion and its financing activities provided/used $4.432 billion.

Exercise 60: getting ready for detailed analysis

Before we work through the formal analysis of financial statements, let's take a look at some structured and basic exercises first:

Accounting Information		**Company A**	**Company B**
Sales		21,546.36	2,387.09
Total Costs		13,205.07	1,192.69
Profit as a percentage of sales			
	Profit $	8,341.29	1,194.40
	%	38.71%	50.04%

	Company A	**Company B**	**Company C**	**Company D**
Contract costs	52,839.00	81,610.00	135,514.00	107,732.00
Mark up %	61.20%	27.90%	73.80%	144.20%
Mark up $	32,337.47	22,769.19	100,009.33	155,349.54
Selling price of contract	85,176.47	104,379.19	235,523.33	263,081.54
Profit Margin	37.97%	21.81%	42.46%	59.05%

	Company 1	Company 2	Company 3	Company 4
Sales	150,717.82	221,435.49	108,405.79	258,819.48
Operating Costs	78,458.00	136,773.00	62,990.00	108,338.00
Mark up %	47.94%	38.23%	41.89%	58.14%
Mark up $	72,259.82	84,662.49	45,415.79	150,481.48
Profit Margin	47.94%	38.23%	41.89%	58.14%

SABIC Income Statement for the years ended 31st December	**20X1**	**20X0**	**Change $**	**Change %**
Sales	189,898	151970	37928	-75.04%
Cost of Sales	127,768	103423	24345	-76.46%
Gross Profit	**62,130**	**48,547**	**13,583**	**-72.02%**
Selling, General and Administration Expenses	13,292	10654	2638	-75.24%
Profit from Operations	**48,838**	**37,893**	**10,945**	**-71.12%**
Investment and Other Income	2,039	1256	783	-37.66%
Financial Charges	2,992	3394	-402	-111.84%
Net Profit before Interest and Taxation	**53,869**	**42,543**	**11,326**	**-73.38%**

SABIC Profit Margin Schedule	**20X1**	**20X0**		**Change %**
Gross Profit margin	32.72%	31.95%		2.42%
Profit from Operations Margin	25.72%	24.93%		3.14%
NPIT Margin	28.37%	27.99%		1.33%

Exercise 61

Use this Exercise to help you to appreciate and understand the work of this section before you work on the larger problems in the spreadsheet file.

1. Express the following income statement information in common size percentages and assess whether this company's situation is favourable or unfavourable.

Harbison Corporation Comparative Income Statements for the years ended 31st December	**2016**	**2015**
Sales	720,000	535,000
Cost of Goods Sold	475,200	280,340
Gross Profit	**244,800**	**254,660**
Operating Expenses	151,200	103,790
Net Income	**93,600**	**150,870**

Harbison Corporation	**Values**		**Common Size**	
Comparative Income Statements	**$**	**$**	**%**	**%**
for the years ended 31st December	**2016**	**2015**	2016	2015
Sales	720,000	535,000	100.00%	100.00%
Cost of Goods Sold	475,200	280,340	66.00%	52.40%
Gross Profit	**244,800**	**254,660**	**34.00%**	**47.60%**
Operating Expenses	151,200	103,790	21.00%	19.40%
Net Income	**93,600**	**150,870**	**13.00%**	**28.20%**

2. Common size and trend percentages for JBC Company's sales, cost of goods sold and expenses follow:

	COMMON SIZE %			**TREND %**		
	2016	**2015**	**2014**	**2016**	**2015**	**2014**
Sales	100.0%	100.0%	100.0%	104.4%	103.2%	100.0%
Cost of goods sold	62.4	60.9	58.1	112.1	108.2	100.0
Expenses	14.3	13.8	14.1	105.9	101.0	100.0

Determine whether net income increased, decreased, or remained unchanged in this three year period.

	COMMON SIZE %			**TREND %**		
	2016	**2015**	**2014**	**2016**	**2015**	**2014**
Sales	100.00%	100.00%	100.00%	104.40%	103.20%	100.00%
Cost of goods sold	62.40%	60.90%	58.10%	112.10%	108.20%	100.00%
Expenses	14.30%	13.80%	14.10%	105.90%	101.00%	100.00%
Total Costs %	76.70%	74.70%	72.20%			
Net Income %	23.30%	25.30%	27.80%			

3. Selected comparative financial statements of Cohorn Company follow:

COHORN COMPANY Comparative Income Statement ($000) For Years Ended December 31, 2010–2016							
	2016	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Sales	1,594	1,396	1,270	1,164	1,086	1,010	828
Cost of goods sold	1.146	932	802	702	652	610	486
Gross profit	**448**	**464**	**468**	**462**	**434**	**400**	**342**
Operating expenses	340	266	244	180	156	154	128
Net income	**108**	**198**	**224**	**82**	**278**	**246**	**214**

COHORN COMPANY Comparative Balance Sheet ($000) December 31,2010–2016							
Assets	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Cash	68	88	92	94	98	96	99
Accounts receivable, net	480	504	456	350	308	292	206
Merchandise inventory	1,738	1,264	1,104	932	836	710	515
Other current assets	46	42	24	44	38	38	19
Long-term investments	0	0	0	136	136	136	136
Plant and equipment, net	2,120	2,114	1,852	1,044	1,078	960	825
Total assets	**4,452**	**4,012**	**3,528**	**2,600**	**2,494**	**2,232**	**1,800**
Liabilities and Equity							
Current liabilities	1,120	942	618	514	446	422	272
Long-term liabilities	1,194	1,040	1,012	470	480	520	390
Common stock	1,000	1,000	1,000	840	840	640	640
Other contributed capital	250	250	250	180	180	160	160
Retained earnings	888	780	648	596	548	490	338
Total liabilities and equity	**4,452**	**4,012**	**3,528**	**2,600**	**2,494**	**2,232**	**1,800**

Required

a) Compute trend percentages for the individual items of both statements using 2000 as the base year.
b) Analyse and comment on the financial statements and trend percentages from part a.

a	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Sales	192.51%	168.60%	153.38%	140.58%	131.16%	121.98%	100.00%
Cost of goods sold	0.24%	191.77%	165.02%	144.44%	134.16%	125.51%	100.00%
Gross profit	**130.99%**	**135.67%**	**136.84%**	**135.09%**	**126.90%**	**116.96%**	**100.00%**
Operating expenses	265.63%	207.81%	190.63%	140.63%	121.88%	120.31%	100.00%
Net income	**50.47%**	**92.52%**	**104.67%**	**38.32%**	**129.91%**	**114.95%**	**100.00%**

Comparative Balance Sheet ($000)
December 31, 2010–2016

Assets	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Cash	68.69%	88.89%	92.93%	94.95%	98.99%	96.97%	100.00%
Accounts receivable, net	233.01%	244.66%	221.36%	169.90%	149.51%	141.75%	100.00%
Merchandise inventory	337.48%	245.44%	214.37%	180.97%	162.33%	137.86%	100.00%
Other current assets	242.11%	221.05%	126.32%	231.58%	200.00%	200.00%	100.00%
Long-term investments	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
Plant and equipment, net	256.97%	256.24%	224.48%	126.55%	130.67%	116.36%	100.00%
Total assets	**247.33%**	**222.89%**	**196.00%**	**144.44%**	**138.56%**	**124.00%**	**100.00%**
Liabilities and Equity							
Current liabilities	411.76%	346.32%	227.21%	188.97%	163.97%	155.15%	100.00%
Long-term liabilities	306.15%	266.67%	259.49%	120.51%	123.08%	133.33%	100.00%
Common stock	156.25%	156.25%	156.25%	131.25%	131.25%	100.00%	100.00%
Other contributed capital	156.25%	156.25%	156.25%	112.50%	112.50%	100.00%	100.00%
Retained earnings	262.72%	230.77%	191.72%	176.33%	162.13%	144.97%	100.00%
Total liabilities and equity	**247.33%**	**222.89%**	**196.00%**	**144.44%**	**138.56%**	**124.00%**	**100.00%**

4. Assume you are an analyst evaluating Mesco Company. The following data are available in your financial analysis (unless otherwise indicated, all data are as at 31st December Year 5):

Retained earnings, 31st December Year 4	$98,000
Gross profit margin ratio	25%
Acid test ratio	2.5 to 1
Noncurrent assets	$280,000
Days' sales in inventory	45 days
Days' sales in receivables	18 days
Shareholders' equity to total debt	4 to 1
Sales (all on credit)	$920,000
Common stock: $15 par value; 10,000 shares issued and outstanding; issued at $21 per share	

Required

Using these data, construct the 31st December Year 5, balance sheet for your analysis. Operating expenses (excluding taxes and cost of goods sold for Year 5) are $180,000. The tax rate is 40%. Assume a 360 day year in ratio computations. No cash dividends are paid in either Year 4 or Year 5. Current assets consist of cash, accounts receivable and inventories.

Income Statement			**Balance Sheet**			
Sales (all on credit)	920,000		Noncurrent assets		280,000
Cost of goods sold	690,000		**Current Assets**		
Gross Profit	**230,000**	25%	Inventory	86,250	
Operating Expenses	180,000		Receivables	46,000	
Profit before Tax	**50,000**		Cash		
Taxation	20,000	40%	Net WC		290,250
Profit after Tax	**30,000**		**Net Assets**		**422,500**
Calculations			**Common stock:**		
Inventory		86250	Par value		150,000
Receivables		46000	Share Premium		60,000
			Retained Profits		128,000
WC	142,500		**Sharehorlders' Equity**		**338,000**
			Total Debt		84,500
			Capital Employed		**422,500**

5. You are an analyst reviewing Foxx Company. The following data are available for your financial analysis (unless otherwise indicated, all data are as at 31st December Year 2):

Current ratio	2	Days' sales in inventory	36 days
Accounts receivable turnover	16	Gross profit margin ratio	50%
Beginning accounts receivable	$50,000	Expenses (excluding cost of goods sold)	$450,000
Return on end of year common equity	20%	Total debt to equity ratio	1
Sales (all on credit)	$1,000,000	Non current assets	$300,000

Required

Using these data, construct the 31st December Year 2, balance sheet for your analysis. Current assets consist of cash, accounts receivable and inventory. Balance sheet classifications include cash, accounts receivable, inventory, total noncurrent assets, total current assets, total current liabilities, total noncurrent liabilities and equity.

Income Statement		
Sales	13,000	
Cost of Sales	9,100	
Gross Profit	**3,900**	0.3
Expenses	2,600	
Net Income	1,300	0.1
Interest	260	5
Earnings before Taxation	1,040	
Taxation	0	
EAT	1,040	
Preferred Dividends	40	
Income Available	1,000	
EPS	3.75	

Balance Sheet	
Current assets	
cash	
accounts receivable	2,564.38
inventory	1,820.00
prepaid expenses	1,625.00
Total Current Assets	**4,875.00**
Non Current Assets	
plant and equipment (net)	6,000.00
Total Assets	**10,875.00**
current liabilities	3,250.00
bonds payable	5,200.00
preferred shares	500.00
stockholders' equity	1,333.33
Retained Earnings	1,350.00
Total Liabilities and Equity	**11,633.33**

Workings				
Inventory via inventory turnover	COGS/Inventory	5	1,820.00	
Recivables via receivables turnover		72	2,564.38	
WC			3250	
CA		1.5	4875	2
CL		1	3250	1
				1.5
Prepaid Expenses	(CA-Inventory)/CL	1	939.38	
No of common shares			266.6667	

6. You are planning to analyse Voltek Company's 31st December Year 6, balance sheet. The following information is available:

1. Opening and closing balances are identical for both accounts receivable and inventory.
2. Net income is $1,300.
3. Times interest earned is 5 (income taxes are zero). Company has 5% bonds outstanding and issued at par.
4. Net profit margin is 10%. Gross profit margin is 30%. Inventory turnover is 5.
5. Days' sales in receivables is 72 days.
6. Sales to end of year working capital is 4. Current ratio is 1.5.
7. Acid test ratio is 1.0 (excludes prepaid expenses).
8. Plant and equipment (net) is $6,000. It is one third depreciated.

9. Dividends paid on 8% non participating preferred stock are $40. There is no change in common shares outstanding during Year 6. Preferred shares were issued two years ago at par.
10. Earnings per common stock are $3.75.
11. Common stock has a $5 par value and was issued at par.
12. Retained earnings at 1st January Year 6, are $350.

Required

a) Given the information available, prepare this company's balance sheet as at 31st December Year 6 (include the following account classifications: cash, accounts receivable, inventory, prepaid expenses, plant and equipment (net), current liabilities, bonds payable and stockholders' equity).
b) Determine the amount of dividends paid on common stock in Year 6.

7.2 The Financial Ratio Analysis of Organisations Some Basic Analysis

Exercise 62 Give a brief analysis of the following summary: it relates to ***amazon.com*** and is taken from the file *amazon_results.xlsx* and provides just a snapshot for us to begin our analysis of an organisation.

	A	B	C	D
1	**amazon.com summary results**	**2014-12**	**2013-12**	**2012-12**
2	Revenue	88,988	74,452	61,093
3	Gross profit	26,236	20,271	15,122
4	Operating income	178	745	676
5	**Net income**	**(241)**	**274**	**(39)**
6	Inventories	8,299	7,411	6,031
7	Total current assets	31,327	24,625	21,296
8	**Total assets**	**54,505**	**40,159**	**32,555**
9	Total Current Liabilities	28,089	22,980	19,002
10	**Total liabilities**	**43,764**	**30,413**	**24,363**
11	Long term debt	8,265	3,191	3,084
12	**Total stockholders' equity**	**10,741**	**9,746**	**8,192**
13	Basic Earnings per share	(0.52)	0.60	(0.09)
14	Cash Dividend per Share	-	-	-
15	Closing Share Price	355	359	2,366
16	Shares Issued (billions)	465	459	454

Exercise 63 Complete the table below by calculating the ratios for 2012 and 2013.

	P	Q	R	S	T
19	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Gross Profit Margin	Gross profit/Revenue	29.48%		
21	Operating Income Margin	Operating income/Revenue	0.20%		
22	Net Income Margin	Net income/Revenue	-0.27%		
23					
24	Return on Total Assets	Operating income/Total assets	0.33%		
25	Return on Capital employed	Net income/Total stockholders' equity	-2.24%		
26					
27	Working Capital	Total current assets -Total Current Liabilities	3,238		
28	Current Ratio	Total current assets/Total Current Liabilities	1.12		
29	Acid Test Ratio	(Total current assets - Inventories)/Total Current Liabilities	0.82		
30					
31	Debt to Equity	Long term debt/Total stockholders' equity	76.95%		

Exercise 64 Say what you think about amazon.com's profitability performance for the three years for which you have data and ratio results.

Exercise 65 Here are the summary results of amazon.com for ten years, in Sparkline format. Does this additional information help you with your analysis of the company?

	L	M	N	O
1		2005-12 - 2014-12		2005-12 - 2014-12
2	Revenue		Gross Profit Margin	
3	Gross profit		Operating Income Margin	
4	Operating income		Net Income Margin	
5	Net income			
6	Inventories		Return on Total Assets	
7	Total current assets		Return on Capital employed	
8	Total assets			
9	Total Current Liabilities		Working Capital	
10	Total liabilities		Current Ratio	
11	Long term debt		Acid Test Ratio	
12	Total stockholders' equity			
13	Basic Earnings per share		Debt to Equity	
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

Exercise 66

a) Compare and comment on the percentage change in revenues with the percentage change in operating profits from the following information for amazon.com:

	AB	AC	AD	AE	AF
33	**Rates of Change**	**Formula**	**2005-12 to 2014-**	**2005-12 to 2013-**	**2005-12 to 2012-**
34	Change in revenues	Revenues year n+x/Revenues 2005 (n)	948.15%	776.94%	619.59%
35	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	-58.80%	72.45%	56.48%

b) Evaluate the dividends paid out by the company over the last ten years

c) How would you summarise amazon.com's equity base over the last ten years? See the table that follows question part d.

i. Increased consistently

ii. Decreased consistently

iii. Increased in stages

iv. Decreased in stages

d) Evaluate amazon.com's return on equity ratio and the debt to equity ratio (gearing or leverage) over the ten years:

	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
37	**Net Income and Total Equity (USD millions)**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
38	Net income	-241	274	-39	631	1152	902	645	476	190	359
39	Total stockholders' equity	10741	9746	8192	7757	6864	5257	2672	1197	431	246

Exercise 67 Projecting Interest Expense

Over the last two years, 2013–2015, amazon.com has borrowed large amounts of money: $8.75 billion. These **corporate bonds** range in size from $750 million to $1.50 billion and are set out in the table below.

a) The file *amazon_bonds_students.xlsx* has also been created for this task and the other three tasks that follow:
Your **first task** is to prepare a schedule of interest payments and redemptions for these bonds assuming they go to term and interest payments are due on the dates derived from their issue dates.

Coupon	Maturity	Ratings Moody	Ratings S&P	Yield	Amount	Payment Frequency (x per year)	First Payment
2.6	5/12/2019	Baal	AA-	2.451	1,000,000,000	2	15/6/2015
3.3	5/12/2021	Baal	AA-	3.016	1,000,000,000	2	15/6/2015
3.8	5/12/2024	Baal	AA-	3.725	1,250,000,000	2	29/5/2013
4.8	5/12/2034	Baal	AA-	4.783	1,250,000,000	2	5/6/2013
4.95	5/12/2044	Baal	AA-	5.014	1,000,000,000	2	15/6/2015
0.65	27/11/2015	Baal	AA-	0.779	750,000,000	2	27/5/2013
1.2	29/11/2017	Baal	AA-	1.459	1,000,000,000	2	29/5/2013
2.5	29/11/2022	Baal	AA-	3.031	1,500,000,000	2	5/6/2015

Exercise 68 Ratings and Inter Firm Comparison

a) what is the significance of the ratings by Moody and S&P?
b) compare the data for *amazon.com* with the corporate bonds data for **Apple Inc** that you will also find in the file *amazon_bonds_students.xlsx*

Exercise 69 Analysis of Apple Inc

Using the data you see below for Apple Inc, carry out the same analysis for Apple Inc as you carried out for amazon.com earlier.

	A	B	C	D
1	**Apple Inc summary results**	**2014-12**	**2013-12**	**2012-12**
2	Revenue	182,795	170,910	156,508
3	Gross profit	70,537	64,304	68,662
4	Operating income	52,503	48,999	55,241
5	**Net income**	**39,510**	**37,037**	**41,733**
6	Inventories	2,111	1,764	791
7	Total current assets	68,531	73,286	57,653
8	**Total assets**	**231,839**	**207,000**	**176,064**
9	Total current liabilities	63,448	43,658	38,542
10	**Total liabilities**	**120,292**	**83,451**	**57,854**
11	Long term debt	28,987	16,960	-
12	**Total stockholders' equity**	**111,547**	**123,549**	**118,210**
13	Basic Earnings per share	6.49	5.72	6.38
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

Complete the table below by calculating the ratios for 2012 and 2013.

	P	Q	R	S	T
19	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Gross Profit Margin	Gross profit/Revenue	38.59%		
21	Operating Income Margin	Operating income/Revenue	28.72%		
22	Net Income Margin	Net income/Revenue	21.61%		
23					
24	Return on Total Assets	Operating income/Total assets	22.65%		
25	Return on Capital employed	Net income/Total stockholders' equity	35.42%		
26					
27	Working Capital	Total current assets -Total current liabilities	5,083		
28	Current Ratio	Total current assets/Total current liabilities	1.08		
29	Acid Test Ratio	(Total current assets - Inventories)/Total current liabilities	1.05		
30					
31	Debt to Equity	Long term debt/Total stockholders' equity	25.99%		

Exercise 70 Say what you think about Apple Inc's performance for the three years for which you have data and ratio results.

Exercise 71 Here are the summary results of Apple Inc for ten years, in Sparkline format. Does this additional information help you with your analysis of the company?

	L	M	N	O
1		2005-12 - 2014-12		2005-12 - 2014-12
2	Revenue		Gross Profit Margin	
3	Gross profit		Operating Income Margin	
4	Operating income		Net Income Margin	
5	Net income			
6	Inventories		Return on Total Assets	
7	Total current assets		Return on Capital employed	
8	Total assets			
9	Total current liabilities		Working Capital	
10	Total liabilities		Current Ratio	
11	Long term debt		Acid Test Ratio	
12	Total stockholders' equity			
13	Basic Earnings per share		Debt to Equity	
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

Exercise 72

a) Compare and comment on the percentage change in revenues with the percentage change in operating profits from the following information for Apple Inc:

	AB	AC	AD	AE	AF
33	**Rates of Change**	**Formula**	**2005-12 to 2014-**	**2005-12 to 2013-**	**2005-12 to 2012-**
34		**Year**	**10 to 11**	**9 to 10**	**8 to 9**
35	Change in revenues	Revenues year n+x/Revenues 2005 (n)	1212.15%	1126.83%	1023.45%
36	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	3082.00%	2869.64%	3247.94%

b) Evaluate the dividends paid out by the company over the last ten years

c) How would you summarise Apple Inc's equity base over the last ten years? See the table that follows question part d.
   i. Increased consistently
   ii. Decreased consistently
   iii. Increased in stages
   iv. Decreased in stages

d) Evaluate Apple Inc's return on equity ratio and the debt to equity ratio (gearing or leverage) over the ten years:

	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
34	**Rates of Change**	**Formula**	**2005-12 to 2014-12**	**2005-12 to 2013-12**	**2005-12 to 2012-12**	**2005-12 to 2011-12**	**2005-12 to 2010-12**	**2005-12 to 2009-12**	**2005-12 to 2008-12**	**2005-12 to 2007-12**	**2005-12 to 2006-12**	**2005-12 to 2005-12**
35	Change in revenues	Revenues year n+x/Revenues 2005 (n)	1212.15%	1126.83%	1023.45%	677.04%	368.20%	207.98%	133.14%	72.32%	38.65%	0.00%
36	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	3082.00%	2869.64%	3247.94%	1947.88%	1014.24%	611.52%	280.30%	167.21%	48.67%	0.00%
37												
38		**Net Income and Total Equity (USD millions)**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
39		Net income	39510	37037	41733	25922	14013	8235	4834	3496	1989	1335
40		Total stockholders' equity	111547	123549	118210	76615	47791	31640	21030	14532	9984	7466

Here are the Solutions!

Exercise 62 Give a brief analysis of the following summary: it relates to ***amazon.com*** and is taken from the file *amazon_results.xlsx* and provides just a snapshot for us to begin our analysis of an organisation.

	A	B	C	D
1	**amazon.com summary results**	**2014-12**	**2013-12**	**2012-12**
2	Revenue	88,988	74,452	61,093
3	Gross profit	26,236	20,271	15,122
4	Operating income	178	745	676
5	**Net income**	**(241)**	**274**	**(39)**
6	Inventories	8,299	7,411	6,031
7	Total current assets	31,327	24,625	21,296
8	**Total assets**	**54,505**	**40,159**	**32,555**
9	Total Current Liabilities	28,089	22,980	19,002
10	**Total liabilities**	**43,764**	**30,413**	**24,363**
11	Long term debt	8,265	3,191	3,084
12	**Total stockholders' equity**	**10,741**	**9,746**	**8,192**
13	Basic Earnings per share	(0.52)	0.60	(0.09)
14	Cash Dividend per Share	-	-	-
15	Closing Share Price	355	359	2,366
16	Shares Issued (billions)	465	459	454

All results are showing positive changes except for Net Income and EPS, earnings per share.

Exercise 63 Complete the table below by calculating the ratios for 2012 and 2013.

	P	Q	R	S	T
19	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Gross Profit Margin	Gross profit/Revenue	29.48%		
21	Operating Income Margin	Operating income/Revenue	0.20%		
22	Net Income Margin	Net income/Revenue	-0.27%		
23					
24	Return on Total Assets	Operating income/Total assets	0.33%		
25	Return on Capital employed	Net income/Total stockholders' equity	-2.24%		
26					
27	Working Capital	Total current assets -Total Current Liabilities	3,238		
28	Current Ratio	Total current assets/Total Current Liabilities	1.12		
29	Acid Test Ratio	(Total current assets - Inventories)/Total Current Liabilities	0.82		
30					
31	Debt to Equity	Long term debt/Total stockholders' equity	76.95%		

Ratio Name	Ratio Formula	2014-12	2013-12	2012-12
Gross Profit Margin	Gross profit/Revenue	29.48%	27.23%	24.75%
Operating Income Margin	Operating income/Revenue	0.20%	1.00%	1.11%
Net Income Margin	Net income/Revenue	-0.27%	0.37%	-0.06%
Return on Total Assets	Operating income/Total assets	0.33%	1.86%	2.08%
Return on Capital employed	Net income/Total stockholders' equity	-2.24%	2.81%	-0.48%
Working Capital	Total current assets -Total Current Liabilities	3,238	1,645	2,294
Current Ratio	Total current assets/Total Current Liabilities	1.12	1.07	1.12
Acid Test Ratio	(Total current assets – Inventories)/ Total Current Liabilities	0.82	0.75	0.80
Debt to Equity	Long term debt/Total stockholders' equity	76.95%	32.74%	37.65%

Exercise 64 Say what you think about amazon.com's profitability performance for the three years for which you have data and ratio results.

Gross margins are steady at the high 20% but operating and net margins are really very poor, reflecting amazon.com as a break even company.

Exercise 65 Here are the summary results of amazon.com for ten years, in Sparkline format. Does this additional information help you with your analysis of the company?

	L	M	N	O
1		2005-12 - 2014-12		2005-12 - 2014-12
2	Revenue		Gross Profit Margin	
3	Gross profit		Operating Income Margin	
4	Operating income		Net Income Margin	
5	Net income			
6	Inventories		Return on Total Assets	
7	Total current assets		Return on Capital employed	
8	Total assets			
9	Total Current Liabilities		Working Capital	
10	Total liabilities		Current Ratio	
11	Long term debt		Acid Test Ratio	
12	Total stockholders' equity			
13	Basic Earnings per share		Debt to Equity	
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

The Sparklines reveal the overall trends over the last ten years. Most metrics are showing positive signs but profitability is very weak and debt to equity is suddenly increasing. Working capital is decreasing too, according to the Sparklines.

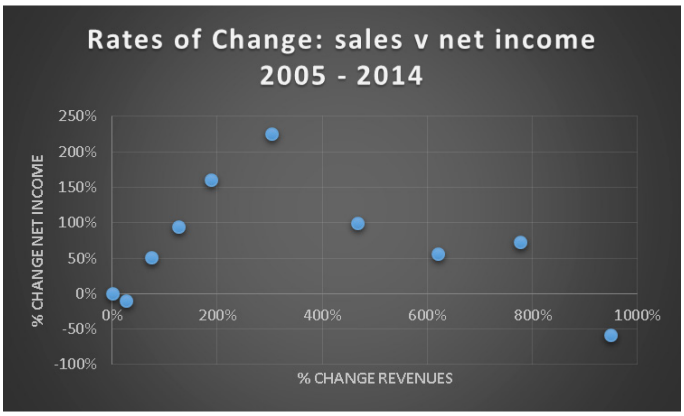
Exercise 66

a) Compare and comment on the percentage change in revenues with the percentage change in operating profits from the following information for amazon.com:

	AB	AC	AD	AE	AF
33	**Rates of Change**	**Formula**	**2005-12 to 2014-**	**2005-12 to 2013-**	**2005-12 to 2012-**
34	Change in revenues	Revenues year n+x/Revenues 2005 (n)	948.15%	776.94%	619.59%
35	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	-58.80%	72.45%	56.48%

It is difficult to conclude a great deal from just three years' data but we do see a sudden change in fortunes in 2014 as operating profits have dropped, giving a negative change.

Unfortunately, data for three years doesn't reveal a great deal so here is the full 10 year data:



What we see here is as the company grows slowly, it turns a profit: as it grows quickly, profits disappear!

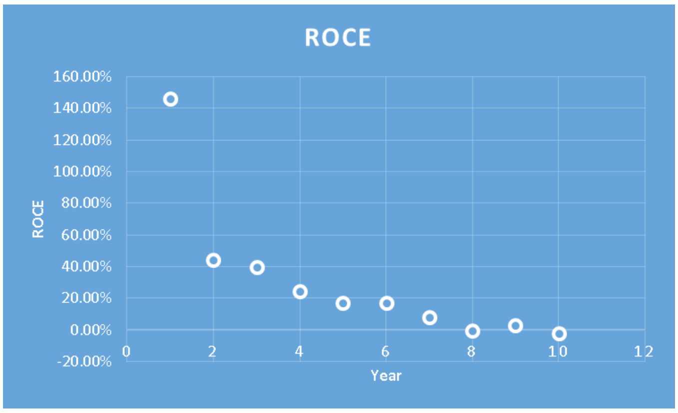
b) Evaluate the dividends paid out by the company over the last ten years amazon.com pays no cash dividends as a matter of policy
c) How would you summarise amazon.com's equity base over the last ten years? See the table that follows question part d.
    i. Increased consistently
    ii. Decreased consistently
    iii. Increased in stages
    iv. Decreased in stages

    I would say answer iii but not perfectly!

d) Evaluate amazon.com's return on equity ratio and the debt to equity ratio (gearing or leverage) over the ten years:

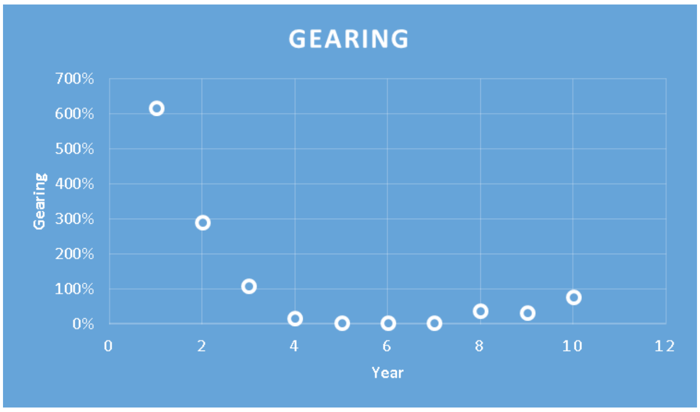
	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
37	**Net Income and Total Equity (USD millions)**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
38	Net income	-241	274	-39	631	1152	902	645	476	190	359
39	Total stockholders' equity	10741	9746	8192	7757	6864	5257	2672	1197	431	246

ROCE = Net Income/Total stockholders' equity:



ROCE is not so good for amazon.com is it?

Debt to Equity Ratio (gearing or leverage)



The gearing ratio fell early on in amazon.com's life but now it is on the rise again: wait for the 2015 results to come out to see if that trend has continued.

Exercise 67 Projecting Interest Expense

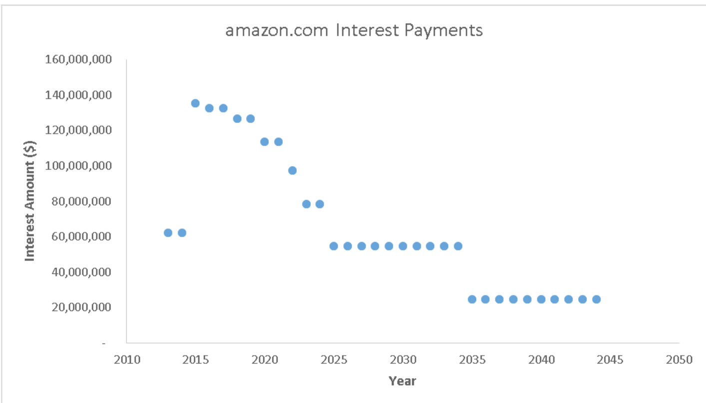
Over the last two years, 2013–2015, amazon.com has borrowed large amounts of money: $8.75 billion. These **corporate bonds** range in size from $750 million to $1.50 billion and are set out in the table below.

a) The file *amazon_bonds_students.xlsx* has also been created for this task and the other three tasks that follow:

Your **first task** is to prepare a schedule of interest payments and redemptions for these bonds assuming they go to term and interest payments are due on the dates derived from their issue dates.

Coupon	Maturity	Ratings Moody	Ratings S&P	Yield	Amount	Payment Frequency (x per year)	First Payment
2.6	5/12/2019	Baal	AA-	2.451	1,000,000,000	2	15/6/2015
3.3	5/12/2021	Baal	AA-	3.016	1,000,000,000	2	15/6/2015
3.8	5/12/2024	Baal	AA-	3.725	1,250,000,000	2	29/5/2013
4.8	5/12/2034	Baal	AA-	4.783	1,250,000,000	2	5/6/2013
4.95	5/12/2044	Baal	AA-	5.014	1,000,000,000	2	15/6/2015
0.65	27/11/2015	Baal	AA-	0.779	750,000,000	2	27/5/2013
1.2	29/11/2017	Baal	AA-	1.459	1,000,000,000	2	29/5/2013
2.5	29/11/2022	Baal	AA-	3.031	1,500,000,000	2	5/6/2015

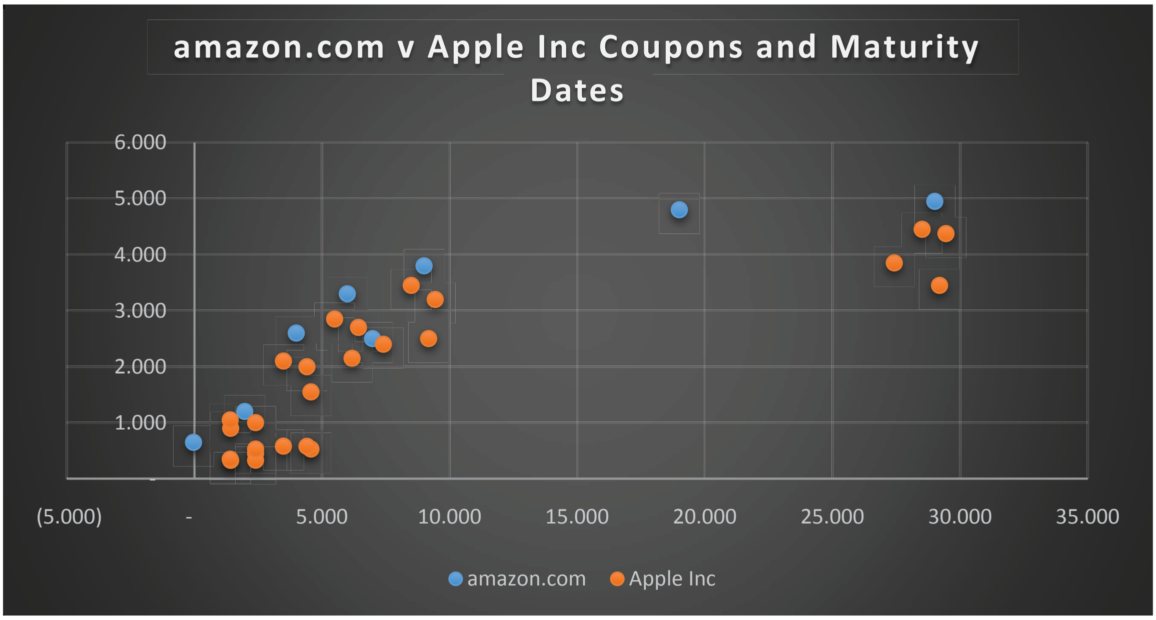
In my file, there is the schedule, from which I have taken data to show the following:



Exercise 68 Ratings and Inter Firm Comparison

a) what is the significance of the ratings by Moody and S&P?
These ratings give us an expert view or the market view of how a company is seen to be performing: AAA or AAA+ is generally the highest rating and then CCC or DDD or EEE is the lowest, depending on which company is doing the rating.

b) compare the data for *amazon.com* with the corporate bonds data for **Apple Inc**



Exercise 69 Analysis of Apple Inc

Using the data you see below for Apple Inc, carry out the same analysis for Apple Inc as you carried out for amazon.com earlier.

	A	B	C	D
1	**Apple Inc summary results**	**2014-12**	**2013-12**	**2012-12**
2	Revenue	182,795	170,910	156,508
3	Gross profit	70,537	64,304	68,662
4	Operating income	52,503	48,999	55,241
5	**Net income**	**39,510**	**37,037**	**41,733**
6	Inventories	2,111	1,764	791
7	Total current assets	68,531	73,286	57,653
8	**Total assets**	**231,839**	**207,000**	**176,064**
9	Total current liabilities	63,448	43,658	38,542
10	**Total liabilities**	**120,292**	**83,451**	**57,854**
11	Long term debt	28,987	16,960	-
12	**Total stockholders' equity**	**111,547**	**123,549**	**118,210**
13	Basic Earnings per share	6.49	5.72	6.38
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

Apple Inc is performing very well here: everything is going in the right direction, unless you are worried about gearing and stockholders' equity, which are both a little suspect.

Complete the table below by calculating the ratios for 2012 and 2013.

	P	Q	R	S	T
19	**Ratio Name**	**Ratio Formula**	**2014-12**	**2013-12**	**2012-12**
20	Gross Profit Margin	Gross profit/Revenue	38.59%		
21	Operating Income Margin	Operating income/Revenue	28.72%		
22	Net Income Margin	Net income/Revenue	21.61%		
23					
24	Return on Total Assets	Operating income/Total assets	22.65%		
25	Return on Capital employed	Net income/Total stockholders' equity	35.42%		
26					
27	Working Capital	Total current assets -Total current liabilities	5,083		
28	Current Ratio	Total current assets/Total current liabilities	1.08		
29	Acid Test Ratio	(Total current assets - Inventories)/Total current liabilities	1.05		
30					
31	Debt to Equity	Long term debt/Total stockholders' equity	25.99%		

Ratio Name	Ratio Formula	2014-12	2013-12	2012-12
Gross Profit Margin	Gross profit/Revenue	38.59%	37.62%	43.87%
Operating Income Margin	Operating income/Revenue	28.72%	28.67%	35.30%
Net Income Margin	Net income/Revenue	21.61%	21.67%	26.67%
Return on Total Assets	Operating income/Total assets	22.65%	23.67%	31.38%
Return on Capital employed	Net income/Total stockholders' equity	35.42%	29.98%	35.30%
Working Capital	Total current assets -Total current liabilities	5,083	29,628	19,111
Current Ratio	Total current assets/Total current liabilities	1.08	1.68	1.50
Acid Test Ratio	(Total current assets – Inventories)/ Total current liabilities	1.05	1.64	1.48
Debt to Equity	Long term debt/Total stockholders' equity	25.99%	13.73%	0.00%

Exercise 70 Say what you think about Apple Inc's performance for the three years for which you have data and ratio results.

Again we can say that Apple Inc is doing well as all of its metrics are showing good signs. However, working capital is a bit erratic and the current ratio has fallen: is this a good or a bad sign? Debt to equity has suddenly risen quite cramatically, too.

Exercise 71 Here are the summary results of Apple Inc for ten years, in Sparkline format. Does this additional information help you with your analysis of the company?

	L	M	N	O
1		2005-12 - 2014-12		2005-12 - 2014-12
2	Revenue		Gross Profit Margin	
3	Gross profit		Operating Income Margin	
4	Operating income		Net Income Margin	
5	Net income			
6	Inventories		Return on Total Assets	
7	Total current assets		Return on Capital employed	
8	Total assets			
9	Total current liabilities		Working Capital	
10	Total liabilities		Current Ratio	
11	Long term debt		Acid Test Ratio	
12	Total stockholders' equity			
13	Basic Earnings per share		Debt to Equity	
14	Cash Dividend per Share			
15	Closing Share Price			
16	Shares Issued (billions)			

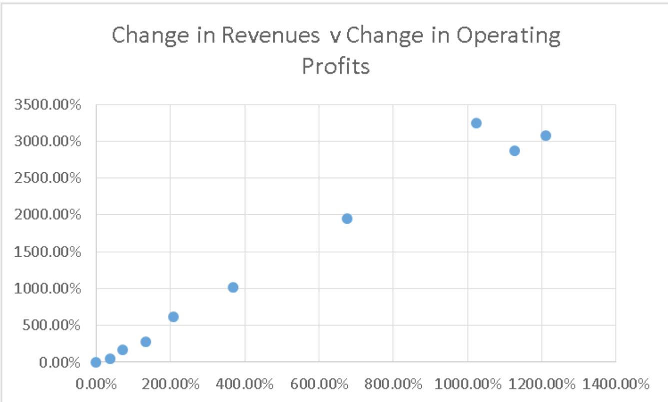
In this case, the Sparklines simply mirror the comments I have already made: Apple Inc is performing well although in the longer term profitability and returns on capital employed and total assets are falling.

Exercise 72

a) Compare and comment on the percentage change in revenues with the percentage change in operating profits from the following information for Apple Inc:

	AB	AC	AD	AE	AF
33	Rates of Change	Formula	2005-12 to 2014-	2005-12 to 2013-	2005-12 to 2012-
34		Year	10 to 11	9 to 10	8 to 9
35	Change in revenues	Revenues year n+x/Revenues 2005 (n)	1212.15%	1126.83%	1023.45%
36	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	3082.00%	2869.64%	3247.94%

Over the long term, revenues and operating profits have moved in a highly correlated way. Over the final three years, however, they have become a little erratic. Is this a cause for concern? Let's see what the new product launches do for the company in 2015 nd 2016.



b) Evaluate the dividends paid out by the company over the last ten years
There have not been many dividends from Apple Inc as a matter of policy: that was Steve Jobs' philosophy I think.

c) How would you summarise Apple Inc's equity base over the last ten years? See the table that follows question part d.
i. Increased consistently
ii. Decreased consistently
iii. Increased in stages
iv. Decreased in stages

I should say i

d) Evaluate Apple Inc's return on equity ratio and the debt to equity ratio (gearing or leverage) over the ten years:

	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
34	**Rates of Change**	**Formula**	**2005-12 to 2014-12**	**2005-12 to 2013-12**	**2005-12 to 2012-12**	**2005-12 to 2011-12**	**2005-12 to 2010-12**	**2005-12 to 2009-12**	**2005-12 to 2008-12**	**2005-12 to 2007-12**	**2005-12 to 2006-12**	**2005-12 to 2005-12**
35	Change in revenues	Revenues year n+x/Revenues 2005 (n)	1212.15%	1126.83%	1023.45%	677.04%	368.20%	207.98%	133.14%	72.32%	38.65%	0.00%
36	Change in operating profits	Operating Profit n+x/Operating Profit 2005(n)	3082.00%	2869.64%	3247.94%	1947.88%	1014.24%	611.52%	280.30%	167.21%	48.67%	0.00%
37												
38		**Net Income and Total Equity (USD millions)**	**2014-12**	**2013-12**	**2012-12**	**2011-12**	**2010-12**	**2009-12**	**2008-12**	**2007-12**	**2006-12**	**2005-12**
39		Net income	39510	37037	41733	25922	14013	8235	4834	3496	1989	1335
40		Total stockholders' equity	111547	123549	118210	76615	47791	31640	21030	14532	9984	7466

ROCE increasing steadily with a small blip in 2013
Gearing very low until the last two years when it jumped significantly

8 Financial Statements Analysis: in detail

8.1 1 Comparative financial statement analysis

No exercises for this section.

8.2 2 Common Size Financial Statement Analysis

Exercise 73

Create common Size Statements for the following examples:

Income Statement	**Year 2 S**	**Year 1 $**
Sales	123,116	73,371
Cost of Sales	115,027	62,314
Gross Profit	13,336	11,057
Administration	5,459	4,844
Selling	2,840	2,641

Balance Sheet	**Year 2 S**	**Year 1 $**
Inventories	8,500	6,872
Receivables	4,454	3,948
Bank	8,001	4,132
Total Current Assets	**20,955**	**14,952**
Property, Plant and Equipment	36,846	30,494
Intangibles	7,076	6,656
Total Non Current Assets	**43,922**	**37,150**
Total Assets	64,877	52,102
Payables	3,229	2,857
Accruals	1,417	1,289
Loans	7,412	4,061
Total Current Liabilities	**12,058**	**8,207**
Debt	30,719	23,494
Long Term Creditors	13,474	12,132
Total Non Current Liabilities	**44,193**	**35,626**
Equity	32,742	24,683
Total Liabilities and Equity	64,877	52,102

Statement of Cash Flow	Year 2 S	Year 1 $
Net Income	14,344	10,866
Non Cash Adjustments	4,307	2,655
Changes in working capital	10,350	7,082
Cash from Operations	**29,001**	**20,603**
Investing	–	–
Net cash from investing activities	(13,438)	(7,947)
Financing	–	–
Net Cash from financing activities	15,786	9,755
Net Cash	31,349	22,411
Opening cash balance	(24,324)	(19,132)
Closing cash balance	**8,001**	**4,132**

8.3 3 Ratio Analysis

Exercise 74

1. DW plc's year end balance sheets show the following:

	2016	2015	2014
Cash	30,800	35,625	36,800
Accounts receivable, net	88,500	62,500	49,200
Merchandise inventory	111,500	82,500	53,000
Prepaid expenses	9,700	9,375	4,000
Plant assets, net	277,500	255,000	229,500
Total assets	**518,000**	**445,000**	**372,500**
Accounts payable	128,900	75,250	49,250
Long term notes payable secured by mortgages on plant assets	97,500	102,500	82,500
Common stock, $10 par value	162,500	162,500	162,500
Retained earnings	129,100	104,750	78,250
Total liabilities and equity	**518,000**	**445,000**	**372,500**

Required

Compare the year end short term liquidity position of DW plc at the end of 2016, 2015 and 2014 by computing the:

a) current ratio and
b) acid test ratio.

Comment on the ratio results.

2. Refer to the information in part 1 about DW plc. The company's income statements for the years ended 31st December 2016 and 2015 show the following:

		2016		2015
Sales		672,500		530,000
Cost of goods sold	410,225		344,500	
Other operating expenses	208,550		133,980	
Interest expense	11,100		12,300	
Income taxes	8,525		7,845	
Total costs and expenses		**(638,400)**		**(498,625)**
Net income		**34,100**		**31,375**
Earnings per share		2.10		1.93

Required

For the years ended 31st December 2016 and 2015, assume all sales are on credit and then compute the following:

a) collection period
b) accounts receivable turnover
c) inventory turnover and
d) days' sales in inventory. Comment on the changes in the ratios from 2015 to 2016.

3. Refer to the information in parts 1 and 2 about DW plc. Compare the long term risk and capital structure positions of the company at the end of 2016 and 2015 by computing the following ratios:

a) total debt ratio
b) times interest earned

Comment on these ratio results.

4. Refer to the financial statements of DW plc in parts 1 and 2. Evaluate the efficiency and profitability of the company by computing the following:
a) net profit margin,
b) total asset turnover
c) return on total assets

Comment on these ratio results.

5. Refer to the financial statements of DW plc in parts 1 and 2. The following additional information about the company is known:

Common stock market price 31st December 2016	15.00
Common stock market price 31st December 2015	14.00
Annual cash dividends per share in 2016	0.60
Annual cash dividends per share in 2015	0.30

To help evaluate the profitability of the company, compute the following for 2016 and 2015:

a) return on common stockholders' equity
b) price earnings ratio on December 31 and
c) dividend yield.

8.4 4 Cash Flow Analysis

Let's look at a Statement of Cash Flows: again we will use amazon.com because they are a very well known organisation:

Exercise 75

AMAZON.COM INC (AMZN) Statement of CASH FLOW			
Fiscal year ends in December. USD in millions except per share data.	**2014-12**	**2013-12**	**2012-12**
Cash Flows From Operating Activities			
Net income	(241)	274	(39)
Depreciation & amortization	4,746	3,253	2,159
Investments losses (gains)	(3)	1	(9)
Deferred income taxes	(316)	(156)	(265)
Stock based compensation	1,497	1,134	833
Accounts receivable	(1,039)		(861)
Inventory	(1,193)	(1,410)	(999)
Accounts payable	1,759	1,888	2,070
Accrued liabilities	706	736	1,038
Other working capital	741	(447)	275
Other non-cash items	185	202	(22)
Net cash provided by operating activities	**6,842**	**5,475**	**4,180**
Cash Flows From Investing Activities			
Investments in property, plant, and equipment	(4,893)	(3,444)	(3,785)
Acquisitions, net	(979)	(312)	(745)
Purchases of investments	(2,542)	(2,826)	(3,302)
Sales/Maturities of investments	3,349	2,306	4,237
Net cash used for investing activities	**(5,065)**	**(4,276)**	**(3,595)**
Cash Flows From Financing Activities			
Long-term debt issued	6,359	394	3,378
Long-term debt repayment	(1,933)	(1,011)	(588)
Excess tax benefit from stock based compensation	6	78	429
Common stock issued			
Repurchases of treasury stock			(960)
Other financing activities			
Net cash provided by (used for) financing activities	**4,432**	**(539)**	**2,259**
Effect of exchange rate changes	(310)	(86)	(29)
Net change in cash	5,899	574	2,815
Cash at beginning of period	8,658	8,084	5,269
Cash at end of period	**14,557**	**8,658**	**8,084**
Free Cash Flow			
Operating cash flow	6,842	5,475	4,180
Capital expenditure	(4,893)	(3,444)	(3,785)
Free cash flow	1,949	2,031	395

Match the descriptions above with this summary statement of cash flows for the years 2012 – 2014 for amazon.com:

- What did it generate from operations?
- How much has the company spent on CAPEX, capital expenditure?
- Has it received or paid out money to its financiers/shareholders?

8.5 Analysis of the Statement of Cash Flows

In evaluating sources and uses of cash, the analyst should focus on questions like:

- Are asset replacements financed from internal or external funds?
- What are the financing sources of expansion and business acquisitions?
- Is the company dependent on external financing?
- What are the company's investing demands and opportunities?
- What are the requirements and types of financing?
- Are managerial policies (such as dividends) highly sensitive to cash flows?

Exercise 76

Take a look at the above questions and apply them to amazon.com: what are your findings?

8.6 Alternative Cash Flow Measures

Exercise 77

Calculate EBITDA for amazon.com just to compare it with the real cash flow from operations figures!

	2014	2013	2012
Net Income	-241	274	-39
Taxation	177	169	112
Interest	91	97	31
Depreciation/Amortisation	4746	3253	2159
EBITDA	**4,773**	**3,793**	**2,263**
Cash Flow from Operating Activities	**6,842**	**5,475**	**4,180**

8.7 Free Cash Flow

A useful addition to the statement of cash flows is the computation of **free cash flow.** While there is disagreement on its exact definition, one of the more useful measures of free cash flow is:

	Cash flows from operations
Less:	Net capital expenditures required to maintain productive capacity
Less:	Dividends on preferred stock and common stock (assuming a payout policy)
=	**Free cash flow (FCF)**

Another definition that is widely used and similar in concept is:

FCF = NOPAT – Change in NOA

Exercise 78

Use both of the definitions of free cash flow just given and find amazon.com's free cash flow: interpret and explain your results.

8.8 Specialised Cash Flow Ratios

8.8.1 Cash Flow Adequacy Ratio

Exercise 79

For 2012, 2013 and 2014 the cash flow adequacy ratio for amazon.com is…how much?

Find the adequacy ratio for 2010 to 2014 now: is the situation better or worse?

8.9 Cash Reinvestment Ratio

Exercise 80

Fill in the gaps in the following two paragraphs for 2014:

> *amazon.com's statement of cash flows is a useful starting point for cash flow analysis. amazon.com generated $_____ billion from operating activities. It then used $_____ billion for investing activities, primarily for capital expenditure and payment for acquisitions. amazon.com also received $_____ billion from debt issuance. Overall, amazon.com's financing activities resulted in a net cash* ***in/outflow*** *to the tune of $_____ billion. After accounting for foreign currency exchange rate fluctuations, amazon.com's cash flow* ***in/decreased*** *by $_____ billion during 2014.*
>
> *This preliminary analysis shows that amazon.com generated* ***a little/a lot of*** *cash flows from its operations. After using some of it for capital expenditure and acquisitions, the rest of the generated cash was ______________________________________.*

8.9 Valuation

8.9.1 Valuation Models

Equity Valuation

Exercise 81

Amazon.com pays no dividends so let's try a theoretical example to use the dividend discount model:

An investor plans to hold DW plc's stock for 3 years. In that time period, DW plc plans to grow at a rate of 6% in the first two years and 3% thereafter. DW plc's last dividend was $0.25. Given a rate of return of 10%, what is the value of DW plc's common stock at the end of the three year time period?

8.10 Free Cash Flow to Equity Model

Exercise 82

Back to amazon.com: find the value of amazon.com using its 2014 and then 2013 data by using the above Free Cash Flow to Equity Model formula assuming that k = 7.5%

8.11 Residual Income Model

Exercise 83

At the end of year 2014, Beagle Co owns 51% of the equity of Retriever, an entirely equity financed company. By agreement with Retriever's shareholders, Beagle agrees to acquire the remaining 49% of Retriever shares at the end of year 2019 at a price of $25 per share. Retriever also agrees to maintain annual cash dividends at $1 per share through 2019. An analyst makes the following projections for Retriever. At this same time (end of year 2014), we wish to compute the intrinsic value of the remaining 49% of Retriever's shares using the alternative valuation models (assume a cost of capital of 10%).

(in $ per share)	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Dividends	-	1.00	1.00	1.00	1.00	1.00
Operating cash flows	-	1.25	1.50	1.50	2.00	2.25
Capital expenditures	-	-	-	1.00	1.00	-
Increase (decrease) in long term debt		(0.25)	(0.50)	0.50		(1.25)
Net income	-	1.20	1.30	1.40	1.50	1.65
Book value	5.00	-	-	-	-	-

Here are the Solutions!

EXCEL you should use the following Excel files for this section

common_size_intro.xlsx
amazon_2014_ann_qtr.xlsx

8.12 Common Size Financial Statement Analysis

Exercise 73

Create common Size Statements for the following examples:

Income Statement	**Year 2 S**	**Year 1 $**
Sales	123,116	73,371
Cost of Sales	115,027	62,314
Gross Profit	13,336	11,057
Administration	5,459	4,844
Selling	2,840	2,641

Balance Sheet	**Year 2 S**	**Year 1 $**
Inventories	8,500	6,872
Receivables	4,454	3,948
Bank	8,001	4,132
Total Current Assets	**20,955**	**14,952**
Property, Plant and Equipment	36,846	30,494
Intangibles	7,076	6,656
Total Non Current Assets	**43,922**	**37,150**
Total Assets	64,877	52,102
Payables	3,229	2,857
Accruals	1,417	1,289
Loans	7,412	4,061
Total Current Liabilities	**12,058**	**8,207**
Debt	30,719	23,494
Long Term Creditors	13,474	12,132
Total Non Current Liabilities	**44,193**	**35,626**
Equity	32,742	24,683
Total Liabilities and Equity	64,877	52,102

Statement of Cash Flow	**Year 2 S**	**Year 1 $**
Net Income	14,344	10,866
Non Cash Adjustments	4,307	2,655
Changes in working capital	10,350	7,082
Cash from Operations	**29,001**	**20,603**
Investing	–	–
Net cash from investing activities	(13,438)	(7,947)
Financing	–	–
Net Cash from financing activities	15,786	9,755
Net Cash	31,349	22,411
Opening cash balance	(24,324)	(19,132)
Closing cash balance	**8,001**	**4,132**

Solutions

Income Statement	**Year 2 S**	**Year 1 $**
Sales	100.00%	100.00%
Cost of Sales	93.43%	84.93%
Gross Profit	**10.83%**	**15.07%**
Administration	4.43%	6.60%
Selling	2.31%	3.60%

Balance Sheet	**Year 2 S**	**Year 1 $**
Inventories	13.10%	13.19%
Receivables	6.87%	7.58%
Bank	12.33%	7.93%
Total Current Assets	**32.30%**	**28.70%**
Property, Plant and Equipment	56.79%	58.53%
Intangibles	10.91%	12.77%
Total Non Current Assets	**67.70%**	**71.30%**
Total Assets	**100.00%**	**100.00%**
Payables	4.98%	5.48%
Accruals	2.18%	2.47%
Loans	11.42%	7.79%
Total Current Liabilities	**18.59%**	**15.75%**
Debt	47.35%	45.09%
Long Term Creditors	20.77%	23.29%
Total Non Current Liabilities	**68.12%**	**68.38%**
Equity	50.47%	47.37%
Total Liabilities and Equity	**100.00%**	**100.00%**

Statement of Cash Flow	**Year 2 S**	**Year 1 $**
Net Income	49.46%	52.74%
Non Cash Adjustments	14.85%	12.89%
Changes in working capital	35.69%	34.37%
Cash from Operations	**100.00%**	**100.00%**
Investing		
Net cash from investing activities	**-46.34%**	**-38.57%**
Financing		
Net Cash from financing activities	**54.43%**	**47.35%**
Net Cash	108.10%	108.78%
Opening cash balance	-83.87%	-92.86%
Closing cash balance	**27.59%**	**20.06%**

Here are screenshots of the common size statements you should prepare:

8.13 Ratio Analysis

Exercise 74

1. DW plc's year end balance sheets show the following:

	2016	2015	2014
Cash	30,800	35,625	36,800
Accounts receivable, net	88,500	62,500	49,200
Merchandise inventory	111,500	82,500	53,000
Prepaid expenses	9,700	9,375	4,000
Plant assets, net	277,500	255,000	229,500
Total assets	**518,000**	**445,000**	**372,500**
Accounts payable	128,900	75,250	49,250
Long term notes payable secured by mortgages on plant assets	97,500	102,500	82,500
Common stock, $10 par value	162,500	162,500	162,500
Retained earnings	129,100	104,750	78,250
Total liabilities and equity	**518,000**	**445,000**	**372,500**

Required

Compare the year end short term liquidity position of DW plc at the end of 2016, 2015 and 2014 by computing the:

a) current ratio and
b) acid test ratio.

Comment on the ratio results.

2. Refer to the information in part 1 about DW plc. The company's income statements for the years ended 31st December 2016 and 2015 show the following:

		2016		2015
Sales		672,500		530,000
Cost of goods sold	410,225		344,500	
Other operating expenses	208,550		133,980	
Interest expense	11,100		12,300	
Income taxes	8,525		7,845	
Total costs and expenses		**(638,400)**		**(498,625)**
Net income		**34,100**		**31,375**
Earnings per share		2.10		1.93

Required

For the years ended 31st December 2016 and 2015, assume all sales are on credit and then compute the following:

a) collection period
b) accounts receivable turnover
c) inventory turnover and
d) days' sales in inventory. Comment on the changes in the ratios from 2015 to 2016.

3. Refer to the information in parts 1 and 2 about DW plc. Compare the long term risk and capital structure positions of the company at the end of 2016 and 2015 by computing the following ratios:

a) total debt ratio
b) times interest earned

Comment on these ratio results.

4. Refer to the financial statements of DW plc in parts 1 and 2. Evaluate the efficiency and profitability of the company by computing the following:

a) net profit margin,
b) total asset turnover
c) return on total assets

Comment on these ratio results.

5. Refer to the financial statements of DW plc in parts 1 and 2. The following additional information about the company is known:

Common stock market price 31st December 2016	15.00
Common stock market price 31st December 2015	14.00
Annual cash dividends per share in 2016	0.60
Annual cash dividends per share in 2015	0.30

To help evaluate the profitability of the company, compute the following for 2016 and 2015:

a) return on common stockholders' equity
b) price earnings ratio on December 31 and
c) dividend yield.

1	**2016**	**2015**	**2014**
(a) current ratio	1.87	2.52	2.90
(b) acid test ratio	1.00	1.43	1.83
Comment Liquidity has systematically reduced over the three years			
2	**2016**	**2015**	**2014**
(a) accounts receivable turnover	48.03	43.04	
(b) inventory turnover	99.21	87.41	
Comment both receivables and inventories are slower to turn into cash			
3	**2016**	**2015**	**2014**
(a) total debt ratio	18.82%	23.03%	
(b) times interest earned	18.17	17.12	
Comment total debt has fallen, relatively and the TIE ratio has improved			
4	**2016**	**2015**	**2014**
(a) net profit margin	5.07%	5.92%	
(b) total asset turnover	1.30	1.19	
(c) return on total asset	38.93%	47.31%	
Comment Profitability has reduced whilst total asset turnover has improved			
5	**2016**	**2015**	**2014**
(a) return on common stockholders' equity	11.69%	11.74%	
(b) price earnings ratio on December 31	7.14	7.25	
(c) dividend yield.	4.00%	2.14%	
Comment Returns to shareholders have improved			

8.14 Cash Flow Analysis

Exercise 75

Let's look at a Statement of Cash Flows: again we will use amazon.com because they are a very well known organisation:

AMAZON.COM INC (AMZN) Statement of CASH FLOW			
Fiscal year ends in December. USD in millions except per share data.	**2014-12**	**2013-12**	**2012-12**
Cash Flows From Operating Activities			
Net income	(241)	274	(39)
Depreciation & amortization	4,746	3,253	2,159
Investments losses (gains)	(3)	1	(9)
Deferred income taxes	(316)	(156)	(265)
Stock based compensation	1,497	1,134	833
Accounts receivable	(1,039)		(861)
Inventory	(1,193)	(1,410)	(999)
Accounts payable	1,759	1,888	2,070
Accrued liabilities	706	736	1,038
Other working capital	741	(447)	275
Other non-cash items	185	202	(22)
Net cash provided by operating activities	**6,842**	**5,475**	**4,180**

Cash Flows From Investing Activities			
Investments in property, plant, and equipment	(4,893)	(3,444)	(3,785)
Acquisitions, net	(979)	(312)	(745)
Purchases of investments	(2,542)	(2,826)	(3,302)
Sales/Maturities of investments	3,349	2,306	4,237
Net cash used for investing activities	**(5,065)**	**(4,276)**	**(3,595)**
Cash Flows From Financing Activities			
Long-term debt issued	6,359	394	3,378
Long-term debt repayment	(1,933)	(1,011)	(588)
Excess tax benefit from stock based compensation	6	78	429
Common stock issued			
Repurchases of treasury stock			(960)
Other financing activities			
Net cash provided by (used for) financing activities	**4,432**	**(539)**	**2,259**
Effect of exchange rate changes	(310)	(86)	(29)
Net change in cash	5,899	574	2,815
Cash at beginning of period	8,658	8,084	5,269
Cash at end of period	**14,557**	**8,658**	**8,084**
Free Cash Flow			
Operating cash flow	6,842	5,475	4,180
Capital expenditure	(4,893)	(3,444)	(3,785)
Free cash flow	1,949	2,031	395

Match the descriptions above with this summary statement of cash flows for the years 2012 – 2014 for amazon.com:

- What did it generate from operations?
- How much has the company spent on CAPEX, capital expenditure?
- Has it received or paid out money to its financiers/shareholders?

Total Cash Generated from Operations, spent on CAPEX and received or paid out for financing are as follows

Fiscal data as at Dec 31 2014	**2014**	**2013**	**2012**
Total cash from operations	**6,842**	**5,475**	**4,180**
Capital expenditures	-4,893	-3,444	-3,785
Total cash from financing	**4,432**	**-539**	**2,259**

8.15 Analysis of the Statement of Cash Flows

In evaluating sources and uses of cash, the analyst should focus on questions like:

- Are asset replacements financed from internal or external funds?
- What are the financing sources of expansion and business acquisitions?
- Is the company dependent on external financing?
- What are the company's investing demands and opportunities?
- What are the requirements and types of financing?
- Are managerial policies (such as dividends) highly sensitive to cash flows?

Exercise 76

Take a look at the above questions and apply them to amazon.com: what are your findings?

- Are asset replacements financed from internal or external funds?

In all three years there is enough money from operating activities to finance the CAPEX

- What are the financing sources of expansion and business acquisitions?

They have been issuing debt over these three years

- Is the company dependent on external financing?

No because we have already seen that it can generate cash from operating activities

- What are the company's investing demands and opportunities?

It is investing in CAPEX in all three years

- What are the requirements and types of financing?

New financing comprises debt

- Are managerial policies (such as dividends) highly sensitive to cash flows?

There are no dividends and other items do not seem to be sensitive to cash flows

8.16 Alternative Cash Flow Measures

Exercise 77

Calculate EBITDA for amazon.com just to compare it with the real cash flow from operations figures!

	2014	2013	2012
Net Income	-241	274	-39
Taxation	177	169	112
Interest	91	97	31
Depreciation/Amortisation	4746	3253	2159
EBITDA	**4,773**	**3,793**	**2,263**
Cash Flow from Operating Activities	**6,842**	**5,475**	**4,180**

8.17 Free Cash Flow

A useful addition to the statement of cash flows is the computation of **free cash flow.** While there is disagreement on its exact definition, one of the more useful measures of free cash flow is:

	Cash flows from operations
Less:	Net capital expenditures required to maintain productive capacity
Less:	Dividends on preferred stock and common stock (assuming a payout policy)
=	**Free cash flow (FCF)**

Another definition that is widely used and similar in concept is:

FCF = NOPAT – Change in NOA

Exercise 78

Use both of the definitions of free cash flow just given and find amazon.com's free cash flow: interpret and explain your results.

	2014	2013	2012
Cash Flow from Operating Activities	**6,842**	**5,475**	**4,180**
Net capital expenditures required to maintain productive capacity	4,893	3,444	3,785
Free cash flow (FCF)	**1,949**	**2,031**	**395**

8.18 Specialised Cash Flow Ratios

8.18.1 Cash Flow Adequacy Ratio

Exercise 79

For 2012, 2013 and 2014 the cash flow adequacy ratio for amazon.com is… how much?
Find the adequacy ratio for 2010 to 2014 now: is the situation better or worse?

	2014	2013	2012	2011	2010
CASH FLOW ADEQUACY	(1.87)	(2.81)	(4.26)	24.86	26.77

This calculation is done in the *amazon_results.xlsx* file

The situation is getting worse now.

8.19 Cash Reinvestment Ratio

Exercise 80

Fill in the gaps in the following two paragraphs for 2014:

> *amazon.com's statement of cash flows is a useful starting point for cash flow analysis. amazon.com generated $_____ billion from operating activities. It then used $_____ billion for investing activities, primarily for capital expenditure and payment for acquisitions. amazon.com also received $_____ billion from debt issuance. Overall, amazon.com's financing activities resulted in a net cash* ***in/outflow*** *to the tune of $_____ billion. After accounting for foreign currency exchange rate fluctuations, amazon.com's cash flow* ***in/decreased*** *by $_____ billion during 2014.*

*This preliminary analysis shows that amazon.com generated **a little/a lot of** cash flows from its operations. After using some of it for capital expenditure and acquisitions, the rest of the generated cash was ______________________________________.*

Suggested Solution

*amazon.com's statement of cash flows is a useful starting point for cash flow analysis. amazon.com generated $6.842 billion from operating activities. It then used $5.065 billion for investing activities, primarily for capital expenditure and payment for acquisitions. amazon.com also received $4.426 billion from debt issuance. Overall, amazon.com's financing activities resulted in a net cash **inflow** to the tune of $6.209 billion. After accounting for foreign currency exchange rate fluctuations, amazon.com's cash flow **increased** by $5.899 billion during 2014.*

*This preliminary analysis shows that amazon.com generated **a lot of** cash flows from its operations. After using some of it for capital expenditure and acquisitions, the rest of the generated cash was from the issuance of new debt.*

8.20 Valuation

8.21 Valuation Models

Equity Valuation

Exercise 81

Amazon.com pays no dividends so let's try a theoretical example to use the dividend discount model:

An investor plans to hold DW plc's stock for 3 years. In that time period, DW plc plans to grow at a rate of 6% in the first two years and 3% thereafter. DW plc's last dividend was $0.25. Given a rate of return of 10%, what is the value of DW plc's common stock at the end of the three year time period?

Solution

To begin, the dividend in each time period must be calculated [$D = D_0(1+g)$]

$D_1 = (0.25)(1.06) = 0.265$
$D_2 = (0.265)(1.06) = 0.281$
$D_3 = (0.281)(1.03) = 0.289$

Since we expect the dividend to grow indefinitely in year 3 and on, the present value of the stock price in year 3 is calculated as follows:

P_3 = 0.289 = 4.133
(0.10-0.03)

The value of DW plc's common stock is as follows:

DW plc's common stock

$$= \frac{\$0.265 + \$0.281 + 0.289 + \$4.133}{(1.10)^1\ (1.10)^2\ (1.10)^3\ (1.10)^3} = \$3.80$$

8.22 Free Cash Flow to Equity Model

Exercise 82

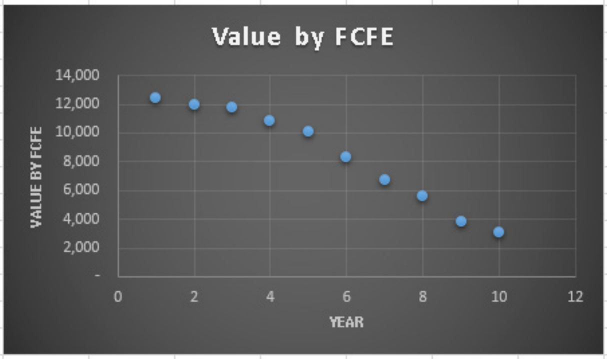
Back to amazon.com: find the value of amazon.com using its ten year data by using the Free Cash Flow to Equity Model formula assuming that k = 7.5%

$$V_t = \frac{(FCFE_{t+1})}{(1+k)^1} + \frac{(FCFE_{t+2})}{(1+k)^2} + \frac{(FCFE_{t+3})}{(1+k)^3} + \cdots$$

where $FCFE_{t+n}$ is free cash flow to equity in period *t+n* and *k* is cost of capital.

Summary

Year	FCFE	DF	Value by FCFE
10	6,375	0.4852	3,093.11
9	1,414	0.5216	3,830.63
8	3,185	0.5607	5,616.47
7	1,825	0.6028	6,716.49
6	2,438	0.6480	8,296.22
5	2,535	0.6966	10,062.00
4	1,096	0.7488	10,882.69
3	1,131	0.8050	11,793.10
2	201	0.8653	11,967.03
1	529	0.9302	12,459.12



8.23 Residual Income Model

Exercise 83

At the end of year 2014, Beagle Co owns 51% of the equity of Retriever, an entirely equity financed company. By agreement with Retriever's shareholders, Beagle agrees to acquire the remaining 49% of Retriever shares at the end of year 2019 at a price of $25 per share. Retriever also agrees to maintain annual cash dividends at $1 per share through 2019. An analyst makes the following projections for Retriever. At this same time (end of year 2014), we wish to compute the intrinsic value of the remaining 49% of Retriever's shares using the alternative valuation models (assume a cost of capital of 10%).

(in $ per share)	2014	2015	2016	2017	2018	2019
Dividends	-	1.00	1.00	1.00	1.00	1.00
Operating cash flows	-	1.25	1.50	1.50	2.00	2.25
Capital expenditures	-	-	-	1.00	1.00	-
Increase (decrease) in long term debt		(0.25)	(0.50)	0.50		(1.25)
Net income	-	1.20	1.30	1.40	1.50	1.65
Book value	5.00	-	-	-	-	-

Solution

Since Beagle will acquire Retriever at the end of 2009 for $25 per share, the terminal value is set – this spares us the task of estimating continuing (or terminal) value. Using the **dividend discount model,** we determine intrinsic value at the end of year 2004 as:

$$\text{FCFE value} = \frac{\$1}{(1.1)^1} + \frac{\$1}{(1.1)^2} + \frac{\$1}{(1.1)^3} + \frac{\$1}{(1.1)^4} + \frac{\$1}{(1.1)^5} + \frac{\$25}{(1.1)^5} = 19.31$$

Next, to apply the free cash flow to equity model, we compute the following amounts for Retriever:

(in $ per share)	2015	2016	2017	2018	2019
Operating cash flows*	1.25	1.50	1.50	2.00	2.25
- Capital expenditures*	-	-	(1.00)	(1.00)	-
± Debt increase (decrease)	(0.25)	(0.50)	0.50	-	(1.25)
= Free cash flow to equity	1.00	1.00	1.00	1.00	1.00

* Amounts taken from analyst's projections.

The excess cash flows not needed for the payment of dividends are used to reduce long term debt. The free cash flows to equity, then, are the cash flows available to pay the dividend requirement of $1. Then, using the free cash flows to equity model, we determine the value of the firm as:

$$\text{FCFE value} = \frac{\$1}{(1.1)^1} + \frac{\$1}{(1.1)^2} + \frac{\$1}{(1.1)^3} + \frac{\$1}{(1.1)^4} + \frac{\$1}{(1.1)^5} + \frac{\$25}{(1.1)^5} = 19.31$$

The free cash flows to equity model values the cash flows generated by the firm, whether or not paid out as dividends.

Finally, to apply the residual income model, we compute the following amounts for Retriever:

(in $ per share)	**2015**	**2016**	**2017**	**2018**	**2019**
Net income*	1.20	1.30	1.40	1.50	1.65
- Capital charge (10% of beg. book value*)	(0.50)	(0.52)	(0.55)	(0.59)	(0.64)
= Residual income	0.70	0.78	0.85	0.91	1.01
+ Gain on sale of equity to Pitbull (terminal value)					17.95+

*Amounts taken from analyst's projections.
+$25 _ $7.05.

Using the **residual income model,** we compute intrinsic value at the end of year 2014 as:

$$\text{Intrinsic value} = \$5.00 + \frac{\$0.70}{(1.1)^1} + \frac{\$0.78}{(1.1)^2} + \frac{\$0.85}{(1.1)^3} + \frac{\$0.91}{(1.1)^4} + \frac{\$1.01}{(1.1)^5} + \frac{\$17.95}{(1.1)^5} = \$19.31$$

All three models yield the same intrinsic value.

9 Benchmarking of Financial and Non Financial Performance

9.1 Key Result Indicators

What are KRI& KRIs are measures that have often been mistaken for KPIs, including

- Customer satisfaction
- Net profit before tax
- Profitability of customers

Exercise 84

Give two more examples of KRIs.

Exercise 85

From what you have already read, try to define what you mean by PIs…

9.2 Seven Characteristics of KPIs

From extensive analysis and from Parmenter's discussions with over 1,500 participants in his KPI workshops, covering most organisation types in the public and private sectors, he defines seven KPI characteristics:

1. Nonfinancial measures (not expressed in dollars, yen, Dollars, euros, etc.)
2. Measured frequently (eg daily or 24/7)
3. Acted on by the CEO and senior management team
4. Understanding of the measure and the corrective action required by all staff
5. Ties responsibility to the individual or team
6. Significant impact (e.g. affects most of the core critical success factors [CSFs] and more than one BSC perspective)
7. Positive impact (e.g. affects all other performance measures in a positive way)

Exercise 86

Explain any two of these seven characteristics to someone who is considering implementing a system of KPIs in their organisation.

9.3 Balanced Scorecard

Exercise 87

Now that you have heard of one, what, then, is a Balanced Scorecard?

9.4 Beyond Budgeting

Exercise 88

Beyond Budgeting can be a great source of liberation and empowerment for some organisations. Find examples of organisations that have used the Beyond Budgeting system and explore the successes they claim to have had. The Beyond Budgeting Round Table web site is a good starting point: www.bbrt.org and take a look at this book by the originators of Beyond Budgeting: Jeremy Hope and Robin Fraser (2003) *Beyond Budgeting* Harvard Business School Press. That book is a little old now but still an excellent primer for the subject.

Here are the Solutions!

Exercise 84

Give two more examples of KRIs.

Suggestions:

Employee satisfaction
Return on capital employed

Performance indicators that lie beneath KRIs could include:

- Profitability of the top 10% of customers
- Net profit on key product lines
- Percentage increase in sales with top 10% of customers
- Number of employees participating in the suggestion scheme

Exercise 85

From what you have already read, try to define what you mean by PIs…

Performance indicators *are mid level metrics* that sit between KRIs and KPIs and can include Profitability by product group or by product.

9.5 Seven Characteristics of KPIs

From extensive analysis and from Parmenter's discussions with over 1,500 participants in his KPI workshops, covering most organisation types in the public and private sectors, he defines seven KPI characteristics:

8. Nonfinancial measures (not expressed in dollars, yen, Dollars, euros, etc.)
9. Measured frequently (e.g. daily or 24/7)
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13. Significant impact (e.g. affects most of the core critical success factors [CSFs] and more than one BSC perspective)
14. Positive impact (e.g. affects all other performance measures in a positive way)

Exercise 86

Explain any two of these seven characteristics to someone who is considering implementing a system of KPIs in their organisation.

You are given outline solutions to the first four of these characteristics!

1. Nonfinancial measures (not expressed in dollars, yen, Dollars, euros, etc.)

   A non financial measure is a metric or result which has nothing directly to do with money. Very simple examples include output per hour, reject rates, kilometres per hour

2. Measured frequently (e.g. daily or 24/7)

   Imagine making a product at the rate of 1,000 units per minute for which the humidity content is critical…such products are likely to be measured/tested every few seconds.

3. Acted on by the CEO and senior management team

   This includes any measure or indicator that both affects the CEO's performance rating and/or that could bring things to a halt if they were to go out of control.

4. Understanding of the measure and the corrective action required by all staff

   Even though a metric is written up on a notice board for all to see does not mean that everyone appreciates the numbers there and when action has to be taken, let alone what that action ought to be.

   Try the rest of these examples for yourself.

5. Ties responsibility to the individual or team

6. Significant impact (e.g. affects most of the core critical success factors [CSFs] and more than one BSC perspective)

7. Positive impact (e.g. affects all other performance measures in a positive way)

9.6 Balanced Scorecard

Exercise 87

Now that you have heard of one, what, then, is a Balanced Scorecard?

A Balanced Scorecard is a management system that enables your organisation to set, track, and achieve its key business strategies and objectives. After the business strategies are developed, they are deployed and tracked through the Four Legs of the Balanced Scorecard perspectives:

Customers
Finance
Internal Business Processes
Learning and Growth

9.7 Beyond Budgeting

Exercise 88

Beyond Budgeting can be a great source of liberation and empowerment for some organisations. Find examples of organisations that have used the Beyond Budgeting system and explore the successes they claim to have had. The Beyond Budgeting Round Table web site is a good starting point: www.bbrt.org and take a look at this book by the originators of Beyond Budgeting: Jeremy Hope and Robin Fraser (2003) *Beyond Budgeting* Harvard Business School Press. That book is a little old now but still an excellent primer for the subject.

10 Review Annual Report and Accounts

Exercise 89

Download an organisation's Annual Report and Accounts and find other examples of non financial data to review.

10.1 Qualitative analysis of financial and non financial data

We will use the Chairman's letter from the amazon.com annual report and accounts 2014 as the basis of our discussion here.

10.2 2014 Chairman's letter from the amazon.com

Locate the file *AMAZON_2014_chair_letter.pdf* in the notes that accompany this section: it is the annual letter to stockholders from the CEO of amazon.com for 2014.

Exercise 90

Summarise the CEO's letter under the four headings you will find in the letter:

- Marketplace
- Amazon Prime
- Amazon Web Services
- Career Choice

In your summaries, stress the aspects of the qualitative analysis of both financial and non financial data.

Conclude by saying whether you think this letter is credible. Do you think the CEO is being open and honest? Do you feel that amazon.com is in good hands for the future?

Exercise 91

In the **BT Group plc** annual report for 2014 there are many tables of data showing five year results. Find the file *trends_fin_nonfin_2015_BT_ann_rep.pdf* in the notes to this section and review what you see there. **Create your own summaries**, possibly including graphs and charts, to highlight what you have found. The key headings from this file include:

Selected Financial Data

Summary group income statement
Summary group balance sheet

Financial and Operational Statistics

Financial statistics
Financial ratios
Operational statistics

Exercise 92

By contrast to the work of exercise 91, here are some data from amazon.com that is completely different from the BT Group plc data and tables

a) The summary five year income statement and highly summarised balance sheets for five years follow: comment on what you see here, include graphs and charts and any other device that you feel will enhance your message.

Item 6. ***Selected Consolidated Financial Data***

The following selected consolidated financial data should be read in conjunction with the consolidated financial statement and the notes thereto in Item 8 of Part II, "Financial Statements and Supplementary Data," and the information contained in Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations." Historical results are not necessarily indicative of future results.

	Year Ended December 31,				
	2014	2013	2012	2011	2010
	(in millions, except per share data)				
Statements of Operations:					
Net sales	$ 88,988	$ 74,452	$ 61,093	$ 48,077	$ 34,204
Income from operations	$ 178	$ 745	$ 676	$ 862	$ 1,406
Net income (loss)	$ (241)	$ 274	$ (39)	$ 631	$ 1,152
Basic earnings per share (1)	$ (0.52)	$ 0.60	$ (0.09)	$ 1.39	$ 2.58
Diluted earnings per share (1)	$ (0.52)	$ 0.59	$ (0.09)	$ 1.37	$ 2.53
Weighted average shares used in computation of earnings per share:					
Basic	462	457	453	453	447
Diluted	462	465	453	461	456
Statements of Cash Flows:					
Net cash provided by (used in) operating activities	$ 6,842	$ 5,475	$ 4,180	$ 3,903	$ 3,495
Purchases of property and equipment, including internal-use software and website development	(4,893)	(3,444)	(3,785)	(1,811)	(979)
Free cash flow (2)	$ 1,949	$ 2,031	$ 395	$ 2,092	$ 2,516

	December 31,				
	2014	2013	2012	2011	2010
	(in millions)				
Balance Sheets:					
Total assets	$ 54,505	$ 40,159	$ 32,555	$ 25,278	$ 18,797
Total long-term obligations	$ 15,675	$ 7,433	$ 5,361	$ 2,625	$ 1,561

(1) For further discussion of earnings per share, see Item 8 of Part II, "Financial Statements and Supplementary Data—Note 1—Description of Business and Accounting Policies."

(2) Free cash flow, a non-GAAP financial measure, is defined as net cash provided by operating activities less cash expenditures for purchases of property and equipment, including internal-use software and website development, both of which are presented on our consolidated statements of cash flows. See Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Non-GAAP Financial Measures" for additional information as well as alternative free cash flow measures.

b) Comment on the usefulness of the data in the following table and explain what you think they mean for the average stockholder.

The following summarizes our principal contractual commitments, excluding open orders for purchases that support normal operations, as of December 31, 2014 (in millions):

	Year Ended December 31,						
	2015	2016	2017	2018	2019	Thereafter	Total
Operating and capital commitments:							
Debt principal and interest	$ 1,842	$ 323	$ 1,322	$ 310	$ 1,272	$ 9,403	$ 14,472
Capital leases, including interest	2,060	1,727	1,030	178	89	98	5,182
Finance lease obligations, including interest	110	112	115	117	119	1,056	1,629
Operating leases	868	791	728	634	549	2,343	5,913
Unconditional purchase obligations (1)	489	435	351	118	38	3	1,434
Other commitments (2) (3)	928	333	160	140	90	845	2,496
Total commitments	$ 6,297	$ 3,721	$ 3,706	$ 1,497	$ 2,157	$ 13,748	$ 31,126

c) Summarise the following table: the aim is to simplify the table for the average non financial manager.

The following table provides information about our current and long-term cash equivalent and marketable fixed income securities, including principal cash flows by expected maturity and the related weighted average interest rates as of December 31, 2014 (in millions, except percentages):

	2015	2016	2017	2018	2019	Thereafter	Total	Estimated Fair Value as of December 31, 2014
Money market funds	$ 10,718	$ —	$ —	$ —	$ —	$ —	$ 10,718	$ 10,718
Weighted average interest rate	0.09%	—%	—%	—%	—%	—%	0.09%	
Corporate debt securities	85	131	154	22	—	—	392	401
Weighted average interest rate	1.05%	1.05%	1.48%	1.65%	—%	—%	1.25%	
U.S. government and agency securities	1,865	342	156	19	1	—	2,383	2,406
Weighted average interest rate	0.33%	0.79%	1.11%	1.91%	2.17%	—%	0.46%	
Asset backed securities	19	43	7	—	—	—	69	69
Weighted average interest rate	0.64%	0.95%	1.10%	—%	—%	—%	0.88%	
Foreign government and agency securities	1	27	49	—	—	—	77	80
Weighted average interest rate	0.04%	0.05%	—%	—%	—%	—%	0.02%	
Other securities	12	10	7	4	—	—	33	33
Weighted average interest rate	0.48%	1.01%	1.23%	0.57%	—%	—%	0.81%	
	$ 12,700	$ 553	$ 373	$ 45	$ 1	$ —	$ 13,672	
Cash equivalent and marketable fixed income securities								$ 13,707

10.3 Sensitivity Analysis in Forecasting Financial Statements

Exercise 93

Take the following base data and make the changes that are suggested below them to see the possible impacts these changes might have which in turn might suggest the sensitivity of, for example, changes in profitability or cash flow to changes in costs, assets, equity or even non financial results.

DW plc Year Ended 31st December 2016 ($m)	
	Base Case
Sales	2,110
Cost of goods sold	1,161
Selling, general and administrative expense	528
Depreciation	121
Research and development	84
Total costs and expenses	**1,894**
Operating Income	**216**
Interest expense	34
Interest (income)	(5)
Earnings before Income Taxes	**187**
Provision for Income Taxes	64
Net Income	**123**

Given the base case above, calculate the:

1. independent effects of a 1% increase in Gross Margin, a 1% decline in the tax rate, and a 5% increase in Sales.
2. independent effects of a 2% increase in Gross Margin, a 2% decline in the tax rate, and a 5% decrease in Sales.
3. composite effects of a 5% increase in Sales, a 2% decline in Gross Margin, a 5% increase is SG&A as % of Sales, and a 2% decline in the tax rate.
4. independent effects of a 1% increase in Gross Margin, a 1% increase in the tax rate, and a 5% increase in Sales.
5. composite effects of a 5% increase in Sales; a 2% decline in Gross Margin, a 3% increase is SG&A as % of Sales, and a 2% decline in the tax rate.

Here are the Solutions!

Exercise 89

Download an organisation's Annual Report and Accounts and find other examples of non financial data to review.

Why not look at the BT Group plc annual report that's mentioned in Exercise 91 and please make sure you do this AND study what you download. If your organisation has an annual report and accounts online, take a look at that one as well as any others.

10.4 Qualitative analysis of financial and non financial data

We will use the Chairman's letter from the amazon.com annual report and accounts 2014 as the basis of our discussion here.

10.5 2014 Chairman's letter from the amazon.com

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- Career Choice

In your summaries, stress the aspects of the qualitative analysis of both financial and non financial data.

Conclude by saying whether you think this letter is credible. Do you think the CEO is being open and honest? Do you feel that amazon.com is in good hands for the future?

There is no solution to present here since there are subjective elements to the answer that only you can provide for yourself.

Exercise 91

In the **BT Group plc** annual report for 2014 there are many tables of data showing five year results. Find the file *trends_fin_nonfin_2015_BT_ann_rep.pdf* in the notes to this section and review what you see there. Create your own summaries, possibly including graphs and charts, to highlight what you have found. The key headings from this file include:

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Free cash flow (2)	$ 1,949	$ 2,031	$ 395	$ 2,092	$ 2,516

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Total long-term obligations	$ 15,675	$ 7,433	$ 5,361	$ 2,625	$ 1,561

(1) For further discussion of earnings per share, see Item 8 of Part II, "Financial Statements and Supplementary Data—Note 1—Description of Business and Accounting Policies."

(2) Free cash flow, a non-GAAP financial measure, is defined as net cash provided by operating activities less cash expenditures for purchases of property and equipment, including internal-use software and website development, both of which are presented on our consolidated statements of cash flows. See Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations—Non-GAAP Financial Measures" for additional information as well as alternative free cash flow measures.

b) Comment on the usefulness of the data in the following table and explain what you think they mean for the average stockholder.

The following summarizes our principal contractual commitments, excluding open orders for purchases that support normal operations, as of December 31, 2014 (in millions):

	Year Ended December 31,						
	2015	2016	2017	2018	2019	Thereafter	Total
Operating and capital commitments:							
Debt principal and interest	$ 1,842	$ 323	$ 1,322	$ 310	$ 1,272	$ 9,403	$ 14,472
Capital leases, including interest	2,060	1,727	1,030	178	89	98	5,182
Finance lease obligations, including interest	110	112	115	117	119	1,056	1,629
Operating leases	868	791	728	634	549	2,343	5,913
Unconditional purchase obligations (1)	489	435	351	118	38	3	1,434
Other commitments (2) (3)	928	333	160	140	90	845	2,496
Total commitments	$ 6,297	$ 3,721	$ 3,706	$ 1,497	$ 2,157	$ 13,748	$ 31,126

c) Summarise the following table: the aim is to simplify the table for the average non financial manager.

The following table provides information about our current and long-term cash equivalent and marketable fixed income securities, including principal cash flows by expected maturity and the related weighted average interest rates as of December 31, 2014 (in millions, except percentages):

	2015	2016	2017	2018	2019	Thereafter	Total	Estimated Fair Value as of December 31, 2014
Money market funds	$ 10,718	$ —	$ —	$ —	$ —	$ —	$ 10,718	$ 10,718
Weighted average interest rate	0.09%	—%	—%	—%	—%	—%	0.09%	
Corporate debt securities	85	131	154	22	—	—	392	401
Weighted average interest rate	1.05%	1.05%	1.48%	1.65%	—%	—%	1.25%	
U.S. government and agency securities	1,865	342	156	19	1	—	2,383	2,406
Weighted average interest rate	0.33%	0.79%	1.11%	1.91%	2.17%	—%	0.46%	
Asset backed securities	19	43	7	—	—	—	69	69
Weighted average interest rate	0.64%	0.95%	1.10%	—%	—%	—%	0.88%	
Foreign government and agency securities	1	27	49	—	—	—	77	80
Weighted average interest rate	0.04%	0.05%	—%	—%	—%	—%	0.02%	
Other securities	12	10	7	4	—	—	33	33
Weighted average interest rate	0.48%	1.01%	1.23%	0.57%	—%	—%	0.81%	
	$ 12,700	$ 553	$ 373	$ 45	$ 1	$ —	$ 13,672	
Cash equivalent and marketable fixed income securities								$ 13,707

By now you should be so good at these kinds of analysis that you no longer need help from me: in fact, you will find some very good clues and advice in the BT Group report anyway.

10.6 Sensitivity Analysis in Forecasting Financial Statements

Exercise 93

Take the following base data and make the changes that are suggested below them to see the possible impacts these changes might have which in turn might suggest the sensitivity of, for example, changes in profitability or cash flow to changes in costs, assets, equity or even non financial results.

DW plc Year Ended 31st December 2016 ($m)	
	Base Case
Sales	2,110
Cost of goods sold	1,161
Selling, general and administrative expense	528
Depreciation	121
Research and development	84
Total costs and expenses	**1,894**
Operating Income	**216**
Interest expense	34
Interest (income)	(5)
Earnings before Income Taxes	**187**
Provision for Income Taxes	64
Net Income	**123**

Given the base case above, calculate the:

1. independent effects of a 1% increase in Gross Margin, a 1% decline in the tax rate, and a 5% increase in Sales.
2. 2 independent effects of a 2% increase in Gross Margin, a 2% decline in the tax rate, and a 5% decrease in Sales.
3. 3 composite effects of a 5% increase in Sales, a 2% decline in Gross Margin, a 5% increase is SG&A as % of Sales, and a 2% decline in the tax rate.
4. 4 independent effects of a 1% increase in Gross Margin, a 1% increase in the tax rate, and a 5% increase in Sales.
5. 5 composite effects of a 5% increase in Sales; a 2% decline in Gross Margin, a 3% increase is SG&A as % of Sales, and a 2% decline in the tax rate.

	A	B	C	D	E	F	G
1	Exercise 93						
2							
3	**DW plc Year Ended 31st December 2016 ($m)**	**Base Case**	**1**	**2**	**3**	**4**	**5**
4	Sales	2,110.00	2,215.50	2,004.50	2,215.50	2,215.50	2,215.50
5	Cost of goods sold	1,161.00	1,196.90	1,062.86	1,263.36	1,196.90	1,263.36
6	**Gross Profit**	**949.00**	**1,018.61**	**941.64**	**952.14**	**1,018.61**	**952.14**
7	Selling, general and administrative expense	528.00	528.00	528.00	529.05	528.00	543.84
8	Depreciation	121.00	121.00	121.00	121.00	121.00	121.00
9	Research and development	84.00	84.00	84.00	84.00	84.00	84.00
10	**Total costs and expenses**	**1,894.00**	**1,929.90**	**1,795.86**	**1,997.41**	**1,929.90**	**2,012.20**
11	**Operating Income**	**216.00**	**285.61**	**208.64**	**218.09**	**285.61**	**203.30**
12	Interest expense	34.00	34.00	34.00	34.00	34.00	34.00
13	Interest (income)	(5.00)	(5.00)	(5.00)	(5.00)	(5.00)	(5.00)
14	**Earnings before Income Taxes**	**187.00**	**256.61**	**179.64**	**189.09**	**256.61**	**174.30**
15	Provision for Income Taxes	64.00	85.26	57.89	60.93	90.39	56.17
16	**Net Income**	**123.00**	**171.35**	**121.75**	**128.16**	**166.22**	**118.13**