VALUATION TEMPLATE

Basis	**CAPITALISE**			**DISCOUNT**			**ASSET**
Example	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Method	Dividend valuation	Capitalisation of earnings	Capitalisation of earnings	FCF_{Equity}	FCF_{Debt}	NPV	Liquidation Market *(a)* Replacement *(b)*
	(c)(d)	*(c) (d)*	*(c) (d)*	*(c) (d)*	*(c) (d)*		
When appropriate	Any firm	**Non Diversified** firm	**Diversified** firm	FCF available **All Equity** firm	FCF available **Debt & Equity**	**Project**	**Reasonableness test** or when **going concern** questionable
Shareholding	**(Minority)**	(Majority)	(Majority)	(Majority)	(Majority)	(Majority)	**(Always)**
Discount rate	Ks-g OR Dividend yield where g = zero	Earnings yield OR 1/PE ratio EY≠ Ks or RRR	Earnings yield OR 1/PE ratio for each business unit	Ks	WACC	WACC	Appropriate rate for each asset if appropriate
Numerator	Next Dividend (D_1)	This years Maintainable earnings "Normalised" After tax	This years Maintainable earnings after tax	Free cash flows after investing	Free cash flows after investing before interest #	Free cash flows after investing before interest	N/a
Value calculated	Equity	Equity	Equity	Firm/equity	Firm	Project	Firm
Notation	$\frac{D_1}{Ks-g}$	$\frac{CF}{EY}$	$\frac{CF}{EY}$	$\sum \frac{CF}{(1+Ks)} + CF_t$	$\sum \frac{CF}{1+WACC} + CF_t$	$\sum \frac{CF}{1+WACC}$	N/a

Summary of valuation techniques

VALUATION OF A BUSINESS.

The valuation of a business is the process of arriving at an informed or educated opinion of the concerns value. This process is subjective with no single correct value. There are however valuation principles that should be applied for the valuation to be sound.

As indicated on the valuation summary there are essentially 7 valuation bases:

1 Dividend based valuation
2 Capitalisation of earnings – single source of income
3 Capitalisation of earnings – diversified sources of income
4 Free cash flows – Equity
5 Free cash flows – Debt and equity
6 NPV technique
7 Excess of asset and liability valuation

1 Dividend based valuation

Steps

a. Calculation of the dividend
b. Assess the growth
c. Calculation of the required rate of return
d. Valuation

2 Capitalisation of earnings – single source of income

Steps

a. Calculate the maintainable earnings
b. Adjust the earnings as necessary
c. Find appropriate price earnings ratio
d. Adjust the price earnings ratio
e. Value the company

3 Capitalisation of earnings – diversified sources of income

Steps

a. Calculate the maintainable earnings – per activity
b. Adjust the earnings as necessary
c. Find appropriate price earnings ratio – for that activity
d. Adjust the price earnings ratio
e. Value individual activities
f. Add the values of all activities

4 Free cash flows – Equity

Steps

a. Determine free cash flows
b. Calculate the growth rate
c. Calculate the return required by shareholders Ke
d. Calculate the terminal value and discount to the present
e. Value the company

5 Free cash flows – Debt and equity

Steps

a. Determine free cash flows add back after tax interest
b. Calculate the growth rate
c. Calculate the return required by shareholders WACC
d. Calculate the terminal value and discount to the present
e. Value the company

6 **NPV technique**
See notes on capital budgeting. Generally used for valuing projects with life spans of under ten years.

7 **Excess of asset and liability valuation**

Steps

a. Obtain values for all assets and liabilities
b. Deduct liability value off the total asset value to arrive at the value

Free cash flow method, capitalisation of earnings and dividend model.
The dividend and the free cash flow methods require an estimation of Ke whereas the capitalisation of earnings model requires an estimation of the earnings yield Ey. Both Ey and Ke are obtained by estimating the Ey and Ke for a similar listed company. Then they are adjusted by a number of risk factors to arrive at an equivalent usable Ey or Ke. The factors that are to be used for adjustment are identical in each case. Examples of these could be:

Financial risk:
1 Transferability
2 Share marketability
3 Size of holding by the member
4 Debt to equity ratio
5 Liquidity

Business risk:
1 Growth
2 Asset base
3 Management
4 Comparative performance
5 Industry prospects
6 Size of firm and industry share
7 Reliability of income and expenditure estimates
8 Special skills required
9 Geographical location
10 Labour relations
11 Other

Example	**Ey**	**P/E**	**Ks**
Listed company	20.00%	5.00	22.00%
Adjustments			
Poor marketability of shares	1.50%	-0.25	1.00%
Transferability restricted	0.50%	-0.25	0.50%
Firm size is small	1.50%	-0.25	0.50%
Labour relations are poor	1.50%	-0.25	0.50%
Rate to be used for private company	25.00%	4.00	24.50%

Capitalisation of earnings – calculating the maintainable earnings
Adjustment required
1 Changes in company operations
2 Adjust prior earnings for fundamental earnings and changes in accounting policy.
3 Adjust for extra ordinary items that are not expected to recur.
4 Adjust for abnormal items taking into account latest estimates

5 Adjust income and expenditure so that they are shown on the same basis as the similar quoted company.
   a. Accounting policies
   b. Non arms length transactions
   c. Directors salaries
6 Adjust the depreciation figure so as to reflect correct asset value and depreciation charge.

Free Cash Flows – Framework for the computation of the free cash flows.
The free cash flow method is the calculation of the present value of the future cash flows less the cost of investments to generate these cash flows.

Operating profit before taxation		500
Add or subtract	Adjust for non cash items	
	Depreciation	+35
	Profit on sale of vehicle	-50
Subtract	Taxation	-200
Add or subtract	Adjustment for the movement in working capital	-50
	Cash available from operations	235
Add	Proceeds on disposal of fixed assets	+250
Subtract	Investment in fixed assets	-200
Add	Interest expense after taxation**	+20
		305

**Only when we are dealing with a company that is financed with both debt and equity.

Valuation of a company using asset values less liability values – limitations
1 Very seldom is the worth of a company equal to the sum of its component parts.
2 The marketability of the shares could be less than the marketability of the underlying assets.

The value of the assets may differ significantly depending on the amount of time available to dispose of them.

Example 1 – Dividend based valuation

You have been given the following information for a private company and requested to value a shareholding of 10% of the company. Earnings per share are 800 cents. The shareholders required rate of return for a company with an equivalent risk profile is 20% under the expectation of a growth rate of 5%. The company has a policy of distributing 50% of its earnings by way of a dividend. The 10% shareholding represents 25000 shares.

Solution

The valuation is a minority valuation and the valuation method to use for this type of valuation is the Gordon Growth Model.

$$= \frac{D_1}{Ks-g}$$

$$= \frac{8x0.5(1+0.05)}{0.20-0.05}$$

$$= \frac{4.2}{0.15} = 28$$

$$= 28 \times 25000$$

$$= 700000$$

Example 2 – Earnings capitalisation – single source of income

A private company has approached you to assist them with a valuation of their company as they intend selling the firm as a going concern. You have determined that their earnings are R500000 for this year after interest and taxation. During this year they had an exceptional item where they lost R50000 after taxation. A listed firm in the same sector has an earnings yield of 18% and you feel that it is appropriate to add a premium of 4% after taking into account the good growth the lack of marketability and transferability. It is expected that the earnings will continue to grow at 5% per annum forever.

Solution

Current earnings	500000
Exceptional items	50000
Maintainable earnings	550000

$$\text{Maintainable earnings} = \frac{550000}{\text{Adjusted earnings yield}} = \frac{550000}{(0.18+0.04)}$$

$$= \frac{550000}{0.22}$$

Value of the equity = 2500000

According to the earnings yield the value of the firm is equal to R2.5m. It is important to remember that it is essential to perform a reasonableness test on the earnings yield method. In most cases an assets valuation method is used.

Example 3 – Earnings capitalisation – diversified firm

A firm that is involved in both the retail sector and the agriculture sector has split its earnings as follows

	Retail	Agriculture	Total
Maintainable earnings	500000	1400000	1900000
Earnings yield for a listed company	17%	19%	

On further analysis it was established that a premium of 3% and 4% for the retail and agriculture based businesses respectively were appropriate. Value the business.

Solution

	Retail	Agriculture	Total
Maintainable earnings	500000	1400000	1900000
Earnings yield for a listed company	17%	19%	
Premium	3%	4%	
	20%	23%	
Value of the divisions	2500000	6086957	8586957

Example 4 – Free cash flow – equity only

A company that has no debt has approached you to value the company for a potential change in shareholding. It has reasonably accurate cash flow estimates for the next three years there after the cash flows are expected to grow at a rate of 8%.

Cash flow predictions:

	Year 1	Year 2	Year 3
Cash flows	480	520	580
Depreciation	25	25	25
Working capital changes	-40	-50	-42
New investments	-150	-200	-180
	315	295	383

The shareholders require a 24% return on capital invested.

Solution

	Year 1	Year 2	Year 3	Year 4
Cash flows	480	520	580	
Depreciation	25	25	25	
Working capital changes	-40	-50	-42	
New investments	-150	-200	-180	
	315	295	383	
Growth				383
				8%
Terminal cash flow (perpetuity)				414
Discount rate	24%			
Net cash flows	315	295	383	
Discount factor	0.806	0.650	0.524	Total
Present value	254	192	201	647

Value terminal value $= \frac{414}{(0.24-0.08)} = 2588$

Discount for three years	=	2588 / 1.907
	=	1357
Value of the equity	=	647 + 1357
	=	2004

Example 5 – Free cash flow – debt and equity

A company with a debt to equity ratio of 50% has approached you to value the company for a potential change in shareholding. It has reasonably accurate cash flow estimates for the next three years there after the cash flows are expected to grow at a rate of 8%. The figure for cash flows below includes an amount for interest of R20; 25; 30 for years 1; 2; 3 respectively.

Cash flow predictions:

	Year 1	Year 2	Year 3
Cash flows	480	520	580
Depreciation	25	25	25
Working capital changes	-40	-50	-42
New investments	-150	-200	-180
	315	295	383

The weighted average cost of capital is 16%.

Solution

	Year 1	Year 2	Year 3	Year 4	
Cash flows	480	520	580		
Add back interest after taxation	20	25	30		
Depreciation	25	25	25		
Working capital changes	-40	-50	-42		
New investments	-150	-200	-180		
Net cash flows	335	320	413		
					413
Growth					8%
Terminal cash flow (perpetuity)					446
Discount rate	16%				
Net cash flows	335	320	413		
Discount factor	0.862	0.743	0.641	Total	
Present value	289	238	265		791

Value terminal value $= \frac{446}{(0.24-0.08)} = 5576$

Discount for three years	=	5576 / 1.561
	=	3572
Value of the equity	=	791 + 3572
	=	4363

Example 6 - NPV

See section on capital budgeting

Example 7 – Asset based valuation

BALANCE SHEET AS AT 31 DECEMBER 2005

	R 000
Share capital (600 000 ordinary shares of R1)	600
Reserves	760
	1360
Long-term liability	420
	1780
Fixed assets (net book value)	1300
Land and buildings	500
Plant and equipment	650
Motor vehicles	100
Patents	50
Current assets	700
Stock	350
Debtors	225
Cash	125
Current liabilities	220
Creditors	180
Taxation	40
Net current assets	480
	1780

You have performed a valuation of this company's earnings using the earnings yield method. You are now required to perform a valuation of the firm assuming that they were to sell the company piecemeal. The land and buildings have been valued and are thought to be worth R800. The Plant and equipment is in poor condition and will only be worth R500. The motor vehicles are worth R110 and the patents are not saleable. Due to a build up of poor quality stock R100 will have to be written off and it is expected that only 90% of the debtors will be collectable. The remainder of the assets and liabilities are appropriately valued.

Solution

Fixed assets (net book value)	1410
Land and buildings	800
Plant and equipment	500
Motor vehicles	110
Patents	0
Current assets	577.5
Stock	250
Debtors	202.5
Cash	125
Total assets	1987.5
Long-term liability	420
Current liabilities	220
Creditors	180
Taxation	40
Value of the equity	1347.5

Example 8 – Dividend valuation and capitalisation of earnings

Jax (Pty) Limited is a private company, whose owners are also the directors. The directors' shareholdings are as follows:

Mr. Jason	50%
Mr. Ajax	45%
Mr. Minnow	5%

Mr. Ajax approached you recently and told you that he has inherited a family farm and is to move there shortly. He, therefore, wishes to sell his shares in Jax (Pty) Limited and required a valuation to enable him to negotiate a price with Mr. Jason who, in terms of the articles of the company, has first right of refusal on the sale of Jax's shares by the other shareholders. Should this agreement not be reached on the price of the shares, the assets will probably be sold and liabilities settled, as there is no other purchaser of the shares. The company is a small player in the industry however the industry is achieving a good growth level of above 10%.

Mr. Jason has an impeccable reputation and it is believed that he will be able to influence the profitability of the company significantly when Mr. Ajax leaves with his old style of management. Relevant information is as follows:

BALANCE SHEET AS AT 31 DECEMBER 2005

	R 000
Share capital (300 000 ordinary shares of R1)	300
Reserves	760
	1 060
Long-term liability	
Loan secured on property	400
	1 460
Fixed assets (net book value)	
Land and buildings	800
Plant and equipment	450
Motor vehicles	55
Patents	2
	1 307
Current assets	383
Stock	250
Debtors	125
Cash	8
Current liabilities	230
Creditors	180
Taxation	50
	153
	1 460

Example 8 (Cont.)

The income after tax and interest over the last five years has been as follows:

		R
Year	2001	90 000
	2002	80 000
	2003	105 000
	2004	90 000
	2005	100 000

The annual dividend has been R45 000 (gross) for the last six years.

As part of their preparations to sell the company, the directors of Jax (Pty) Limited have had the fixed assets revalued by an independent expert, with the following results:

	R
Land and buildings	1 075 000
Plant and equipment	480 000
Motor vehicles	45 000

As can be seen from the valuation the assets are in fair condition.
The dividend yields and P/E ratios of three quoted companies in the same industry as Jax (Pty) Limited over the last three years have been as follows:

	Aardvark Limited		Bull Limited		Crow Limited	
Year	Div. Yield %	P/E ratio	Div. Yield %	P/E ratio	Div. Yield %	P/E Ratio
2005	7	8.25	8	7.75	6	8.75
2004	7	8	7	8	7	8.25
2003	7	8.26	7.2	7.74	5	7.75
Average	7	8.17	7.4	7.83	6	8.25

REQUIRED:

1. Prepare a valuation of Mr. Ajax's 45% interest.
2. Discuss which method is most appropriate.
3. Advise Mr. Ajax on what he should do.

(Rhodes University)

Example 9

The directors of Cadbury (Pty) Limited have asked you in your capacity as their auditor to advise them on a suitable price at which to offer all the shares in their company to Monti Limited, a large public company, which is interested in taking over their operations.

The abridged financial statements of Cadbury (Pty) Limited reveal the following information:

BALANCE SHEET AT 30 JUNE 2010

CAPITAL EMPLOYED	
Ordinary shares (R1.00 each)	5000
Retained income	2000
Ordinary shareholders' interest	7000
12% debentures	4000
	11000
CAPITAL EMPLOYED	
Fixed assets	8800
Land and buildings	6800
Equipment and vehicles	2000
Investments	1600
Net current assets	600
Inventory	650
Accounts receivable	550
Bank	200
Current assets	1400
SARS	200
Trade creditors	600
Accounts payable	800
	11000

Example 9 (cont.)

INCOME STATEMENTS

	2010	2009	2008	2007
Operating income	2 180	2 600	1 760	2 170
Debenture interest	(480)	(480)	(480)	(480)
	1 740	1 280	1 280	1 690
Taxation	(609)	(512)	(512)	(676)
Investment income	70	56	56	50
Extraordinary item	192			
	1 393	1 427	824	1 064

As auditor of Cadbury, you are aware of the following additional information:

1. In April 2010 the amount of R300 000 owing by a rural trading store which had become insolvent a year before was written off.

2. In February 2008 a fire occurred in one of Cadbury's stores resulting in considerable damage. The property was found to be under-insured, and the irrecoverable loss amounting to R500 000 was written off in the same financial year.

3. Investments represents one investment of a 5% holding in a large wholesale supply company, quoted on the Stock Exchange, which Cadbury holds for strategic reasons. All the investment income relates to this shareholding.

4. The fixed property has recently been valued at R8 000 000.

5. All other assets are valued at book value.

6. The company's effective rate of tax has dropped at 35%.

7. The average returns for quoted companies in the market sector in which both Cadbury and the company in which it has invested operate, are as follows:

Earnings yield	17%
Dividend yield	5%

8. You may assume that the debentures carry the market rate of interest.

REQUIRED:
Using all relevant available information, value the shares of Cadbury (Pty) Limited for the purpose of offering them to Monti Limited.

(Rhodes University)

Example 8 - Suggested solution

1 **Introduction**

a. Determine the objective

The objective of the valuation is to value Jax Limited for Mr. Ajax's who holds a 45% interest in the company. On completion of the valuation we are required to advise Mr. Ajax on what he should do.

b. Identify the rights and obligations attached

Mr. Ajax has a 45% interest thus he has a minority interest in the company. Mr. Jason has the right of first refusal on the purchase of the shares.

If agreement is not forthcoming the company will be sold off piecemeal.

2 **Choose an appropriate valuation method**

As Mr. Ajax is a minority shareholder we should use the capitalization of dividends approach.

However the purchaser of the shares is a majority shareholder and this is sufficient justification for the use of the capitalization of maintainable earnings model.

Failing agreement the company will be liquidated this justifies the need for a valuation of the assets of the company. This will be done as a reasonableness test.

3 **Identify future benefits**

a. Capitalisation of dividends

Dividends are not growing thus use the dividend of R 45000

b. Capitalisation of earnings

Using the weighted average method of calculating maintainable earnings. Earnings do not appear to be growing and for this reason this method is appropriate.

$= ({}^{1}/_{15} \times 90) + ({}^{2}/_{15} \times 80) + ({}^{3}/_{15} \times 105) + ({}^{4}/_{15} \times 90) + ({}^{5}/_{15} \times 100)$

$= 95000$

4 Determine the risk adjusted discount rate

Average Dy	(7	+	8	+	6)/3	=	7
Average Ey	(8.25	+	7.75	+	8.75)/3	=	8.25

Rate of return	Comment	Company	Investment
Given		8.25	0.07
Adjustments			
Financial risk			
Transferability	Pvt co	-0.5	0.01
Share marketability	Pvt co	-0.5	0.01
Liquidity	Poor	-0.5	
Debt to Equity ratio	Poor	-0.5	
Preferential rights of members	Yes	-0.5	0.005
Business risk			
Asset Base	?		
Growth	nil	-0.5	0.005
Management	reputation	1	-0.01
Comparative performance	?		
Industry prospects	Fair	0.5	-0.005
Relative size of the firm	Small	-0.5	0.005
Technical/special skills	?		
Geographical location of company	?		
Labour relations	?		
		6.25	0.09

Workings

Liquidity		Comment
Current	1.665217 (383/230)	Poor
Quick	0.578261 (383-250)/230	Poor
Debt to equity	0.59434 (400+230)/1060	High

5 Calculate the value

Earnings yield 95000 X 6.25 = 593750

Dividend yield $\frac{45000}{9\%}$ = 500000

6 Reasonableness test

Liquidation value

Assets	1983000
Land and buildings	1075000
Plant and equipment	480000
Motor vehicles	45000
Patent	0
Current assets	383000
Liabilities	630000
Current liabilities	230000
Loan secured on property	400000
Net asset valuation	1353000

7 Conclusion

Summary of valuations	
Majority valuation	593750
Minority valuation	500000
Liquidation valuation	1353000

Looking at the above valuations the company should be liquidated as this yields the highest value unless Mr. Jason is prepared to pay Mr. Ajax his 45% share of R 1353000 Mr. Ajax should insist that the company be wound up.

Example 9 - Suggested solution

1 **Introduction**

a. Determine the objective
   i. Valuation is to value the company for a proposed take over by Monti.
b. Identify the rights and obligations attached
   i. No rights and obligations appear apparent from the question.

2 **Choose an appropriate valuation method**

c. This company is being sold off as a majority holding
d. We do not have free cash flow information
e. The company is a diversified firm it has two types of income thus we must value each income stream separately.
   i. The main business income will be valued according to the earnings yield as we have an earnings yield to work with.
   ii. The investment income will be discounted using the dividend yield model.

3 **Identify future benefits**

Maintainable earnings

	2010	2009	2008	2007
Income after taxation	1393	1427	824	1064
Extra ordinary item*	192			
Bad debt	300			
Taxation	-105			
Fire damage			500	
Deduct income from investment	-70	-56	-56	-50
	1710	1371	1268	1014
Percentage change **growth**	25%	8%	25%	
Tax rate	35%			

* = Assumed to be the after tax figure

Considering that there is a consistent increasing trend in the earnings we conclude that the earnings for 2010 can be used as a fair earnings

4 Determine the risk adjusted discount rate

Rate of return	Comment	Company	Investment
Given		17.0%	5.0%
Adjustments			
Financial risk			
Transferability	Pvt co	1.0%	
Share marketability	Pvt co	0.5%	
Liquidity	Fair		
Debt to Equity ratio	Poor	2.0%	
Preferential rights of members	?		
Business risk			
Asset Base	?		
Growth	Fair/good	-0.5%	
Management	?		
Comparative performance	?		
Industry prospects	?		
Relative size of the firm	?		
Technical/special skills	?		
Geographical location of company	?		
Labour relations	?		
		20%	5.0%

Workings

Workings	
Liquidity	
Current ratio	1.75 (1400/800)
Quick ratio	0.9375 ((1400-650)/800)
Debt to equity	69% (4000+800)/(7000)
Adjusted for market value of Land	59% (4000+800)/(7000+1200)

5 Calculate the value

Valuation

Numerator	1710	70
Denominator	20%	5.0%
Value of equity	8550	1400
Value of the total equity	9950 (8550+1400)	

6 Reasonableness test

Here we are able to use the market value to provide us with a valuation.

Reasonableness test

Asset valuation	
Land and buildings	8000
Equipment and vehicles	2000
Investments	1600
Net current assets	600
	12200
12% debentures	4000
Net value of the equity	**8200**

7 Conclusion

A selling price should be set somewhere between R8200 and R9950 as the company is a going concern and is clearly profitable it should push to get the R9950.

Notes:

#	= Subtract debt off value
*	= To calculate the terminal value use CF/(Ks-g) or CF/(WACC-g)
(a)	= Assumes a willing buyer and willing seller.
(b)	= Assumes you are willing to start a new company.
(c)	= All require a reasonableness test.
(d)	= Require a calculation of growth this should be calculated on EPS unless the payout ratio is constant then DPS can be used.