

### ***Success of Hadsi development to date***

Domusco is planning to construct a total of 12,000 housing units in the Hadsi area over a three-year period. When Domusco's housing plans were launched during 2004 for the first phase of 3,000 housing units, the public interest was good. By the end of August 2005 Domusco had cumulative sales in the Hadsi area of over 78% of the first phase of 3,000 housing units. This comprised a higher level of pre-sales (defined as sales made prior to the start of construction work) as well as a high level of sales made after the start of construction. Interest in Domusco's housing remains strong and Domusco are confident that all 3,000 housing units in the first phase, will be sold before the completion of construction work. Domusco decided to bring forward the launch of the second phase of housing units in Hadsi and in August 2005 has pre-sales of over 18% of the phase two housing units, some six months before construction is even due to commence. Domusco's sales of housing in other areas of Zee were also strong, as well as in other areas of Europe and the USA. Domusco forecast that its total completed housing units in 2005 might be as high as 18,800 units, including the sale of the first phase of 3,000 housing units in the Hadsi area.

The Domusco house building subsidiary company's cash balance had quickly changed from a deficit to a surplus of Z\$1,200 million at the end of August 2005.

The development of the Hadsi region of Zee has been acclaimed as a success by the media and many companies were planning to move into the region. Many companies chose to move to Hadsi as the technology incorporated in the new office buildings used ecological and energy saving solutions for air conditioning and heating. The Zee government was very pleased with the success of the Hadsi area and also announced the relocation of one of its government agencies to Hadsi. The Zee government chose to purchase one of the larger office buildings that Domusco was in the process of constructing and contracts for the purchase were signed at the end of August 2005.

In August 2005, Domusco announced that it intended to relocate its offices to one of the most prestigious of all of the new office blocks in the Hadsi region, as it has outgrown its present Head Office building in Zee. The new offices are forecast to meet the requirements of Domusco's Zee based staff for the next eight years, assuming the company expands in accordance with its 10-year plan. In addition to the Hadsi office building that Domusco plans to move to, Domusco had signed contracts with a total of seven other companies for office buildings in Hadsi by the end of August 2005.

### ***Construction of Sport Stadium in Europe***

In August 2005 Domusco signed contracts for the construction of a large national sports stadium in a European country. The contract value was €180 million (approximately Z\$459 million). Peter Kaye is very concerned at the lack of available experienced manpower within the company that can be allocated to this major construction project. He has been requested by the Domusco Board to consider whether part of the work could be sub-contracted to a large international company (which the contract terms allow) or whether to recruit staff locally in the European country on short term contracts. Peter Kaye is also concerned about the tight deadlines and the final stage payment of €12 million (approximately Z\$31 million) that will only be paid if the stadium is built to the agreed deadline of April 2007.

## **Construction work in Wye**

Domusco has been unable to renegotiate the motorway construction budget for the large project that Domusco is currently constructing in Wye. This project is now forecast to make a loss of Z\$44 million but Domusco is contractually bound to complete the motorway construction.

At the August 2005 Domusco Board meeting, it was decided that Domusco would no longer undertake any further construction work in Wye that is funded by the Wye government. This will result in Domusco declining to bid for a number of major construction projects for the Wye government, which are in Domusco's current plan. Domusco will continue to build a small amount of housing in Wye, which it sells to private buyers. Therefore Domusco's current plan is overstated. The effect on the Domusco group's post tax cash flows for the next five years due to the removal of Wye government funded projects is as follows:

	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Z\$	Z\$	Z\$	Z\$	Z\$
	<i>million</i>	<i>million</i>	<i>million</i>	<i>million</i>	<i>million</i>
Reduction in Domusco group cash flows due to removal of Wye government funded projects	80	110	110	120	140

## **Updated cash flow forecast as a result of recent events**

The high sales of housing and offices in Zee, including the Hadsi development, and the high housing sales in other countries, as well as the newly awarded contract for the sports stadium (that was not in the current plan), has been incorporated in an updated cash flow forecast for the Domusco group. However, the updated forecast cash flows, shown below, **have not yet been adjusted** for the removal of government funded projects in Wye.

By the end of August 2005 the Domusco group had a cash balance of Z\$1,000 million. The current cash balance and forecast end year cash balances for the next 5 years, after tax, loan repayments and planned dividend payments, are now forecast to be as follows:

	<b>End August 2005</b>	<b>End December 2005</b>	<b>End December 2006</b>	<b>End December 2007</b>	<b>End December 2008</b>	<b>End December 2009</b>
	Z\$	Z\$ million	Z\$ million	Z\$ million	Z\$ million	Z\$ million
	<i>million</i>					
Forecast cash balance	1,000	1,300	1,800	1,700	1,600	1,400

The above cash forecast assumes that Domusco does not increase its loans during 2005, as included in the current plan (Appendix 4 to the pre-seen material).

## **Development in Metsa**

The Zee government has announced that the area of Metsa, west of the Hadsi region, is the next area of the country that could be developed. It is further along the coast from Hadsi, in rugged terrain and is much smaller than the area of the Hadsi land. The Zee government is pleased with the way that Domusco has managed the Hadsi development. The Zee government has now offered the entire plot of land in Metsa to Domusco at a cost of Z\$500 million.

Peter Kaye is proposing that Domusco retain the entire plot and undertake the entire development of the Metsa land. However, Peter Kaye's team cannot forecast the construction costs with any accuracy until further survey work is undertaken and construction work is commenced. As the terrain in this area is more difficult, initial land preparation would be more difficult and more expensive. However, Peter Kaye's team have prepared two levels of cash flows depending on what problems they encounter during construction, together with estimated probabilities.

These cash outflows (before tax), which exclude the cost of the land of Z\$500 million, are shown below:

<i>Cash outflows for Metsa construction project</i>	<i>Probability</i>	<b>2006</b> <i>Z\$ million</i>	<b>2007</b> <i>Z\$ million</i>	<b>2008</b> <i>Z\$ million</i>	<b>2009</b> <i>Z\$ million</i>	<b>Total</b> <i>Z\$ million</i>
High cost scenario cash outflows	75%	250	340	480	580	1,650
Normal cost scenario cash outflows	25%	130	160	340	380	1,010

The proposed revenues mainly from housing, with some office buildings, for the Metsa development, are forecast to be as follows:

	<b>2006</b> <i>Z\$ million</i>	<b>2007</b> <i>Z\$ million</i>	<b>2008</b> <i>Z\$ million</i>	<b>2009</b> <i>Z\$ million</i>	<b>Total</b> <i>Z\$ million</i>
Metsa forecast revenues	0	600	850	1,000	2,450

The revenues and cash outflows given above are before tax, and tax should be assumed to be 30%. Martyn Lite stated that a suitable risk-adjusted discount rate for evaluating this construction project is 12% post tax.

Marma Winge stated at the August 2005 Domusco Board meeting that he considered that the housing market in Zee was growing too fast and the level of growth in the sales of new housing could not be expected to continue. He also reminded the Domusco Board that the company had a land bank of around Z\$1,900 million of land in Zee for future development. He did not have confidence, despite the success of the Hadsji project so far, that Metsa would be as successful. He was also concerned that Domusco should not undertake the entire development of Metsa on its own. He stated that there was a risk that the housing in Metsa would not sell as well as in the Hadsji area.

Will Umm is concerned about the development in the Metsa area due to concerns from environmental groups. Domusco managed to overcome the environmental issues in its development in Hadsji, by making some compromises and allowing a small forest to remain intact and reducing the size of the commercial area in Hadsji. However, the world's media has already supported the local opposition groups who do not want to see the Metsa area developed, as it has a number of sites of archeological interest. However, the Zee government has publicly stated that the development of the Metsa area is required to help Zee to sustain its economic growth.

### ***Proposed Joint Venture with Olan***

The government in a European country is funding the construction of a large sports stadium. Olan is a leading construction company in this European country, but it has not constructed a sports stadium of the size specified for construction. The government has indicated to Olan that it considers that the stadium could be built to budget and on time if an experienced company were to be involved in a joint venture with Olan. Olan has approached Domusco with a proposal for a joint venture. Bids for this stadium are due to be submitted in January 2006 and the decision to award the contract will be announced in March 2006.

Peter Kaye is concerned that most of his employees are already committed on other projects, including the recently awarded contract to construct a sports stadium in another European country. He recognises that Domusco would need to recruit additional staff as he considered that a project of this size, even taken on as a joint venture, could not rely on Domusco's current high level of sub-contract staff. Peter Kaye's department has estimated that this proposed joint venture with Olan, if awarded, would need an additional 1,200 man-years, over the three-year project timescale. This would result in the recruitment of an additional 400 employees.

If Domusco were awarded the joint venture contract with Olan, it would be Domusco's largest ever contract for a single building, at the equivalent of Z\$2,400 million total revenue (which would be shared with Olan in the agreed joint venture split, which has not yet been agreed). If Domusco agreed to be a 50/50 joint venture partner, its share of the contract would be Z\$1,200 million and its share of the profits for the contract over 3 years, would be over Z\$300 million.

Peter Kaye has estimated that if Domusco did bid for this contract, in a joint venture with Olan, then it could have an 80% probability of being awarded the contract. Martyn Lite is concerned that working capital requirements would be high for this contract, as the European government has stated that stage payments would only be paid after the completion of different stages of construction. Within the first 12 months, the total working capital for the entire project would be the equivalent of around Z\$850 million.

Will Umm is not entirely confident about the proposed joint venture with Olan. Olan has suffered from bad press coverage on several occasions. There was a reported incident when Olan had been accused of bribery to win government contracts in its home country, but this was never proved. Additionally, Olan has a bad track record with the way in which it treats its sub-contractors and its employees. Its safety record, which is public knowledge, is poor. Olan is keen to work with Domusco. However, Domusco's non-executive directors are unsure about the proposed joint venture.

### ***Employee survey***

Domusco has undertaken its fourth employee survey and the management is now considering the findings. The points raised by employees include the following:

#### ***(a) Issues concerning sub-contractors***

Domusco employees continue to complain about the quality of the work undertaken by sub-contractors. The employees are also aware that some sub-contractors are paid a larger daily fee than their own salaries, and feel that they are under-valued.

Domusco employees report that there are a greater number of sub-contractors who are employing workers with insufficient training or inadequate experience. Zee is experiencing a construction boom at present, and a variety of inexperienced people, have sought work in the construction industry. Some of Domusco's sub-contractors have employed inexperienced staff, which has led to some workers ignoring safety issues and demonstrating a lack of awareness for the importance of safety. Some Domusco employees have refused to work at one site where there have been a number of accidents caused by sub-contractors.

#### ***(b) Employee sickness***

Domusco has a number of employees absent on long-term sickness leave. The main reason for long-term sickness is not for work-related injuries, but is due to stress.

#### ***(c) Shortage of managers***

Some of Domusco's managers have reported that they feel under pressure to complete their jobs in unrealistic timescales. They also state that they have insufficient junior managers to support them and they are under pressure to meet budgets and deadlines.

### ***August 2005 Domusco Board meeting***

When the Board met in August 2005, it was agreed that Domusco was experiencing its most successful phase in its building history, despite the forecast loss on the Wye motorway contract. Domusco's share price had risen slightly to Z\$13.95.

Carlos Freer announced that the unsold land in the Hadsji area, that Domusco owned, would be sold to either of two office construction companies that were both very interested in it. Both companies were keen to purchase the land following the recent high profile sales of office space in Hadsji and each construction company was trying to finalise its bid price. Domusco is hoping to be able to receive over Z\$200 million within the next three months, for the land that it has in the group balance sheet as inventory for Z\$102 million.

Martyn Lite was pleased to announce that the Domusco group had a very strong positive cash flow at present, and that the Domusco group had a cash balance of Z\$1,000 million at the end of August 2005. The Board discussed a number of ways in which it could expand its business, given its current strong cash position.

In addition to the Metsa and Olan proposals detailed above, some further uses of the cash balance discussed were:

- Martyn Lite is keen to repay loans. The company has a Z\$324 million loan which is due to be repaid in 2007, but could be paid back early. Additionally the company took out two loans to finance the start of the construction work on the Hadsi development, which could be repaid early if the Board decided to.
- Marma Winge wants to expand the USA house building operations by organic growth, but needs sufficient working capital to do this. He plans to set up a further subsidiary company that would need around Z\$200 million funding to open offices, acquire land, to construct some houses and to market them in this new geographic area within the USA. He considers that there is huge potential for new business and that the USA market is growing rapidly. This expansion in the USA is in the company's ten-year plan, but not until 2007. Marma Winge would like to bring this project forward.
- Will Umm stated that Domusco is permitted to buy back its shares on the stock market in Zee, but asked for advice as to whether the company should use some, or all, of its surplus cash to buy back shares.

### ***Investigations into cash shortages***

It had been brought to the attention of Jaz Grue, who is one of the senior finance managers based in Domusco's Head Office in Zee, that one of the cash reconciliations could not be reconciled. Jaz Grue was inquisitive and pursued the reconciliation problem, which concerned reconciling deposits paid by customers for their houses in Zee to cheques banked. Jaz Grue works in Domusco's subsidiary for house building in Zee and has a dotted line responsibility to Martyn Lite, but his direct manager is Marma Winge.

With the large volume of sales of houses in Zee, the bank reconciliation between the value of cheques banked and sales receipts issued showed a shortfall of around Z\$1.6 million. After his investigations, Jaz Grue discovered that a number of house sales, both in the Hadsi area and elsewhere in Zee, have not had deposits accounted for as paid. Instead he has uncovered what could be a major fraud involving a group of eight of Domusco's employees in the house building subsidiary based in Zee. The missing cheques from Domusco customers had not been identified as the customers are not due to pay a further instalment, or the final payment for their new houses for many months. Initially, the difference was considered to be due to timing differences.

Jaz Grue was unsure of what to do or who to approach. On Friday 2 September 2005, he decided to speak to Jackie Paul, Human Resources Director. On hearing the extent of the fraud, Jackie Paul decided to instantly dismiss Jaz Grue, as she considered that he had been negligent in allowing the fraud to occur and for not identifying the cash shortfall before it had reached such a large sum. Jackie Paul has now advised Marma Winge and Martyn Lite of her action of dismissing Jaz Grue.

### ***Appointment of consultant***

The Domusco Group has been through a very busy phase with the high growth of sales in Zee and elsewhere and Tom Micol is undecided on where the company should use its resources.

The Board has decided that it would like to have the advice from an experienced consultant. It has appointed a leading global consultancy company.

End of Unseen material

Maths Tables and Formulae are on pages 29 to 32



## MATHS TABLES AND FORMULAE

### Present value table

Present value of 1.00 unit of currency, that is  $(1 + r)^{-n}$  where  $r$  = interest rate;  $n$  = number of periods until payment or receipt.

Periods ( $n$ )	Interest rates ( $r$ )									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149

Periods ( $n$ )	Interest rates ( $r$ )									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.079	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026



Cumulative present value of 1.00 unit of currency per annum, Receivable or Payable at the end of each year for  $n$  years  $\left[ \frac{1-(1+r)^{-n}}{r} \right]$

Periods ( $n$ )	Interest rates ( $r$ )									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.679	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.878	13.590	12.462	11.470	10.594	9.818	9.129	8.514

Periods ( $n$ )	Interest rates ( $r$ )									
	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870

## FORMULAE

### Valuation Models

- (i) Irredeemable preference share, paying a constant annual dividend,  $d$ , in perpetuity, where  $P_0$  is the ex-div value:

$$P_0 = \frac{d}{k_{\text{pref}}}$$

- (ii) Ordinary (Equity) share, paying a constant annual dividend,  $d$ , in perpetuity, where  $P_0$  is the ex-div value:

$$P_0 = \frac{d}{k_e}$$

- (iii) Ordinary (Equity) share, paying an annual dividend,  $d$ , growing in perpetuity at a constant rate,  $g$ , where  $P_0$  is the ex-div value:

$$P_0 = \frac{d_1}{k_e - g} \text{ or } P_0 = \frac{d_0 [1 + g]}{k_e - g}$$

- (iv) Irredeemable (Undated) debt, paying annual after tax interest,  $i(1-t)$ , in perpetuity, where  $P_0$  is the ex-interest value:

$$P_0 = \frac{i[1 - t]}{k_{\text{dnet}}}$$

or, without tax:

$$P_0 = \frac{i}{k_d}$$

- (v) Future value of  $S$ , of a sum  $X$ , invested for  $n$  periods, compounded at  $r\%$  interest:

$$S = X[1 + r]^n$$

- (vi) Present value of £1 payable or receivable in  $n$  years, discounted at  $r\%$  per annum:

$$PV = \frac{1}{[1 + r]^n}$$

- (vii) Present value of an annuity of £1 per annum, receivable or payable for  $n$  years, commencing in one year, discounted at  $r\%$  per annum:

$$PV = \frac{1}{r} \left[ 1 - \frac{1}{[1 + r]^n} \right]$$

- (viii) Present value of £1 per annum, payable or receivable in perpetuity, commencing in one year, discounted at  $r\%$  per annum:

$$PV = \frac{1}{r}$$

- (ix) Present value of £1 per annum, receivable or payable, commencing in one year, growing in perpetuity at a constant rate of  $g\%$  per annum, discounted at  $r\%$  per annum:

$$PV = \frac{1}{r - g}$$

### Cost of Capital

- (i) Cost of irredeemable preference capital, paying an annual dividend,  $d$ , in perpetuity, and having a current ex-div price  $P_0$ :

$$k_{pref} = \frac{d}{P_0}$$

- (ii) Cost of irredeemable debt capital, paying annual net interest,  $i(1 - t)$ , and having a current ex-interest price  $P_0$ :

$$k_{dnet} = \frac{i[1 - t]}{P_0}$$

- (iii) Cost of ordinary (equity) share capital, paying an annual dividend,  $d$ , in perpetuity, and having a current ex-div price  $P_0$ :

$$k_e = \frac{d}{P_0}$$

- (iv) Cost of ordinary (equity) share capital, having a current ex-div price,  $P_0$ , having just paid a dividend,  $d_0$ , with the dividend growing in perpetuity by a constant  $g\%$  per annum:

$$k_e = \frac{d_1}{P_0} + g \quad \text{or} \quad k_e = \frac{d_0[1 + g]}{P_0} + g$$

- (v) Cost of ordinary (equity) share capital, using the CAPM:

$$k_e = R_f + [R_m - R_f]\beta$$

- (vi) Weighted average cost of capital,  $k_0$ :

$$k_0 = k_e \left[ \frac{V_E}{V_E + V_D} \right] + k_d \left[ \frac{V_D}{V_E + V_D} \right]$$

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*Test of Professional Competence in  
Management Accounting*

*Monday 5 September 2005*