



Institute of Incorporated Public Accountants

Module 14:

Financial Management

Thursday 30th. August 2012

2pm – 5pm

Instructions: Answer five questions

Section A

All three questions to be attempted

Section B

Two of the three questions to be attempted

Present Value Tables are attached at the end of the paper.

Time Allowed: 3 Hours

Section A: All three questions to be attempted

Section A (70 marks in Total)

Question 1

Emerald Silicon Technology plc., (EST), wishes to estimate its cost of capital for use in analysing projects that are similar to its existing projects. The following figures have been extracted from their most recent accounts:

	€000	€000
Fixed assets		39,000
Investments		6,500
Current Assets	19,000	
Less - current liabilities	<u>16,900</u>	
		<u>2,100</u>
		<u><u>47,600</u></u>
Ordinary Share Capital:		
Issued - 500,000 @ €1		1,000
Reserves		<u>9,000</u>
Shareholders' funds		10,000
10% Irredeemable Debentures		20,000
8% Preference Shares		16,000
Deferred taxation		600
Corporation Tax		<u>1000</u>
		<u><u>47,600</u></u>

The current market value of EST plc's ordinary shares is €40.00 per share cum-dividend. EST's beta is 1.4, the risk-free rate is 5 percent, and the return on the ISEC index (the market proxy) is 14 percent. An annual dividend of €2,900,000 is due for payment shortly. The 10% debentures are irredeemable and are trading at a current market value of €120.00, a €20 premium above their issue price of €100. Semi-annual interest of €4m has just been paid on the debentures.

The 8% preference shares are trading at a current market value of €15, a €5 premium above their issue price of €10. Interest has just been paid on these preference shares. There have been no issues or redemptions of ordinary shares or debentures during the past five years. The corporation tax rate of 12.5% has pertained throughout the past five years without change. Assume that tax relief on the debenture interest arises at the same time as the interest payment.

EST is considering a major investment that is expected to increase its operating and financial leverage. Were it to go ahead with the investment its new capital structure will contain, in market value terms, 20 percent ordinary equity, 55 percent debt, and 25 percent preference shares. As a result of the proposed investment, the firm's 10% irredeemable debentures debt is expected to trade at its par value of €100, the market value of the preference shares are also expected to fall to their €10 par value, and EST's beta is expected to rise to 2.

P.T.O.

Required

- a) Ignoring the potential new investment, calculate the cost of capital that EST should use as a discount rate when appraising new marginal investment opportunities. **(13 marks)**
- b) If EST do go ahead with the investment what effect will this investment have on EST's Weighted Average Cost of Capital, (WACC)? Explain your finding and in particular the (after tax) cost of each of the different sources of finance before and after the new investment. **(6 marks)**
- c) Explain when firms should discount projects using the cost of equity. When should they use the WACC instead? When should they use neither? You should use the information and your results in parts (a) and (b) as examples. **(6 marks)**

(25 marks in Total)

Question 2

Nicholas Madoff, head of the “Safe as Houses” investment fund has decided that property markets have reached rock bottom. He has determined that now is the right time to invest to achieve the best long term returns. To spread the risk around he has decided that it is essential to hold a well diversified portfolio.

However due to the economic downturn and investor’s reluctance to invest in property after the property crash new inflows into the investment fund have been low. To ensure a sufficiently diversified portfolio, he has set a maximum investment allowed in each of the five property funds as shown below. Each of the five property funds may be treated as perpetuities.

Investment	Maximum allowed Investment	Expected return in Year 1	Expected annual growth	Appropriate discount rate
A	€ 5,000,000	€ 375,000	12.0%	16%
B	€ 4,000,000	€ 325,000	10.0%	15%
C	€ 3,000,000	€ 300,000	9.0%	13%
D	€ 2,000,000	€ 130,000	8.0%	15%
E	€ 1,500,000	€ 120,000	7.0%	12%

Required:

- a) If there are no capital constraints, what would be the NPV of the projects, and which investments should he recommend, if any? **(7 marks)**
- b) Assume the most Nicholas has to invest is €12.5mn and any money not invested, (from the €12.5mn), in any of the five projects (A – E) above must be invested in NPV = 0 projects. With the help of a Profitability Index, recommend which investments she should recommend, if any, and the expected payoffs in each situation, if:
- (i) investments are “divisible”, and
 - (ii) if projects are “not divisible”.

(6 marks)

(Note: by “divisible” it means that it is possible to invest in a project in whole or in part, e.g. investing only half of the initial maximum allowed, €2.5mn in project A will result in only half the maximum NPV of that project. “Non divisible” implies that a project must be accepted in whole or not at all, e.g. one must invest €5mn in Project A or not invest in A at all).

- c) Discuss the reasons for your recommendations in (b), explaining capital rationing and the Profitability Index in your answer.

(5 marks)

- d) One way of categorising risk and uncertainty is to make a distinction between business risk and financial risk. Explain what is meant by “financial risk” and show with the aid of an example how two firms which are identical in every respect except for their financial structure (i.e. same total level of financing, but different mix of debt and equity financing) can have differing levels of financial risk.

(7 marks)
(25 marks in Total)

Question 3

Up-Vision Ltd. is a niche Irish supplier of designer glasses to the European optician retail industry. Despite trying to reduce costs Up-Vision expects to be in a negative cash position in the coming year with weekly sales to be only €75,000 per week. Not coincidentally its bankers have increased its overdraft rate to 14%.

The financial director has noted that cash is generally received evenly each day of the week, Monday through Friday, with the 8am post and recorded by 9am. Cash recorded and lodged on bank opening (10am) can be credited with interest from that day.

The current procedure in Up-Vision is to make bank lodgements twice a week every Monday and Thursday. However the sales director feels that as each lodgement costs €25 per lodgement Up-Vision could save by making just one lodgement per week, each Friday. The managing director suggested that Up-Vision should lodge every Tuesday and Friday. Finally the head of security has suggested that Up-Vision should lodge cash every day as she was nervous holding large amounts of cash on the premises.

Alternatively Up-Vision Ltd. could obtain the services of a factor.

The factor has said that they could reduce the current collection period from 10 weeks to 5 weeks. The basic fee for the debtor collection service would be 2% of Up-Vision's annual turnover, payable annually in arrears. However this would be offset by (i) an annual saving in back office and collection expenses of €33,000 and (ii) the reduction in the collection period.

In addition the factor could advance Up-Vision up to 80% of invoice value of the factored debts. However should Up-Vision choose to take up the offer of the advance there would be a commission of 1.5% charged on the gross amount advanced, plus interest of 5% p.a., to be applied on a simple weekly basis. Both the interest and the commission would be deducted from the sum advanced to Up-Vision. On receipt of cash from Up-Vision's invoiced debtors, the factor will immediately pay to Up-Vision all sums outstanding concerning that invoice.

For simplicity, you may assume:

- a 364 day year made up of 52 weeks each of 7 days,
- that banks remain open for only five days a week for lodgements , (ignore bank holidays etc.)
- but that you may receive / pay interest seven days a week,
- Finally you may ignore taxation issues such as DIRT tax etc.

Summary of details

- (i) Weekly sales: €75,000 hence annual sales: €3,900,000
Cost to make a lodgement: €25
The company's overdraft rate: 14%
Current collection period: 10 weeks
- (ii) Factoring services
Basic collection fee: 2%
Administration saving: €33,000
- (iii) Finance/Lending services
Advance: 75%
Commission: 1.5%
Interest simple: 7% per annum
- (iv) Factoring selling points
New collection period: 5 weeks
Assume that there are 364 days in year

P.T.O.

REQUIREMENT:

- a) Calculate the annual cost of each of the four alternatives; (i) the current situation; Monday and Thursday, (ii) Friday only, (iii) Tuesday and Friday or (iv) daily and based solely on costs recommend the best option.

(8 marks)

- b) Calculate the annual factoring costs as a percentage of funds improvement for a full year under each of the following separate conditions:

i) Only avail of the collection service, average collection period falls to 5 weeks.

ii) The average collection period falls to 5 weeks and Up-Vision use the finance facilities.

iii) Given your answers in parts (bi) and (bii) briefly discuss the appropriateness of Up-Vision using the services outlined.

(12 marks)

(20 marks in Total)

P.T.O.

Section B: two (2) of the following three (3) questions to be attempted

Section B (30 marks in Total)

Question 4

- a) If a company is facing business failure and if it is considering a business re-organisation, briefly outline the strategic business advice (as opposed to any legal advice) you might give. In your answer you should refer to a well-known company / companies that you have learnt from publicly available information that have undergone a business re-organisation to avoid facing business failure and the success or otherwise of the strategies they employed.

(8 marks)

- b) In a world of no taxes, with the aid of a diagram, explain Modigliani–Miller “capital structure irrelevance” theorem’s Proposition II: $k_e = k_0 + D/E (k_0 - k_d)$

Where: k_e is the required rate of return on equity, or cost of equity.

k_0 is the company unlevered cost of capital (i.e. assume no leverage).

k_d is the required rate of return on borrowings, or cost of debt.

D/E is the debt-to-equity ratio.

(7 marks)

(15 marks in total)

Question 5

- a) In managing a bond portfolio explain the impact of maturity and the effects of coupons. In particular explain when an investor might choose low-coupon, long maturity bonds and vice versa?

(8 marks)

- b) With the aid of three (3) diagrams explain the causes of the shape of the three main patterns created by the “Term Structure of Interest Rates”: (i) the Normal (ii) the Flat and (iii) the Inverse Yield Curve.

(7 marks)

(15 marks in total)

Question 6

Write short notes on **three (3)** of the following **six (6)** topics:

- a) Financial future contracts and how they are used to hedge a position.
- b) Interest rate swaps and how they are used to hedge a position.
- c) In capital structure decisions: the pecking order for financing.
- d) The difference between earnings yield and dividend yield as company valuation methods.
- e) The difference between the approaches to corporate governance in the UK (same as Ireland) and the US.
- f) The co-efficient of correlation as it relates to the two stock portfolio.

(3 x 5 marks)

(15 marks in total)

Table 1: Present Value of €1 to be received after t periods = $1 / (1+r)^n$

Period	Interest rate per period or "r" or Discount rate, (in % terms)																			
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009	0.005	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000

**Table 2: Present Value of an ANNUITY of €1 per period
to be received for t periods = $\{1 - (1+r)^{-n}\} / r$**

Period	Interest rate per period or "r" or Discount rate, (in % terms)																			
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999
Infinity	100.0	50.00	33.33	25.00	20.00	16.67	14.29	12.50	11.11	10.00	9.091	8.333	7.692	7.143	6.667	6.250	5.882	5.556	5.263	5.000