ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF LAW, BUSINESS INTELLIGENCE AND ECONOMICS

EXAMINATION PAPER

COURSE CODE	:	CBM 223
COURSE TITLE	:	BUSINESS FINANCE
SPECIAL REQUIREMENTS	:	Non-Programmable Calculator, Formula Booklet Financial Tables
DURATION	:	3 Hours
LEVEL	:	2.2
DATE	:	02 AUG 2023

INSTRUCTIONS TO CANDIDATES:

1. No cell phones are allowed in the examination venue.
2. Answer **any four** questions
3. The number of marks for each question or part question is shown in brackets [ ]
4. Show all your workings in order to gain full marks.
5. Begin each answer on a new page.
6. **DO NOT OPEN THIS PAPER UNTIL YOU ARE INSTRUCTED BY THE INVIGILATOR.**

Question 1 **[25 marks]**

Revere Steel is a highly levered company with 25 million shares, trading at $10/share and $750 million in debt (in market and book value terms) outstanding. The pre-tax cost of debt for the company is 10%, the marginal tax rate is 40% and the levered beta for the company is 2.52. The risk free rate is 3% and the equity risk premium is 5%.

a) Estimate the cost of capital for the company. (5 point)

The Jack & Diane (JD) Corporation is considering a new 5-year project. Since this project is very different from JD's current operations, the adjusted present value will be used to value the project.

The project requires an initial investment of $750,000 in new assets, which will be depreciated straight-line to 0 over the project's 5-year life. These assets will be worthless in five years, i.e., they will not be resold. (Assume that the depreciation tax shields can be discounted at the project discount rate). Each year for five years, the project is expected to generate pre-tax revenues of $600,000 and to require pre-tax costs of $240,000. The entire project will be financed through a 5-year bank loan with an annual rate of 10%. The principal on the loan will be repaid in equal instalments of $150,000 each (i.e., each year, the company pays $150,000 in principal, and pays the interest on the outstanding loan). It is estimated that the pre-tax costs (payable at time zero) of negotiating the loan will be 4% of the amount borrowed.

The project's risk is very similar to the risk of Tommy & Gina (TG) Inc.'s assets. This firm is currently financed by 100,000 shares worth $12.50 each, and $750,000 worth of debt. The beta of TG's stock is 1.5, and the company borrows at a rate of 11%. The risk-free rate in the economy is 8%, and the expected return on the market is 18%. The current corporate tax rate is 45% (assume that it applies to both JD and TG). Ignore personal taxes.

b) What would be the appropriate discount rate for the project, if it were all-equity financed? [5 marks]
c) What is the adjusted present value of the project? [15 marks]

Question 2 **[25 marks]**

ABC public limited company has a net income of $66 000, total assets of $500 000, total liabilities of $250 000 and the company has declared a dividend of $22 000, Assuming this dividend pay-out ratio is not likely to change in the future;

a) With the aid of example (s), distinguish between internal growth rates (IGR) and sustainable growth rate (SGR) of a firm. [8 marks]
b) What is the IGR of ABC public limited company? [5 marks]
c) What is the SGR of ABC public limited company? [5 marks]
d) Explain the determinants of ABC public Limited's growth rate. [7 marks]

Question 3 **[25 marks]**

a) Firms A and B have debt/total asset ratios of 75% and 50% and returns on total assets of 10% and 15% respectively. Which firm has the greatest return on equity? (explain) [3 marks]
b) Terry Co. has a profit margin of 15 percent on sales of $20,000,000. If the firm has debt of $7,500,000, total assets of $22,500,000, and an after-tax interest cost on total debt of 5 percent, what is the firm's ROA? [5 marks]
c) Terry Co. has had sales this year of $1,000,000. Their selling and administrative expense was $220,000, COGS was $425,000, Interest Expense of $20,000, outstanding debt was $150,000 and depreciation was $75,000. Timmons has a 40% corporate tax rate.

   i. What is Terry Co. Net Income for the year? [5 marks]

   ii. What is Terry Co. Operating Cash Flow for the year? [3 marks]

d) The Tina Construction Company has projected next year's sales to be $6,000,000. Construct a pro forma balance sheet given the following information. COGS are 50% of sales and credit sales are 60% of total sales. Current Ratio 1.5 Debt Ratio 60% Inventory Turnover 6 Accts. Rec. Period 60 days Fixed Asset Turnover 2 Times Interest Earned 8.0 Profit Margin .27 Return on Assets 30%. [9 marks]

Question 4 **[25 marks]**

a) Distinguish between primary and secondary capital markets with reference to the Zimbabwean economy[5 marks]

b) Explain clearly what is meant by corporate governance and with reference to an organisation of your choice, give examples, where the governance structure of a corporate may result in costs to the corporate. Provide measures that can be put in place to reduce the costs. [20 marks]

Question 5 **[25 marks]**

a) Zegu Agric department need to accumulate $25,000 in 10 years in order to buy a piece of land for poultry project. How much will the department have to invest right now if the rate of return is 6% compounded semi-annually? [6 marks]

b) The Agric department has decided to accumulate $10,000 for the construction of fowl run for the poultry project. To do so, the department plans to make deposits of $1,500 per year, with the first payment being made one year from now. The investment earns 8% compounded annually. How large will the department's last deposit be? [15 marks]

c) Explain other possible ways of raising finance for the poultry project. [4 marks]

End of paper

ZEGU BUSINESS FINANCE-2021

FINANCIAL & **MATHS TABLES AND FORMULAE**-FOR CBM204

Present value table For Practice and Exam Use

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	7.793	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 shares, paying a constant annual dividend, d, in perpetuity, where P_0 is the ex-div value:

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

(ii) Ordinary (equity) shares, 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) shares, paying an annual dividend, d, growing in perpetuity at a constant rate, g, where P_0 is the ex-div value:

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

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

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

or, without tax:

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

(v) Total value of the geared entity, V_g (based on MM):

$$V_g = V_u + TB$$

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

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

(vii) Present value of 1·00 payable or receivable in n years, discounted at r% per annum:

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

(viii) Present value of an annuity of 1·00 per annum, receivable or payable for n years, commencing in one year, discounted at r% per annum:

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

(ix) Present value of 1·00 per annum, payable or receivable in perpetuity, commencing in one year, discounted at r% per annum:

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

(x) Present value of 1·00 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 shares, 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 bonds, paying annual net interest, $i\,[1-t]$, and having a current ex-interest price P_0:

$$k_{d\,net} = \frac{i[1-t]}{P_0}$$

(iii) Cost of ordinary (equity) shares, 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) shares, 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:

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

(v) Cost of ordinary (equity) shares, using the CAPM:

$$k_e = R_f + [R_m - R_f]ß$$

(vi) Cost of ordinary (equity) share capital in a geared entity :

$$k_{eg} = k_{eu} + [k_{eu} - k_d]\,\frac{V_D\,[1-t]}{V_E}$$

(vii) Weighted average cost of capital, k_o or WACC

$$WACC = k_e\left[\frac{V_E}{V_E + V_D}\right] + k_d\,[1-t]\left[\frac{V_D}{V_E + V_D}\right]$$

(viii) Adjusted cost of capital (MM formula):

$$K_{adj} = k_{eu}\,[1 - tL] \quad \text{or} \qquad r^* = r[1 - T^*L]$$

(ix) Ungear ß:

$$ß_u = ß_g\left[\frac{V_E}{V_E + V_D[1-t]}\right] + ß_d\left[\frac{V_D[1-t]}{V_E + V_D[1-t]}\right]$$

(x) Regear ß:

$$ß_g = ß_u + [ß_u - ß_d]\,\frac{V_D\,[1-t]}{V_E}$$

(xi) Adjusted discount rate to use in international capital budgeting (International Fisher effect)

$$\frac{1 + \text{annual discount rate B\$}}{1 + \text{annual discount rate A\$}} = \frac{\text{Future spot rate A\$/B\$ in 12 months' time}}{\text{Spot rate A\$/B\$}}$$

where A$/B$ is the number of B$ to each A$

Other formulae

(i) Expectations theory:

$$\text{Future spot rate A\$/B\$} = \text{Spot rate A\$/B\$} \times \frac{1 + \text{nominal country B interest rate}}{1 + \text{nominal country A interest rate}}$$

where:

A\$/B\$ is the number of B\$ to each A\$, and

A\$ is the currency of country A and B\$ is the currency of country B

(ii) Purchasing power parity (law of one price):

$$\text{Future spot rate A\$B\$} = \text{Spot rate A\$/B\$} \times \frac{1 + \text{country B inflation rate}}{1 + \text{country A inflation rate}}$$

(iii) Link between nominal (money) and real interest rates:

$$[1 + \text{nominal (money) rate}] = [1 + \text{real interest rate}][1 + \text{inflation rate}]$$

(iv) Equivalent annual cost:

$$\text{Equivalent annual cost} = \frac{PV \text{ of costs over } n \text{ years}}{n \text{ year annuity factor}}$$

(v) Theoretical ex-rights price:

$$\text{TERP} = \frac{1}{N + 1}\ [(N \times \text{cum rights price}) + \text{issue price}]$$

(vi) Value of a right:

$$\frac{\text{Theoretical ex rights price} - \text{issue price}}{N}$$

where N = number of rights required to buy one share.

Wish you the very best!

HPM

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