kasneb

CIFA PART III SECTION 5

ALTERNATIVE INVESTMENTS ANALYSIS

THURSDAY: 29 November 2018.   Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

QUESTION ONE
(a)   Explain five characteristics of real estate as an alternative investment class.   (5 marks)

(b)   The following information relates to a certain office building in Naro town and which Kangaro Financial Services
        (KFS) is considering for valuation:

	Sh."000"
Gross potential rental income	700,000
Insurance and taxes	52,000
Utilities	36,000
Repairs and maintenance	46,000
Depreciation	80,000
Interest on proposed financing	36,000

Additional information:
1. Vacancy and collection losses is estimated at 4%.
2. Recently, there have been two office buildings sold in the same area:
    - The first building had a net operating income of Sh.1,000,000 and was sold for Sh.8,000,000.
    - The second building had a net operating income of Sh.450,000 and was sold for Sh.3,200,000.

Required:
(i)   The net operating income (NOI) for the office building.   (5 marks)

(ii)   The appraised price of the office building using the income approach.   (5 marks)

(c)   An asset management firm is reviewing the following mortgage pool:

Loan	Outstanding Mortgage balance Sh."000"	Mortgage rate (%)	Months remaining
1	215,000	6.75	200
2	185,000	7.75	185
3	125,000	7.25	192
4	100,000	7.00	210
5	200,000	6.50	180

Required:
(i)   The weighted average coupon (WAC) rate for the mortgage pool.   (3 marks)

(ii)   The weighted average maturity (WAM) for the mortgage pool.   (2 marks)
                                                                                  (Total: 20 marks)

QUESTION TWO
(a)   Explain the term "J-curve effect" as used in private equity valuation.   (2 marks)

(b)   Highlight three differences between a "buyout investment" and a "venture capital investment".   (3 marks)

(c) Examine four roles of third market and fourth market in alternative investments. (4 marks)

(d) A private equity fund has the following information about the yearly capital calls, operating results and distributions:

Year	Amount (Sh."million")					
	2012	2013	2014	2015	2016	2017
Capital called down	50	15	10	25	10	5
Realised results	0	0	10	35	40	80
Unrealised results	-5	-15	15	10	15	25
Distributions	-	-	-	25	45	75

Additional information:
1.   The management fee is set at 2%.
2.   The carried interest is 20%.
3.   The fund's committed capital is Sh.125 million.

Required:
The fund's net internal rate of return (IRR). (8 marks)

(e) The following information relate to a venture capital deal.

Terminal value (at time of exit)	Sh.5,000,000
Time to exit event	4 years
Amount of investment	Sh.1,000,000
Discount rate used by investors	25%
Number of existing shares owned by the entrepreneurs	200,000

Required:
The price per share of the venture capital deal. (3 marks)
(Total: 20 marks)

QUESTION THREE
(a) Distinguish between "contango" and "backwardation" in relation to commodities. (2 marks)

(b) An asset is priced at Sh.5,000. The risk-free rate is 9%. Futures contract on the asset expires in 45 days.

Assume a 365-day year.

Required:
(i)   The futures price assuming that the underlying asset has no storage cost, cash flow or convenience yield. (2 marks)

(ii)   The futures price assuming that the future value of storage cost on the underlying asset at expiration is Sh.500. (2 marks)

(iii) The futures price assuming that the future value of positive cash flows on the underlying asset is Sh.150. (2 marks)

(c) An index provider has created a new investable index that tracks the hedge fund industry. Any fund that follows a long/short strategy can enter the index. The index provider places new constituents in the index at the end of each year and incorporates the new fund's track record in the database.

In relation to the above statement, evaluate three biases inherent in the hedge fund databases that might distort the historical performance of the index. (6 marks)

(d) Cool Breeze Capital (CBC) is considering a leveraged buyout (LBO) of Optimax Capital which has been experiencing poor operating results over the last few years. The revenue and earnings before interest tax depreciation and amortisation (EBITDA) for Optimax Capital have been declining rapidly but CBC believe it has found a new management team that will stabilise Optimax Capital.

Optimax Capital currently has EBITDA of Sh.250 million and CBC believes that the new management team could keep EBITDA constant for the next five years.

CBC has obtained debt financing of Sh.750 million at an interest rate of 10% and Optimax Capital expects working capital to be a source of funds at a cost of Sh.6 million per year. It also requires capital expenditure of Sh.35 million per year. The corporation tax rate is 30%.

CBC plans to sell Optimax Capital after five years at an enterprise value to EBITDA multiple of 6.0x.

Additional information:
1. Assume that excess cash is not used to repay debt and instead accumulates on the balance sheet.
2. There are no transaction fees, zero minimum cash required and the property, plant and equipment on the balance sheet remain constant for the next five years.

Required:
The purchase price required for CBC to obtain a 3.0x multiple of invested capital (MOIC). (6 marks)

(Total: 20 marks)

QUESTION FOUR
(a) Onesmus Nyandiko is the manager of a portfolio containing mortgage pass-through securities. He is reviewing output of his firm's analytical system for several pass-through securities that are in the portfolio. Below is a portion of the report for three pass-through securities:

Price based on an assumed interest rate volatility of:

Pass-through (%)	11	13	15	16
Security 1	100	98	95	93
Security 2	92	90	88	87
Security 3	102	104	106	107

Required:
Comment on whether there is an error in the analytical system. (3 marks)

(b) Describe two ways in which a credit default swap could be settled. (4 marks)

(c) Explain the following tranches of a collateralised mortgage obligation (CMO):

    (i) Sequential pay tranche. (1 mark)

    (ii) The accrual tranche. (1 mark)

    (iii) The planned amortisation class (PAC) tranche. (1 mark)

    (iv) The support tranche. (1 mark)

(d) A collateralised debt obligation (CDO) has a Sh.100 million structure. The collateral consists entirely of bonds with 10 years remaining until maturity and a coupon rate which is equal to the 10 years treasury rate plus 300 basis point. The senior tranche represent Sh.65 million and carries a floating coupon rate equal to London Interbank Offered Rate (LIBOR) plus 60 basis point. There is Sh.7 million mezzanine tranche and has a fixed coupon equal to the treasury rate at origination plus 100 basis point. The manager of the trust has entered into an interest rate swap under which the trust will pay an annual fixed rate equal to the treasury rate plus 80 basis points and receive LIBOR. The notional amount for this swap is Sh.65 million.

The 10 year treasury rate is 6% at the time of origination.

Required:
Determine the return of the equity tranche that is created. (9 marks)

(Total: 20 marks)

QUESTION FIVE
(a) Discuss four common features of alternative investments. (4 marks)

(b) Describe two categories of infrastructure investments as a form of alternative investments. (2 marks)

(c) Explain the following terms in the context of private equity:

    (i)   Equity dry powder. (1 mark)

    (ii)   Mezzanine debt. (1 mark)

    (iii)   Distribution waterfall. (1 mark)

(d) Faida Hedge Fund has Sh.100 million assets under management (AUM) at the start of year 1. The Fund grows to Sh.120 million at the end of year 1. At the end of year 2, the value of the fund had declined to Sh.90 million. However, the value of the fund increased to Sh.140 million at the end of year 3.

The fund charges a management fee of 2% based on AUM and a 20% incentive fee with a high-watermark (HWM) provision for incentive fees.

Required:
Return to investors at the end of each year. (6 marks)

(e) A government sponsored mortgage backed security (MBS) is a 9% passthrough security issued on 1 March 2017 with a remaining term of 359 months. The 1 June 2018 and 1 July 2018 pool factors are 0.85150625 and 0.84732282 respectively.

Required:
The prepayment speed for the month of June 2018 using Public Securities Association (PSA). (5 marks)

(Total: 20 marks)

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Present Value of 1 Received at the End of n Periods:

$$PVIF_{r,n} = 1/(1+r)^n = (1+r)^{-n}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	.9901	.9804	.9709	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.8929	8772	.8696	.8621	.8475	.8333	.8065	.7813	.7576	.7353
2	.9803	.9612	.9426	.9246	.9070	.8900	.8734	.8573	.8417	.8264	.7972	.7695	.7561	.7432	.7182	.6944	.6504	.6104	5739	.5407
3	.9706	.9423	.9151	.8890	.8638	.8396	.8163	.7938	.7722	.7513	.7118	.6750	.6575	.6407	.6086	.5787	.5245	.4768	.4348	.3975
4	.9610	.9238	.8885	.8548	.8227	.7921	.7629	.7350	.7084	.6830	.6355	.5921	.5718	.5523	.5158	.4823	.4230	.3725	.3294	.2923
5	.9515	.9057	.8626	.8219	.7835	.7473	.7130	.6806	.6499	.6209	.5674	5194	.4972	.4761	.4371	.4019	.3411	.2910	.2495	.2149
6	.9420	.8880	.8375	.7903	.7462	.7050	.6663	.6302	.5963	.5645	.5066	.4556	.4323	.4104	.3704	.3349	.2751	.2274	.1890	.1580
7	.9327	.8706	.8131	.7599	.7107	.6651	.6227	.5835	.5470	.5132	.4523	.3996	.3759	.3538	.3139	.2791	.2218	.1776	.1432	.1162
8	.9235	.8535	.7894	.7307	.6768	.6274	.5820	.5403	.5019	.4665	.4039	.3506	.3269	.3050	.2660	.2326	.1789	.1388	.1085	.0854
9	.9143	.8368	.7664	.7026	.6446	.5919	.5439	.5002	.4604	.4241	.3606	3075	.2843	.2630	.2255	.1938	.1443	.1084	.0822	.0628
10	.9053	.8203	.7441	.6756	.6139	.5584	.5083	.4632	.4224	.3855	.3220	.2697	.2472	.2267	.1911	.1615	.1164	.0847	.0623	.0462
11	.8963	.8043	.7224	.6496	.5847	.5268	.4751	.4289	.3875	.3505	.2875	.2366	.2149	.1954	.1619	.1346	.0938	.0662	.0472	.0340
12	.8874	.7885	.7014	.6246	.5568	.4970	.4440	.3971	.3555	.3186	.2567	.2076	.1869	1685	.1372	.1122	.0757	.0517	.0357	.0250
13	.8787	.7730	.6810	.6006	.5303	.4688	.4150	.3677	.3262	.2897	.2292	.1821	.1625	.1452	.1163	.0935	.0610	.0404	.0271	.0184
14	.8700	.7579	.6611	.5775	.5051	.4423	.3878	.3405	.2992	.2633	.2046	.1597	.1413	.1252	.0985	.0779	.0492	.0316	.0205	.0135
15	.8613	.7430	.6419	.5553	.4810	.4173	.3624	3152	.2745	.2394	.1827	.1401	.1229	.1079	.0835	.0649	.0397	.0247	.0155	0099
16	.8528	.7284	.6232	.5339	.4581	.3936	.3387	.2919	.2519	.2176	.1631	.1229	.1069	.0930	.0708	.0541	.0320	.0193	.0118	.0073
17	.8444	.7142	.6050	.5134	.4363	.3714	.3166	.2703	.2311	.1978	.1456	.1078	.0929	.0802	.0600	.0451	.0258	.0150	.0089	.0054
18	.8360	.7002	.5874	.4936	.4155	.3503	.2959	.2502	.2120	.1799	.1300	.0946	.0808	.0691	.0508	.0376	.0208	.0118	.0068	.0039
19	.8277	.6864	.5703	.4746	.3957	.3305	.2765	.2317	.1945	.1635	.1161	.0829	.0703	.0596	.0431	.0313	.0168	.0092	.0051	.0029
20	.8195	.6730	.5537	.4564	.3769	.3118	.2584	.2145	.1784	.1486	1037	.0728	.0611	.0514	.0365	.0261	.0135	.0072	.0039	.0021
25	.7798	.6095	.4776	.3751	.2953	.2330	.1842	.1460	.1160	.0923	.0588	.0378	.0304	.0245	.0160	.0105	.0046	.0021	.0010	0005
30	.7419	.5521	.4120	.3083	.2314	.1741	.1314	.0994	.0754	.0573	.0334	.0196	.0151	.0116	.0070	.0042	.0016	.0006	.0002	.0001
40	.6717	.4529	.3066	.2083	.1420	.0972	.0668	0460	.0318	.0221	.0107	.0053	.0037	.0026	.0013	.0007	.0002	.0001		
50	.6080	.3715	.2281	.1407	.0872	.0543	.0339	.0213	.0134	.0085	.0035	.0014	.0009	.0006	.0003	.0001				
60	.5504	.3048	.1697	.0951	.0535	.0303	.0173	.0099	.0057	.0033	.0011	.0004	.0002	.0001						

* The factor is zero to four decimal places

Present Value of an Annuity of 1 Per Period for n Periods:

$$PVIF_{r,t} = \sum_{t=1}^{n} \frac{1}{(1+r)^t} = \frac{1 - \frac{1}{(1+r)^t}}{r}$$

Number of payments	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696	0.8621	0.8475	0.8333	0.8065	0.7813	0.7576
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6901	1.6467	1.6257	1.6052	1.5656	1.5278	1.4568	1.3916	1.3315
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4018	2.3216	2.2832	2.2459	2.1743	2.1065	1.9813	1.8684	1.7663
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.0373	2.9137	2.8550	2.7982	2.6901	2.5887	2.4043	2.2410	2.0957
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6048	3.4331	3.3522	3.2743	3.1272	2.9906	2.7454	2.5320	2.3452
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.1114	3.8887	3.7845	3.6847	3.4976	3.3255	3.0205	2.7594	2 5342
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1604	4.0386	3.8115	3.6046	3.2423	2.9370	2.6775
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6389	4.4873	4.3436	4.0776	3.8372	3.4212	3.0758	2.7860
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.3282	4.9464	4.7716	4.6065	4.3030	4.0310	3.5655	3.1842	2.8681
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6502	5.2161	5.0188	4.8332	4.4941	4.1925	3.6819	3.2689	2.9304
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	5.9377	5.4527	5.2337	5.0286	4.6560	4.3271	3.7757	3.3351	2.9776
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.1944	5.6603	5.4206	5.1971	4.7932	4.4392	3.8514	3.3868	3.0133
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.4235	5.8424	5.5831	5.3423	4.9095	4.5327	3.9124	3.4272	3.0404
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.6282	6.0021	5.7245	5.4675	5.0081	4.6106	3.9616	3.4587	3.0609
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	6.8109	6.1422	5.8474	5.5755	5.0916	4.6755	4.0013	3.4834	3.0764
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	6.9740	6.2651	5.9542	5.6685	5.1624	4.7296	4.0333	3.5026	3.0882
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.1196	6.3729	6.0472	5.7487	5.2223	4.7746	4.0591	3.5177	3.0971
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.2497	6.4674	6.1280	5.8178	5.2732	4.8122	4.0799	3.5294	3 1039
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.3658	6.5504	6.1982	5.8775	5.3162	4.8435	4.0967	3.5386	3.1090
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4694	6.5231	6.2593	5.9288	5.3527	4.8696	4.1103	3.5458	3 1129
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	7.8431	6.8729	6.4641	6.0971	5.4669	4.9476	4.1474	3.5640	3 1220
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.0552	7.0027	6.5660	6.1772	5.5168	4.9789	4.1601	3.5693	3 1242
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.2438	7.1050	6.6418	6.2335	5.5482	4.9966	4.1659	3.5712	3 1250
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605	6.2463	5.5541	4.9995	4.1666	3.5714	3 1250
60	44.9550	34.7609	27.6756	22.6235	18.9293	16.1614	14.0392	12.3766	11.0480	9.9672	8.3240	7.1401	6.6651	6.2402	5 5553	4.9999	4.1667	3.5714	3 1250