kasneb

CIFA PART III SECTION 5

ALTERNATIVE INVESTMENTS ANALYSIS

WEDNESDAY: 27 November 2019.   **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)   Examine four forms of regulations imposed by the market regulator in your country to ensure that systematic risks associated with alternative investments are minimised.   (4 marks)

(b)   Highlight four objectives of including real estate to an investment portfolio as an alternative asset class.   (4 marks)

(c)   Utopia Investment Bank recently hired you to be its portfolio assistant manager. One of your key client whose account you are managing has shown interest in diversifying his portfolio through investment in a commercial building real estate investment trust (CREIT). The following information regarding the CREIT you have recommended is as follows:

	Sh."000"
Estimated 12 months net operating income (NOI)	76,000
Funds from operation for the year ended 31 December 2018	66,500
Cash and cash equivalents	61,750
Accounts receivable	33,250
Non-cash rents	4,750
Debt and other liabilities	380,000
Recurring maintenance costs	14,250
Expected annual dividend to be paid in the year 2019	4,750

Additional information
1.   The number of outstanding ordinary shares amounted to 9.5 million.
2.   The dividend growth rate in the year 2020 and 2021 is expected to be 2% per annum and thereafter grow at 1% per annum from 2022 into perpetuity.
3.   The assumed capitalisation rate is 7.5%.
4.   The commercial building subsector average price-to-funds from operation (P/FFO) is 10 times while that of price-to-average funds from operation (P/AFFO) is 14 times.

Assume your cost of equity is 9% while the risk-free rate is 2%.

Required:
The value of CREIT using the following approaches:

(i)   The net asset value (NAV).   (3 marks)

(ii)   The price-to-funds from operation (P/FFO).   (3 marks)

(iii)   The price-to-average funds from operation (P/AFFO).   (3 marks)

(iv)   Through discounted cash flow (DCF) method.   (3 marks)

(Total: 20 marks)

QUESTION TWO

(a) (i) Propose two distribution waterfall methods that could be applied to facilitate the flow of accrued interest from a general partner to a limited partner in relation to private equity. (4 marks)

(ii) Zimera Fund is a private equity firm with interests in agricultural and building constructions. The firm has recently raised Sh.100 million capital with carried interest rate of 20%. Out of this fund, an investment to the tune of Sh.40 million is made and later in the year the firm will exit the investment and earn a profit of Sh.22 million.

Required:
Determine whether the general partner receives any carried interest under the waterfall distribution method. (4 marks)

(b) Describe four factors that could have contributed to the growth of the global distressed debt market in the recent past. (4 marks)

(c) Two financial analysts were tasked to analyse a potential investment in a leveraged buyout (LBO) of Rich Capital Limited. They seek to assess the expected gain if they elect to purchase all the preference shares and 90% of the ordinary shares in the LBO.
Details of the LBO include the following:
- The buyout requires an initial investment of Sh.10 million.
- Financing of the deal includes Sh.6 million in debt, Sh.3.6 million in preference shares that promises a 15% annual return paid at exit and Sh.0.4 million in ordinary shares. The expected exit value in six years is Sh.15 million with an estimated reduction in debt of Sh.2.8 million over the six years prior to exit.

Required:
The multiple of expected proceeds at exit to invested funds for the LBO investment. (5 marks)

(d) The coupon curve of prices for passthrough security for some months is as follows:

Coupon (%)	Price (Sh.)
7	94.00
8	97.06
9	99.50
10	102.60
11	105.25
12	106.19

Required:
The coupon curve duration for the 10% coupon passthrough. (3 marks)

(Total: 20 marks)

QUESTION THREE

(a) Evaluate three forms of internal credit enhancement as used in asset backed securities (ABS). (6 marks)

(b) Suggest two reasons why financial institutions originate synthetic balance sheet collateralised debt obligations (CDOs). (4 marks)

(c) The following information relates to property B which is eventually sold in year 10:

	Sh.
Purchase price	4,570,000
Expected net selling price	7,760,500
Expected gain on sale	4,710,500
Accumulated depreciation	1,520,000
Mortgage balance outstanding	1,140,000
Tax on depreciation recapture	30%
Tax on capital gains	5%

Required:
The after-tax equity reversion of property B. (4 marks)

(d) As a pension manager with Faraja Endowment Fund, you have made an investment in a venture capital fund known as "Hekima Fund" for 3 years commencing 2016. You have committed a capital of Sh.876 million and the performance of Hekima Fund is as shown below:

Year	Called down Sh."million"	Management fee Sh."million"	Operating results Sh."million"
2016	135	0.55	−95
2017	112	0.87	135
2018	337	1.39	455

You are also informed that the distribution waterfall calls for a 20% carried interest when the Net Asset Value (NAV) before distribution exceeds the committed capital.

Required:

(i) Calculate the year 2018 percentage management fee of the Hekima Fund. (3 marks)

(ii) Determine the net asset value (NAV) of the fund for the year 2018. (3 marks)

(Total: 20 marks)

QUESTION FOUR

(a) Explain three classes of protective covenants provided in a venture capital arrangement aimed at safeguarding the investors' interests. (3 marks)

(b) (i) Describe three types of participants in the commodities market. (3 marks)

(ii) A pension fund seeks to gain long exposure to commodities using the swap market. They analyse the performance of a long position in a commodity index total return swap having monthly resets and a notional amount of Sh.25 million. Selected data on the commodity index for the year 2019 is as presented below:

Reference date	Index level
April (swap initiation)	3042.35
May	3282.23
June	3225.21

The settlement date was June 2019.

Required:
The amount to be received or paid by the party that is long in the commodity index total return swap.

(3 marks)

(c) A pool of mortgage pass-through securities is used as a collateral for collateralised mortgage obligation (CMO) selling at a premium. One tranche in the deal, Tranche X is selling at a discount and another tranche Y is selling at a premium.

Required:

(i) Explain why a slowdown in prepayments will tend to increase the value of the collateral. (2 marks)

(ii) Compare and contrast the effect of a slowdown in prepayments on the value of tranche X and Y respectively. (2 marks)

(d) As a financial analyst for Liz Fund Managers, you have gathered the following data on a collateralised mortgage obligation (CMO) structure using Monte Carlo Simulation Model based on 12% volatility:

	Option adjusted spread (OAS) Basis points (BPS)	Z-spread Basis points (BPS)	Effective duration
Collateral tranche	90	130	8.0
PAC I A	60	70	2.0
PAC I B	80	90	4.0
PAC I C	40	130	6.0
PAC I D	40	160	10.0
PAC II A	90	180	5.0
PAC II B	30	300	7.0
Support A S1	40	190	12.0
Support A S2	60	210	15.0

Where: PAC – Planned Amortisation Class

Required:

(i)   Calculate the option cost for PAC I D, PAC II B and Support A S2.   (3 marks)

(ii)   Identify the PAC tranches that appear expensive in the above deal on a relative value basis.   (2 marks)

(iii)   Despite PAC II B low OAS of 30 basis points, explain why a yield buyer may be persuaded to purchase the PAC II B.   (2 marks)

   (Total: 20 marks)

QUESTION FIVE

(a)   In relation to hedge funds:

(i)   Assess three difficulties which could be experienced in applying traditional portfolio analysis to value hedge funds.   (6 marks)

(ii)   Argue three cases in favour of hedge fund replication strategy to manage hedge funds.   (6 marks)

(b)   The current cash price of one barrel of Brent Crude Oil is Sh.10,000 while the three month future price is Sh.9,800 per barrel. The annual cost of funding is 4% and the annual storage cost is 5%.

Required:
The convenience yield.   (2 marks)

(c)   An analysts observes the following futures prices for an agricultural commodity trading on a global futures market:

Commodity	January 2020	February 2020	March 2020	April 2020
30 December 2019	57.98	61.04	62.09	62.35
31 January 2020		68.35	67.92	68.74
28 February 2020			61.10	61.41
31 March 2020				60.57

Required:
Calculate the following:

(i)   Futures return for January 2020.   (2 marks)

(ii)   Spot return for February 2020.   (2 marks)

(iii)   The roll return for March 2020.   (2 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	.5674	.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:

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

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	6.6231	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