



UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

2nd SEMESTER 2008/2009

**PROGRAMME: BSc. AGRICULTURAL ECONOMICS &
AGRIBUSINESS MANAGEMENT**

COURSE CODE: AEM 407

TITLE OF PAPER: AGRICULTURAL FINANCE

TIME ALLOWED: TWO (2) HOURS

**INSTRUCTIONS: Candidates are required to answer QUESTION 1
and any other TWO of the THREE remaining
questions.**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR.**

Question 1

Consider a producer who is improving pasture land and expanding a beef cow herd by 200 cows. The budget indicates that E80,000 of net-cash income is available each year for debt servicing, consumption, or other sizes. This is part of the information needed to evaluate the financial feasibility of the investment. Additional information includes loans size, interest rate , and loan length. Suppose that the investor formulates estimates for four of these variables:

Case A: The beef investor projects the application of E80,000.00 annually to debt servicing. For an annual interest of 14% and a seven-year loan, what is the maximum size loan that can be serviced? Calculate using the model and evaluate your answers. *(10 marks)*

Case B: What is the annual debt (principal and interest) payment on a loan, loan size in Case A per hectare with an interest rate of 14% and a seven-year maturity. Evaluate your answer. *(10 marks)*

Case C: What is the maximum interest rate for a loan in Case A for seven-years when E80,000.00 is available annually for debt servicing? Evaluate. *(10 marks)*

Case D: What is the minimum length of loan needed for a loan in Case A when E80,000.00 is available annually for debt servicing and the interest rate is 14%? Evaluate. *(10 marks)*

Question 2

a) Most investment decisions involve a large element of uncertainty about the future, and they are taken in the expectation of returns that might not materialize fully, or that might result in losses. The investment dilemma is how to maximize returns from investments at the same time minimize the associated risk. To achieve this, the first step that most investors take is to reduce risk by holding a diversified portfolio. Explain what this means to you and its advantages to the investor. *(10 marks)*

b) Assume you have been asked by the management of the University of Swaziland which is contemplating of removing agricultural finance as one of the courses offered by its Department of Agricultural Economics and Management. The management is of the opinion that such a course is irrelevant to the needs of the country since the country's agriculture is dominated by smallholder farmers who make very minimal use of cash in their farming systems. Attempt to convince the management that the study of agricultural finance is and is becoming increasingly important. *(10 marks)*

c) Describe with an illustration the principle of increasing risk, using a hypothetical example as we did in class, and discuss the impacts of leveraging on owner equity with an equal percentage gain and loss on total capital used in the business. *(10 marks)*

Question three

a) Underlying the portfolio approach to decision-making is the contention that by combining a number of risky assets into a portfolio, some degree of income stabilization can be achieved without impairing the expected profit. How would you explain this proposition to a lay man on the street? *(10 marks)*

b) It is well known that additional leverage would increase the rate of firm growth, yet, internal capital rationing limit the use of financial leverage to generally accepted levels. Comment on this. *(10 marks)*

c) Using an example, explain the effect of inflation on the cost of capital. *(10 marks)*

Question four

Many critics of markets (both commodity and financial) point to the market bubbles and crises as evidence that markets do not work. For instance, both financial and commodity market turmoil last year (2008) are pointed to as backing for the statement that free markets are the source of the problem and not the solution

- a) Discuss two counter arguments that can be offered, *(10 marks)*
- b) Explain the four squared firm chart providing all the objective Classical functions in the four blocks and further telling the King of the Kingdom of Swaziland what can go wrong within the chart *(20 marks)*

APPENDIX TABLE IV
 Present Value of a Uniform Ser.

$$V_0 = \$1 \left[\frac{1 - (1+i)^{-n}}{i} \right]$$

n	.5%	.75%	1%	1.5%	2%	3%	4%	5%	6%	7%
1	.9950	.9926	.9901	.9852	.9804	.9709	.9615	.9524	.9434	.9346
2	1.9851	1.9777	1.9704	1.9559	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080
3	2.9702	2.9556	2.9410	2.9122	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243
4	3.9505	3.9261	3.9020	3.8544	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872
5	4.9259	4.8894	4.8534	4.7826	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002
6	5.8964	5.8456	5.7955	5.6972	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665
7	6.8621	6.7946	6.7282	6.5982	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893
8	7.8230	7.7366	7.6517	7.4859	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713
9	8.7791	8.6716	8.5660	8.3605	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152
10	9.7304	9.5996	9.4713	9.2222	8.9926	8.5302	8.1109	7.7217	7.3601	7.0236
11	10.6770	10.5207	10.3676	10.0711	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987
12	11.6189	11.4349	11.2551	10.9075	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427
13	12.5562	12.3423	12.1337	11.7315	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577
14	13.4887	13.2430	13.0037	12.5434	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455
15	14.4166	14.1370	13.8651	13.3432	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079
16	15.3399	15.0243	14.7179	14.1313	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466
17	16.2586	15.9050	15.5623	14.9076	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632
18	17.1728	16.7792	16.3983	15.6726	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591
19	18.0824	17.6468	17.2260	16.4262	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356
20	18.9874	18.5080	18.0456	17.1686	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940
24	22.5629	21.8891	21.2434	20.0304	18.9139	16.9355	15.2470	13.7986	12.5504	11.4693
25	23.4456	22.7188	22.0232	20.7196	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536
30	27.7941	26.7751	25.8077	24.0158	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090
36	32.8710	31.4468	30.1075	27.6607	25.4888	21.8323	18.9083	16.5469	14.6210	13.0352
40	36.1722	34.4469	32.8347	29.9158	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317
48	42.5803	40.1848	37.9740	34.0426	30.6731	25.2667	21.1951	18.0772	15.6500	13.7305
50	44.1428	41.5664	39.1961	35.9997	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007
60	51.7256	48.1734	44.9550	39.3803	34.7609	27.6756	22.6235	18.9293	16.1614	14.0392

(Continued)

APPENDIX TABLE IV (Continued)

n	8%	9%	10%	11%	12%	13%	14%	15%	16%
1	.9259	.9174	.9091	.9009	.8929	.8850	.8772	.8696	.8621
2	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052
3	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459
4	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982
5	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743
6	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8889	3.7845	3.6847
7	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386
8	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436
9	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065
10	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332
11	7.1390	6.8052	6.4951	6.2065	5.9377	5.6868	5.4527	5.2337	5.0286
12	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971
13	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423
14	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675
15	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755
16	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685
17	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487
18	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178
19	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775
20	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288
24	10.5288	9.7066	8.9847	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971
25	10.6748	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971
30	11.2578	10.2737	9.4269	8.6938	8.0552	7.4959	7.0027	6.5660	6.1772
36	11.7172	10.6118	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201
40	11.9246	10.7574	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335
48	12.1891	10.9336	9.8969	9.0302	8.2972	7.6705	7.1296	6.6585	6.2450
50	12.2335	10.9617	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463
60	12.3766	11.0480	9.9672	9.0736	8.3240	7.6873	7.1401	6.6651	6.2492

(Continued)

APPENDIX TABLE IV (Continued)

n	17%	18%	19%	20%	21%	22%	23%	24%	25%
1	.8547	.8475	.8402	.8333	.8264	.8197	.8130	.8065	.8000
2	1.5852	1.5656	1.5465	1.5278	1.5095	1.4915	1.4740	1.4568	1.4400
3	2.2096	2.1743	2.1399	2.1065	2.0739	2.0422	2.0114	1.9813	1.9520
4	2.7432	2.6901	2.6386	2.5887	2.5404	2.4936	2.4483	2.4043	2.3616
5	3.1993	3.1272	3.0576	2.9906	2.9260	2.8636	2.8035	2.7454	2.6893
6	3.5892	3.4976	3.4098	3.3255	3.2446	3.1669	3.0923	3.0205	2.9514
7	3.9224	3.8115	3.7057	3.6046	3.5079	3.4155	3.3270	3.2423	3.1611
8	4.2072	4.0776	3.9544	3.8372	3.7256	3.6193	3.5179	3.4212	3.3289
9	4.4506	4.3030	4.1633	4.0310	3.9054	3.7863	3.6731	3.5655	3.4631
10	4.6586	4.4941	4.3389	4.1925	4.0541	3.9232	3.7993	3.6819	3.5705
11	4.8364	4.6560	4.4865	4.3271	4.1769	4.0354	3.9018	3.7757	3.6564
12	4.9884	4.7932	4.6105	4.4392	4.2784	4.1274	3.9852	3.8514	3.7251
13	5.1183	4.9095	4.7147	4.5327	4.3624	4.2028	4.0530	3.9124	3.7801
14	5.2293	5.0081	4.8023	4.6106	4.4317	4.2646	4.1082	3.9616	3.8241
15	5.3242	5.0916	4.8759	4.6755	4.4890	4.3152	4.1530	4.0013	3.8593
16	5.4053	5.1624	4.9377	4.7296	4.5364	4.3567	4.1894	4.0333	3.8874
17	5.4746	5.2223	4.9897	4.7746	4.5755	4.3908	4.2190	4.0591	3.9099
18	5.5339	5.2732	5.0333	4.8122	4.6079	4.4187	4.2431	4.0799	3.9279
19	5.5845	5.3162	5.0700	4.8435	4.6346	4.4415	4.2627	4.0967	3.9424
20	5.6278	5.3527	5.1009	4.8696	4.6567	4.4603	4.2786	4.1103	3.9539
24	5.7465	5.4509	5.1822	4.9371	4.7128	4.5070	4.3176	4.1428	3.9811
25	5.7662	5.4669	5.1951	4.9476	4.7213	4.5139	4.3232	4.1474	3.9849
30	5.8294	5.5168	5.2347	4.9929	4.7569	4.5419	4.3391	4.1601	3.9950
36	5.8617	5.5412	5.2531	4.9966	4.7596	4.5439	4.3467	4.1659	3.9987
40	5.8713	5.5482	5.2582	4.9966	4.7596	4.5439	4.3467	4.1659	3.9995
48	5.8792	5.5536	5.2619	4.9992	4.7614	4.5451	4.3476	4.1665	3.9999
50	5.8801	5.5541	5.2623	4.9995	4.7616	4.5452	4.3477	4.1666	3.9999
60	5.8819	5.5553	5.2630	4.9999	4.7619	4.5454	4.3478	4.1667	4.0000

APPENDIX TABLE II
Present Value of \$1.00
 $V_0 = \$1(1 + i)^{-n}$

n	.5%	.75%	1%	1.5%	2%	3%	4%	5%	6%	7%
1	.9950	.9926	.9901	.9852	.9804	.9709	.9615	.9524	.9434	.9346
2	.9901	.9852	.9803	.9707	.9612	.9426	.9246	.9070	.8900	.8734
3	.9851	.9778	.9706	.9563	.9423	.9151	.8890	.8638	.8396	.8163
4	.9802	.9706	.9610	.9422	.9238	.8885	.8548	.8227	.7921	.7629
5	.9754	.9633	.9515	.9283	.9057	.8626	.8219	.7835	.7473	.7130
6	.9705	.9562	.9420	.9145	.8880	.8375	.7903	.7462	.7050	.6663
7	.9657	.9490	.9327	.9010	.8706	.8131	.7599	.7107	.6651	.6227
8	.9609	.9420	.9235	.8877	.8535	.7894	.7307	.6768	.6274	.5820
9	.9561	.9350	.9143	.8746	.8368	.7664	.7026	.6446	.5919	.5439
10	.9513	.9280	.9053	.8617	.8203	.7441	.6756	.6139	.5584	.5083
11	.9466	.9211	.8963	.8489	.8043	.7224	.6496	.5847	.5268	.4751
12	.9419	.9142	.8874	.8364	.7885	.7014	.6246	.5568	.4970	.4440
13	.9372	.9074	.8787	.8240	.7730	.6810	.6006	.5303	.4688	.4150
14	.9326	.9007	.8700	.8118	.7579	.6611	.5775	.5051	.4423	.3878
15	.9279	.8940	.8613	.7999	.7430	.6419	.5553	.4810	.4173	.3624
16	.9233	.8873	.8528	.7880	.7284	.6232	.5339	.4581	.3936	.3387
17	.9187	.8807	.8444	.7764	.7142	.6050	.5134	.4363	.3714	.3166
18	.9141	.8742	.8360	.7649	.7002	.5874	.4936	.4155	.3503	.2959
19	.9096	.8676	.8277	.7536	.6863	.5703	.4746	.3957	.3305	.2765
20	.9051	.8612	.8195	.7425	.6730	.5537	.4564	.3769	.3118	.2584
24	.8872	.8358	.7876	.6995	.6217	.4919	.3901	.3101	.2470	.1971
25	.8828	.8296	.7798	.6892	.6095	.4776	.3751	.2953	.2330	.1842
30	.8610	.7992	.7419	.6398	.5521	.4120	.3083	.2314	.1741	.1314
36	.8356	.7641	.6989	.5851	.4902	.3450	.2437	.1727	.1227	.0875
40	.8191	.7416	.6717	.5513	.4529	.3066	.2083	.1420	.0972	.0668
48	.7871	.6986	.6203	.4894	.3865	.2420	.1522	.0961	.0610	.0389
50	.7793	.6883	.6080	.4750	.3715	.2281	.1407	.0872	.0543	.0339
60	.7414	.6387	.5504	.4093	.3048	.1697	.0951	.0535	.0303	.0173

(Continued)

APPENDIX TABLE II (Continued)

n	8%	9%	10%	11%	12%	13%	14%	15%	16%
1	.9259	.9174	.9091	.9009	.8929	.8850	.8772	.8696	.8621
2	.8573	.8417	.8264	.8116	.7972	.7831	.7695	.7561	.7432
3	.7938	.7722	.7513	.7312	.7118	.6931	.6750	.6575	.6407
4	.7350	.7084	.6830	.6587	.6355	.6133	.5921	.5718	.5523
5	.6806	.6499	.6209	.5935	.5674	.5428	.5194	.4972	.4761
6	.6302	.5963	.5645	.5346	.5066	.4803	.4556	.4323	.4104
7	.5835	.5470	.5132	.4817	.4523	.4251	.3996	.3759	.3538
8	.5403	.5019	.4665	.4339	.4039	.3762	.3506	.3269	.3050
9	.5002	.4604	.4241	.3909	.3606	.3329	.3075	.2843	.2630
10	.4632	.4224	.3855	.3522	.3220	.2946	.2697	.2472	.2267
11	.4289	.3875	.3505	.3173	.2875	.2607	.2366	.2149	.1954
12	.3971	.3555	.3186	.2858	.2567	.2307	.2076	.1869	.1685
13	.3677	.3262	.2897	.2575	.2292	.2042	.1821	.1625	.1452
14	.3405	.2992	.2633	.2320	.2046	.1807	.1597	.1413	.1252
15	.3152	.2745	.2394	.2090	.1827	.1599	.1401	.1229	.1079
16	.2919	.2519	.2176	.1883	.1631	.1415	.1229	.1069	.0930
17	.2703	.2311	.1978	.1696	.1456	.1252	.1078	.0929	.0802
18	.2502	.2120	.1799	.1528	.1300	.1108	.0946	.0808	.0691
19	.2317	.1945	.1635	.1377	.1161	.0981	.0829	.0703	.0596
20	.2145	.1784	.1486	.1240	.1037	.0868	.0728	.0611	.0514
24	.1577	.1264	.1015	.0817	.0659	.0532	.0431	.0349	.0284
25	.1460	.1160	.0923	.0736	.0588	.0471	.0378	.0304	.0245
30	.0994	.0754	.0573	.0437	.0334	.0256	.0196	.0151	.0116
36	.0626	.0449	.0323	.0234	.0169	.0123	.0089	.0065	.0048
40	.0460	.0318	.0221	.0154	.0107	.0075	.0053	.0037	.0026
48	.0249	.0160	.0103	.0067	.0043	.0028	.0019	.0012	.0008
50	.0213	.0134	.0085	.0054	.0035	.0022	.0014	.0009	.0006
60	.0099	.0057	.0033	.0019	.0011	.0007	.0004	.0002	.0001

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