

Name, matriculation number _____

Examination: 20029 – Corporate Finance **Summer Term 2010**
Examiner: Prof. Dr. Peter Reichling
Time available: 60 minutes

Aids permitted: non-programmable pocket calculators;
English dictionaries without any markings.

The examination comprises **two** problems. All of them are to be solved. Answers must be given in **English**. **Good luck!**

Problem 1 (30 Points)

ABC Corporation shows the following forecast balance sheet and income statement data (in millions of dollars):

Balance Sheet

	2011	2012	2013	2014
Assets:				
Intangible assets	100	100	200	150
Property, plant, equipment	800	880	950	900
Non-current financial assets	300	350	330	360
Non-current assets	1,200	1,330	1,480	1,410
Inventories	200	300	200	120
Trade receivables	200	210	230	220
Current financial assets	400	420	440	460
Trading-securities	250	270	280	290
Cash and cash equivalents	400	350	380	400
Current assets	1,450	1,550	1,530	1,490
Balance sheet total	2,650	2,880	3,010	2,900
Equity and Liabilities:				
Share capital	160	188	200	190
Additional paid-in capital	500	532	560	560
Retained Earnings	50	80	110	120
Equity	710	800	870	870
Provisions for pensions	90	150	150	200
Non-current financial liabilities	600	680	600	580
Non-current liabilities	690	830	750	780
Other current provisions	200	240	380	400
Trade payables	250	210	230	200
Current financial liabilities	800	800	780	650
Current liabilities	1,250	1,250	1,390	1,250
Balance sheet total	2,650	2,880	3,010	2,900

Income Statement

	2011	2012	2013	2014
Sales	3,000	3,500	3,600	4,000
Costs of goods sold	1,000	1,200	1,250	1,500
Gross profit	2,000	2,300	2,350	2,500
Marketing and selling expenses	200	300	400	400
Research and development expenses	100	120	100	200
Operating result	1,700	1,880	1,850	1,900
Unrealized gains/losses on investments	-20	20	10	10
Interest income	30	45	40	45
Interest expense	40	50	45	48
Profit before tax	1,670	1,895	1,855	1,907
Taxes on income	501	568,5	556,5	572,1
Net income	1,169	1,326.5	1,298.5	1,334.9

15 % of the income statement position “costs of goods sold” include depreciation. The company is taxed at the rate of 30 %.

Additionally the following data of ABC is given:

ABC's cost of equity	10 %
ABC's cost of debt	7 %
ABC's debt ratio (in market values)	20 %

- Calculate the weighted average cost of capital of this company.
- Compute the forecast free cash flows using the **INDIRECT** method for the next four years. Non-current assets in 2010 amount to 1000 million dollars. Net working capital in 2010 is 250 million dollars.
- Assuming constant free cash flows starting from 2014, calculate the value of the firm and its equity value. The debt value in 2010 amounts to 3,000 million dollars.

Problem 2 (30 Points)

- a) Sketch the efficient frontier and the SML if shortsales are prohibited. Explain why there is or there is no linear relationship between stock returns and corresponding beta coefficients.
- b) In which cases do the Treynor and Sharpe Ratios lead to identical results? Show the proof for your answer.
- c) Consider the following data for portfolio F and the market portfolio:

	Expected return	Volatility	Beta
Portfolio F	10%	15%	0.8
Market portfolio M	8%	13 %	1.0

The risk-free rate of return amounts to 5%. Compute the net selectivity of portfolio F .

- d) The company has to pay back a loan of 50,000 euro in four years. The assets of the corporation are worth 300,000 euro. The volatility of the assets is 40% and its continuously compounded rate of return amounts to 10% p.a. Compute the default probability of the loan, if the risk-free rate is 5 % p.a.
- e) Explain briefly the principle of the risk premium and risk discount valuation methods. Write the corresponding general formulas down.
- f) Explain the principle to value swaps. State the general formulas for that.



Cumulative Standard Normal Distribution

x	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7034	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9773	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9983	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9990	0.9993	0.9995	0.9997	0.9998	0.9998	0.9999	0.9999	1.0000