



EXAMINATION I:

Economics

Corporate Finance

**Financial Accounting and
Financial Statement Analysis**

Equity Valuation and Analysis

Questions

Final Examination

March 2007

Question 1: Economics**(43 points)**

By the end of June 1991, India's foreign currency reserves had declined to USD 975 million, hardly enough to pay for two weeks of imports, manifesting symptoms of a balance of payments crisis. The annual inflation rate was soaring above 16 per cent and the GDP growth rate (for 1991) was less than 1 per cent.

- a) What are two major components of the balance of payments besides the current account? Explain how the current account leads to a balance of payment crisis? (8 points)

The 1991 balance of payments crisis was turned into an opportunity by the Indian government to re-set the direction of the economy by liberalizing the economy and through reforms in various sectors. Ten years later in May 2001 the picture provided a sharp contrast. Foreign currency reserves were 43 billion USD, equivalent to nine months of imports. The current account deficit was close to 1 per cent of GDP, and the GDP growth rate was itself among the highest in the world, having accelerated to 7.25 per cent by the mid 1990s.

	1997	1998	1999	2000	2001
Current Account (in million USD)	-550	-4038	-4698	-2579	782

- b) As seen in the table above, the current account has been showing a deficit from 1997 to 2000. Was this a sign of economic weakness? Explain. (5 points)

The Indian currency market had been tightly controlled since independence in 1947 and the Indian Rupee was highly overvalued until 1991 when the exchange rate system was transformed in less than two years from a discretionary, basket-pegged system to a largely market-determined unified exchange rate.

- c) Before 1991, if India wanted to maintain the option of conducting an independent monetary policy as well as having a fixed exchange rate, what would be its effect on capital mobility? (5 points)

Currently, although the exchange rate system in India is supposed to be a free float, the RBI (Reserve Bank of India) intervenes in the market at regular intervals to direct the movement in Rupee values. The intervention by the RBI in the market could be passive (whereby RBI does not directly intervene) or active (whereby the RBI itself purchases or sells dollars in the market). Therefore, it may well be stated that the exchange rate system in India is not exactly a free float.

- d) How is the exchange rate determined in a free float system? What are the undesirable features of a free float exchange rate system? (8 points)

A comparison of the inflation rates in India vis-à-vis the United States is shown below.

Country	Subject Description	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
India	Inflation, Index, 2000=100	75.697	81.12	91.853	96.145	100	103.78	108.24	112.36	116.59	121.54
India	Inflation, annual percent change (Percent)	9	7.2	13.2	4.7	4	3.8	4.3	3.8	3.8	4.2
United States	Inflation, Index, 2000=100	91.095	93.225	94.667	96.743	100	102.82	104.45	106.84	109.69	113.4
United States	Inflation, annual percent change (Percent)	2.9	2.3	1.5	2.2	3.4	2.8	1.6	2.3	2.7	3.4

Source: IMF's WORLD ECONOMIC OUTLOOK Database, April 2006

- e) Is there any relation between the inflation rate of a country and the exchange rate of its currency vis-à-vis another currency? Firstly, explain it verbally. Then express it mathematically. Based on the inflation data above, what can you say about the exchange rate of the India Rupee against the US dollar over the period under consideration?

(11 points)

The actual exchange rate between the Indian rupee (INR) and the US dollar (USD) from 2002 is given below:

	Jan 2002	Jan 2003	Jan 2004	Jan 2005
INR for 1 USD	48.344	48.12	45.69	43.47

- f) Do the above exchange rate values correspond with your answer to sub-question e)? If not, what could be the possible reasons for such a mis-match? Give 3 reasons. (6 points)

Question 2: Corporate finance and Equity**(60 points)**

The conglomerate NOVA recently has been the target of various hedge funds that specialize in finding companies that operate inefficiently in order to exploit the value potential through operating and financial restructuring. This strategy is based on the assumption that sooner or later firms are fairly valued by the capital markets. NOVA derives its operating cash flows primarily from the business unit A (“unit A”) that is producing robots for industrial production processes. Due to inefficiencies in the processes and organisation of all the other business units B (“unit B”), they are dependent on the cash flows from the “robot”-unit. This negatively impacts the cash flows available for NOVA’s shareholders and the value of the firm.

The hedge funds are making the following proposals for the upcoming annual shareholder meeting:

- Make a complete change of NOVA’s management team.
- Sell off all the other business units except for unit A.
- Distribute the cash raised in the sell-offs to make a share repurchase and to increase the dividend.

You are working as an analyst at SES Investment, an institutional investor having a 5% stake in NOVA. In order to make a decision on the voting at the annual shareholder meeting, you are asked to evaluate the proposed measures and their impact on the holdings of SES Investment.

Using various databases you collect the following information:

	Unit A (“Robot-unit”)	Unit B (All other units combined)
Revenues (mio EUR)	200	100
Variable Cost Margin	50%	70%
Fixed Costs (mio EUR)	20	15
Depreciation (mio EUR)	10	15
Tax Rate	30%	30%
Beta of Equity* (leveraged beta)	1.1	1.4
Leverage (Debt/Equity)	0.5	0.5
Borrowing Rate	6%	6%

* estimate by the hedge funds

The risk-free rate and the expected return of the market portfolio are 4% and 14%, respectively. Using the last 60 months data the current beta of equity for NOVA is 1.2. Because of the current lack of innovation and ideas it is expected that all the business units of NOVA grow at an annual rate of 2.0% which is in line with the long-term inflation outlook.

a)

- a1) Calculate the current market value of NOVA based on this information. (Round up to one decimal place) (16 points)

- a2) The hedge funds suggest valuing unit A and unit B separately because of a difference in risks. They estimate that the beta of equity for unit A is 1.1 and for unit B 1.4. Explain the concept of “division-specific” cost of capital and its relevance in the case for your project evaluation. Calculate the market value for NOVA by valuing both units separately. (8 points)

Assume that the hedge funds are successful in replacing the management of NOVA which then implements the new strategies. First they restructure all business units with the following outcome. For unit A they are able to reduce the variable cost margin to 40% and to increase the leverage ratio to 2.0 by issuing new debt and buying back shares. The result is an increase in the growth rate of cash flows of 10% for the next two years and 5% thereafter.

b)

b1)

- i) Calculate the new cost of equity capital for unit A (assume that the systematic risk of debt is zero). (8 points)
- ii) Explain the concept of leverage and why the cost of equity has to change as leverage changes. Explain the results within the Modigliani and Miller framework. You can answer verbally or can use a graph for your explanations (in case of a graph, show at least lines for the costs of equity, costs of debt, and WACC). (4 points)
- iii) Calculate the new WACC. Why is there an impact on the WACC? (Assume that cost of debt remains unchanged or clearly specify which value you apply for the cost of debt.) (5 points)

b2)

- i) Calculate the new market value for unit A. (7 points)
- ii) What are the three factors of a dividend growth model that lead to an increase in market value of the firm? (3 points)

For unit B the new management is able to reduce the variable cost margin to 50% and the fixed cost to 10 million EUR. The financial structure stays the same. The restructuring results in an expected annual growth rate of the cash flows of 4%.

- c) Calculate the price at which the business unit B could be sold to another firm. (5 points)
- d) The hedge funds suggest buying back shares and increasing the dividend payout. Explain why these measures could result in a stock price increase. Would your arguments change in the framework of Modigliani-Miller? (4 points)

Question 3: Equity Valuation and Analysis**(27 points)**

IT Corporation was established just a year ago and is planning a EUR 5 million equity financing so that it can begin fully-fledged operations. Mr. Young, a venture capitalist, is considering purchasing newly issued shares of IT and then selling his equity when the company goes public. According to the business plan submitted by the IT management team, IT Corporation plans to go public in five years time with net income of EUR 20 million. It anticipates a price earnings ratio (PER) at the time of the IPO of 30, which is the industry average. IT currently has 1 million shares issued and outstanding and no plans for further stock issues or dividend payments until the IPO. Mr. Young thinks that the required rate of return on IT equity should be 50%.

- a) Calculate the total market capitalization (theoretical price) after the equity financing of IT from Mr. Young's perspective. (6 points)
- b) Calculate the share price at which Mr. Young should purchase new shares of IT. (6 points)
- c) It is common for venture capitalists to employ extremely high required rates of return of between 40% and 100% when making equity investments in new startups. Discuss two reasons why privately-held startups are required to have far higher rates of return than publicly-traded companies. (4 points)
- d) "Real options" are the options, inherent in corporate management and business operations, to modify, cancel and defer investment projects as conditions warrant. It is possible to use option valuation theory to calculate the impact of this inherent flexibility in corporate management on the value of an investment project or a company as a whole.
 - d1) Mr. Young is considering applying the "real option" approach to evaluate venture capital investments. Discuss why the real option approach is considered to be a suitable evaluation method for venture capital investments. (5 points)
 - d2) Briefly explain, in general, under which circumstances it might be better to use real options to value projects and list three examples you can think of. (6 points)

Question 4: Financial Accounting**(50 points)**

Sky Ltd is a production company for consumer goods. The 2006 financial statements of Sky Ltd will be prepared according to IAS/IFRS. Assume you are the chief accountant of Sky Ltd and have to answer some questions.

a) Measurement of assets

a1) Buildings

Sky Ltd acquired all their buildings at a price of 4,000 kCU (= thousand Cash Units) on 1 January 2000. Sky Ltd includes the buildings according to the cost model. This means that the buildings are carried at their historical cost less any accumulated depreciation and impairment losses. Sky Ltd depreciates the buildings using the straight line method over a useful life of 40 years and there will be no residual value after the useful life period. No impairment losses were generated in the past.

Calculate the impact on the equity of Sky Ltd on 31 December 2006 assuming that Sky Ltd would apply the revaluation model (instead of the cost model) and the fair value of the buildings would account 3,800 kCU on 31 December 2006. Do not consider any income taxes. (4 points)

a2) Inventory

Sky Ltd calculates the carrying amount of its inventory according to the WAC (weighted average cost) method. Using the following inventory changes, calculate the carrying amount on 31 August.

Inventory Changes

- inventory on	1 August :	20,000 units at 20.00 CU
- purchases:	9 August:	6,000 units at 22.00 CU
	22 August:	8,000 units at 19.00 CU
- sales:	25 August:	18,000 units

(4 points)

b) Acquisition

Sky Ltd is thinking about the following investments by 31 December 2006:

- 60% of the shares of Earth Ltd at 5,000,000 CU
- 50% of the shares of Water Ltd at 5,000,000 CU

The acquisition of 60% of the shares of Earth Ltd would mean that Earth Ltd would be controlled as a full subsidiary by Sky Ltd.

The acquisition of 50% of the shares of Water Ltd would mean that Water Ltd would be jointly controlled by Sky Ltd and another joint venture partner.

Assume that Sky Ltd recognizes its interests in joint ventures using the proportionate consolidation method and full fair value approach.

- b1) The values of assets and liabilities of Earth Ltd expected on 31 December 2006 are as follows (in kCU):

Earth Ltd	At historical costs	At fair value
Assets		
Customer lists	0	3,500
Software	500	750
Buildings	5,000	6,000
Other assets	2,500	2,500
Liabilities		
Provisions	1,500	1,250
Other Liabilities	4,000	4,000

The values of assets and liabilities of Water Ltd expected on 31 December 2006 are as follows (in kCU):

Water Ltd	At historical costs	At fair value
Assets		
Inventories	400	600
Software	1,500	2,000
Buildings	8,000	10,000
Other assets	4,000	4,000
Liabilities		
Provisions	2,100	2,000
Other Liabilities	8,000	8,000

Calculate the goodwill arising from the potential investments in shares of Earth Ltd and Water Ltd. Do not consider deferred taxes. (8 points)

- b2) Calculate the minority interests of Earth Ltd and Water Ltd which would be presented in the consolidated financial statement of Sky Ltd (on 31 December 2006). (4 points)
- b3) Assume that Sky Ltd will conduct the investments in Earth Ltd and Water Ltd. Total assets of Sky Ltd (stand-alone) would be 70,000 kCU by 31 December 2006 (including the investments in Earth Ltd and Water Ltd). Furthermore assume that Sky Ltd has no further investments in companies.

Calculate the expected total assets of the Sky Ltd Group (consolidated financial statement) on 31 December 2006. (7 points)

b4) Assume that Sky Ltd will conduct the investment in Earth Ltd and Water Ltd. The expected revenues for 2007 are as follows:

Sky Ltd

Revenues with third parties	20,000 kCU
Revenues with Earth Ltd	5,000 kCU
Revenues with Water Ltd	8,000 kCU

Earth Ltd

Revenues with third parties	5,000 kCU
Revenues with Sky Ltd	2,000 kCU
Revenues with Water Ltd	2,000 kCU

Water Ltd

Revenues with third parties	10,000 kCU
Revenues with Sky Ltd	4,000 kCU

Calculate the expected consolidated revenues of Sky Ltd Group (consolidated financial statement) for 2007. Assume that Sky Ltd will have no further investments in companies. (8 points)

c) Cash Flow Statement

c1) What are the three basic cash flow sections (sub-totals) of a cash flow statement? Describe briefly the content of these three sections. (6 points)

c2) Assign the following items to the three basic cash flow sections of the cash flow statement.

- Dividends paid
- Cash received from sale of products
- Cash received from disposal of production facilities
- Cash paid for inventories
- Cash paid for acquisition of company shares.
- Salary payment

(6 points)

c3) What are the two methods of presenting the cash flow from operating activities? Give a brief description! (3 points)