Certified International Investment Analyst

EXAMINATION I

Economics

Corporate Finance

Financial Accounting and Financial Statement Analysis

Equity Valuation and Analysis

Questions

Final examination

March 2016

Question 1: Economics **(38 points)**

The first two rows of Table 1 document the evolution of Greece's net exports and net primary income received from abroad (NIRA, including transfers) from 2011 through 2013. All numbers are expressed relative to Greece's gross domestic product (GDP) in the respective year. The third row gives Greece's real effective exchange rate (a weighted average of bilateral real exchange rates expressed in terms of domestic currency units per foreign currency unit) for the same time interval.

	2011	2012	2013
Greece: Net exports of goods and services (% of GDP)	-5.98	-2.41	-0.18
Greece: Net income received from abroad (including current transfers) (% of GDP)	-3.88	-0.07	0.91
Greece: Real effective exchange rate (base year: 2010)	99.33	102.51	103.42

Table 1: Greece's net exports and NIRA (both in % of GDP) and real effective exchange rate. Source: IMF (International Financial Statistics).

a) Compute Greece's current account balance (in % of GDP terms) for the years 2011, 2012 and 2013. (4 points)

b) Explain how a country's current account balance is related to national savings and national investment. (4 points)

c) Explain why a series of current account deficits may eventually result in a financial crisis. (4 points)

d) Explain why, given the country's fiscal crisis, the Greek current account deficit had to shrink between 2011 and 2013 (you suppose the trade balance to be constant). (4 points)

e) Define the real exchange rate and explain how movements of the nominal exchange rate and of national price levels may bring about a real currency depreciation. (4 points)

f) Define and discuss how the changes in Greece's net exports over the period from 2011 to 2013 are related to the changes in the real effective exchange rate. Explain why real depreciations are usually associated with an expansion of net exports. Assume that its net exports are almost zero. (8 points)

g) Some observers argue that, to jump-start the Greek economy, the Greek government should abandon its policy of fiscal austerity and to increase public spending. Describe the effects of increased government spending on output and the interest rate assuming that the economy is closed and that prices don't change in the short run. Use the IS/LM-model and an appropriate graph to illustrate your answer. (6 points)

h) Would such an expansionary fiscal policy be beneficial in the Greek case? Justify your answer by considering the effect of a fiscal stimulus both on government debt and on output. (4 points)

Question 2: Financial Accounting and Financial Statement Analysis (49 points)

Lorenzo Ferrari analyses financial statements of companies within the automotive industry. Recently, the two Chinese car manufacturers Han Kan Gang and Zhu Lang Sam published their annual accounts for the fiscal year ended 31.12.N1 in accordance with International Financial Reporting Standards (IFRS). The condensed consolidated statements of financial position of both, Han Kan Gang and Zhu Lang Sam, as of 31.12.N1 are shown below (figures in TCU (thousand currency unit)). The balance sheet item 'Other Reserves' includes the total comprehensive income for the period.

Consolidated Statement of financial position of Han Kan Gang as of 31.12.N1:

Intangible Assets	1,800,000	Capital Stock	500,000
Property, Plant and Equipment	5,600,000	Capital Reserves	3,000,000
Financial Instruments	800,000	Other Reserves	3,400,000
Noncurrent Assets	**8,200,000**	**Shareholders' Equity**	**6,900,000**
Inventories	6,600,000	Current Liabilities	4,300,000
Receivables	3,100,000	Noncurrent Liabilities	6,700,000
Current Assets	**9,700,000**	**Liabilities**	**11,000,000**
Total	**17,900,000**	**Total**	**17,900,000**

Consolidated Statement of financial position of Zhu Lang Sam as of 31.12.N1:

Intangible Assets	400,000	Capital Stock	450,000
Property, Plant and Equipment	4,100,000	Capital Reserves	2,000,000
Financial Instruments	350,000	Other Reserves	1,600,000
Noncurrent Assets	**4,850,000**	**Shareholders' Equity**	**4,050,000**
Inventories	3,900,000	Current Liabilities	2,700,000
Receivables	2,600,000	Noncurrent Liabilities	4,600,000
Current Assets	**6,500,000**	**Liabilities**	**7,300,000**
Total	**11,350,000**	**Total**	**11,350,000**

For the purpose of a comparative financial statements analysis Lorenzo Ferrari wants to form an opinion about the soundness of the companies' financing. He considers the equity ratio as a key figure for this analysis.

a) Calculate the equity ratio of both Chinese companies as of 31.12.N1 based on the aforementioned financial statements. (2 points)

b) To improve the validity and comparability of the key figure equity ratio, Lorenzo Ferrari intends to prepare pro forma statements of financial position of the two Chinese car manufacturers. As the notes of the financial statements show, the capitalized intangible assets are to their full extent internally generated patents (inventions).

   b1) What conditions must be met for the recognition of internally generated patents as intangible assets according to IFRS? (6 points)

b2) The book values of the intangible assets have changed as follows during the fiscal year:

	Han Kan Gang	Zhu Lang Sam
Book Value 01.01.N1	1,400,000	450,000
+ Capitalized Expenses in N1	700,000	100,000
- Amortization in N1	-300,000	-150,000
= Book Value 31.12.N1	1,800,000	400,000

For the purpose of preparing pro forma statements of financial position for both Chinese companies as of 31.12.N1 Lorenzo Ferrari assumes that all the capitalized expenditures for developing the internally generated patents were recognized as an expense in the income statement. Fill in the adjusted book values for the positions of the statement of financial positions in the following table. Do not take into account the impact of current and deferred taxes. (6 points)

Consolidated Statement of financial position (pro forma) of Han Kan Gang as of 31.12.N1:

Intangible Assets		Capital Stock	
Property, Plant and Equipment		Capital Reserves	
Financial Instruments		Other Reserves	
Noncurrent Assets		**Shareholders' Equity**	
Inventories		Current Liabilities	
Receivables		Noncurrent Liabilities	
Current Assets		**Liabilities**	
Total		**Total**	

Consolidated Statement of financial position (pro forma) of Zhu Lang Sam as of 31.12.N1:

Intangible Assets		Capital Stock	
Property, Plant and Equipment		Capital Reserves	
Financial Instruments		Other Reserves	
Noncurrent Assets		**Shareholders' Equity**	
Inventories		Current Liabilities	
Receivables		Noncurrent Liabilities	
Current Assets		**Liabilities**	
Total		**Total**	

b3) The corporate tax rate in China is at 30%. For tax purposes, the capitalization of self-created intangible assets is prohibited.

b3i) What is the amount of deferred tax assets and/or deferred tax liabilities that the Chinese car manufactures had to recognise in their statements of financial position as of 31.12.N1 with respect to the internally generated intangible assets (support your answer with a brief explanation)? (5 points)

b3ii) What impact has the reversal of the capitalisation of internally generated intangible assets in the statement of financial position as of 31.12.N1 by taking into account deferred tax effects? Fill in the adjusted book values of the balance sheet items in the following table. (6 points)

Consolidated Statement of financial position (pro forma) of Han Kan Gang as of 31.12.N1:

Intangible Assets		Capital Stock	
Property, Plant and Equipment		Capital Reserves	
Financial Instruments		Other Reserves	
Noncurrent Assets		**Shareholders' Equity**	
Inventories		Current Liabilities	
Receivables		Noncurrent Liabilities	
Current Assets		**Liabilities**	
Total		**Total**	

Consolidated Statement of financial position (pro forma) of Zhu Lang Sam as of 31.12.N1:

Intangible Assets		Capital Stock	
Property, Plant and Equipment		Capital Reserves	
Financial Instruments		Other Reserves	
Noncurrent Assets		**Shareholders' Equity**	
Inventories		Current Liabilities	
Receivables		Noncurrent Liabilities	
Current Assets		**Liabilities**	
Total		**Total**	

c) Reading the disclosures in the notes, Lorenzo Ferrari learned that both entities have provided a significant proportion of their production capacity by lease contracts. Whereas Han Kan Gang has entered into operating leases solely, all the lease contracts agreed by Zhu Lang Sam qualify as finance leases.

In order to eliminate the impact of the lease transactions on the equity ratio, Lorenzo Ferrari intends to treat *operating leases* for accounting purposes as if they were *finance leases*, based on the assumption that Han Kan Gang entered into all lease contracts on 31.12.N1. According to the accompanying information provided in the notes, the annual minimum lease payments amount to 400,000 TCU, payable at each year-end from 31.12.N2 to 31.12.N6. Lorenzo Ferrari assesses the reasonable interest rate in order to determine the present value of the lease payments at 5% p.a.

c1) How does the conclusion of a finance lease affect the statement of financial position of the lessee at the commencement of the lease term? Do not address the subsequent measurement in your answer. (4 points)

c2) What impact does the reclassification of the operating leases into finance leases have on the reported amounts of assets, current liabilities, non-current liabilities and equity of Han Kan Gang as of 31.12.N1? (6 points)

c3) Consider the impact of the reclassification of operating leases on the pro forma statement of financial position (Base your answer on your results from question b3ii). Fill in the adjusted book values in the in the following table. Do not take into account the impact of current and deferred taxes. (4 points)

Consolidated Statement of financial position (pro forma) of Han Kan Gang as of 31.12.N1:

Intangible Assets		Capital Stock	
Property, Plant and Equipment		Capital Reserves	
Financial Instruments		Other Reserves	
Noncurrent Assets		**Shareholders' Equity**	
Inventories		Current Liabilities	
Receivables		Noncurrent Liabilities	
Current Assets		**Liabilities**	
Total		**Total**	

c4) What is the amount of Shareholders' Equity once the impact of deferred taxes is taken into account? Explain your answer. (3 points)

d) The Chinese car manufacturers export a large proportion of their car production to Western Europe. To reduce the foreign exchange risks arising from car sales expected in the forthcoming six months, Zhu Lang Sam designated the forecast transactions as hedged items and currency forwards as hedging instruments in a cash flow hedge. At 31.12.N1 the gain on the hedging instruments amounts to 300,000 TCU.

d1) How did the cash flow hedges affect the reported amounts of assets, liabilities and equity in the statement of financial position of Zhu Lang Sam as of 31.12.N1? Do not take into account the impact of current and deferred taxes. (4 points)

d2) What would be the equity ratio of Zhu Lang Sam based on the pro forma statement of financial position according to question b3), if the entity did not enter into forward contracts to reduce the foreign exchange risks arising from the forecast transactions? Do not take into account the impact of current and deferred taxes. (3 points)

Question 3: Corporate Finance **(35 points)**

Western Airlines is domiciled in Country X and is considering the purchase of an aircraft. The jet that it wants to purchase has a price of 100 million euros. The usable life of the jet is 20 years, but Western Airlines plans to sell it on the used market after 10 years. While it is studying the purchase, Western Airlines receives a proposal from Eastern Lease to enter into a 10-year leasing agreement for the aircraft with annual leasing fees of 9 million euros. This leasing agreement cannot be canceled for 10 years. Western Airlines' CFO, Mr. Smith, is concerned that a deterioration in financial ratios will trigger a downgrade of the company's debt rating. He is attracted by the proposal because he considers it better to enter into a leasing agreement than to raise funds for the aircraft by issuing debt. The leasing agreement will allow the aircraft to be acquired without increasing Western Airlines' debt ratio, according to Mr. Smith's thinking.

a) While there are differences in the details, Country X's lease accounting rules are generally close to current international standards for lease accounting. Under these standards, leasing agreements are categorized for accounting purposes as either "operating leases" or "finance leases" depending on certain conditions. Briefly explain the accounting treatment for "operating leases" and "finance leases." (6 points)

b) Under the financial accounting rules of Country X, the lease is treated as a "finance lease" if it satisfies any of the following conditions:

   (i) At the end of the leasing term, ownership of the leased asset is transferred to the lessee.

   (ii) The lessee is granted an option to purchase the leased asset at a price significantly below the market price.

   (iii) The leasing term is 75% or more of the estimated economic life of the asset.

   (iv) The total present value of future lease payments calculated with an appropriate discount rate at the start of the leasing agreement is in excess of 90% of the cash purchase price of the asset.

   The leasing agreement proposed by Eastern Lease does not satisfy conditions (i)-(iii). In the light of condition (iv), is the leasing agreement proposed to Western Airlines categorized as an "operating lease" or a "finance lease?" Explain in detail. Assume that annual leasing fees are paid at the start of each fiscal year, beginning with the date on which the agreement is executed. Assume that the appropriate discount rate to be used in making determinations under condition (iv) is 5% per year, which is the pretax borrowing rate of Western Airlines. (6 points)

c) Comment briefly on your opinion of Mr. Smith's idea, as CFO of Western Airlines, to use a lease to understate the company's debt ratio to rating agencies and investors. (4 points)

d) Mr. Smith decides to compare the costs of using a lease to source the aircraft and raising funds for the aircraft in the form of a lease-equivalent loan, assuming that for tax purposes the leasing agreement would be treated as an operating lease. To do this, Mr. Smith calculates the NPV of incremental cash flows of leasing versus purchasing. The annual incremental cash flows of the two approaches are calculated as shown below:

Incremental cash flows = Lease CF - Purchase CF

= Aircraft price (Year 0) - lost tax-savings effect of depreciation

- sellable price (10th year) - leasing fee + tax-savings effect of leasing fee

The analysis is shown in the table below:

(Unit: 1,000 EUR)

Year	**0**	**1**	**2**	**…**	**9**	**10**	**NPV**
Aircraft price	100,000			…			
Loss of tax savings effect of depreciation				…			
Sellable price						-50,000	
Leasing fee	-9,000	-9,000	-9,000	…	-9,000	0	
Tax saving effect of leasing fee							
Cash flow difference from leasing and purchasing							
Present value of above (discount rate = 3.25%)							

d1) Compared to purchasing, use of a lease results in the loss of the tax-savings effect of depreciation. What is the annual value of the lost tax-savings effect only due to these forgone depreciation charges? Country X has a corporate income tax rate of 35%. For simplicity, assume depreciation under the straight-line method with a remaining usable life of 20 years and a terminal value at the end of 20 years of zero. (2 points)

d2) What is the annual tax-savings effect of the leasing fee? (2 points)

d3) Calculate the cash flow differences per year from leasing and purchasing at the following points in time: (1) Year 0, (2) Years 1-9; and (3) Year 10. Assume that if the aircraft is purchased, it can be sold on the used market in Year 10 for the residual book value of 50 million euros. (3 points)

d4) Calculate the NPV of overall cash flow difference between leasing and purchasing by discounting the cash flow differences of the years 0 to 10 with Western Airlines' after-tax borrowing rate of 3.25% (= 5% x (1 - 0.35)). For the sake of simplifying your calculations, assume that the resale value of 50 million euros is discounted at the same rate.
[Computational aid: If C euros are paid at the end of each year for a period of 9 years, and the discount rate is 3.25%, present value will be:

$$\sum_{t=1}^{9} \frac{C}{1.0325^{t}} = 7.696123 \cdot C\,]$$

(5 points)

d5) According to this analysis, which is more advantageous in terms of costs, leasing the aircraft or purchasing it? (2 points)

e) The findings from an analysis of the relative cost advantages of leasing and purchasing will be influenced by the price at which the aircraft can be disposed of on the used market after 10 years. What is the disposal price that marks the breakeven point at which cost advantages are reversed?
[Note: Be aware that in case of an eventual sale of the aircraft below its book value there will be a tax-savings effect (Corporate income tax rate is 35%).] (5 points)

Question 4: Equity valuation and analysis **(58 points)**

Company A is a slow-growing company. To date, the top management has failed to find new and innovative lines of business. In order to avoid the situation where stockholders start to complain, the CEO of Company A is considering incorporating Company B, a smaller but fast growing company. The takeover will be realised by means of an exchange of shares, at an exchange ratio yet to be fixed. Relevant data for A and B are as follows:

	current div. per share (Div_0)	β	growth rate of dividend (g)	# of outstanding stock (N)
A	0.8	0.7	0.01	4,000
B	1.3	1.5	0.05	1,000

The risk-free rate of return is $r_F = 0.03$ p.a. while the expected market rate of return is $\bar{r}_M = 0.1$ p.a. It is assumed that all data will remain unchanged in the future. Company A and B are both free of interest bearing debt.

a)

a1) Determine the expected cost of capital, according to CAPM, for companies A and B. (3 points)

a2) Calculate, according to the Dividend Discount Model (DDM), the current stock (i.e. in $t = 0$) prices for companies A and B. (4 points)

b) Explain, from a theoretical point of view, what happens to the price of a stock, determined by using the DDM, if, *ceteris paribus*, the expected market rate of return changes. Is the change in the price of the stock affected by the riskiness (in terms of β) of the company? Distinguish in your analysis between stocks with a $\beta > 1$ and stocks with a β between 0 and 1 (i.e. $0 < \beta < 1$). (6 points)

c) As an independent advisor, you have been asked to analyze the acquisition process. To do this you establish the following hypotheses:

i) the merger is not going to affect the way future earnings, and therefore dividends, will be produced by the new (AB) company. This means that AB's future overall dividends will be the sum of the dividends that companies A and B would pay out if they did not merge.

ii) the rate of growth of AB's dividends is determined according to i).

iii) AB's β is the weighted sum of the βs of A and B with, as weights, their relative capitalizations as computed by the DDM (in order to calculate the market capitalisation use the stock prices as calculated in question a2) above).

c1) What is the current overall dividend of company AB? What is the rate of growth from $t = 0$ to $t = 1$ of the dividends of the new company? What is its rate of growth from $t = 1$ to $t = 2$? (6 points)

c2) Denote with *SER* the stock exchange ratio, i.e. the number of new stocks of company AB that stockholders of company B receive for each share they own if they agree to the acquisition. Determine, as a function of *SER*, the current dividend per share of the new company. (3 points)

c3) Calculate in which range for *SER* the current dividend per share of company A is less than the dividend per share of AB. (3 points)

c4) Determine the cost of capital of the new company following hypothesis iii). (4 points)

c5) Find, according to DDM, the current stock price of the resulting company AB as a function of the exchange ratio (SER). [Note: Use the cost of capital calculated in c4) and the dividend growth rates for A and B given at the beginning. Discount the dividends of A and B separately.] (5 points)

c6) Determine the range for *SER* in which both shareholders of the pre-existing companies end up being better off in terms of wealth (that is: the stocks they own after the acquisition are worth more than those they owned before). (6 points)

d) Companies usually merge to create synergy, i.e. an extra equity value the companies would not have if they did not merge. Discuss the ways (name three of them) a positive synergy can be created. (6 points)

e)

e1) Find the overall equity value of company AB. Does this value depend on *SER*? Explain your answer. (4 points)

e2) What is the synergy value obtained by the merger? (4 points)

e3) In corporate finance textbooks the exchange ratio, *ER*, is usually determined as $ER = \frac{P_B(0)}{P_A(0)}$, where $P_A(0)$ and $P_B(0)$ are the current stock prices of the merging companies. In this case (i.e. assuming SER = ER), determine which part of the synergy goes to stockholders of the acquiring company A and which part is left for company B's shareholders. (4 points)