EXAMINATION I

Economics

Corporate Finance

Financial Accounting and Financial Statement Analysis

Equity Valuation and Analysis

Questions

Final examination

March 2017

Question 1: Economics **(35 points)**

The economic situation of the Mediterranean member countries of the European Monetary Union has been characterized by low or even negative growth rates of their gross domestic product (GDP) and (very) high unemployment rates in recent years. In Greece, the development has been particularly negative. Since 2009, the GDP of this country has shrunk by more than 25% and the unemployment rate has risen to above 25%.

Because of the global financial crisis of the years 2007/08, the negative economic consequences caused by this crisis and the (partly) significant fiscal stimulus packages implemented to deal with these negative economic impacts, the public budgets of most member countries of the European Monetary Union exhibited sizeable deficits in the years 2010/11. In the case of Greece, the public deficit amounted to 11.1% of GDP in 2010 and 10.1% in 2011 (Source: Eurostat).

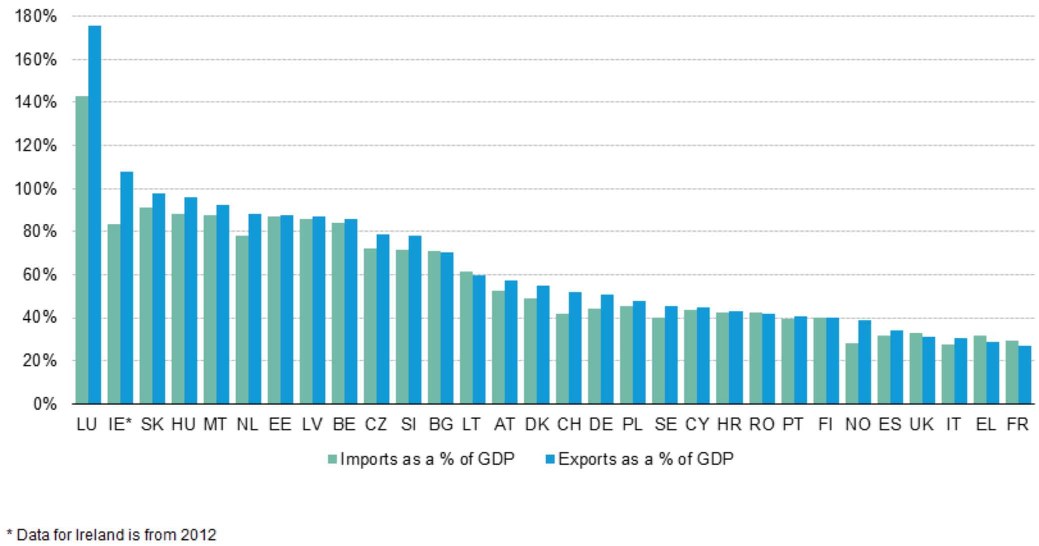
a) To stabilize their public budgets (an obligation resulting from the Stability and Growth Pact), most countries of the euro area have made decisive steps to reduce the above-mentioned deficits since 2010/11. This has also been the case in Greece which we consider to be representative of a small open economy.

   a1) Provide an exposition of the AS/AD model for an open economy (including a short explanation of the underlying economic mechanisms). Include a graphical illustration of this model in your answer. (9 points)

   a2) To reduce its public deficit Greece has cut government spending (G) and increased taxes (T). Use the AS/AD model to analyse the short-run impacts of these fiscal policy measures on the Greek economy. For simplicity, you should assume the economy to be at its natural level before the fiscal policy implementation. Include a graphical illustration of these consequences in your answer. (4 points)

b) When addressing the following questions [under b) (except b3) and c)], we consider that Greece is part of a monetary union which one can consider as a particularly strong form of a fixed exchange rate regime.

   b1) One potential solution to achieve an urgently needed improvement of the country's economic situation could be to leave the euro area, reintroduce its own currency and considerably devalue this currency. Provide a short discussion regarding the desired implications of such a policy on the Greek economy and illustrate your arguments employing an AS/AD diagram. When doing so, assume that the Greek economy is initially in a recession. Include a short exposition of the Marshall-Lerner condition and its importance for the derived result in your answer (Assume that the Marshall-Lerner condition is satisfied). (6 points) b2) Figure 1 shows the ratios of the exports and imports of EU countries relative to their respective GDP. Briefly discuss the potential problems which can result for Greece (EL) from these figures concerning the desired implications of the above discussed currency devaluation. Include an appropriate reference to the concept of the J curve in your answer (Provide a short explanation of this concept in this context). (4 points)



Source: Eurostat

Figure 1: Ratio of the exports/imports of EU countries relative to their GDP (2013)

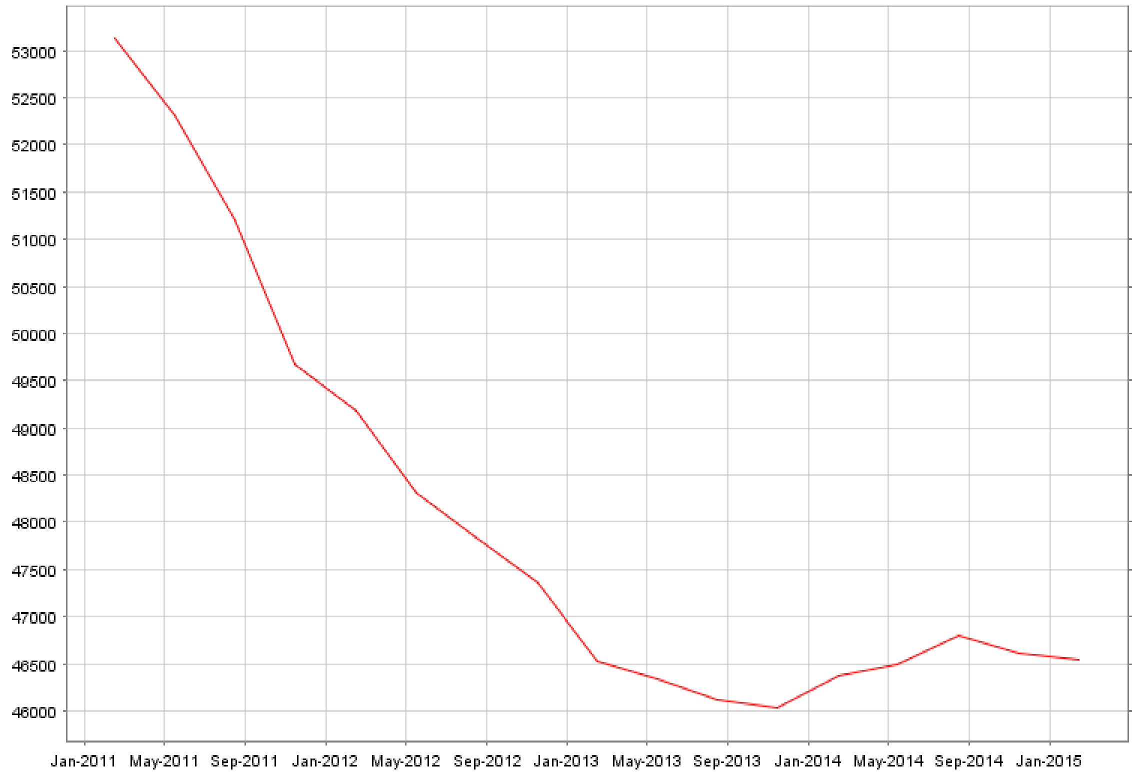
b3) Briefly discuss the potential disadvantages which Greece could experience if it decided to give up its currency peg to the euro (i.e., if it decided to leave the euro area) and reintroduced a new currency which would have a considerably lower value (relative to the euro) and which would very likely be flexible (again with respect to the euro).

(2 points)

c) Assuming that Greece remains within the Euro area:

c1) Briefly discuss the economic adjustment process over the long term (where the wages are not sticky) which is triggered in the case of a recession when the exchange rate is fixed and no devaluation of the currency takes place. Use the AS/AD diagram to illustrate your answer. (6 points)

Figure 2 below shows the development of the Greek real GDP since 2011. Its cumulative decrease since 2009 amounts to around 25%. Such a dramatic decrease is very unusual for a recession. The same is true for the length of this economic downturn which is normally related to the period over which nominal prices or wages are considered to be sticky.



Source: ECB, Statistical Data Warehouse

Figure 2: Development of the Greek (real) GDP since 2011 (in millions EUR)
(Calendar and seasonally adjusted data)

c2) One potential explanation for the strong decline in the Greek economy activity is given by the existence of a large fiscal multiplier (also known as the Government-purchases multiplier): various empirical studies have shown that the fiscal multiplier can take values larger than one in times of recessions. Briefly explain the concept of fiscal multipliers. Include a discussion of its major determinants in your answer and discuss the consequences that a value of the fiscal multiplier that is larger than one would have for the short-run budget consolidation efforts of the Greek government.(4 points)

<u>Question 2:</u> Financial Accounting and Financial Statement Analysis (48 points)

FUNDATOR Ltd. is a building and infrastructure construction group, focusing on complex projects in the transportation, energy, and social and urban infrastructure segments. FUNDATOR Ltd.'s internal management and reporting complies with the principles of financial reporting in accordance with IFRS. Answer the following questions.

a) At the beginning of 2016, FUNDATOR Ltd. won a contract to build a new football stadium. Completion of construction is planned for end of March 2019. The football club and FUNDATOR Ltd. agreed to a fixed price of EUR 120 million for the turnkey construction of the stadium. According to FUNDATOR Ltd.'s calculations, total costs for building the stadium were estimated at EUR 100 million.

a1) Excavation of the construction pit for the underground parking garage underneath the stadium was completed as of December 31st, 2016 (reporting date). A total of EUR 5 million was incurred for earthworks, of which:

- EUR 1.3 million was attributable to wages,
- EUR 2.0 million was attributable to depreciation of fixed assets, and
- EUR 1.7 million was attributable to other expenses.

Wages and other expenses resulted in an outflow of cash and cash equivalents in an equal amount. The work carried out in 2016 has been charged to the customer just before the end of financial year 2016 but no payment was received in 2016.

At FUNDATOR Ltd., construction contracts are reported using the percentage of completion (POC) method (IAS 11); the completion state is measured on the basis of the ratio of contract costs actually incurred to total contract costs expected. Assume that the outcome of the general contractor contract can be reliably measured. Taxes are not to be taken into account.

a1a) Determine the amount of revenues related to the stadium-contract FUNDATOR LTD. has recognized in its 2016 income statement. Provide some explanatory remarks on your calculation. (4 points)

a1b) What were the impacts of the stadium-contract on FUNDATOR Ltd.'s balance sheet as of December 31st, 2016, and its income statement for financial year 2016? Fill in the blanks in the below tables (write "0" if there is no impact). (6 points)

Balance sheet items	Impact
Property, plant and equipment	
Inventories	
Receivables	
Cash and cash equivalents	

Income statement items	Impact
Revenues	
Changes in inventories of finished goods and work in progress	
Other own work capitalised	
Cost of materials	
Personnel expenses	
Depreciation	
Other operating expenses	
Operating profit (EBIT)	

a2) Let us assume that for tax purposes, any profit from the construction contract is not to be recognized until final acceptance of the stadium has taken place. What annual profit or loss after tax would result according to IFRS if FUNDATOR Ltd.'s tax rate is 30% (state the reasons on which you base your answer)? (4 points)

a3) What was the impact – taking account of the assumption made in a2) above – of the stadium-contract on the cash flow from operating activities in 2016? Calculate the cash flow from operating activities using the indirect method. (4 points)

b) At the end of the fiscal year 2016, there were indications of an impairment in one of FUNDATOR Ltd.'s largest plants for ready mix concrete. Information about this plant can be found below. Answer the following questions.

Acquisition cost	EUR 20.0 million
Accumulated depreciation expenses	EUR 15.0 million
Remaining useful life	5 years
Expected future cash flow	Pre-tax cash flow of EUR 950,000 will be generated at the end of each fiscal year and residual cash flow will be zero at the time of disposition.
Fair value less costs to sell (as of 31st December 2016)	EUR 3.5 million

b1) When the carrying amount of an asset (book value) exceeds its recoverable amount, the enterprise must, in conformity with the principle of prudence, recognize an impairment loss. IAS 36 prescribes the procedures that must be applied in estimating the recoverable amount of an asset. According to IAS 36, how shall this recoverable amount be determined? (2 points)

b2) Assuming a discount rate of 10%, calculate the value in use of the plant for ready mix concrete. (6 points)

b3) What is the impairment loss on the ready mix concrete plant? Explain your answer. (4 points)

b4) What is the annual depreciation expense that will be recognized for the impaired ready mixed concrete plant over the next 5-year period? (2 points)

c) It is the end of the fiscal year 2016, and FUNDATOR Ltd. requires a large piece of machinery (a hard-rock tunnel boring machine). This piece of equipment will be acquired through a finance lease transaction. The Chief Financial Officer (CFO) of FUNDATOR Ltd. has gathered the following information:

Finance lease contract: Terms	
Commencement date of the lease	1st January 2017
Lease term	5 years
Annual lease payments (to be paid at the end of the year)	EUR 5,275,950
Interest rate implicit in the lease	10.0%
Estimated economic life of the leased asset	5 years
Depreciation method	straight-line method
Fair value of the underlying asset	EUR 20,000,000
Residual value after 5 years	EUR 0

[Note: FUNDATOR Ltd. is preparing its accounts in accordance with IAS 17.]

c1) Decompose the lease payments using the following table. (8 points)

	Interest	**Lease payment**	**Principal repayment**	**Lease obligation at year end**
2017	………………	………………	………………	………………
2018	………………	………………	………………	………………
2019	………………	………………	………………	………………
2020	………………	………………	………………	………………
2021	………………	………………	………………	………………

c2) Complete the following table showing extracts from the balance sheet and income statement of FUNDATOR Ltd for the years 2017 and 2018. (8 points)

Balance sheet	December 31st, 2017	December 31st, 2018
Property, plant and equipment	....	....
Financial debt	....	....
Income statement	2017	2018
Operating expenses	....	....
Financial expenses	....	....

Question 3: Corporate Finance (39 points)

ABC Co., a multinational company, has annual sales of USD 77.2 million and the related cost of sales is USD 43.2 million. Close to half of all sales are exports to European countries, which are invoiced in euros. Table 1 shows an excerpt from ABC Co.'s latest statement of financial position.

Table 1

ABC Co.	
Excerpt from statement of financial position	(in USD ,000)
Current assets	
Cash and cash equivalents	1,000
Inventory	8,877
Trade accounts receivable	19,036
Current liabilities	
Trade accounts payable	3,551
Interest bearing loans (Bank overdraft)	19,862
Net working capital[1]	5,500

[1] Net working capital = (Cash and cash equivalents + Inventory + Trade accounts receivable) - (Trade accounts payable + Short-term interest bearing debt) = USD 5.5 million.

In order to improve its profitability, ABC Co. plans to change its working capital policy. This policy change will not affect the current levels of sales, cost of sales, cash and cash equivalents and net working capital. As a result of the policy change, the following working capital ratio values are expected:

Inventory period	50 days
Accounts receivable period	65 days
Accounts payable period	45 days

Other relevant financial information is as follows:

Short-term USD borrowing rate	5% per year
Short-term USD deposit rate	4% per year

Assume there are 365 days in each year and that ABC Co.'s material purchases are equal to cost of sales. Answer the following questions.

a) For the change in working capital policy, calculate the change in the cash conversion cycle (in days), the effect on the current ratio and the finance cost saving. Briefly discuss the implications of your calculations. (18 points)

b) Name and explain 3 main types of foreign currency risk faced by a multinational company. How would you expect companies to hedge against these different types of foreign currency risks? (12 points)

c) ABC Co. expects to receive EUR 8,649,771 from export sales at the end of three months. ABC Co.'s bank offers a 3 months USD/EUR forward rate of USD 1.1561 per EUR 1.00. The current spot rate is USD 1.1592 per EUR 1.00. ABC Co. can borrow short term in the Euro at 6% per year.

   Calculate the dollar income from (i) a forward market hedge and (ii) a money market hedge (i.e. borrow EUR today, change it in USD at the current spot rate, and deposit the USD on the bank account) and indicate which hedge would be financially preferred by ABC Co.

   (9 points)

Question 4: Equity valuation and analysis (30 points)

Maggie Smith just graduated from College and is starting a job as a junior financial analyst for Seahawk Investments. She has studied fundamental analysis in College and is eager to impress her colleagues. Ms. Smith is convinced that an in depth understanding of the forward P/E ratio is one of the most useful tools for investment decisions. She plans to use the forward P/E ratio to help her firm identify undervalued stocks.

Ms. Smith is currently reviewing information on a company called Food For Life,Inc (FFL). The company distributes healthy food across the United States. FFL has been in business for twenty years and is located in Wilmington, NC. Ms. Smith has spent many hours analyzing the company. She believes that Americans will continue to eat more healthy food and FFL may be an attractive investment.

Ms. Smith is concerned about FFL's new management team. In a recent news conference, the new Chief Financial Officer (CFO) of FFL stated that FFL should have increased their dividend payout ratio to 60% last year. The CFO stated that a higher dividend payout ratio would have increased the stock price.

Ms. Smith is evaluating the validity of the CFO's statement. Ms. Smith expects that FFL's Return on Equity (ROE) and required return would have remained the same if the company changed their dividend payout ratio to 60%. She is uncertain about the impact on the price of the stock. (Round all earnings, dividends and prices to the nearest penny and round all other figures to four decimal places.)

For further information see Table 1 "Balance Sheet for FFL, Inc." and Table 2 "Income Statement for FFL, Inc" and "Additional Information".

a) Calculate FFL's ROE in 2016 and use the DuPont identity to decompose it into three factors. [Note: Due to missing information for 2015, use balance sheet values as of December 31st, 2016, for your 2016 ROE calculation.] (4 points)

b) Calculate FFL's Dividend payout ratio and sustainable growth rate in 2016. (3 points)

c) Calculate the required return for FFL using the Capital Asset Pricing model. (3 points)

d) Calculate – at the start of 2017 - the forward P/E ratio and the stock price under two scenarios. The first scenario is based on FFL's actual dividend payout ratio in 2016. The second scenario is based on the assumption that the new CFO changed the dividend payout ratio to 60% in 2016. [Hint: Base your computations on the constant growth dividend discount model.] (14 points)

e) Should FFL have changed the dividend payout ratio to 60% in 2016? Explain the reasons why increasing the dividend payout ratio would have been a good or bad idea for FFL. What is the critical question that the CFO should consider when making this decision? Explain your answer. (6 points)

Table 1, Balance sheet for FFL, Inc, as of December 31st

In thousands of dollars	2016
Current Assets	
Cash	20,000
Accounts receivable	60,000
Inventories	80,000
Total current assets	**160,000**
Other Assets	
Property, plant and equipment	375,000
Accumulated depreciation	-75,000
Net property, plant and equipment	300,000
Intangible assets	215,000
Other non-current assets	50,000
Total non-current assets	**565,000**
Total Assets	**725,000**
Current liabilities	
Short-term notes payable	25,000
Accounts payable	35,000
Total current liabilities	**60,000**
Long-term liabilities	
Long-term liabilities	225,000
Other non-current liabilties	35,000
Total long-term liabilities	**260,000**
Total liabilities	320,000
Shareholder equity	
Common equity	50,000
Retained earnings	355,000
Total equity	**405,000**
Total Equity and Liabilities	**725,000**

Table 2, Income Statement for FFL, Inc, from January 1st, 2016 to December 31st, 2016

In thousands of dollars (except for per share data)	2016
Sales	675,000
Cost of good sold	425,000
Gross profit	**250,000**
Selling, general and administrative expenses	170,000
Earnings before interest, taxes, depreciation and amortization (EBITDA)	**80,000**
Depreciation and amortization	15,000
Earnings, before interest and taxes (EBIT)	**65,000**
Interest	16,000
Earnings, before taxes	**49,000**
Income taxes	12,250
Net income	**36,750**

Additional information	
Number of shares outstanding (in ,000)	20,000
Dividend distributed (in ,000)	15,000
Return on 30 year Treasury securities	2.75%
Expected return on a market index	9.50%
Standard deviation of FFP's returns	15.00%
Beta for FFP	0.8
Expected inflation	2.00%

<u>Question 5:</u> Equity valuation and analysis (28 points)

Mr. Brown is an analyst who wants to make an investment decision regarding White's stock. He decides to start by calculating the White's beta and its required rate of return for stock. However, White's stock has not been listed for a sufficiently long period of time to generate a long enough time series of prices/returns to estimate beta, so Mr. Brown decides to estimate its beta from the beta of Black, a similar company in the same sector. He collected the data, as shown below.

Risk-free rate	2%
Risk premium for stock market	7%
Market capitalization for White	1.2 billion dollars
Total interest-bearing liabilities for White	0 dollars
Market capitalization for Black	2 billion dollars
Total interest-bearing liabilities for Black	400 million dollars
Black's stock beta	1.4
Corporate income tax rate	30%

a) Calculate White's stock beta using the following assumptions:

- In the future, White will not take on any debt, and Black's total interest-bearing liabilities will not change.
- The asset betas (unlevered beta) for White and Black are equal.
- Black's debt beta is zero.

(4 points)

b) In light of betas for other companies in the sector besides Black, Mr. Brown ultimately decides to use 10% as the required rate of return for White's stock. He also makes the following forecasts for White's results.

- During this financial year, earnings per share will be 12.00 dollars and per-share dividend will be 2.00 dollars.
- From the next financial year and onwards, the return on equity (ROE, net income /net worth at the start of the year) will be 11% and the dividend payout ratio will be 25%, and this will continue in perpetuity.

Next, Mr. Brown uses the residual income model (shown below) to calculate White's theoretical share price:

Theoretical share price = net worth per share at the beginning of the year + present value of residual income per share this financial year and beyond.

With:
Residual Income = Net Income – Equity Charge
Equity Charge = Equity Capital x Cost of Equity

b1) White's book value per share at the beginning of the current financial year is 90 dollars. On the assumption that there will be no capital increases or other capital transactions in the future and the clean surplus relationship will hold true, calculate the forecast residual income per share for this financial year and the subsequent period. (6 points)

b2) White's market share price has been between 139 dollars and 148 dollars for the past 1 month. Use the residual income model to calculate White's theoretical share price (as at the beginning of this year), and determine whether White's stock is trading at a discount, at a premium, or at a reasonable price. (5 points)

c) There have been calls from White's shareholders for an increase in dividends, and White's management team has announced that it will increase the payout ratio to 40% beginning this financial year.

c1) Assuming that this financial year's forecast earnings per share of 12.00 dollars and the forecast ROE of 11% for the next financial year and beyond do not change, and that the payout ratio will continue at 40% in perpetuity, what is White's theoretical share price? Use the dividend discount model to calculate. (8 points)

c2) White has said that it will not use capital increases or debt to raise funds, so the increase in the payout ratio to 40% beginning this year will change the amount invested in the business going forward, and is therefore predicted to change ROE beginning next period. Assuming that this financial year's forecast earnings per share is 12.00 dollars, calculate the ROE (as a percentage) from the next period that would give a theoretical share price of 150 dollars. (5 points)