# EXAMINATION I

# Economics

# Corporate Finance

# Financial Accounting and Financial Statement Analysis

# Equity Valuation and Analysis

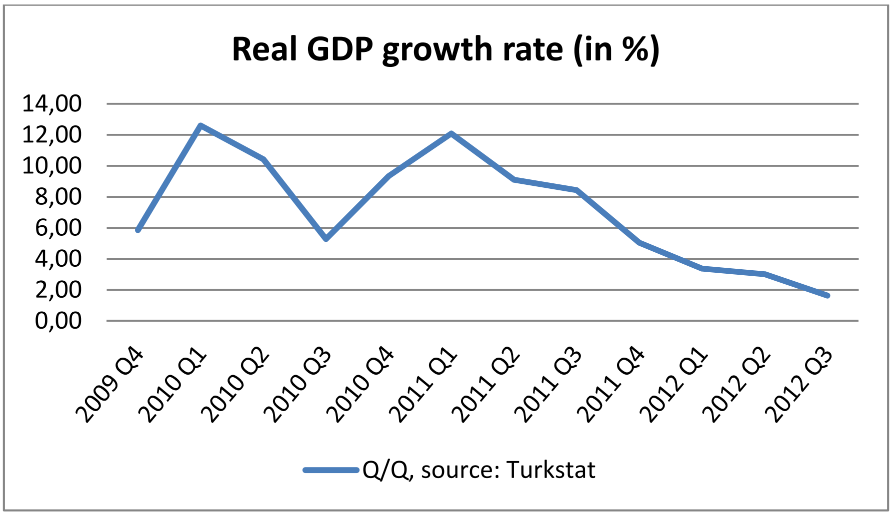
## Questions

## Final examination

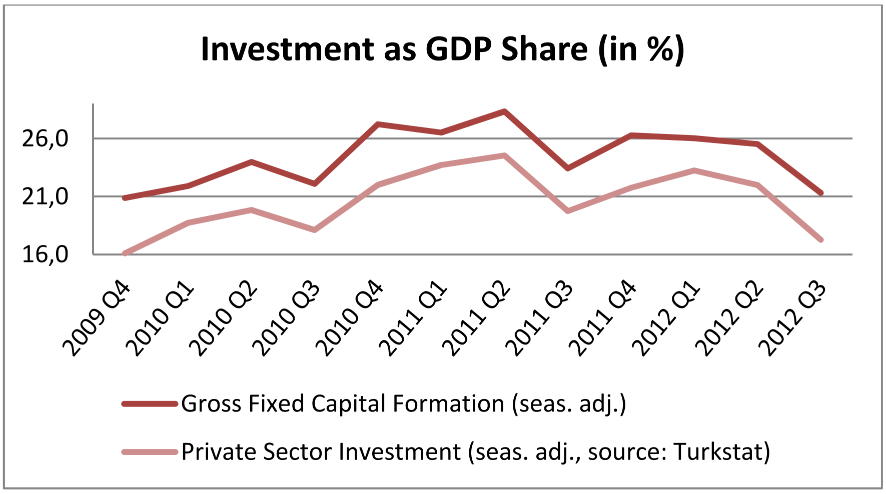
## March 2014

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

Since the end of the 2008-2009 recession, Turkey has experienced a brisk economic growth: its economy has expanded rapidly, by more than 8%, both in 2010 and in 2011. However, from the second half of 2011 the crisis in the Euro zone, Turkey's biggest trading partner, and nervousness about the conflict in neighboring Syria have hurt the Turkish economy. The GDP growth has perceptibly slowed, as shown below (the growth is calculated by comparing to the same quarter of the previous year).




The recent poor development in GDP can partly be ascribed to the slowing down of investment, induced by the political tension and by pessimism spreading from the crisis in the Euro economies.



a) First consider Turkey as a closed economy and use the IS-LM model to answer the following questions.

a1) Explain the IS curve, and show how it is affected by a reduction in investment. You should support your answer by using a graph. (5 points)

a2) Sketch the money market equilibrium, and explain in general how the Central Bank can exert its influence on it, and affect output (for a given IS schedule). Your answer should be again supported graphically. (7 points)

Indeed, the Turkish Central Bank (TCMB) has reduced the policy interest rate (the repo rate) from 6.25% to 5.75% on the 5th of August 2011, and then from 5.75% to 5.50% on the 12th of December 2012. However, given the limited reduction in the interest rate, it is reasonable to argue that the monetary policy response to the slowing down of GDP growth has been quite weak.

a3) Using the IS-LM framework, explain, with the support of graphs, the motivation according to which it is possible to maintain that the monetary policy response has been limited. (5 points)

a4) Describe the AS-AD model, and suggest the reason why the monetary policy authority has chosen the line of action sketched above. You should include graphs in support of your answer. [Hint: You may consider the output of the economy was close (or above) its natural level (full employment) from 2009 Q4 to 2011 Q2.] (6 points)

b) Now consider that Turkey is an open economy, and take into account that the Turkish lira floats against the Euro and the US Dollar. Consider also that Turkey's real exchange rate has decreased during 2012 and that the current-account deficit declined during 2012 (from a record USD 78.6 billion in October 2011). Answer the following questions in words.

b1) Use the uncovered interest parity (UIP) equation to suggest how the decrease in the interest rate can induce a reduction in the Turkish real exchange rate (against the Euro). [Hint: Define first the real exchange rate in that case. Then describe the UIP relation, and then answer the question.] (5 points)

b2) Discuss the determinants of the net exports, and show under which conditions the weakening in the real exchange rate induces an improvement in the external trade balance. (6 points)

b3) Imagine that in Euroland – Turkey's most important trading partner – the European Central Bank increases its policy rate during the second half of 2014 as a response to improved economic conditions in the Euro zone. Discuss what the most likely effects for Turkish GDP and the trade balance using the IS-LM model will be if this scenario is realized. (4 points)

**<u>Question 2:</u> Financial Accounting and Financial Statement Analysis (57 points)**

Company X is a Japanese manufacturer of beverages and liquors. Its business segments are domestic liquor, international liquor and beverages and food (domestic only). The international liquor business is primarily in Southeast Asia and Oceania.

At its FY2013 results briefing, it announced mid-term targets up to FY2015 to analysts and investors. Company X expressed a plan to improve ROE, which was in the 9% range in FY2013, to above 11% in FY2015. The company is considering several action programs to achieve this objective.

Refer to the notes below when making calculations:

- Operating profit + financial balance (= financial income + financial expenses) = pretax income.
- Pretax income x (1 - tax rate) = net income.
- Financial income = balance of financial assets at the end of the year x 2%;
  Financial expenses = balance of financial liabilities at the end of the year x 4%.
- Total assets = current assets + financial assets + tangible fixed assets.
- Balance of tangible fixed assets = balance of tangible fixed assets at the end of the previous year – depreciation of tangible fixed assets + capital expenditures on tangible fixed assets.
- Free Cash Flow (CF) = operating CF (net income + change in working capital + depreciation of tangible fixed assets) + investing CF.
- Net CF = free CF + financing CF.
- All dividends are paid during the current year. The payout ratio in 2014 and 2015 is 25%.
- Net CF = increase or decrease in financial assets at the end of the year.
- Net worth (shareholders' equity) = previous year net worth + net income – dividends paid.

When calculating financial indicators, you should use the relevant year-end numbers from the balance sheet. For the purposes of this question, EBIT can be considered to be equal to operating profit.

a) Exhibit 1 contains company X's balance sheet, profit and loss statement and cash flow statement (actual and forecast), as well as a portion of the numbers from Company X's guidelines.

   a1) Fill in the blanks (1) to (7) in Exhibit 1. Assume that the operating profit margin in % (operating profits * 100 / sales) for liquor (domestic and international) increases by 0.3 points year-on-year in FY2014 and FY2015. (21 points) a2) Calculate the ROE for FY2015 forecast and split it into 5 ratios using the following formula:

$$ROE = \frac{\text{net income}}{\text{pretax income}} * \frac{\text{pretax income}}{\text{operating profit}} * \frac{\text{operating profit}}{\text{sales}} * \frac{\text{sales}}{\text{total assets}} * \frac{\text{total assets}}{\text{net worth}}$$

(6 points)

a3) In Exhibit 3, column II, you will find the corresponding figures for FY2013. Provide your comments on the expected evolution from FY2013 to FY2015. Explain the reasons for the improvement (or lack of improvement) in ROE in a2), with a focus on changes in the specific component metrics. (5 points)

Mr. A, working for the society BB Securities, examined Company X's explanations carefully and recently published a report asserting that it will be difficult for the company to achieve its targets. Mr. A argues that the company will need to take a number of very bold steps to achieve an ROE above 11% (including improving operational efficiency and changing financial policies). During FY2013, Company X invested a large amount of money in the domestic and international liquor sectors as a first step in improving operational efficiency.

b) Exhibit 2 reflects the numerical results from Mr. A's proposed improvements.

b1) Mr. A's forecast for FY2015 shows considerably more improvement in ROE than Company X's guidance. Refer to Exhibit 3, column III and calculate the 5 factors behind ROE and the changes using the same formula as in a2). (6 points)

b2) From the results of b1), analyze Mr. A's reasoning. Focus on the two metrics below.

- Ratio of operating profit-to-sales of domestic liquor and international liquor.
- Financial leverage (total assets/net worth).

(4 points)

In his report, Mr. A compared Company X to its rival, Company Y (a company that specializes in liquor, which is headquartered in Europe and has global operations). He wanted to identify the factors explaining the large gap between the two companies in ROE and find out whether this gap could be reduced.

c) Exhibit 3, column I, contains FY2013 financial data for Company Y, Company X's rival. Even if Company X achieves an ROE of 11% by the end of FY2015, it will still be a long way from Company Y's ROE of 18.8%.

c1) Mr. A believes that Company X can achieve an ROE that is the same as Company Y. The first thing he focused on was Company X's accounting treatment. Company X includes liquor tax to both sales and cost of sales (Company Y does not). This is because Company X collects liquor tax on behalf of the government for domestic Japanese sales. The amount paid for FY2013 was CU 4,291 (CU = Currency Units). Calculate the operating profit-to-sales and total-asset-turnover ratios (sales-to-total assets) for the FY2013 when liquor tax is deducted from sales and cost of sales.

(5 points)

c2) According to Mr. A, only Company X's liquor businesses should be compared against Company Y because Company Y specializes in liquor sales. Exhibit 3, column IV, contains Mr. A's estimates for the liquor units. Calculate the corresponding operating profit-to-sales ratio and ROE. (5 points)

c3) The results from c2) bring Company X's ROE considerably closer to Company Y's. What should Company X do in going forward to maintain its ROE at levels comparable to Company Y? Discuss two points. (5 points)

(Figures in Exhibit 1 and Exhibit 2 are in CU, CU = Currency Units)

**Exhibit 1**

**Company X's guidance**

| Company X's sales target | FY2012 actuals | FY2013 actuals | FY2014 forecast | FY2015 forecast |
|---|---|---|---|---|
| Segment information | | | | |
| Sales | | | | |
| Domestic liquor unit | 9,440 | 9,676 | 9,918 | 10,166 |
| International liquor unit | 1,562 | 1,687 | 1,822 | 1,968 |
| Beverages and food unit | 4,789 | 4,912 | 5,038 | 5,169 |
| Total | 15,791 | 16,275 | 16,778 | 17,303 |
| Operating profit | | | | |
| Domestic liquor unit | 1,098 | 1,151 | | |
| International liquor unit | 41 | 49 | | |
| Beverages and food unit | 80 | 87 | 95 | 101 |
| Total | 1,219 | 1,287 | | |

**Company X's guidance on numbers in major financial statement items**

| Profit and loss statement-related | FY2012 | FY2013 | FY2014 forecast | FY2015 forecast |
|---|---|---|---|---|
| Sales | 15,791 | 16,275 | 16,778 | 17,303 |
| Operating Profit (= EBIT) | 1,219 | 1,287 | (1) | (2) |
| Financial balance | -98 | -73 | -56 | (6) |
| a) Financial income | 60 | 73 | | |
| b) Financial expenses | -158 | -146 | | |
| Pretax income | 1,121 | 1,214 | | |
| Tax rate | 40% | 40% | 40% | 40% |
| Net income | 672 | 728 | (3) | |

| Balance sheet-related | End of FY2012 | End of FY2013 | End of FY2014 | End of FY2015 |
|---|---|---|---|---|
| Financial assets | 3,006 | 3,450 | | |
| Current assets | 4,948 | 5,094 | 5,252 | 5,415 |
| Tangible fixed assets | 9,368 | 9,213 | (4) | |
| Total assets | 17,322 | 17,757 | 18,239 | (7) |
| | | | | |
| Financial liabilities | 3,961 | 3,661 | 3,361 | |
| Current liabilities | 6,092 | 6,282 | 6,476 | 6,678 |
| Total liabilities | 10,053 | 9,943 | 9,837 | 9,739 |
| | | | | |
| Net worth | 7,269 | 7,814 | | |
| | | | | |
| Total liabilities and net worth | 17,322 | 17,757 | | (7) |

| Cash flow (CF) statement | FY2012 | FY2013 | FY2014 | FY2015 |
|---|---|---|---|---|
| I) Operating CF | 1,171 | 1,376 | | |
| Net income | 672 | 728 | | |
| Change in working capital | -25 | 43 | 37 | 38 |
| Depreciation of tangible fixed assets | 524 | 605 | 625 | 651 |
| | | | | |
| II) Investing CF (= a) | -1,100 | -450 | -500 | -550 |
| a) Capital Expenditures on tangible fixed assets | -1,100 | -450 | -500 | -550 |
| | | | | |
| III) Free CF | 71 | 926 | | |
| | | | | |
| IV) Financing CF | 325 | -482 | | |
| a) Financial liabilities (+ increase, -decrease) | 450 | -300 | -300 | -300 |
| b) Dividends paid | -125 | -182 | | |
| | | | | |
| Net CF | 396 | 444 | (5) | 472 |

**Exhibit 2**

**Mr. A's forecast**

| Sales and operating income by segment | FY2013 actuals | FY2014 forecast | FY2015 forecast |
|---|---|---|---|
| Segment information | | | |
| Sales | | | |
| Domestic liquor unit | 9,676 | 9,937 | 10,206 |
| International liquor unit | 1,687 | 1,940 | 2,231 |
| Beverages and food unit | 4,912 | 5,039 | 5,168 |
| Total | 16,275 | 16,916 | 17,605 |
| **Operating profit** | | | |
| Domestic liquor unit | 1,151 | 1,242 | 1,338 |
| International liquor unit | 49 | 76 | 109 |
| Beverages and food unit | 87 | 95 | 101 |
| Total | 1,287 | 1,413 | 1,548 |

**Major financial metric forecasts**

| Profit and loss statement-related | FY2013 actuals | FY2014 forecast | FY2015 forecast |
|---|---|---|---|
| Sales | 16,275 | 16,916 | 17,605 |
| **Operating Profit (= EBIT)** | 1,287 | 1,413 | 1,548 |
| Financial balance | -73 | -69 | -60 |
| **a) Financial income** | 73 | 77 | 86 |
| **b) Financial expenses** | -146 | -146 | -146 |
| **Pretax income** | 1,214 | 1,344 | 1,488 |
| Tax rate | 40% | 39% | 38% |
| Net income | 728 | 820 | 923 |

| Balance sheet-related | End of FY2013 | End of FY2014 | End of FY2015 |
|---|---|---|---|
| Financial assets | 3,450 | 3,868 | 4,296 |
| **Current Assets** | 5,094 | 5,294 | 5,510 |
| Tangible fixed assets | 9,213 | 9,088 | 8,987 |
| Total assets | 17,757 | 18,250 | 18,793 |
| | | | |
| Financial liabilities | 3,661 | 3,661 | 3,661 |
| **Current liabilities** | 6,282 | 6,529 | 6,795 |
| Total liabilities | 9,943 | 10,190 | 10,456 |
| | | | |
| Net worth | 7,814 | 8,060 | 8,337 |
| | | | |
| Total liabilities and net worth | 17,757 | 18,250 | 18,793 |

| Cash flow (CF) statement | FY2013 actuals | FY2014 forecast | FY2015 forecast |
|---|---|---|---|
| I) Operating CF | 1,376 | 1,492 | 1,624 |
| Net income | 728 | 820 | 923 |
| Change in working capital | 43 | 47 | 50 |
| Depreciation of tangible fixed assets | 605 | 625 | 651 |
| | | | |
| II) Investing CF (= a) | -450 | -500 | -550 |
| a) Capital expenditures on tangible fixed assets | -450 | -500 | -550 |
| | | | |
| III) Free CF | 926 | 992 | 1,074 |
| | | | |
| IV) Financing CF | -482 | -574 | -646 |
| a) Financial liabilities (+ increase, -decrease) | -300 | 0 | 0 |
| b) Dividends paid | -182 | -574 | -646 |
| | | | |
| Net CF | 444 | 418 | 428 |

**Exhibit 3: ROE 5-factor analysis**

| | I | II | III | IV |
|---|---|---|---|---|
| | Company Y | Company X | Company X according to Mr. A | Company X, liquor units only |
| | FY2013 actuals | FY2013 actuals | FY2015 forecast | Mr. A's FY2013 estimates |
| ROE | 18.8% | 9.3% | | |
| | | | | |
| Net income / pretax income | 82.7% | 60.0% | | 60.0% |
| Pretax income / operating profit (= EBIT) | 92.4% | 94.3% | | 92.0% |
| Operating profit (= EBIT) / sales | 12.6% | 7.9% | | |
| Sales / total assets | 0.80 | 0.92 | | 0.77 |
| Total assets / net worth | 2.44 | 2.27 | | 2.45 |

**<u>Question 3:</u> Corporate Finance / Equity valuation and analysis** **(52 points)**

Telecom North is an established telecommunications company that offers fixed-line and mobile telephony, as well as broadband and internet services in many European countries. For several years, Telecom North has exhibited extraordinarily high growth but due to increasing market saturation in its core markets, the CEO, Rene Overbeck, pushed the company to expand overseas by acquiring the subsidiary of a Mexican state owned enterprise. However, the company's attempt to enter new markets proved to be a financial disaster as customers largely deserted to local competitors and, thus, the company had to abandon its Mexican operations. Apart from this setback, Telecom North is highly profitable and analysts expect this outstanding performance to continue into the foreseeable future. This is reflected in the financial statements given below which are projected for the coming four years by the leading investment bank TMT Invest.

The board members are preparing for a meeting in which they want to discuss several proposals by the company's CEO Rene Overbeck. To assess the impact of these proposals on the market value of the company, the board members receive further company details and capital market data. Currently, the company has 80,000 shares outstanding. Telecom North is rated A- and comparable corporate debt in this rating category trades at a yield of 6%. The company currently is debt free. The applicable tax rate is 40%. Currently, the risk-free rate equals 4% and the expected stock market return is 12%. Telecom North's current share price is CU (Currency Unit) 50 and its beta is 1.25.

**Table 1: Projected Income Statement**

| (in CU) | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| Sales | 1,100,000 | 1,240,000 | 1,320,000 | 1,425,000 |
| Operating Cost | 620,000 | 685,000 | 724,400 | 788,600 |
| Depreciation | 210,000 | 220,500 | 238,200 | 262,300 |
| Interest Expense | - | - | - | - |
| Profit before Taxes | 270,000 | 334,500 | 357,400 | 374,100 |
| Income Taxes | 108,000 | 133,800 | 142,960 | 149,640 |
| Profit after Tax | 162,000 | 200,700 | 214,440 | 224,460 |

**Table 2: Projected Balance Sheet (Book Values)**

| (in CU) | **0** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|---|
| Inventories | 100,000 | 122,000 | 141,300 | 156,240 | 168,100 |
| Receivables | 300,000 | 308,300 | 321,940 | 343,360 | 370,900 |
| Payables | 400,850 | 428,420 | 458,940 | 494,410 | 532,190 |

**Table 3: Projected Investments**

| (in CU) | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| Capital expenditures | 60,000 | 70,500 | 82,200 | 85,400 |

a)

a1) Calculate the free cash flows available to shareholders and determine the theoretical share price at the beginning of year 1. Assume that cash flows will grow at 4% p.a. after the fourth year. (14 points)

a2) A recent report by a telecommunications analyst from TMT Invest predicts a theoretical price of CU 54 for Telecom North in the near future. In their report, the analysts are forecasting dividends of CU 270,000 for year 1, CU 300,000 for year 2, and CU 345,000 for year 3. The dividends are expected to grow at a long-term growth rate thereafter. The dividend payment for the past financial year takes place on the first day of the new financial year. The report also states that Telecom North's cost of equity capital is 15%. Calculate the long-term growth rate embedded in the analyst's report using the dividend growth model. (8 points)

b) One proposal by the CEO concerns the company's use of leverage. Observing a significant amount of unused debt capacity, Overbeck proposes to use debt in order to fend off the threat of a hostile takeover and pressure by large institutional investors. His proposal contains the following details:

- Raise CU 800,000 of convertible debt by issuing 5 year notes at par with an annual coupon of 5%.
- Sell off vacant corporate real estate, that is no longer used for operations, to real estate investment trusts (REITs). This transaction is expected to raise CU 200,000.
- Distribute the proceeds to shareholders by making a tender offer to buy back shares at CU 60 a share.

Overbeck expects that these transactions will raise the company's stock price to CU 60 and will lift the company leverage (debt to assets) to its target level of 50%.

b1) Determine the net present value of the 'financing advantage' due to selling a convertible bond with a coupon of 5% at par (par value CU 1000) instead of a straight bond. Use the company's cost of debt in your calculation. What does this 'financing advantage' reflect in economic terms? (5 points)

b2) Calculate the weighted average cost of capital before and after these transactions. Base your calculations on Overbeck's expectation of a debt to asset ratio of 50% being met after these transactions. (10 points)

b3) Explain why each of these transactions is suitable to lower the company's cost of capital and raise the company's share price. In particular, use your knowledge of the impact of tax shields and agency problems on capital structure and firm value. (6 points)

c) When answering this question, assume that none of the above mentioned proposals has been implemented yet. Another proposal of Overbeck concerns the company's strategy. After the failed overseas expansion, he proposes to focus instead on cross-selling opportunities in Telecom North's core markets by combining telephone, internet and digital television services into a single package for customers. He projects incremental cash flows from this project of CU 70,000 in the first year, CU 95,000 in the second year and CU 110,000 in the third. Thereafter, cash flows are expected to grow by 3% p.a. However, due to the inherent risks of expanding the current business model to include digital television services, the *asset* beta equals 1.6 for this new project. Furthermore, an initial outlay of CU 750,000 is necessary to implement this project. Based on the company's current capital structure and his estimate for the company's current cost of equity of 15%, Overbeck has figured out that this project will increase shareholder value by approximately CU 76,000.

Do you agree with Overbeck's approach in the capital budgeting process? Explain and show graphically why Overbeck should pay particular attention to project-specific risk in the calculation of the project's net present value. Calculate the correct net present value based on Overbeck's assumptions. What stock market reaction do you expect upon the announcement of this project? Explain your answer. (9 points)

**<u>Question 4:</u> Equity valuation and analysis / Corporate Finance** **(33 points)**

a) Below is ABC Co.'s earnings forecast for the next 3 years. The company has no debt, and holds surplus cash of 2 billion dollars.

(Unit: 1 million dollars)

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| Sales | 6,220 | 6,657 | 7,254 |
| Operating income | 1,839 | 1,902 | 2,125 |
| Depreciation | 1,866 | 1,998 | 2,176 |
| Capital expenditure | 2,417 | 2,570 | 2,796 |
| Increase in net working capital | 102 | 126 | 142 |

a1) Based on the forecast, what will be the free cash flow to equity (FCFE) over the next 3 years? Assume in your answer that ABC Co. continues to be debt-free. Also assume that cash holdings do not earn interest, and that there is no non-operating profit/loss or extraordinary profit/loss. The corporate income tax rate is 35%. (6 points)

a2) Compute the value of ABC Co.'s operating assets and the value of its cash to calculate its theoretical share price as at the beginning of FY2014. Assume in your answer that from 2017 onwards ABC Co.'s free cash flow to equity grows at a rate of 7% p.a. Also assume that the company has 100 million issued and outstanding shares and the required rate of return on equity is 11%. (5 points)

b) ABC Co.'s chief executive is thinking about using the 2 billion dollars in surplus cash to launch a new business beginning in early FY2014. The plan is for the new business to have a rate of return (net profits/operating assets at the beginning of the year) of 14%, and to allocate 35% of the net profits produced by the new business to net investment (capital expenditure + increase in net working capital - depreciation charge) in the new business.

b1) What will be the free cash flow to equity (FCFE) of the new business in FY2014? (4 points)

b2) How much will the value of ABC Co.'s equity grow because of the new business? Assume the required rate of return of the new business is 13%. (6 points)

c) ABC Co.'s chief executive is considering using the 2 billion dollars in surplus cash to repurchase the company's shares instead of launching the new business.

For the purposes of questions c1) and c2), calculate the value of operating assets at 14 billion dollars.

c1) What will be ABC Co.'s theoretical share price if the company repurchases its shares for 160 dollars per share? (4 points)

c2) ABC Co. ultimately decides not to launch the new business or touch the 2 billion dollars in surplus cash, but instead borrow 2 billion dollars at an interest rate of 5% and use that money to repurchase its shares at the market share price of 160 dollars.

What will be the company's theoretical share price taking account only of the present value of the tax shield effect from the debt interest generated by the borrowing, all other things being equal? Assume in your answer that the borrowing will continue to be 2 billion dollars going forward, and use the debt interest rate of 5% as the discount rate for the tax shield effect. The value of operating assets is still 14 billion dollars.

(8 points)