Corporate Finance, Spring, 2011
Final Exam
Friday, May 20th, 2011

Writing time: 5 hours
Use of calculators is allowed

Points per each question as indicated. Maximum score is 80 points for Corporate Finance (8 ECTS) students, and 65 points for Corporate Governance (6 ECTS) students. **The Corporate Governance students do not answer question number 5 (if you are uncertain about it, you are probably not a Corporate Governance student).** 50% of the available points are required for a passing grade. In your answers to the essay questions, avoid going beyond one page. A collection of financial formulas is provided on the last page for your convenience.

1. Consider the following project set up, and answer the following set of multiple choice questions based on it. For each question, choose the most correct option. Unclearly marked choices do not score points. (each of the 6 sub-questions below is worth 2.5 points)

   Midnight Oil Co. is working on an oil exploration project. The company has identified an oil reserve, and they are considering initiation of production on the reserve. Their analysis of the production costs and the current oil market has revealed the following:
   - The cost of setting up the production facility and the drilling operation is estimated at $55 million. This cost is not expected to vary over time, so that even if the company decides to postpone the investment, the cost will remain the same.
   - While unrealistic, for mathematical simplicity, the company is assuming that once the production is started, it will continue to the infinite future.
   - The company sees three alternative scenarios for the future, each with different expectations regarding the price of oil:
     - The first scenario is that the world oil market remains at its current form, and that the price per barrel of oil is $90
     - The second scenario is that alternative fuels become a more viable source of energy, which will reduce the oil price to $45 per barrel
     - The third scenario is that due to dramatic increases in demand, the oil price increases to $150 per barrel
   - The production cost is estimated at $7.50 per barrel, and it will be the same regardless of the oil market conditions
   - Currently, each of the three scenarios is viewed as equally likely. However, in two years, the company expects to learn which scenario represents the reality most accurately.
   - Once the production is commenced, the facility will produce 100,000 barrels of oil per year
   - The company's cost of capital is 11.25%
   - All cash flows are assumed to take place at the end of each year, except of the initial investment, which takes place immediately upon investment.

1.1. What is the NPV of the project if the company has to choose between developing the project either now or never?

a) $3.81 million
b) $22.8 million
c) $73.9 million
d) $654.5 million

1.2. What type of a real option is illustrated in the problem

a) an expansion option
b) an abandonment option
c) a rainbow option
d) a timing option

1.3. This type of an option resembles a

a) put option
b) call option
c) compound option
d) executive option

1.4. What is the current value of the project if the company optimizes its value given the information provided?

a) $6.1 million
b) $23.9 million
c) $24.2 million
d) $30.0 million

1.5. How would the value of the option change if the low and the high potential outcomes were further apart (in other words, if the volatility of the underlying asset were greater)?

a) the value of the option would remain unchanged
b) the value of the option would increase
c) the value of the option would decrease
d) the correct choice depends on the outcome of the market

1.6. Given your answers to questions 1.1, and 1.4 above, the value of the option in this case is (provide your answer on the line below, no work necessary)

$1.4 million

2. Discuss the challenges in evaluating projects with unequal life spans. What different methods can be used to overcome the challenges? How does the unequal lives problem affect evaluation of replacement projects? (15 points)

3. How can the debt and equity claims be viewed as options? What types of options are they? Illustrate the management's risk-shifting motives in light of the option analogy. (15 points)

4. a) As discussed during a guest lecture, Chrysler Corporation filed for Chapter 11 renegotiation bankruptcy at the end of April, 2009. Discuss the merits of renegotiation bankruptcy, compared to liquidation bankruptcy. How can even debt holders benefit from renegotiation (10 points)?

   b) After the renegotiations, Chrysler's ownership structure is as follows:

United Auto Workers	67.7%
US Treasury	9.8%
Canada	2.5%
Fiat	20.0%
	100%

   Discuss the corporate governance implications of this ownership structure by focusing on incentives and willingness to corporate risk-taking (10 points).

5. **STUDENTS ENROLLED IN HANKEN'S CORPORATE GOVERNANCE PROGRAM DO NOT ANSWER THIS QUESTION** What is debt tax shield? How should existence of debt tax shields affect firms' capital structure decisions? If the debt tax shield were the only factor affecting firms' capital structure decisions, what type of leverage percentages should we observe? Discuss the incentives of firms with persistent losses and tax loss carry-forwards to carry debt, compared to other firms (15 points).