

Third Midterm Exam

No points will be given by simply writing down formulas, and writing down definitions or irrelevant statements from the book, or saying "yes," will get you zero points. Justify all your answers. If you cannot prove something give some intuition. Good luck. Reminder: this is an open book exam, but no open notes.

Time: 1hr 25 minutes.

I. Problems (10 points each).

1. Quahong Inc., a U.S. firm, plans to invest in a new project that will be located either in Venezuela or in Colombia. If the Venezuelan project is selected, it will constitute 40% of the firm's total funds invested in it. If the Colombian project is selected, it will constitute only 10% of the firm's total funds. Assume the U.S. risk free rate is 3%. You have the following data on expected returns for each project:

	Quahong	Venezuela	Colombia
Expected return	11%	20%	30%
Standard deviation	15%	25%	55%
Correlation with existing Quahong's portfolio	1.00	.35	.05
Weight on overall portfolio	-	.40	.10
Beta	.85	1.10	1.30

- Based on the Sharpe Ratio, which project would you recommend to Quahong?
- Based on the Treynor Ratio, which project would you recommend to Quahong?
- Is Quahong, under both criteria, better off without adding any project?

2. Griffin Corporation, a U.K.-based MNC, has a subsidiary in Venezuela that manages oil fields. The subsidiary believes it could also enter into the gas exploration business. The following data has been compiled for the analysis (in Bolivares (VEB), Venezuela's currency):

- Initial outlay: VEB 3000 million
- Life of the project: 3 years
- Gross profits per year: VEB 2000 million
- Depreciation: 10% of initial outlay
- Salvage value: VEB 1500 million
- Exchange rate: 2000 VEB/GBP
- Forecasted exchange rates: $E[S_{t+1}] = 2100$ VEB/GBP; $E[S_{t+2}] = 2200$ VEB/GBP; $E[S_{t+3}] = 2400$ VEB/GBP.
- The Venezuelan government imposes a 30% tax on profits.
- The Venezuelan government also imposes a 10% withholding tax on any funds remitted to the U.K. parent house (including salvage value).
- The U.K. government imposes a 10% tax on remitted funds, excluding salvage value. There is no tax credit allowed.
- The required rate of return is 15%.

- i.- What is the evaluation of the project for Griffin Corporation's Venezuelan subsidiary?
- ii.- What is the evaluation of the project for Griffin Corporation?
- iii. Does Griffin's decision depend on salvage value? (Calculate SV^{BE})
- iv.- Would you recommend the project to Griffin Corporation?

3. Suppose Telefónica (TEF) is considering offering cellular phone service in Panamá, El Salvador, Guatemala, Nicaragua and Honduras. The success of the investment, with a 10-year horizon, depends on the number of subscribers. TEF determines two states for the numbers of subscribers: “high growth” or “low growth.” If the state is “high”, the expected NPV of future cash flows is EUR 80M per market; if the state is “low,” the expected NPV of the future cash flows is EUR 20M per market. Suppose, the probability of a high number of subscribers is 50% and after one year TEF knows learns the state (high growth or low growth) for the whole investment. Suppose the upfront initial investment is EUR 45M per market if investing in one market. A joint investment in all markets reduces the total upfront investment by 5%. Evaluate the investment under the 3 situations described in A, B & C, using a discount rate of $k=15\%$:

A. TEF invests in one market only, Panamá.

B. TEF decides to test one market, Panamá, first. After one year, if successful in test market –i.e., number of subscribers is high-, TEF enters the other 4 markets. TEF learns from the investment in Panamá: with this knowledge, now, the upfront investment in additional markets is reduced by 10%, while the probability of high increases to 60% in additional markets.

C. TEF decides to invest in all the markets simultaneously.

D. Explain why the results B & C are different.

4. The annual Bolivian peso (BOB) interest rate is 10% (s.a.), while the annual USD interest rate is 2% (s.a.). Swanson Co., a U.S. firm, entered into a currency swap with a swap dealer, where Swanson receives 3% semi-annually in USD and pays 7% semi-annually in BOB. The notional principals in the two currencies are USD 4 million and BOB 30 million. The swap will last for another two years. Assume the notional principals are also exchanged at the end of the currency swap. The exchange rate is .15 USD/BOB. For simplicity, assume the term structure in Bolivia and in the U.S. is flat.

- A. Draw a diagram showing the semi-annual swap cash flows (in BOB and in USD).
- B. Value this currency swap for Swanson Co.
- C. Suppose the USD depreciates against the BOB. Without doing any calculations, does the value of the swap increase or decrease for Swanson?
- D. A year from now, the exchange rate is .17 USD/BOB. Assuming that nothing else has changed, calculate the new value of the swap for Swanson, using the forward contract decomposition.

II. CASE (20 points).

Note: No points will be given by simply writing lines from the article. Briefly justify your answers.

Read the attached article (April 17, 2003) and briefly answer the following questions:

1) Given what you learned in this class, what kind of additional risk is ABN Amro Holding NV taking by investing in Brazil? What can ABN Amro Holding do to minimize these additional risks?

2) According to the article, many larger international banks are scaling back their operations in Brazil. Why are these big international banks reducing their investment from Brazil? (Do not repeat what the article states.)

3) According to the article, the Brazilian economy is struggling with high interest rates. Have the recent measures taken by President Lula da Silva reduce or increase country risk? Assume U.S. interest rates constant, measure the change in country risk since September 2002.

4) According to the article, ABN Amro agreed to pay BRR 2.29 billion for the Brazilian unit of Banca Intesa SpA in cash and stock. Assume that ABN borrows 30% to pay the agreed amount. Assume ABN Amro's spread in Brazil is 90 bps over the yield of government bonds. Assume the Brazilian banking sector has a beta of 1.10. The Brazilian stock market has an average return of 13%. The tax rate in Brazil is 30%. Assuming that there are no other loans to the new company, calculate the cost of capital for the new entity.

5) Historically, the average annual rate of return in the Brazilian automotive sector is 14%, while the average annual rate return on ABN Amro is 10%. Assume the historical rates of return are a good forecast for future rates of return. By how much would the Brazilian real have to change to cause ABN Amro's Brazilian investment to be unattractive?