Topic 8: International Capital Budgeting

1. Why is Capital budgeting analysis so important to the firm?
2. What is the intuition behind the NPV capital budgeting framework?
3. Discuss what is meant by the incremental cash flows of a capital project.
4. Discuss the difference between performing the capital budgeting analysis from the parent firm's perspective as opposed to the project perspective. (*)
5. Early results on the Lexus, Toyota's upscale car, showed it was taking the most business from customers changing from either BMW (15%), Mercedes (14%), GM's Cadillac (12%) or Ford's Lincoln (6%). With what in the auto business is considered a high percentage of sales coming from its own customers, how badly is Toyota hurting itself with Lexus? **(*)**
6. Suppose a firm projects a $5 million perpetuity from an investment of $20 million in Spain. If the required return on this investment is 20% how large does the probability of expropriation in year 4 have to be before the investment has a negative NPV? Assume that all cash inflows occur at the end of each year and that the expropriation, if it occurs, will occur prior to the year 4 cash inflow or not at all. There is no compensation in the event of expropriation. **(*)**
7. Suppose a firm has just made an investment in France that will generate $2 million annually in depreciation, converted at today's spot rate. Projected annual sales of inflation in France and in the US are 7% and 4% respectively. If the real exchange rate is expected to remain constant and the French tax rate is 50%, what is the expected real value (in terms of today's dollars) of the depreciation charge in year 5, assuming that the tax write-off is taken at the end of the year? **(*)**
8. What is the terminal value of a project? How is it calculated?
9. What is meant by the cannibalization of an export market?
10 Why is it necessary to consider real currency appreciation and depreciation forecasts when doing an international capital budgeting analysis?

Problems

(1) Suppose that a foreign project has a beta of 0.85, the risk-free return is 12%, and the required return on the market is estimated at 19%. What is the cost of capital for the project? **(*)**

(2) Jim Toreson, CEO of Xebec Corp., a California, manufacturer of disk-drive controllers, must decide whether to switch to offshore production. Given Xebec's well-developed engineering and marketing capabilities, Toreson could use offshore manufacturing to ramp up production, taking advantage of low-wage labor, tax holidays, low-interest loans, and other government largess. Most of his competitors seem to be doing it. The faster he follows suit, the better off Xebec would be according to the conventional discounted cash-flow analysis, which shows that switching production offshore is clearly a positive NPV investment. However, Toreson is concerned that such a move would entail the loss of certain intangible strategic benefits associated with domestic production. (*)

a. What might be some strategic benefits of domestic manufacturing for Xebec? Consider the fact that its customers are all U.S. firms and that manufacturing technology – particularly automation skills – is key to survival in this business.

b. What analytic framework can be used to factor these intangible strategic benefits of domestic manufacturing (which are intangible costs of offshore production) into the factory location decision?

c. How would the possibility of radical shifts in manufacturing technology affect the production location decision?

d. Xebec is considering producing more-sophisticated drives that require substantial customization. How does this possibility affect its production decision?

e. Suppose the Taiwan government is willing to provide a loan of $10 million at 5% to Xebec to build a factory there. The loan would be paid off in equal annual installments over a five-year period. If the market interest rate for such an investment is 14%, what is the before-tax value of the interest subsidy?

[**Note**: We are doing this question for (e)]

(3) International Cuckoo Clock Corporation (IC^3), a Switzerland based manufacturer of Cuckoo Clocks, is considering an expansion into Asia after its expansion into the US last summer was highly successful. Currently, IC^3 does export clocks to Asia, but the increased Asian demand raises the question of an expansion in Asia. IC^3 is trying to decide whether to establish a Cuckoo Clock manufacturing plant and office in Japan where the clocks would be built and then sold across Asia.

The cost of the expansion is ¥80,000,000, which must be expended in the very, very near future. Moreover, IC^3 would have to fund **additional** working capital of ¥5,000,000 at the time of the expansion. Further investment in net working capital would be ¥5,000,000, ¥8,000,000, and ¥10,000,000 in year 1, 2, and 3 respectively. If it builds the plant, IC^3 will **depreciate** it at a rate of ¥5,000,000 per year (starting in year 1) and will have to fund additional **capital expenditures** of ¥8,000,000 per year to maintain and improve the plant. Although the project is assumed to have an **infinite** life, cash-flows are only projected up to three years and the **terminal value** of the project is computed based on the **year 3 free cash-flow (FCF)** assuming a **growth rate** that equals the Japanese long-run GDP growth rate.

Other relevant data is given in the tables below. All **taxes** are paid in Japan in the year the income is earned. Tax treaties are in effect so that IC^3 will have no tax obligations to the Swiss tax authorities. **(*)** ***(Past Exam Question)***

	Japan		**Switzerland**
Price inflation	5%		4%
Annual return on government bonds	9%		7%
Corporate tax rate	40%		30%
Equity market risk premium CHF			8.6%
Spot rate—S(CHF/¥)		0.01000	
Before tax cost of debt			10%
Debt-to-value ratio (**D/V)**		0.40	
Systematic risk (beta)		0.8	
Japanese long-run GDP growth rate		6%	

Free Cash Flows for three years

	Year 0	Year 1	Year 2	Year3
Net profit before tax		30.00	40.00	50.00
Taxes	0.00	-12.00	-16.00	-20.00
Net profit after tax	0.00	18.00	24.00	30.00
Depreciation	0.00	5.00	5.00	5.00
CAPEX	-80.00	-8.00	-8.00	-8.00
NWC	-5.00	-5.00	-8.00	-10.00
FCF	-85.00	10.00	13.00	17.00

(a) Calculate the cost of capital, in Swiss francs (CHF), for the project.

(b) Calculate the forward exchange rates, F_1(CHF/¥) through F_3(CHF/¥), for the years 1, 2, and 3 based on the spot rate and the interest rates given in the question.

(c) Based on a perpetuity formula, the FCF in yen for year 3 and the Japanese growth rate assumption given in the question what is the terminal value as of year 3? Assume the yen $WACC_{¥}$ is 12.7977%**.**

(d) Calculate the FCF for the years 0, 1, 2 and 3 and the terminal value in CHF using the forward rates calculated in (b).

(e) Should IC^3 expand into the Asian market? Explain completely.