

Topic 7 Solutions: Cost of Capital and Political Risk

Cost of Capital

1. Why are large multinational corporations located in small countries such as Sweden, Holland, and Switzerland interested in developing a global investor base?

Large MNCS located in these small countries often need to raise substantial amounts of capital to continue growing. Quite often, the domestic market cannot provide this amount of capital on reasonable terms because local investors already have a large exposure to the local MNC. To add additional MNC paper will make their portfolios even less diversified, leading local investors to demand an added risk premium. By going overseas, MNCs from small countries such as Sweden and the Netherlands can find investors who view stocks and bonds from Dutch and Swedish MNCs as a source of diversification. In other words, although stocks of Dutch and Swedish MNCs comprise a large fraction of local portfolios, they comprise a small fraction of global wealth. The net result is a lower cost of capital for these MNCs from small countries (and hence a higher market value). In addition, developing a global investor base gives these MNCs access to capital in the event their local markets are subject to some event (most likely political) that restricts the ability of MNCs to raise capital there regardless of price.

2. Suppose that your firm is operating in a segmented capital market. What actions would you recommend to mitigate the negative effects?

The best solution for this problem is the cross-listing the firm's stock in overseas markets. This should reduce the cost-of-capital of the firm. In completely segmented markets, investors in these markets are forced to bear all the risk of its economic activities and would require risk premium to bear this risk. There are associated costs such as complying with the accounting and disclosure requirements etc.

3. Explain why and how a firm's cost of capital may decrease when the firm's stock is cross-listed on foreign stock exchanges.

If a stock becomes internationally tradable upon overseas listing, the required return on the stock is likely to decrease as the stock will be priced according to international systematic risk rather than local systematic risk. As a country opens up its capital markets and also allows its residents to invest overseas, the local investors will no longer have to bear the risks associated

with the activities of the local companies on their own. If a firm is restricted to raising capital in the local market, the amount it can raise is dependent on the supply and demand in the domestic capital market. As the firm's capital budget increases, its marginal cost of capital will increase, that is, it can only tap the local market for a limited amount before which its marginal cost of capital starts to increase as investors are less willing to lend more. They can avoid this, by raising capital internationally. As is evident in Exhibit 16.1, the firm can reduce its marginal cost of capital while at the same time increasing the amount it can raise.

4. Discuss how the cost of capital is determined in segmented versus integrated capital markets.

In segmented markets, the cost-of-capital is essentially determined by the securities' domestic systematic risks. In integrated capital markets, on the other hand, the cost-of-capital will be determined by the securities' international systematic risk, regardless of nationality.

5. Explain how the premium and discount are determined when assets are priced to market. When would the law of one price prevail in international capital markets even if foreign equity ownership restrictions are imposed?

The pricing-to-market refers to the case where the same security is priced differently by different investors. The premium/discount at which shares restricted to foreign shareholders are determined by the (i) the severity of restrictions imposed on foreigners, (ii) foreigner's ability to mitigate the effect of these restrictions using their own domestic securities

6. A firm with a corporate-wide debt/equity ratio of 1:2, an after-tax cost of debt of 7%, and a cost of capital of 15% is interested in pursuing a foreign project. The debt capacity of the project is the same as for the company as a whole, but its systematic risk is such that the required return on equity is estimated to be about 12%. The after-tax cost of debt is expected to remain at 7%.

- a) What is the project's weighted average cost of capital? How does it compare with the parent's WACC?

$$\text{WACC can be written as } K_{WACC} = K_e \frac{E}{V} + K_d (1-t) \frac{D}{V}$$

$$K_{WACC} = \frac{2}{3} * 0.12 + \frac{1}{3} * 0.07 = 10.33\%$$

b) If the project's equity beta is 1.21, what is its unlevered beta?

We can use the following approximation to estimate the unlevered beta

$$\text{Unlevered beta} = \frac{\text{Levered beta}}{[1 + (1-t) D/E]}$$

We need to know the firm's marginal tax rate to unlever its beta. Let us assume that it is 40%

$$\text{Unlevered beta} = \frac{1.21}{[1 + (1-0.4) 1/2]} = 0.93$$

7. Comment on the following statement: “There is a curious contradiction in Corporate Finance theory: Since equity is more expensive than debt, highly leveraged subsidiaries should be assigned a low hurdle rate. But, when the highly leveraged subsidiaries are in risky nations, country risk dictates just the opposite: a high hurdle rate.”

There are several issues that we need to consider.

- (i) Country risk is more likely to be unsystematic risk and hence should not affect the cost of capital for a project.
- (ii) As leverage rises, the cost of equity capital rises as well, offsetting in whole or in part the advantage of debt.
- (iii) Subsidiaries may or may not have independent capital structures therefore it may not be possible to determine if its cost-of-capital varies with its leverage.

8. Boeing Commercial Airplane Co. manufactures all its planes in the United States and prices them in dollars, even the 50% of its sales destined for overseas markets. What financing strategy would you recommend for Boeing? What data do you need?

Boeing faces foreign exchange risk for two reasons: (1) It sells half its planes overseas and the demand for these planes depends on the foreign exchange value of the dollar, and (2) Boeing faces stiff competition from Airbus Industrie, a European consortium of companies that builds the Airbus. As the dollar appreciates, Boeing is likely to lose both foreign and domestic sales to Airbus unless it cuts its dollar prices. One way to hedge this operating risk is for Boeing to

finance a portion of its assets in foreign currencies in proportion to its sales in those countries. However, this tactic ignores the fact that Boeing is competing with Airbus. Absent a more detailed analysis, another suggestion is for Boeing to finance at least half of its assets with EURO denominated bonds as a hedge against depreciation of the currencies of its European competitors. EURO denominated bonds would also provide a hedge against appreciation of the dollar against the yen and other Asian currencies since European and Asian currencies tend to move up and down together against the dollar (albeit imperfectly).

9. The CFO of Eastman Kodak is thinking of borrowing Japanese yen because of their low interest rate, currently at 4.5%. The current interest rate on U.S. dollars is 9%. What is your advice to the CFO?

The advice should be "Don't speculate." The international Fisher effect says that the 450 basis point differential reflects a 4.5% expected annual appreciation of the yen against the dollar. Thus, the expected costs of dollar and yen financing should be the same. Unless Kodak needs yen financing to offset a yen transaction or operating exposure, it should stick to dollar financing.

10. Nord Resource's Ramu River property in Papua New Guinea contains one of the world's largest deposits of cobalt and chrome outside of the Soviet Union and South Africa. The cost of developing a mine on this property is estimated to be around \$150 million.

a. Describe three major risks in undertaking this project.

The three principal risks faced by Nord Resource's Ramu River project are the following:

1. **Political risk.** The government of Papua New Guinea may seize the mine if it turns out to be highly profitable. The government may also block repatriation of profits.
2. **Reserve risk.** There may be too few copper reserves or the ore may be too expensive to profitably mine.
3. **Price risk.** The price at which Nord can sell the ore may be too low.

Exchange risk is unlikely to be a major risk. The price at which the copper can be sold is set in dollars. In addition, Nord's most important cost is the cost of developing the mine, which is largely set in dollar terms.

- b. How can Nord structure its financing to reduce these risks?

Nord can use financing to reduce these risks as follows:

1. **Political risk.** Finance the project to the extent possible with funds from the host and other governments, international development agencies, overseas banks, and from customers--with payment to be provided out of production--rather than supplying parent company- raised or parent-guaranteed capital.
2. **Reserve risk.** Use nonrecourse financing with a minimal amount of equity. In this way, the lenders bear the risk of the mine being uneconomical.
3. **Price risk.** Sell the ore in advance at a fixed price. Even if the price varies with the world market price, the typical take-or-pay contract, Nord will have a guaranteed outlet for its ore and will not have to engage in price cutting to sell more output.

- c. How can Nord use financing to add value to this project?

To the extent that Nord can access subsidized financing for the purchase of equipment and contractor services to develop the mine, it should do so. In addition, Nord can add value to the project by using financing to reduce the various operating risks it faces.

11. Although the one-year interest rate is 10% in the United States, one-year, yen-denominated corporate bonds in Japan yield only 5%.

- a. Does this present a riskless opportunity to raise capital at low yen interest rates?

No. According to the international Fisher effect, the 5% interest differential reflects the market's expectations that the yen will appreciate by approximately 5% relative to the dollar over the coming year.

- b. Suppose the current exchange rate is ¥140 = \$1. What is the lowest future exchange rate at which borrowing yen would be no more expensive than borrowing U.S. dollars?

The breakeven exchange rate is found as the solution to $S = 140 \times 1.05/1.10 = ¥133.64$.

- 12. The manager of an English subsidiary of a U.S. firm is trying to decide whether to borrow, for one year, dollars at 7.8% or pounds sterling at 12%. If the current value of the pound is \$1.70, at what end-of-year exchange rate would the firm be indifferent now between borrowing dollars and pounds?**

The breakeven exchange rate change is

$$c = (r_{us} - r_{UK}) / (1 + r_{UK}) = (0.078 - 0.12) / 1.12 = -3.75\%$$

In other words, the pound would have to depreciate by 3.75% during the year for the two loans to have the same dollar cost. A 3.75% pound depreciation would yield an end-of-year exchange rate equal to \$1.63625 ($1.70 \times (1 - 0.0375)$).

- 13. All-Nippon Airways, a Japanese airline, flies exclusively within Japan. It is looking to finance a recent purchase of Boeing 737s. The director of finance for All-Nippon is attracted to dollar financing because he expects the yen to keep appreciating against the dollar. What is your advice to him?**

Since ANA's yen cash flow will not vary in line with the dollar/yen exchange rate, using dollar financing will expose it to exchange risk. The implicit argument for using dollar financing is that yen appreciation will make it cheaper to repay. But this argument ignores the international Fisher effect, which says that a borrower should expect that any gain on loan repayment will be offset by the higher interest rate on a dollar loan. The key question to ask here is: "What's your business? Is it speculating on the future course of the \$/yen exchange rate or is it providing aviation service at a reasonable price?"

- 14. What factors should be considered in deciding whether the cost of capital for a foreign affiliate should be higher, lower, or the same as the cost of capital for a comparable domestic operation?**

Key factors include whether the cash flows of the affiliate are closely tied to the state of the local economy or to the world economy, the correlation between the local and domestic economies, and the volatility of the foreign affiliate's cash flows relative to that of the domestic operation. The greater (lesser) each of these factors, the higher (lower) the foreign affiliate's cost of capital relative to that of the domestic operation. In general, the closer these factors are to each other, the closer their costs of capital.

15. A foreign project that is profitable when valued on its own will always be profitable from the parent firm's standpoint. True or false. Explain.

There are many reasons why project cash flows can diverge from the incremental cash flows accruing to the parent. Increased project cash flows may have been at the expense of other operations (cannibalisation). Converting cash flows from foreign currencies to the home currency may result in lower revenues. Therefore, the correct answer is false.

16. What are some of the market imperfections said to be important in the firm's decision to make foreign investments overseas. (Give examples, with some discussion)

Past Exam Question

- The most important reason has to be a REDUCTION in its cost-of-capital, especially if the firm is from a segmented market.
- By going overseas, they can not only reduce their cost of capital but also increase the amount of capital that they can raise. It will also increase the liquidity of its existing shares. This action is also likely to remove any potential mis-pricing that it might face in a segmented market, illiquid home capital market.
- This would also enable the firm to establish a secondary market for shares used to acquire local firms in the foreign market.
- It may also circumvent many regulatory restrictions, cost and information barriers that might prevent cross-border investment.
- It also increases visibility of the firm and political acceptance to customers, suppliers, and host governments
- It also allows firms to compensate local management and employees through stock options.

Political Risk

1. What factors affect the degree of political risk faced by a firm operating in a foreign country?

There is some evidence to indicate that the political risk faced by the firm is related to

- (1) a function of the industry the firm operates in
- (2) the cost to the country of replacing with a state-owned operation
- (3) the health of the economy
- (4) philosophical leanings of the government
- (5) potential for civil strife in the country

2. What are some indicators of country risk? Of country health?

Country risk in practice is concerned with sovereign credit risk and this determines the extent to which governments and its agencies have access to capital (credit) markets. For instance, the International Credit Risk Guide (ICRG) decomposes country risk into the country's ability to pay and its willingness to pay.

Ability to pay: This is concerned with the country's ability to meet its long- and short-term obligations. This encompasses financial and economic risk. This can be ascertained from an examination of its level of external debt and international reserves, its growth rate, government deficit relative to its GDP (GNP) and also by utilising a large number of other macroeconomic indicators.

Willingness to pay: Cash flow constraints can cause a country to default. Note, that a government can avoid default by allocating the entire proceeds of taxation (not very practical or realistic). Generally this represents political risk. Certain political characteristics can make it more feasible or easier for some political leaders to default on their loan. Generally, a change in leadership brought about by political instability, a coup, assassination etc. makes default more likely.

Indicators of country health include:

- minimal regulations and economic distortions
- incentives to save
- an open economy

- a legal structure that encourages private ownership of property (i.e. it enforces property rights)

3. How does a firm hedge against political risk?

The ways to hedge against this type of risk include (please note that this is not an exhaustive list):

- avoidance
- obtaining insurance against political risk
- negotiating with the government before investing (also known as concession agreements)
- developing local stakeholders (consumers, suppliers, local employees local bankers etc. – could also be in the form of a joint venture with the government)
- planned divestment which would involve MNCs phase out their ownership over a fixed time period by selling all or a majority stake of their interest to local investors
- short-term profit maximisation would entail the firm withdrawing the maximum amount of cash from the local operation.

4. What indicators would you look for in assessing the political riskiness of an investment in Eastern Europe?

Here are some key indicators to look for in assessing the political riskiness of investing in Eastern Europe:

- a) Do they free prices quickly or continue the old system of administered prices that are based heavily on state subsidies? Although a free economy will need free prices, the public still expects the state to protect it against unexpected events. So the working public expects its wages to rise precisely in line with rising prices. If the governments give in on this point and index wages to inflation, they will institutionalize inflation.
- b) Do they dismantle and sell state-owned monopolies quickly?
- c) Do they establish all the paraphernalia of capitalism--including capital markets, tax regimes, and contract law--to go along with their new-found enthusiasm for free markets? These are not mere details. Completing such tasks will embroil the region in all the wrangles about wealth distribution and the size and role of the state which Western countries have spent generations trying to resolve.

Another key indicator of political risk would be seeing governments give in to the temptation to fine-tune their economies in order to reduce the costs of making the transition to a market economy. The constant changes of policy involved in fine-tuning will reduce government credibility--just when it is crucial--and increase the likelihood and costs of policy mistakes. The only hope for success is to devise a complete reform program and implement it as quickly as possible. Governments must convey that their commitment to the program is absolute. Perhaps most important of all, the reform program should include a set of simple rules to govern how policy makers and the public are to operate. This will boost credibility, reduce investor uncertainty, and discourage any efforts by special interest groups, who will be hurt by some of the reforms, to forestall the reform program.

5. What can we learn about economic development and political risk from the contrasting experiences of East and West Germany, North and South Korea, and communist China and Taiwan, Hong Kong and Singapore?

These countries provide us with as close to a controlled economic experiment as we are ever going to find in this world: same peoples, same language, same history, same culture, even members of the same families in many instances, divided by an accident of history. And what we see is that those societies that respect the rights of property and that subject their enterprises to the rigors of competition, particularly global competition, grow more rapidly, create far more wealth, are more innovative, more willing to take risk, and are far more productive than those nations with centrally planned economies. The lesson is as clear as possible: Incentives matter, and they matter greatly.

6. In the early 1990s, China decided that by 2000 it would boost its electricity-generating capacity by more than half. To do that, it is planning on foreigners' investing at least \$20 billion of the roughly \$100 billion tab. However, Beijing has informed investors that, contrary to their expectations, they will not be permitted to hold majority stakes in large power-plant or equipment-manufacturing ventures. In addition, Beijing has insisted on limiting the rate of return that foreign investors can earn on power projects. Moreover, this rate of return will be in local currency without official guarantees that the local currency can be converted into dollars and it will not be permitted to rise with the rate of inflation. Beijing says that if foreign investors fail to invest in these projects, it will raise the necessary capital by issuing bonds overseas. However, these bonds will not carry the "full faith and credit of the Chinese government."

a. What problems do you foresee for foreign investors in China's power industry?

Since the return is set in nominal yuan terms, high inflation--a perennial Chinese problem--will reduce the real value of this return. This high inflation, in turn, will put pressure on the yuan to devalue, lowering the dollar value of the return. Finally, the local currency returns may be blocked. In other words, the dollar return is likely to be lower than the yuan return and the dollar return may never be realized because of inconvertibility.

b. What options do potential foreign investors have to cope with these problems?

Don't invest under these terms. If they do invest, they can buy political risk insurance against currency inconvertibility. They should also negotiate for higher yuan returns to compensate for the anticipated yuan devaluation and the cost of political risk insurance.

c. How credible is the Chinese government's fallback position of issuing bonds overseas to raise capital in lieu of foreign direct investment?

Not very credible. If the bonds don't carry the "full faith and credit of the Chinese government," then investors will either not buy them or, if they do, they will demand an interest rate that will compensate them for the political risks associated with the absence of the guarantee. The bonds will have to be dollar denominated and the interest rate will have to be as high as the dollar yield that investors would expect if they invested directly in the power plants themselves. In other words, the Chinese government will realize no benefit by financing the

power projects through issuing bonds as opposed to enticing investors to provide equity financing for the projects.

**7. What are some ways in which firms can minimize their exposure to political risk?
(Give three examples, with some discussion)** *Past Exam Question*

Political Risk: crudely defined as the possibility that political events can impact on the value of the parent firm. The most extreme example of political risk is EXPROPRIATION, but governments may stop short of that and just make life difficult for the firm.

There are numerous ways in which a firm can minimize such a risk and some of these include avoidance, negotiation with the host government, insurance, develop local stakeholders, increase government's cost of interfering with the firm's operation. Make sure R&D facilities and proprietary technology is kept in the home country.

- Guaranteed way to avoid political risk: Avoid investing in risky countries
- Obtain insurance
- Short-term profit maximisation
- Negotiating investment agreements
- Structuring the investment
- Develop local stakeholders

8. Suppose Oil & Gas Corp (OGC) is considering a joint project with Arafura Petroleum, an oil company in Arafura. OGC's contribution to the project is \$75 million and it predicts it will generate \$50 million per year for two years. They estimate the hurdle rate to be 10%. However the political situation in Arafura is unstable and the current leader has issued statements hinting at nationalising various sectors including Arafura Petroleum. Given this information, OGC's managers estimate the probability that the government will expropriate the property is 12% per year and if this happens cash flows from the project will be zero. (*)

- (a) What is the value of the project when there is no expropriation?

$$V = \frac{\$50m}{1.1} + \frac{\$50m}{1.1^2} = \$86.78$$

The firm should undertake the project as it is positive NPV

- (b) How does the value change after incorporating the possibility of expropriation?

$$\begin{aligned} V &= \frac{(0.88 \times \$50m) + (0.12 \times 0)}{1.1} \\ &\quad + \frac{(0.88^2 \times \$50m) + (0.12 \times 0.88) \times 0 + (0.12 \times 0)}{1.1^2} \\ &= \$40m + \$32m = \$72m \end{aligned}$$

The value is less than the initial investment. The project should not be undertaken.

- 9(a). Biloela Resources (BR), a Queensland based mining company, is considering developing a copper mine in Brazil. It plans to use a subsidiary, *Bahia Mines*, to develop the mine. BR has a 90% share in *Bahia Mines* with the remaining 10% owned by the government of the state of Bahia. BR has completed exploration and feasibility studies and has spent the last few years in the process of acquiring permits to begin development. The proposed mine has “proven and probable reserves” of 50 million tonnes of copper. BR has so far spent USD 200 million and will need an additional USD 800 million to complete the developmental phase of the mine. The plan is to use open pit mining and use “heap leaching”, a process that involves using chemicals to extract copper from crushed ore. It is being considered because it is a low cost process with recovery rates of around 70%. The planned life of the mine is 20 years.

Given the recent Samarco disaster, in the nearby state of Minas Gerais, where the tailings dam at the iron ore mine burst resulting in the loss of lives and the pollution of the Doce river, local community interest groups have become more vocal in their opposition to the mine. These local stakeholders have raised concerns about the potential damage to the tourism sector and to the environment if the use of cyanide contaminates aquifers.

BR estimates that the mine will create jobs and inject billions of dollars into the Brazilian economy and over \$2 billion directly to the treasury of the state of Bahia. However, BR is concerned about this escalating political issue affecting its stock price and the chances of final approval for the project. Given its declining cash reserves it is keen to get started on the developmental phase of the project. The NPV approach indicates that the mining project has a positive valuation and this value is robust to sensitivity analyses done utilizing various key inputs such as cost of capital, royalties paid to the state of Bahia, quantity of reserves, price of copper etc. Despite this upbeat assessment, BR is

concerned about its financing needs. The project is currently funded entirely by equity. Its stock is currently trading at around 75 cents.

How can Bahia ensure it receives the final approval for the mine? If the project is approved, what do you believe, based on understanding of the benefits/costs of various types of financing, is the best way to finance its CAPEX needs?

How to hedge political risk?

1. Raise the ownership stake of the Bahia government; increase royalties paid to the local government
2. Think about using a different extraction method if possible.
3. Ask the Australian government for help.
4. Buy political insurance from the Australian government arm or from Lloyd's of London
5. Argue that it calls in to the question the state and federal government's friendliness towards business and suggest it could hurt growth/development/jobs in the region/tax revenues etc.

How to raise financing?

At such a low stock price, issuing equity makes no sense as it would dilute current owners.

Debt works as "proven and probable reserves" can be used as collateral. But, what type of debt? Bank loan – one lender, more monitoring though likely to be shorter maturity. Bonds owners are likely to be a dispersed group.

- 9(b) In March 2020, the Australian Treasurer announced that the Foreign Investment Review Board (FIRB) would assess all foreign proposals to acquire Australian firms. He said in a statement that "These measures are necessary to safeguard the national interest as the coronavirus outbreak puts intense pressure on the Australian economy and Australian businesses." (Reuters March 30, 2020). Evaluate the argument that the Australian government should impose restrictions because a depreciation of the Australian dollar offers a significant financial advantage to foreign bidders for Australian firms/assets.

Basic premise: Price paid = PV (Expected FCFs)

The argument is made on fallacious reasoning. Suppose the AUD declines in value against a foreign currency (FC). This means for a given dollar bid, a foreign firm will have to spend less FC to acquire AUD (and the Australian firm).

While a depreciating AUD allows a foreign company to buy an Australian firm at a discount, the post-acquisition AUD cash flows are correspondingly less valuable when converted back into FC at the current exchange rate. Thus, it is not obvious that a “cheap” acquisition will create more value.

10. Past Exam question from 2023 (*)

Suppose it is the end of 2023. *High on the Hog*, an Australian hospitality firm, is planning to sell the subsidiary it owns in Chile in two years. Given projections about the state of the economy, projected revenues and costs, the expected sale price is 50 million pesos. Chile has a currency board and its currency is trading at 1 peso per Australian dollar. However, your banker informs you that economists at his bank estimate the probability the currency board will collapse at 20%. Should it collapse, economists expect a devaluation of the local currency against the dollar of 25%. Furthermore, political risk analysts at ICRG contend that there is a 10% chance of complete expropriation in the event of the currency board collapsing. What is the maximum price that *High on the Hog* can hope to receive from the sale?

Currency board: currencies are at par; *1 peso per AUD* (as per question) **or** 1 AUD per peso

Expected dollar sales price in a world with devaluation:

$$50\text{m} \times 1 \$/\text{peso} \times 0.80 + 50\text{m} \times \$ 0.75/\text{peso} \times 0.20 = \$47.5^*$$

Adjusting the expected dollar price with expropriation probability:

$$47.5 \times 0.90 + 0 \times 0.10 = 42.75$$

Taking into account the correlation between political and currency risk:

$$\text{CFs in the } \underline{\text{event of devaluation}} \text{ and } \mathbf{NO} \text{ expropriation} = 50 \times 0.75 = 37.5$$

	Probability	Dollar Sale Price
No devaluation, no expropriation	80%	\$50m
25% devaluation, no expropriation	10%	\$37.5
25% devaluation and expropriation	10%	\$0

Taking into account devaluation, we get: $50m \times 0.80 + 37.5 \times 0.10 + 0 \times 0.10 = \$43.75m$

- * I have flipped the quote, so I have the Peso in denominator. This question leverages your understanding of probabilities.