AcF305:
International Financial and Risk Management
Week 9

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Outline of Lecture 9

- Essential reading: Chapter 21 of Sercu (2009) and slides.

- Topics:

  - Domestic capital budgeting

  - What is the weighted average cost of capital? Is it any good? Why would using an adjusted NPV approach be preferable?

  - International capital budgeting varies from the domestic project evaluation in a number of context

  - Capital investment in a foreign context may be subject to political risk

Reminder of Domestic Capital Budgeting

- General Rule: Accept an investment project, if its NPV > 0; of 2 mutually exclusive projects, accept the one with the higher NPV.

- Several aspects are important to remember:

  - Discount net cash flows (what comes in minus what goes out)

  - Adjust for time effects in cash flows, e.g. some costs occur early (employee wages), while some inflows occur late (accounts receivable).

Domestic NPV – Example

- A Chinese company, considers setting up a new business unit in its homeland
- The initial investment costs are as follows:
    1. Land, CNY 100; expected liquidation value CNY 130 (inflation 5% p.a.).
    2. Plant & equipment, worth CNY 350; scrap value: nil (depreciation: linear).
    3. Entry costs, worth CNY 250 (depreciation: linear).
- Data on the annual cash flows is shown in the table:

Year	(a1) Sale of goods	(a2) Sale of land	(b) Variable costs	(c) Overheads	(d) Depreciation	(e) Taxable income	(f) Taxes
1	650	—	260	105	120	165	58
2	1,000	—	400	110	120	370	130
3	1,100	—	440	116	120	424	148
4	600	—	240	122	120	118	41
5	300	—	120	128	120	−68	−24
6	—	130	—	—	—	30	11
PV	1,991	40	872	312	—	—	198

- Using a discount rate of 20%, the NPV equals:

$$NPV = \sum_{t=1}^{5} \frac{sales_t}{1.2^{t+0.75}} - \sum_{t=1}^{5} \frac{var\,costs_t}{1.2^{t+0.25}} - \sum_{t=1}^{5} \frac{overhead_t}{1.2^{t+0.5}} + \frac{land_5}{1.2^{6.5}} - \sum_{t=1}^{5} \frac{taxes_t}{1.2^{t+1}} - \frac{invest_t}{1.2^{0.50}} = -13$$

with specific assumptions about the timing of cash flows.

Adjusted Net Present Value I

- Capital budgeting considers incremental cash flows, i.e. the change of company-wide cash flows from accepting the project.
  - Managers discount the investment outlay, not depreciation: real cash is discounted, not imaginary cash.
  - The acceptance of a project could change the cash flows of other business units in the firm: recognize these changes.
    Example: Weltek buys some of its input from another business unit → generates cash inflows for this other unit.

• NPV of the cash flows realized by the new business unit	−13m
• PV of the linked cash flows generated by the supplying unit	71m
Total (in CNY):	58m

- Most NPV input variables are highly uncertain and difficult to estimate:
  → always perform a sensitivity analysis, e.g. how does NPV change
  - … if sales were 10% lower than initially expected?
  - … if costs were 20% higher than initially expected?
  - … if the discount rate is 5% higher or lower than 20%?

Adjusted Net Present Value II

- In the initial stage, it is assumed that a firm is 100% owned by its shareholders and that no new capital needs to be raised.
  - Allows managers to concentrate on economic (intrinsic) value and to not get distracted by financing issues.

- If this assumption does not hold, then NPV must be adjusted for, e.g.:
  1. Transaction costs from raising equity or debt capital.
  2. The tax advantage of debt (interest payments are tax-deductible).

- Example of the tax benefits of debt:
  - Ms. Taikoon is the sole equity owner of a firm making a perpetual EBIT of EUR 50m; the company tax rate is 30%.
  - Assume she gives a loan of 500m to the firm (with 5% interest), which the firm uses to partially buy her equity → ownership remains the same.
  - ... but the company's taxable profits decrease by 500m * 5% = 25m and thus corporate tax savings are 25m * 30% = 7.5m.

Limits to the Usage of Debt

- However, the tax advantages to debt might be overstated:
  - Analysis so far only considers corporate taxes and abstracts from personal taxation: ultimately, investors care about what ends up in their pockets.
- Example: At the personal level, Ms. Taikoon is taxed at 30% on interest income, but at 0% on dividends:

$$\text{all equity} \rightarrow \underbrace{0.3 * 50}_{\text{company tax}} = 15$$

$$\text{equity \& debt} \rightarrow \underbrace{0.3 * (50 - 25)}_{\text{company tax on profit}} + \underbrace{0.3 * 25}_{\text{personal tax on debt}} = 15$$

- Other problems:
  - If debt has tax advantages, the demand for debt will be high.
  - High demand implies that debtholders can charge higher interest rates; thus, they partially capture the tax shield – not the shareholders.

Use WACC?

- Adjusted NPV (ANPV) suggests to compute project value *as if* the firm is all equity-financed and later to adjust for financing issues.
- A different approach: the weighted average cost of capital (WACC).
   1. Consider all cash flows, including those related to financing issues, e.g. royalties, interest payments, and so on.
   2. Discount these at the WACC:

$$WACC = \frac{D}{E+D} \times \underbrace{R_D(1-\tau)}_{\text{cost of debt}} + \frac{E}{E+D} \times \underbrace{E(\tilde{R}_{EQ})}_{\text{cost of equity}}$$

      with weights equal to the % of equity market value and the % of borrowings used to finance the project.
- We use the WACC approach to find *E* → chicken-and-egg problem.
- This problem can be avoided in 3 ways:
   1. Use the firm's target leverage ratio for the project (very few firms in the real world would behave like this).
   2. Use book values (could lead to systematic biases!).
   3. Re-iterate (start from book weights, compute NPV, use estimated market weights, etc.)

Domestic vs. International Capital Budgeting

- In an international setting, several new issues arise, as e.g.:
  - Financing deals might be done with parent company.
  - Funds can be blocked by foreign country.
  - Subsidiary's profits will be taxed at home and abroad.
- This gives rise to new, interesting challenges, such as:
  1. How should profits be allocated between subsidiary and parent company?
  2. How should the foreign subsidiary remit its cash flows, i.e. in the form of dividends, royalties, management fees, etc.?
- A three-step procedure is recommended to value international projects:
  1. Step 1: Branch stage → Focus on the economic value of the project and ignore financing arrangements.
  2. Step 2: Unbundling stage → Analyze the intragroup financial arrangements.
  3. Step 3: External financing stage → Make adjustments for the effects of external financing.

How to Deal with Exchange Rate Issues

- A firm needs to distinguish whether it invests into a market which is integrated or segmented from its home market:

  Integrated Possible to discount in either currency: but use an InCAPM.
  Segmented Discount in HC: As a result, first translate expected FC cash flows into HC; remember the covariance term.

- Again, important to use a sensitivity analysis.

Political Risks

- Proactive management of transfer risk:

  – Transactions in the capital account: equity or loan transfers are among the first to be blocked

    → lead or lag transfer payments in this case.

  – Dividends: a government can limit dividend payments

    → increase the capital base to reduce the effect of such a dividend ceiling
    → take over a local company with a huge nominal capital
    → include the parent's own government, a government agency

Political Risks

- Proactive management of transfer risk:
  - Interest payments and license fees

  → If loans are obtained from large international banks, the foreign country might be reluctant to seize these

  → The parent lends funds to an international bank, which then relends these funds to the subsidiary

  → you lend to an international bank, which lends to a local bank, which lends to the project

- After capital controls have been imposed:
  - Invest funds into local capital market.
  - Buy local goods or services, organize conferences or meetings in the foreign markets.

Taking Political Risks into Account

- There are three ways:
  - Add an extra risk premium to the discount rate
    … but how shall managers determine this?
  - Determine the probability of the funds being blocked and then adjust the expected cash flows. … but what data should managers use to adjust the probabilities?
  - Get an insurance contract
- In the United Kingdom, the UK Export Credit Guarantee Department offers insurance against losses from foreign business.
- Other political risks include expropriation, distress sale of equity or the nationalization of an entire economic sector

– Managers can again insure themselves against these risks …
  … but, in this case, insurance works imperfectly.

Summary, Homework and Additional Reading

- In this lecture, we dealt with:

  - Basic rules of international capital budgeting.
  - Weighted average cost of capital.
  - Adjusted NPV approach.
  - Foreign sources of risk, e.g. political risk.

- At home, you will need to:
  - Finish the assignment that is due next

- Solve the workshop exercises