Module - 40

Evaluation of Foreign Direct Investment

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The present session discusses about international capital budgeting. It has modified the NPV method to make it suitable for international capital budgeting.

In this session, the following details about management of transaction exposure are discussed.

- Financial Integration and segmentation and its impact of capital budgeting
- Foreign exchange risk and its impact on capital budgeting
- Capital Budgeting for Foreign Direct Investments

The session would help readers to understand the international capital budgeting and evaluation of foreign direct investment.
1. Exchange rate Risk & Capital Cost

Project evaluation cashflows are perspective in nature and in case of international project cash flows are in foreign currency which values goes on fluctuating and hence misalignments take place while evaluating international project.

**Method: A**

- Estimate future cash flows in foreign currency.
- Convert to the home currency at the predicted exchange rate using PPP, IRP etc. for the predictions.
- Calculate $NPV$ using the home currency cost of capital.

**Method: B**

- Estimate future cash flows in foreign currency.
- Estimate the foreign currency discount rate.

2. World Financial Markets are integrated

- Foreign currency denominated future cash flows need to be discounted with a risk-free foreign currency discount rate and multiply it by home currency current spot rate to bring it to present value of home currency.

\[
\text{Home currency PV} = \left\{ \frac{\text{FCF}}{1+r_f} \right\} \times \text{Current Spot rate}
\]

- In place of each year foreign currency cash flow, we can use respective year forward rate and discount the cash flow with home currency risk-free discount rate.
3. World Financial Markets are segmented

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Cash Flow (Euro)</td>
<td>-1000</td>
<td>250</td>
<td>475</td>
<td>625</td>
</tr>
</tbody>
</table>

- We can use expected spot rate for each year foreign currency cash flow and discount it by home currency discount rate which can adjust the exchange rate risk.
- In case of segmented market, political risk, exchange risk etc., are adjusted in the discount rate.

Example

A U.S. MNC is considering a European opportunity. The size and timing of the after-tax cash flows are:

Inflation in US is 7% and that of Euro-zone is 4%. The current spot rate is Euro 1= US$1.28. Expected opportunity cost for the MNC in dollar term is 14%. Evaluate the project.

Answer

Conversion of 1st year, 2nd year and 3rd year Cash flow into $, we have used the respective country inflation rate.

\[ S_0(\$/\€) = \frac{(1 + \pi_\$)}{(1 + \pi_\€)} \times 1.28 \]

\[ S_1(\$/\€) = \frac{(1 + \pi_\$)}{(1 + \pi_\€)} \times 1.28 \]

\[ S_2(\$/\€) = \frac{(1 + \pi_\$)}{(1 + \pi_\€)} \times 1.28 \]

\[ S_3(\$/\€) = \frac{(1 + \pi_\$)}{(1 + \pi_\€)} \times 1.28 \]
Cash flow in US$ term are as follows:

\[
\begin{align*}
CF_0 &= S_0(\$/€) \times CF_0 \text{ in Euro} \\
CF_1 &= S_1(\$/€) \times CF_1 \text{ in Euro} \\
CF_2 &= S_2(\$/€) \times CF_2 \text{ in Euro} \\
CF_3 &= S_3(\$/€) \times CF_3 \text{ in Euro}
\end{align*}
\]

NPV is positive and hence project can be considered.

### 4. Capital Budgeting for Foreign Direct Investments

FDI is part of overall globalization of markets. It may be in the forms of project finance, subsidiary investment, new venture, joint venture etc. Capital budgeting for FDI requires:

- forecasting the impact of future market conditions,
- exchange rate estimates
- taxes on the profitability of a project
- discount rate has to appropriately account for risk.
- Country risk which include political risk, government default risk, unexpected inflation etc. besides the market risk of exchange rate fluctuation, interest rate volatility etc.

MNCs generally use the Adjusted NPV (ADNPV) method for evaluation of FDI. In the ADNPV they make correction in the NPV for the followings:

- Dividends to parent company
- Royalty to parent company
- Management fees
- Tax credits paid to host countries
- Blocked Funds use
- Use of Spare parts of parent company
Example

An US based Company is planning to invest Rs.600 Crore of FDI to produce 20000 unit of cars every year. The plant would be operational within one year and it would continue for 5 year as the company kept a vision for this. The company is expected to sell car in India at a price of Rs.7,000,000 per car. Operating cost per car is Rs.3,000,000 and company is expecting an opportunity cost of 18% from the new investment. The company has fixed depreciation 20% at straight-line method. The project further also provides following information

- The Company has accumulated Blocked Funds Rs.150 crore in a local Indian bank and its withdrawal would attract a tax of 55%.
- The company would import the engine for the car from its parent location which cost Rs. 2,000,000 per piece which has variable cost of production Rs. 1,500,000.
- Indian government permits 2% of sales as royalty payment and it is tax deductible. This income in US considered as “technology export” and hence in place of 38% tax it would attract 20% tax. Carry out the FDI appraisal.
- The Sovereign Risk Cost is 6%

Answer

<table>
<thead>
<tr>
<th>Year &gt;</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Investment (Rs.Crore)</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units sell</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td>20000</td>
<td></td>
</tr>
<tr>
<td>Operating cost ( Rs. 300000 per Unit)</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Revenue (Rs.700000 Per Unit)</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td></td>
</tr>
<tr>
<td>Depreciation (20%)</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Profit before tax</td>
<td>680</td>
<td>680</td>
<td>680</td>
<td>680</td>
<td>680</td>
<td></td>
</tr>
<tr>
<td>Profit After Tax (35%)</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td>442</td>
<td></td>
</tr>
<tr>
<td>Cash Flow</td>
<td>562</td>
<td>562</td>
<td>562</td>
<td>562</td>
<td>562</td>
<td></td>
</tr>
<tr>
<td>DCF(18% discount rate)</td>
<td>476</td>
<td>404</td>
<td>342</td>
<td>290</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td>Total DCF</td>
<td>1757</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Outflow</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NPV 1157
### Adjustment

**Blocked Funds**
- Opportunity cost of using: 35%
- NPV increased: **97.5**

### Imported Engine

- Domestic Price: 200000
- Variable cost: 150000
- Cost difference per unit: 50000
- Cost difference 20000 units per year: 100

<table>
<thead>
<tr>
<th>Risk cost</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV</td>
<td>94.34</td>
<td>89.00</td>
<td>83.96</td>
<td>79.21</td>
<td>74.73</td>
</tr>
</tbody>
</table>

NPV increased: **421**

### Royalty Payment

- 2% of Sales: 28.00 28.00 28.00 28.00 28.00
- Tax (35% corporate tax) in India: 9.80 9.80 9.80 9.80 9.80
- Transfer to US as Royalty: 18.20 18.20 18.20 18.20 18.20
- Tax in US (38%): 10.64 10.64 10.64 10.64 10.64
- Tax actually paid (20%): 5.60 5.60 5.60 5.60 5.60
- Tax savings: 14.84 14.84 14.84 14.84 14.84
- Risk cost: 6%

<table>
<thead>
<tr>
<th>Risk cost</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV</td>
<td>14.00</td>
<td>13.21</td>
<td>12.46</td>
<td>11.75</td>
<td>11.09</td>
</tr>
</tbody>
</table>

NPV Increased: **63**

**Total NPV for FDI project**: 1739
1. Inflation in US is 6.50% and that of Euro-zone is 3.75%. The current spot rate is Euro 1= US$1.26. Expected opportunity cost for the MNC in dollar term is 12%. Evaluate the project if the after tax cash flows are in the following pattern:

Answer for 3

<table>
<thead>
<tr>
<th>Year</th>
<th>CF in Euro</th>
<th>CF in $</th>
<th>DCF in $</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-1550</td>
<td>-1953</td>
<td>-1953</td>
</tr>
<tr>
<td>1</td>
<td>450</td>
<td>582</td>
<td>520</td>
</tr>
<tr>
<td>2</td>
<td>675</td>
<td>896</td>
<td>714</td>
</tr>
<tr>
<td>3</td>
<td>825</td>
<td>1124</td>
<td>800</td>
</tr>
</tbody>
</table>

NPV = 81

\[ S_t(\$/\€) = \frac{(1 + \pi_d)}{(1 + \pi_e)} \times 1.26 \]

\[ CF_t = S_t(\$/\€) \times CF_t \text{ in Euro} \]