



International Corporate Finance Lectures

International Capital Budgeting

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Agenda

- Extend the domestic capital budgeting analysis to evaluate incremental and greenfield foreign projects
- Distinguish between the project viewpoint and the parent viewpoint of a potential foreign investment
- Identify value drivers in a foreign project using Adjusted NPV analysis



Class Discussion

- What are issues that we encounter in cross-border capital budgeting that we do not have to worry in domestic context?



Cross-Border Project Evaluation

- Differentiation of project and parent company cash-flows
- Exchange Rate Fluctuations
- Relative inflation
- Financing Arrangements
- Blocked Funds (activation via FDI)
- Remittance Restrictions
- Effects of Sales on other Divisions
- Uncertain Terminal Value
- Host Government Incentives/Subsidies
- Varying levels of Taxation or tax differentials



Example

Alpine Refining Company's Thai Investment





Alpine Refining Company



- Privately owned Alpine Refining Company is considering investing in the Thailand so as to have a refinery source closer to its Asian customers.
- The original investment in Thai Baht would amount to THB250 million, or \$7,692,308 at the current spot rate of THB32.50/\$, all in fixed assets, which will be depreciated over ten years by the straight-line method.
- An additional THB 100,000,000 will be needed for working capital.





- For capital budgeting purposes, Alpine assumes sale as a going concern at the end of the third year at a price, after all taxes, equal to the net book value of fixed assets alone (not including working capital).
- All free cash flows will be repatriated to the United States as soon as possible.





Assumptions

Assumptions	0	1	2	3
Original investment (THB)	250,000,000.000			
Spot exchange rate (THB/USD)	32.50	30.00	27.50	25.00
Unit demand		700,000.00	900,000.00	1,000,000.00
Unit sales price		\$ 10.00	\$ 10.30	\$ 10.60
Fixed cash operating expenses		\$ 1,000,000	\$ 1,030,000	\$ 1,060,000
Depreciation		769,231	769,231	769,231
Investment in working capital (K)	100,000,000.000			

- Variable manufacturing costs are expected to be 50% of sales.
- No additional funds need be invested in the subsidiary during the period under consideration.
- The Thai government imposes no restrictions on repatriation of any funds of any sort.
- The Thai corporate tax rate is 25% and the United States rate is 40%.
- Both countries allow a tax credit for taxes paid in other countries.
- Alpine uses 18% WACC to evaluate EM investments



Capital Budgeting Process

- Define cash flows at three stages of the project:
 - Investment Outlay
 - Operational Cash Flows
 - Terminal Cash Flows or Terminal Ongoing Concern Value
- Use a decision rule such as NPV or IRR.
 - Pursue the project if $NPV > 0$
 - Pursue the project if $IRR > \text{Cost of Capital}$
 - If NPV and IRR conflict, rely on NPV





What is different in this Investment?

- It is in Thailand; in a foreign country; a distinct economic setting
- Cash flows are generated in Thai Baht; exchange rate risk is an issue
- Taxes in Thailand and the US are not the same! Would this affect our evaluation of the Alpine project?
- Regulations in Thailand such as withholding taxes on interest payments, dividends or licensing fees may affect the project
- Are there any political risks to worry about? For instance, is it possible that Thai government expropriate the Alpine refinery?





Project and Parent Views in Project Evaluation



- In international investments we review the project from two different perspectives:
 - Project View → this perspective reviews the project as an independent asset; disregards its ownership by the parent company Alpine refining; focuses on project cash flows accruing to Thai investment or “the project”
 - Parent View → This approach considers the project from Alpine Refining Company’s investors’ perspective; it focuses on cash flows that accrue to investors in the US.
- While project view is critical in understanding the viability of the project, the decision should be based on the parent view!





In which currency should we value the project?



- Since the project cash flows are generated in Thai Baht, we can evaluate the project in Thai Baht, calculate the NPV in THB and then convert the NPV into the USD. This approach requires a THB cost of capital.
- Alternatively, since Alpine investors are based in the US, we can evaluate the project in USD; and calculate the NPV and IRR in USD.
- When parity relationships such as IFE and PPP hold, two approaches produce the same result. But when parity relationships do not hold, results are sensitive to the method used.



Project Cash Flows in USD

1,000,000 x \$10.60

250,000,000/32.50

700,000 x \$10

900,000 x \$10.30

Project Viewpoint (in US\$)

	0	1	2	3
Initial investment	\$ (7,692,308)			
Revenues		\$ 7,000,000	\$ 9,270,000	\$ 10,600,000
Less costs of manufacturing		(3,500,000)	(4,635,000)	(5,300,000)
Gross profit		\$ 3,500,000	\$ 4,635,000	\$ 5,300,000
Less fixed cash operating expenses		(1,000,000)	(1,030,000)	(1,060,000)
Less depreciation		(769,231)	(769,231)	(769,231)
Earnings before taxes		\$ 1,730,769	\$ 2,835,769	\$ 3,470,769
Less Thai corporate income taxes		(432,692)	(708,942)	(867,692)
Net income		\$ 1,298,077	\$ 2,126,827	\$ 2,603,077
Add back depreciation		769,231	769,231	769,231
Less additional working capital investment	\$ (3,076,923)			
Sale value				8,461,538
Free cash flow for discounting	\$ (10,769,231)	\$ 2,067,308	\$ 2,896,058	\$ 11,833,846

Depreciation: 7,692,308/10=769,231

WC Investment=100,000,000/32.50=\$3,076,923

$$NPV = \sum_{t=1}^N \frac{FCFP_t}{(1+k)^t} - IO > 0$$

TV=Book Value + Recalled WCR
 Book Value =7,692,308 –
 Accumulated Depreciation
 Book Value=5,384,615
 Recall WCR=3,076,923
 TV=8,461,538



Project Cash Flows in USD

1,000,000 x \$10.60

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Depreciation: $7,692,308 / 10 = 769,231$

WC Investment = $100,000,000 / 32.50 = \$3,076,923$

TV = Book Value + Recalled WCR
 Book Value = $7,692,308 - \text{Accumulated Depreciation}$
 Book Value = $5,384,615$
 Recall WCR = $3,076,923$
 TV = $8,461,538$

$$NPV = \frac{2,067,308}{(1 + 0.18)} + \frac{2,896,058}{(1 + 0.18)^2} + \frac{11,833,846}{(1 + 0.18)^3} - 10,769,231 = \$265,073$$



Project Cash Flows in USD

1,000,000 x \$10.60

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 Book Value = $5,384,615$
 Recall WCR = $3,076,923$
 TV = $8,461,538$

$$\$10,769,231 = \frac{2,067,308}{(1 + IRR)} + \frac{2,896,058}{(1 + IRR)^2} + \frac{11,833,846}{(1 + IRR)^3} \rightarrow IRR = 19.16\% > 18\%$$



Evaluating the Project from Parent Perspective

- From the parent company perspective this may not reflect all the economic reality. There are a few things that may be different for Alpine:
 - Alpine may not have to commit all the investment capital itself, it may finance it with debt (which is not the case in this example)
 - Alpine may not receive all the cash flows generated by the project because of regulations, taxes etc. (which appears to be the case in this example)
 - Alpine may have other benefits from this investment in that it can sell inputs, equipment and charge licensing fees to generate additional benefits.





- All of these can collectively alter the cash flows from the parent perspective.
- For instance licensing fee paid by the subsidiary is an expense, and reduces cash flows for the project, but it is a profit and increases cash flows for the parent.
- This discrepancy may change the value of the project to the parent company.
- In this example none of these issues seem to be complicating the capital budgeting. The only important issue to be considered is the taxes as Thai and US tax rates differ. This changes the cash flows received by Alpine in USD terms.



Parent View: Cash Flows to Apline Refinery Investors in the US

Parent Viewpoint (US\$)		0	1	2	3
Dividends remitted to US parent		\$ 1,298,077	\$ 2,126,827	\$ 2,603,077	
Add back Thai taxes deemed paid		432,692	708,942	867,692	
Grossed up dividend		\$ 1,730,769	\$ 2,835,769	\$ 3,470,769	
Tentative US tax liability	40%	\$ 692,308	\$ 1,134,308	\$ 1,388,308	
Less credit for Thai taxes paid		(432,692)	(708,942)	(867,692)	
Additional US taxes due on foreign income		\$ 259,615	\$ 425,365	\$ 520,615	
Cash dividend less added US taxes		\$ 1,038,462	\$ 1,701,462	\$ 2,082,462	
Initial investment & working capital	\$ (10,769,231)				
Plus sale value at end of 3 years					8,461,538
Parent cash flows (US\$)	\$ (10,769,231)	\$ 1,038,462	\$ 1,701,462	\$ 2,082,462	10,544,000

- We assume 100% of profit is paid out as dividends.
- Grossed up dividends amount to pre-tax Thai profit; the IRS uses this as the basis of US tax liability for Alpine's profits repatriated into the US
- For instance, in year 1, pre-tax profit is $1,298,077 + 432,692 = 1,730,769$
- Alpine's tax liability is calculated based on this profit; which is at 40%, amounts \$692,308
- Since US and Thailand has a bilateral tax agreement, the US government recognizes taxes paid to Thai government and provides a tax credit for the amount of taxes paid to Thai government
- With tax credit Alpine's taxes due to the US government turns out to be: $692,308 - 432,692 = 259,615$
- Alpine pays an additional \$259,615 tax on repatriated income



Parent View: Cash Flows to Apline Refinery Investors in the US

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Plus sale value at end of 3 years					8,461,538
Parent cash flows (US\$)	\$ (10,769,231)	\$ 1,038,462	\$ 1,701,462	\$ 2,082,462	10,544,000

$$NPV = \frac{1,038,462}{(1 + 0.18)} + \frac{1,701,462}{(1 + 0.18)^2} + \frac{10,544,000}{(1 + 0.18)^3} - \$10,769,231 = -\$2,249,812$$

Interestingly, after considering the additional taxation on repatriated income, project NPV turns out to be negative.



The impact of the 2017 US Tax Law



- The Jobs act on paper changed the US Worldwide taxation system into a territorial taxation system.
- While the worldwide taxation imposed additional US taxation on income generated in low tax locations, territorial taxation system does not impose any taxes on foreign income.
- However, additional provisions such as Global Intangible Low Tax Income (GILTI), adds additional taxation and makes it difficult to figure out the exact impact on repatriated profits.
- The current system is more of a hybrid system than a territorial taxation system.



A few additional thoughts

- We assumed 18% discount rate for Alpine's EM investments; this may not be realistic as not all emerging economies are not equally risky.
- Since the entire production output of Alpines Thai Refinery will sell its products in international markets in USD, one can argue that domestic risks in operating Thailand may not be significant,
- However, the refinery will operate in Thailand, will probably use Thai workforce, and will subject to Thai government regulations; there may be some operational, regulatory and commercial risks that should be considered.





Adjusted NPV Model

The APV model is useful for a domestic firm analyzing a domestic capital expenditure or for a foreign subsidiary of an MNC analyzing a proposed capital expenditure from the subsidiary's viewpoint.

$$APV = \sum_{t=1}^T \left(\frac{OCF \times (1 - T)}{(1 + k_u)} + \frac{D_t \times T}{(1 + k_d)^t} + \frac{I_t \times T}{(1 + k_d)^t} \right) + \left(\frac{TV_T}{(1 + k_u)^T} \right) - IO_0$$

- The generic APV model is NOT useful for an MNC in analyzing foreign capital expenditure *from the parent firm's perspective.*





Lessard's Augmented APV Model

- Donald Lessard's augmented APV model recognizes many issues peculiar to foreign investments.

$$APV = \sum_{t=1}^T \frac{S_t \times IOCF \times (1 - \tau)}{(1 + k_u)^t} + \sum_{t=1}^T \frac{S_t \times \tau \times D_t}{(1 + k_d)^t} + \sum_{t=1}^T \frac{S_t \times \tau \times I_t}{(1 + k_d)^t} + \sum_{t=1}^T \frac{S_T \times TV_T}{(1 + k_u)^t} + \left(S_0 \times CL_0 - \sum_{t=1}^T \frac{S_t \times LP_t}{(1 + k_d)^t} \right) + S_0 \times RF_0 - S_0 \times C_0$$

S= Spot exchange rate

IOCF=Incremental Operating Cash Flows

τ =tax rate

D=Depreciation and Amortization

I=Interest Expense

LP=Loan Payments

CL=Concessionary Loan (Subsidized Credit)

RF=Restricted Funds



Additional Items in APV for MNCs Parents

- The cash flows are assumed to be denominated in the foreign currency and converted to the currency of the parent at the expected spot exchange rates, S_t , applicable for year t .
- Restricted Funds:
 - The term $[S_0 \times RF]$ represents the value of accumulated restricted funds (of amount RF) in the foreign land from existing operations that are freed up by the proposed project. These funds become available only because of the proposed project and are therefore available to offset a portion of the initial capital outlay.
- Benefits of Subsidized Loans:
 - The host country offers subsidized financing to attract FDI. We can factor the value of the concessionary loans by estimating its value at the market rate.





Centralia Example: Assumptions

Spot Rate	1.32
Inflation_US	3.00%
Inflation_Euro Area	2.10%
Total Sales to Europe (units)	25,000
Expected Growth	12%
Lost Sales (Former Exports-Units)	9,600
Expected growth	5%
Cost of Plant (EURO)	(5,500,000)
Cost of Plant (USD)	(7,260,000)
Depreciation	687,500
Contribution Margin on Sales (EURO)	40
Contribution Margin on Loss Exports (USD)	35
Cost of Equity	12%
Subsidized Loan (EURO)	4,000,000
Additional Borrowing Capacity (USD)	2,904,000
Preferential Tax in Spain	20%
US Tax	35%
Tax Penalty on Repatriation	35%
Trapped Funds in Spain (EURO)	750,000
Cost of Debt (USD)	8%
Cost of Subsidized Debt (EUR)	5%





Incremental Operational Cash Flows to Project

Year	0	1	2	3	4	5	6	7	8
Spot Rate	1.3200	1.3316	1.3434	1.3552	1.3672	1.3792	1.3914	1.4036	1.4160
Quantity		25,000	28,000	31,360	35,123	39,338	44,059	49,346	55,267
Contribution Margin		40.00	40.84	41.70	42.57	43.47	44.38	45.31	46.26
Operating Profit (EUR)		1,000,000	1,143,520	1,307,638	1,495,310	1,709,917	1,955,324	2,235,953	2,556,856
Operating Profit (USD)		1,331,636	1,536,175	1,772,131	2,044,331	2,358,340	2,720,581	3,138,462	3,620,530
Contr.Margin on Lost Sales		36.05	37.13	38.25	39.39	40.57	41.79	43.05	44.34
Lost Sales (Units)		(10,080)	(10,584)	(11,113)	(11,669)	(12,252)	(12,865)	(13,508)	(14,184)
Lost Sales (USD)		(363,384)	(393,000)	(425,029)	(459,669)	(497,132)	(537,648)	(581,467)	(628,856)
Incremental Operating Cash Flows		968,252	1,143,175	1,347,102	1,584,662	1,861,208	2,182,932	2,556,995	2,991,674
After Tax IOCF		629,364	743,064	875,616	1,030,030	1,209,785	1,418,906	1,662,047	1,944,588
Cost of Equity	12%								
PV of After Tax IOCF	\$5,374,685.35								

Year	Depr.	Spot Rate	Depr in USD	DTS
1	687,500	1.3316	915,500	320,425
2	687,500	1.3434	923,570	323,249
3	687,500	1.3552	931,711	326,099
4	687,500	1.3672	939,924	328,973
5	687,500	1.3792	948,209	331,873
6	687,500	1.3914	956,567	334,799
7	687,500	1.4036	964,999	337,750
8	687,500	1.4160	973,506	340,727
PV ITS				\$1,892,501.8

The investment is depreciated straight line over an 8 year period; annual allocation is EUR 687,500



						Debt Service
Year	Spot Rate	Principal (EUR)	Balance (EUR)	Interest (EUR)	Debt Service (EUR)	(USD)
1	1.3316	500,000	3,500,000	200,000	700,000	932,145
2	1.3434	500,000	3,000,000	175,000	675,000	906,777
3	1.3552	500,000	2,500,000	150,000	650,000	880,890
4	1.3672	500,000	2,000,000	125,000	625,000	854,476
5	1.3792	500,000	1,500,000	100,000	600,000	827,528
6	1.3914	500,000	1,000,000	75,000	575,000	800,038
7	1.4036	500,000	500,000	50,000	550,000	771,999
8	1.4160	500,000	-	25,000	525,000	743,404
PV of Loan PMT at market rate (\$)						\$4,887,311
Concessionary Loan						\$5,280,000
Benefit of Concessionary Loan						\$392,689



PV of ITS

Year	Spot Rate	Interest	D/V	ITS (EUR)	ITS(USD)
1	1.3316	200,000	0.55	38,500	51,268
2	1.3434	175,000	0.55	33,688	45,255
3	1.3552	150,000	0.55	28,875	39,132
4	1.3672	125,000	0.55	24,063	32,897
5	1.3792	100,000	0.55	19,250	26,550
6	1.3914	75,000	0.55	14,438	20,088
7	1.4036	50,000	0.55	9,625	13,510
8	1.4160	25,000	0.55	4,813	6,815
PV of ITS					<u>\$183,807</u>



Value of Restricted Funds

- If the investment frees up otherwise restricted funds, they should be incorporated in the analysis. However, we need to account for the opportunity cost of these funds. The logical assumption is to assume repatriation:

	IN EUROS	IN USD
Restricted Funds (EUR)	750,000	
Grossed up Value (EUR)	937,500	
USD Value	1,237,500	433,125
Tax Liability if Transferred	185,625.00	247,500
Net Benefit		185,625

$$\begin{aligned}
 & \text{EBT} - \text{EBT} \times \text{Tax Rate} = \text{EAT} \\
 & \text{EBT} \times (1 - \text{Tax}) = 750,000 \\
 & \text{EBT} \times (1 - 0.2) = 750,000 \\
 & \text{EBT} = 750,000 / (1 - 0.2) = \text{EUR}937,500 \\
 & \text{Spot Rate} = 1.32 \\
 & \text{EBT} (\$) = \text{EUR}937,500 \times 1.32 \\
 & = \$1,237,500
 \end{aligned}$$

US Tax Liability

Tax Credit for Spanish Taxes Paid

- The repatriation of restricted funds may create a tax liability. For instance, in this example the pre tax basis of repatriation of 750,000 Euro is estimated as 937,500 under the assumption of 20% foreign corporate tax



APV or Valuation in Parts

		$\sum_{t=1}^T \frac{S_t \times IOCF \times (1 - \tau)}{(1 + k_u)^t}$
IOCF	\$5,374,685.35	
+DTS	\$1,892,501.82	$\sum_{t=1}^T \frac{S_t \times \tau \times D_t}{(1 + k_d)^t}$
+ITS	\$183,807	$\sum_{t=1}^T \frac{S_t \times \tau \times I_t}{(1 + k_d)^t}$
PV of Concessionary Loan	\$392,689	$\left(S_0 \times CL_0 - \sum_{t=1}^T \frac{S_t \times LP_t}{(1 + k_d)^t} \right)$
Impact of Restricted Funds	185,625	$S_0 \times RF_0$
Investment Outlay	(7,260,000)	$-S_0 \times C_0$
APV	\$769,308.04	

The dissection of the project value into pieces helps us to understand the value drivers. In this example concessionary loan and the opportunity cost of restricted funds account for the 75% of the NPV. That is a cause for concern!!

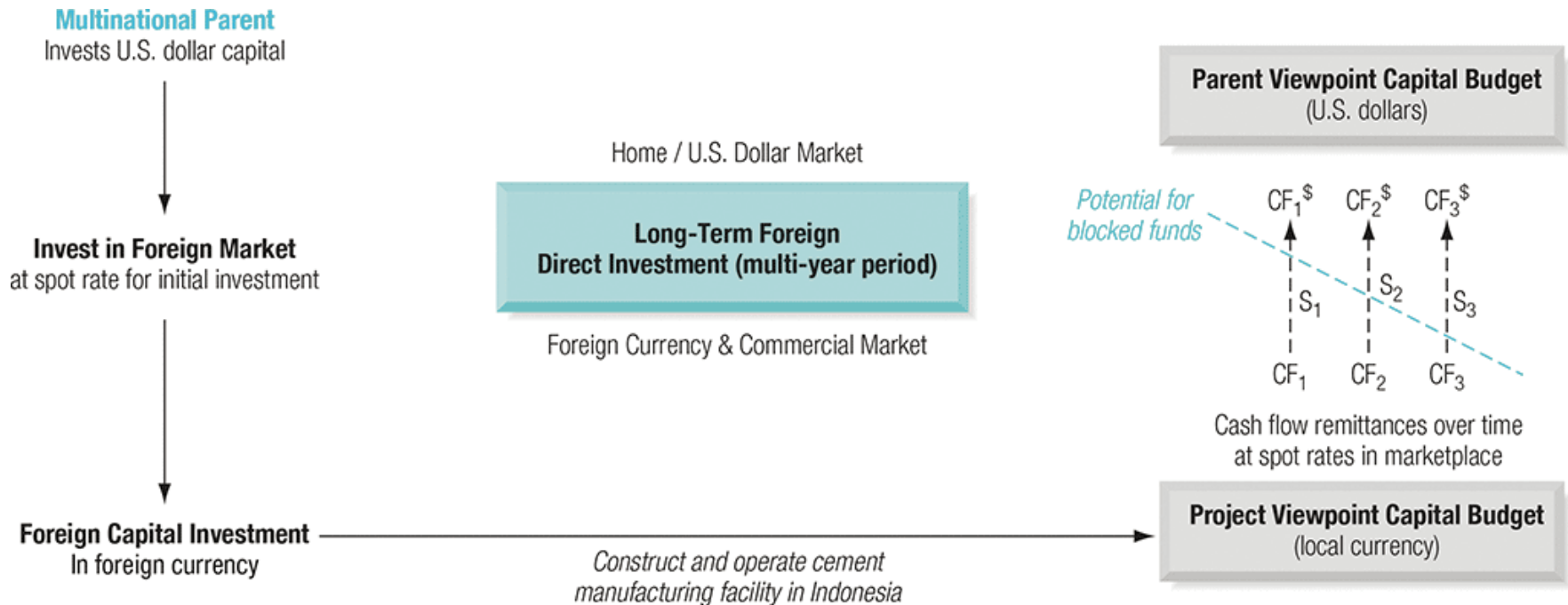


Project Versus Parent Valuation

- A strong theoretical argument exists in favor of analyzing any foreign project from the viewpoint of the parent.
- Cash flows to the parent are ultimately the basis for dividends to stockholders, reinvestment elsewhere in the world, repayment of corporate-wide debt, and other purposes that affect the firm's many interest groups.
- However, this viewpoint violates a cardinal concept of capital budgeting—that financial cash flows should not be mixed with operating cash flows.



International Capital Budgeting: Project and Parent Viewpoints





Project Versus Parent Valuation

- Evaluation of a project from the local viewpoint serves some useful purposes, but it should be subordinated to evaluation from the parent's viewpoint.
- In evaluating a foreign project's performance relative to the potential of a competing project in the same host country, we must pay attention to the project's local return.
- Almost any project should at least be able to earn a cash return equal to the yield available on host government bonds (with the same maturity as the project's economic life).



Project Versus Parent Valuation

- International firms should invest only if they can earn a risk-adjusted return greater than locally based competitors can earn on the same project.
- If they are unable to earn superior returns on foreign projects, their stockholders would be better off buying shares in local firms, where possible, and letting those companies carry out the local projects.
- Most firms appear to evaluate foreign projects from both parent and project viewpoints (to obtain perspectives on NPV and the overall effect on consolidated earnings of the firm).



Illustrative Case: Cemex Enters Indonesia

- Cementos Mexicanos, Cemex, is considering the construction of a cement manufacturing facility on the Indonesian island of Sumatra.
- This project would be a wholly-owned greenfield investment.
- The company has three main reasons for the project:
 - Initiate a productive presence in Southeast Asia
 - To position Cemex to benefit from infrastructural development in the region
 - The geographic location of Indonesia as an export platform for fast growing South East Asia



Illustrative Case: Cemex Enters Indonesia)

- The first step is to construct a set of pro forma financial statements for Semen Indonesia (in Indonesian Rupiah-IRD).
- The next step is to create two capital budgets, the project viewpoint and parent viewpoint.
- Financial assumptions are then made about:
 - Capital investment
 - Method of financing
 - Revenue/cost forecasts



Assumptions

ASSUMPTIONS	Value	Units	ASSUMPTIONS	Value	Units
Terminal value growth rate	0.000%	per annum	<i>Dividend payout:</i>		
License fees to parent	2.000%	per annum	Year 1	0.000%	per annum
Exchange rate (year 0)	10,000	Rp/USD	Year 2	50.000%	per annum
Use PPP (0) or User rate (1)			Year 3	50.000%	per annum
?	0	toggle	Year 4	50.000%	per annum
PPP adjustment to rate	126.21%	per annum	Year 5	50.000%	per annum
User specified rate change	0.000%	per annum	Year 6	50.000%	per annum
Indo inflation rate	30.000%	per annum	<i>Cost of Capital:</i>		
Indo avg sales price chg	20.000%	per annum	Risk free rate of interest	7.000%	per annum
U.S. inflation rate	3.000%	per annum	Market risk premium	7.000%	per annum
Export unit price (year 1)	\$ 58.00	USD	Cemex's beta	1.50	
Export unit price growth	0.000%	per annum	Cemex's cost of debt in \$	8.000%	per annum
Installed capacity	20,000	Units in 000s	Cemex loan rate in \$	10.000%	per annum
Utilization rate (year 1)	40%	% of capacity	Cemex loan maturity	5.00	years
Utilization rate (year 2)	50%	% of capacity	Rupiah loan rate	35.000%	per annum
Utilization rate (year 3)	60%	% of capacity	Rupiah loan maturity	8.00	years
Cost per tonne installed capacity	\$ 110		Indonesia's cost of equity	40.000%	per annum
Cash costs	115,000	Rp/tonne	Indo equity premium	6.000%	per annum
Other production costs	20,000	Rp/tonne	Indonesia's WACC	33.257%	per annum
Total factory costs	135,000	Rp/tonne	Cemex's WACC	10.180%	per annum
Cash cost growth rate	30.000%	per annum	Foreign investment premium	4.000%	per annum
Other product cost growth rate	30.000%	per annum	Required return on for investment	14.180%	per annum
Net working capital	15.0	DSO	<i>Taxes:</i>		
Loading cost	\$ 2.00	USD/tonne	Mexican corp inc tax rate	35.000%	per annum
Loading cost growth rate	3.0%		Indo corp income tax rate	30.000%	per annum
Shipping cost	\$ 10.00	USD/tonne	Indo dividend with tax	15.000%	per annum
Shipping cost growth rate	3.0%		Indo interest with tax	10.000%	per annum
G&A expense as % of sales	8.000%	per annum	Indo license fee with tax	5.000%	per annum
G&A growth increment per year	1.000%	per annum			
Depreciation, straight line	10	years			



Financial Structure of The Investment

Source/Type of Capital	Project Perspective (IDR)	Cemex Perspective (USD)	Percent
Rupiah Loan	Rp2,750,000,000	\$ 275,000.00	12.50%
Cemex USD Loan	Rp8,250,000,000	\$ 825,000.00	37.50%
Total Debt	Rp11,000,000,000	\$ 1,100,000.00	50.00%
Equity	Rp11,000,000,000	\$ 1,100,000.00	50.00%
Invested Capital	Rp22,000,000,000	\$ 2,200,000.00	100.00%
Capital at Risk	Rp22,000,000,000	\$ 1,925,000.00	87.50%

- Note that **capital at risk** from project and parent perspective are not identical. If we consider the project from a standalone subsidiary/project perspective, the capital at risk is IDR 22bn or USD 2.2m. \$1.925m of this capital is provided by the Cemex and \$275K was locally raised from creditors in Indonesia.
- From Cemex perspective capital at risk is \$1.925m; this is the basis of investment from Cemex perspective because \$275K credit is not necessarily backed by Cemex assets; technically creditors have no recourse to Cemex if the subsidiary fails!



Illustrative Case: Cemex Enters Indonesia

- The explicit debt structures, including repayment schedules, are presented in the next slide
- Due to the expected depreciation of the rupiah against the dollar, the Indonesian income statement will show the foreign exchange losses on the debt service.



Debt Schedule of the Project

Exchange rate (Rp/US\$)	10,000	12,621	15,930	20,106	25,376	32,028
Calendar year	1998	1999	2000	2001	2002	2003
Project Year	0	1	2	3	4	5
Indonesian loan @ 35% for 8 years:						
	2,750,000,000					
Interest payment (Rp)		(962,500,000)	(928,921,308)	(883,590,073)	(822,392,906)	(739,776,731)
Principal payment (Rp)		(95,939,121)	(129,517,813)	(174,849,048)	(236,046,215)	(318,662,390)
Total P&I (Rp)		(1,058,439,121)	(1,058,439,121)	(1,058,439,121)	(1,058,439,121)	(1,058,439,121)
Principal remaining (Rp)		2,654,060,879	2,524,543,065	2,349,694,017	2,113,647,802	1,794,985,412
Cemex loan @ 10% for 5 yrs						
	825,000					
Interest payment (US\$)	\$	(82,500)	\$ (68,987)	\$ (54,122)	\$ (37,771)	\$ (19,785)
Principal payment (US\$)	\$	(135,133)	\$ (148,646)	\$ (163,511)	\$ (179,862)	\$ (197,848)
Total P&I (US\$)	\$	(217,633)	\$ (217,633)	\$ (217,633)	\$ (217,633)	\$ (217,633)
Principal remaining (US\$)	\$	689,867	\$ 541,221	\$ 377,710	\$ 197,848	\$ -
Scheduled (at Rp10,000/US\$):						
Interest payment (Rp)		(825,000,000)	(689,867,078)	(541,220,865)	(377,710,029)	(197,848,111)
Principal payment (Rp)		(1,351,329,217)	(1,486,462,138)	(1,635,108,352)	(1,798,619,187)	(1,978,481,106)
Total P&I (Rp)		(2,176,329,217)	(2,176,329,217)	(2,176,329,217)	(2,176,329,217)	(2,176,329,217)
Actual (at current spot rate):						
Interest payment (Rp)		(1,041,262,136)	(1,098,949,347)	(1,088,160,391)	(958,479,938)	(633,669,122)
Principal payment (Rp)		(1,705,561,147)	(2,367,914,991)	(3,287,493,628)	(4,564,190,182)	(6,336,691,224)
Total P&I (Rp)		(2,746,823,283)	(3,466,864,338)	(4,375,654,019)	(5,522,670,121)	(6,970,360,346)
CFs in Rp on parent loan	8,250,000,000	(2,746,823,283)	(3,466,864,338)	(4,375,654,019)	(5,522,670,121)	(6,970,360,346)
Cost of Cemex loan in Rp	38.835%					
FX Gains/Losses on Debt:						
FX Gain (loss) on principal		(354,231,931)	(881,452,852)	(1,652,385,276)	(2,765,570,995)	(4,358,210,118)
FX Gain (loss) on interest		(216,262,136)	(409,082,269)	(546,939,526)	(580,769,909)	(435,821,012)
Total FX Gain (loss) on debt		(570,494,066)	(1,290,535,121)	(2,199,324,802)	(3,346,340,904)	(4,794,031,130)



Discount Rate For the Project Cash Flows

- There is rich data to estimate the required return on both project and the parent cash flows.
- Required Return for Project Cash Flows
 - This is essentially an IDR discount rate that can be estimated by using local metrics such as cost of debt and cost of equity in reference to subsidiary risk characteristics
 - In this case, parent required rate of return cannot be simply converted into IDR discount rate by using IFE because capital at risk is not identical.
- Required Return for Parent or Cemex Investors
 - The WACC for Cemex investors would be the correct discount rate for the parent cash flows



Discount Rate for the Project/Subsidiary

- The IDR loan costs 35%; the cost of loan extended by the Cemex to the Indonesian Subsidiary is estimated as follows:

Future Spot	Interest	Principal	Payment
10,000			8,250,000,000
12,621	(1,041,262,136)	(1,705,561,147)	(2,746,823,283)
15,930	(1,098,949,347)	(2,367,914,991)	(3,466,864,338)
20,106	(1,088,160,391)	(3,287,493,628)	(4,375,654,019)
25,376	(958,479,938)	(4,564,190,182)	(5,522,670,121)
32,028	(633,669,122)	(6,336,691,224)	(6,970,360,346)
AIC			38.83%

- Note that USD payments to Cemex were converted into IDR at the forecasted future spot rates and IRR of the loan payments were calculated. Since there are no fees associated with the loan provided by Cemex AIC is 38.83%.



Subsidiary/Project WACC

- If we use the data provided in the example about the cost of equity for the subsidiary 40%, the WACC for the subsidiary is estimated as follows:

Capital Type	Capital Structure	Cost	After Tax	Component Cost
Rupiah loan	12.50%	35.00%	24.50%	3.06%
Cemex loan	37.50%	38.83%	27.18%	10.19%
Total debt	50.00%			
Equity	50.00%	40.00%		20.00%
WACC				33.26%



Proforma Income Statement

Exchange rate (Rp/US\$)	10,000	12,621	15,930	20,106	25,376	32,028
Calendar year	1998	1999	2000	2001	2002	2003
Project Year	0	1	2	3	4	5
Sales volume (000s)		8,000	10,000	12,000	12,000	12,000
Sales price (USD)	\$	58.00	\$	58.00	\$	58.00
Sales price (Rp)		732,039	923,933	1,166,128	1,471,813	1,857,627
Total sales revenue		5,856,310,680	9,239,325,101	13,993,540,930	17,661,750,689	22,291,529,995
Cash costs		(920,000,000)	(1,495,000,000)	(2,332,200,000)	(3,031,860,000)	(3,941,418,000)
Other production costs		(160,000,000)	(260,000,000)	(405,600,000)	(527,280,000)	(685,464,000)
Loading costs		(201,941,748)	(328,155,340)	(511,922,330)	(665,499,029)	(865,148,738)
Shipping costs		(1,009,708,738)	(1,640,776,699)	(2,559,611,650)	(3,327,495,146)	(4,325,743,689)
Total production costs		(2,291,650,485)	(3,723,932,039)	(5,809,333,981)	(7,552,134,175)	(9,817,774,427)
Gross profit		3,564,660,194	5,515,393,062	8,184,206,950	10,109,616,514	12,473,755,568
Gross margin		61%	60%	58%	57%	56%
Less license fees		(117,126,214)	(184,786,502)	(279,870,819)	(353,235,014)	(445,830,600)
Less general & administrative		(468,504,854)	(831,539,259)	(1,399,354,093)	(1,942,792,576)	(2,674,983,599)
EBITDA		2,979,029,126	4,499,067,301	6,504,982,038	7,813,588,924	9,352,941,369
Less depreciation & amortization		(1,760,000,000)	(1,760,000,000)	(1,760,000,000)	(1,760,000,000)	(1,760,000,000)
EBIT		1,219,029,126	2,739,067,301	4,744,982,038	6,053,588,924	7,592,941,369
Less interest on US\$ debt		(825,000,000)	(689,867,078)	(541,220,865)	(377,710,029)	(197,848,111)
FX Gain/Loss on Cemex Debt		(570,494,066)	(1,290,535,121)	(2,199,324,802)	(3,346,340,904)	(4,794,031,130)
Less interest on Rp debt		(962,500,000)	(928,921,308)	(883,590,073)	(822,392,906)	(739,776,731)
EBT		(1,138,964,940)	(170,256,206)	1,120,846,299	1,507,145,085	1,861,285,398
Less Income Taxes						
Less taxes		-	-	-	(395,631,071)	(558,385,619)
Net income (NI)		(1,138,964,940)	(170,256,206)	1,120,846,299	1,111,514,014	1,302,899,778
Net income in US\$	\$	(90,241)	(10,688)	55,748	43,802	40,680
Return on sales		-19%	-2%	8%	6%	6%
Dividends distributed		-	(85,128,103)	560,423,149	555,757,007	651,449,889
Retained		(1,138,964,940)	(85,128,103)	560,423,149	555,757,007	651,449,889



Tax Liability of Semen Indonesia

Less interest on US\$ debt	(825,000,000)	(689,867,078)	(541,220,865)	(377,710,029)	(197,848,111)
FX Gain/Loss on Cemex Debt	(570,494,066)	(1,290,535,121)	(2,199,324,802)	(3,346,340,904)	(4,794,031,130)
Less interest on Rp debt	(962,500,000)	(928,921,308)	(883,590,073)	(822,392,906)	(739,776,731)
EBT	(1,138,964,940)	(170,256,206)	1,120,846,299	1,507,145,085	1,861,285,398
Less Income Taxes	-	-	-	(395,631,071)	(558,385,619)
Net income (NI)	(1,138,964,940)	(170,256,206)	1,120,846,299	1,111,514,014	1,302,899,778
Net income in US\$	\$ (90,241)	\$ (10,688)	\$ 55,748	\$ 43,802	\$ 40,680
Return on sales	-19%	-2%	8%	6%	6%
Dividends distributed	-	(85,128,103)	560,423,149	555,757,007	651,449,889
Retained	(1,138,964,940)	(85,128,103)	560,423,149	555,757,007	651,449,889

Tax Calculation:	1999	2000	2001	2002	2003
Tax due this year	-	-	(336,253,889.55)	(452,143,525.48)	(558,385,619.28)
Tax credit generated this year	341,689,482.08	51,076,861.76	-	-	-
Remaining tax credit from previous year	-	341,689,482.08	392,766,343.84	56,512,454.29	-
Taxes payable in year	-	-	-	(395,631,071.19)	(558,385,619.28)
Tax credit carried forward		392,766,343.84	56,512,454.29	-	-

As the pro forma income statement indicates, the subsidiary is not expected to be profitable until 2001; the losses incurred in 1999 and 2000 are carried forward as tax credits and eliminate the effective tax burden in first profitable year 2001 and reduce it in 2002.



Project Perspective

	1998	1999	2000	2001	2002	2003
EBIT		1,219,029,126	2,739,067,301	4,744,982,038	6,053,588,924	7,592,941,369
Less recalculated income taxes		(365,708,738)	(821,720,190)	(1,423,494,611)	(1,816,076,677)	(2,277,882,411)
Add Back Depreciation		1,760,000,000	1,760,000,000	1,760,000,000	1,760,000,000	1,760,000,000
Net operating cash flow		2,613,320,388	3,677,347,111	5,081,487,427	5,997,512,247	7,075,058,958
WCR		240,670,302	379,698,292	575,077,025	725,825,371	916,090,274
Less change in net working capital		(240,670,302)	(139,027,990)	(195,378,733)	(150,748,346)	(190,264,903)
Initial investment	(22,000,000,000)					
Terminal value (after-tax)						21,274,102,146
Free cash flow (FCF)	(22,000,000,000)	2,372,650,086	3,538,319,121	4,886,108,694	5,846,763,901	28,158,896,201
NPV (rupiah)	(7,606,313,196)					
IRR	19.1%					
MIRR	22.4%					

- Note that in FCF to project calculations we did charge the tax on EBIT, because the interest tax shield is accounted in the WACC; to avoid double counting, we ignore the impact of interest tax shield on cash flows.
- The tax implications we accounted for in the previous slide will help us to determine the dividend payments to the parent.



Illustrative Case: Cemex Enters Indonesia

- The capital budget for the Semen Indonesia project from a project viewpoint is shown in the next slide.
- When the local currency cash flows are discounted at 33.27% WACC; the project has a negative NPV.
- Similarly IRR of the project is $19.1\% < \text{WACC}$;
- From a narrow financial perspective, the project seems to be not acceptable.
- It is possible that this approach may be excluding some strategic benefits and real option value embedded in the project, but with the data we considered, project does not look viable on stand alone basis.



Illustrative Case: Cemex Enters Indonesia

- A foreign investor's assessment of a project's returns depends on the actual cash flows that are returned to it, in its own currency.
- For Cemex, this means that the investment must be analyzed in terms of U.S. dollar cash inflows and outflows associated with the investment over the life of the project, after-tax, discounted at the appropriate cost of capital.
- Let's review the project from the Cemex perspective to see if there is any justification for the investment.



Illustrative Case: Cemex Enters Indonesia

- We build this parent viewpoint capital budget in two steps.
 - First, we isolate the individual cash flows, adjusted for any withholding taxes imposed by the Indonesian government and converted to U.S. dollars.
 - The second step, that actual parent viewpoint capital budget, combines these U.S. dollar after-tax cash flows with the initial investment to determine the NPV of the proposed Indonesian subsidiary in the eyes (and pocketbook) of Cemex.



Cash Flows to Cemex

Exchange rate (Rp/US\$)	10,000	12,621	15,930	20,106	25,376	32,028
Calendar year	1998	1999	2000	2001	2002	2003
Project Year	0	1	2	3	4	5
Dividend Remittance						
Dividends paid (Rp)		-		560,423,149	555,757,007	651,449,889
Less Indonesian withholding taxes		-	-	(84,063,472)	(83,363,551)	(97,717,483)
Net dividend remitted (Rp)		-	-	476,359,677	472,393,456	553,732,406
Net dividend remitted (US\$)		-	-	23,693	18,616	17,289
License Fees Remittance						
License fees remitted (Rp)		117,126,214	184,786,502	279,870,819	353,235,014	445,830,600
Less Indonesian withholding taxes		(5,856,311)	(9,239,325)	(13,993,541)	(17,661,751)	(22,291,530)
Net license fees remitted (Rp)		111,269,903	175,547,177	265,877,278	335,573,263	423,539,070
Net license fees remitted (US\$)		8,816	11,020	13,224	13,224	13,224
Debt Service Remittance						
Promised interest paid (US\$)		82,500	68,987	54,122	37,771	19,785
Less Indonesian withholding taxes		(8,250)	(6,899)	(5,412)	(3,777)	(1,978)
Net interest remitted (US\$)		74,250	62,088	48,710	33,994	17,806
Principal payments remitted (US\$)		135,133	148,646	163,511	179,862	197,848
Total P&I remitted	\$	209,383	\$ 210,734	\$ 212,221	\$ 213,856	\$ 215,654

As the table above shows, cash flows to Cemex are composed of three categories:
Dividends, License Fees and Debt Service



Discount Rate

- The Cemex management sets a hurdle rate 6% above its WACC for its foreign projects. While this is a common practice among MNCs it has no analytical basis and the mark up varies across countries.

Cemex (in US\$ capital costs) USD		Capital Structure Net Cost Component			
Risk-free rate of interest	6.00%				
Cemex credit risk premium	2.00%				
Cemex debt	8.00%	0.4	0.052	2.08%	
Beta for Cemex	1.5				
Equity risk premium	7.00%				
Cemex equity	16.50%	0.6	16.5%	9.90%	
WACC					11.98%

- A more refined work that accounts for Indonesian country risk would serve the company well, but if we take the given parameters, the discount rate for the parent cash flows should be $11.98\% + 6\% = 17.98\%$.
- We can consider 6% as the country risk premium for investment in Indonesia.



Cemex/Parent Perspective

Exchange rate (Rp/US\$)	10,000	12,621	15,930	20,106	25,376	32,028
Calendar year	1998	1999	2000	2001	2002	2003
Project Year	0	1	2	3	4	5
Initial investment	(1,925,000)					
Dividends after-tax		-	-	23,693	18,616	17,289
License fees after-tax		8,816	11,020	13,224	13,224	13,224
Debt service after-tax		209,383	210,734	212,221	213,856	215,654
Total on-going CF earnings after-tax		218,199	221,754	249,138	245,696	246,167
Terminal value (US\$)						1,369,118
Net cash flows	(1,925,000)	218,199	221,754	249,138	245,696	1,615,285
WACC	17.98%					
NPV	(595,562.17)					
IRR	7.21%					
NPV (at 10.18%)	(\$302,243.60)					



A review of findings

- The evaluation from parent perspective suggests that the investment does not create value for the investors.
- NPV of the project is negative and provides signals that the firm should approach the investment with caution.
- Like any other analytical framework, capital budgeting and the associated decision rules are never the end of the discussion. They are rather create an opportunity for a productive discussion within the management team.
- Typical questions that should be raised at this stage include the following:
 - Are cash flows projections realistic?
 - Do we ignore possibly valuable options that may contribute to the value of the project such as exit and growth options?
 - How sensitive the project to TV? Is our TV estimate realistic?
 - How sensitive the project to discount factor? Is our discount factor properly account for the risk? Is 6% premium justified?