

Case 3: Excess Capacity

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- In the Vale example, assume that the firm will use its existing distribution system to service the production out of the new iron ore mine. The mine manager argues that there is no cost associated with using this system, since it has been paid for already and cannot be sold or leased to a competitor (and thus has no competing current use). Do you agree?
 - a. Yes
 - b. No

A Framework for Assessing The Cost of Using Excess Capacity

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- If I do not add the new product, when will I run out of capacity?
- If I add the new product, when will I run out of capacity?
- When I run out of capacity, what will I do?
 - Cut back on production: cost is PV of after-tax cash flows from lost sales
 - Buy new capacity: cost is difference in PV between earlier & later investment

Product and Project Cannibalization: A Real Cost?

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- Assume that in the Disney theme park example, 20% of the revenues at the Rio Disney park are expected to come from people who would have gone to Disney theme parks in the US. In doing the analysis of the park, you would
 - a. Look at only incremental revenues (i.e. 80% of the total revenue)
 - b. Look at total revenues at the park
 - c. Choose an intermediate number
- Would your answer be different if you were analyzing whether to introduce a new show on the Disney cable channel on Saturday mornings that is expected to attract 20% of its viewers from ABC (which is also owned by Disney)?
 - a. Yes
 - b. No

B. Project Synergies

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- A project may provide benefits for other projects within the firm. Consider, for instance, a typical Disney animated movie. Assume that it costs \$ 50 million to produce and promote. This movie, in addition to theatrical revenues, also produces revenues from
 - ▣ the sale of merchandise (stuffed toys, plastic figures, clothes ..)
 - ▣ increased attendance at the theme parks
 - ▣ stage shows (see “Beauty and the Beast” and the “Lion King”)
 - ▣ television series based upon the movie
- In investment analysis, however, these synergies are either left unquantified and used to justify overriding the results of investment analysis, i.e., used as justification for investing in negative NPV projects.
- If synergies exist and they often do, these benefits have to be valued and shown in the initial project analysis.

Case 1: Adding a Café to a bookstore: Bookscape

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- Assume that you are considering adding a café to the bookstore. Assume also that based upon the expected revenues and expenses, the café standing alone is expected to have a net present value of -\$87,571.
- The cafe will increase revenues at the book store by \$500,000 in year 1, growing at 10% a year for the following 4 years. In addition, assume that the pre-tax operating margin on these sales is 10%.

	1	2	3	4	5
Increased Revenues	\$500,000	\$550,000	\$605,000	\$665,500	\$732,050
Operating Margin	10.00%	10.00%	10.00%	10.00%	10.00%
Operating Income	\$50,000	\$55,000	\$60,500	\$66,550	\$73,205
Operating Income after Taxes	\$30,000	\$33,000	\$36,300	\$39,930	\$43,923
PV of Additional Cash Flows	\$27,199	\$27,126	\$27,053	\$26,981	\$26,908
PV of Synergy Benefits	\$135,268				

- The net present value of the added benefits is \$135,268. Added to the NPV of the standalone Café of -\$87,571 yields a net present value of \$47,697.

Case 2: Synergy in a merger..

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- We valued Harman International for an acquisition by Tata Motors and estimated a value of \$ 2,476 million for the operating assets and \$ 2,678 million for the equity in the firm, concluding that it would not be a value-creating acquisition at its current market capitalization of \$5,248 million. In estimating this value, though, we treated Harman International as a stand-alone firm.
- Assume that Tata Motors foresees potential synergies in the combination of the two firms, primarily from using its using Harman's high-end audio technology (speakers, tuners) as optional upgrades for customers buying new Tata Motors cars in India. To value this synergy, let us assume the following:
 - It will take Tata Motors approximately 3 years to adapt Harman's products to Tata Motors cars.
 - Tata Motors will be able to generate Rs 10 billion in after-tax operating income in year 4 from selling Harman audio upgrades to its Indian customers, growing at a rate of 4% a year after that in perpetuity (but only in India).

Estimating the cost of capital to use in valuing synergy..

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- Business risk: The perceived synergies flow from optional add-ons in auto sales. We will begin with the levered beta of 1.10, that we estimated for Tata Motors in chapter 4, in estimating the cost of equity.
- Geographic risk: The second is that the synergies are expected to come from India; consequently, we will add the country risk premium of 3.60% for India, estimated in chapter 4 (for Tata Motors) to the mature market premium of 5.5%.
- Debt ratio: Finally, we will assume that the expansion will be entirely in India, with Tata Motors maintain its existing debt to capital ratio of 29.28% and its current rupee cost of debt of 9.6% and its marginal tax rate of 32.45%.
 - Cost of equity in Rupees = $6.57\% + 1.10 (5.5\% + 3.60\%) = 16.59\%$
 - Cost of debt in Rupees = $9.6\% (1 - .3245) = 6.50\%$
 - Cost of capital in Rupees = $16.59\% (1 - .2928) + 6.50\% (.2928) = 13.63\%$

Estimating the value of synergy... and what Tata can pay for Harman

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- Value of synergy_{Year 3} = $\frac{\text{Expected Cash Flow}_{\text{Year 4}}}{(\text{Cost of Capital} - g)} = \frac{10,000}{(.1363-.04)} = \text{Rs } 103,814 \text{ million}$
- Value of synergy today = $\frac{\text{Value of Synergy}_{\text{year 3}}}{(1+\text{Cost of Capital})^3} = \frac{103,814}{(1.1363)^3} = \text{Rs } 70,753 \text{ million}$
- Converting the synergy value into dollar terms at the prevailing exchange rate of Rs 60/\$, we can estimate a dollar value for the synergy from the potential acquisition:
 - Value of synergy in US \$ = Rs 70,753/60 = \$ 1,179 million
- Adding this value to the intrinsic value of \$2,678 million that we estimated for Harman's equity in chapter 5, we get a total value for the equity of \$3,857 million.
 - Value of Harman = \$2,678 million + \$1,179 million = \$3,857 million
- Since Harman's equity trades at \$5,248 million, the acquisition still does not make sense, even with the synergy incorporated into value.

III. Project Options

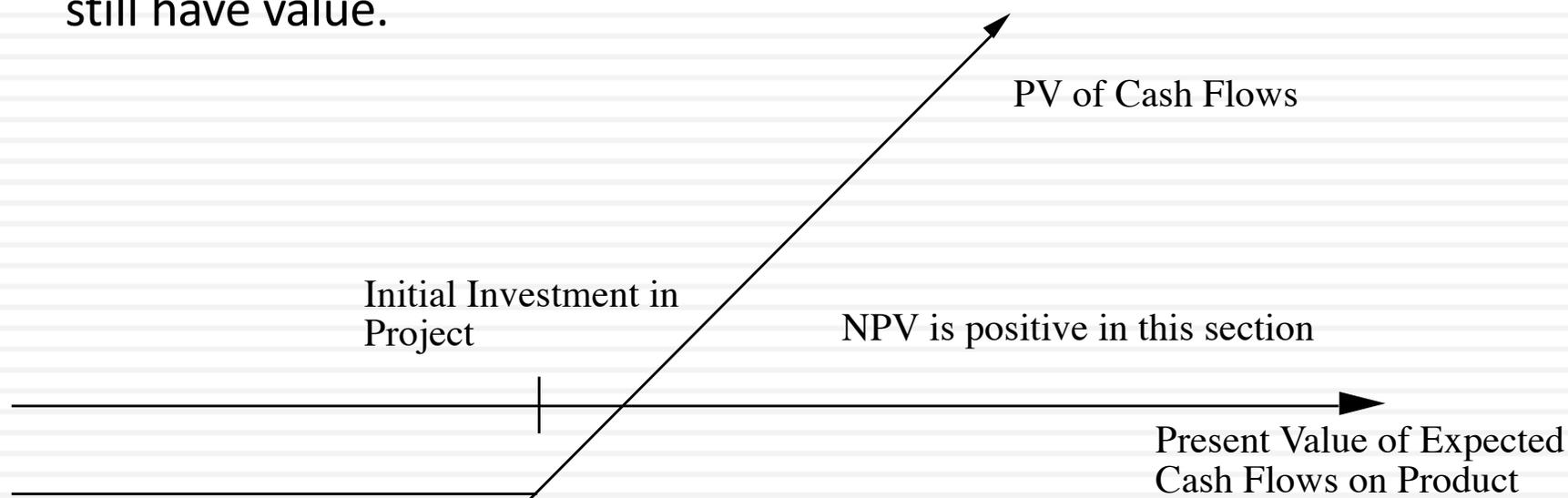
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- One of the limitations of traditional investment analysis is that it is static and does not do a good job of capturing the options embedded in investment.
 - The first of these options is the option to delay taking a project, when a firm has exclusive rights to it, until a later date.
 - The second of these options is taking one project may allow us to take advantage of other opportunities (projects) in the future
 - The last option that is embedded in projects is the option to abandon a project, if the cash flows do not measure up.
- These options all add value to projects and may make a “bad” project (from traditional analysis) into a good one.

The Option to Delay

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- When a firm has exclusive rights to a project or product for a specific period, it can delay taking this project or product until a later date. A traditional investment analysis just answers the question of whether the project is a “good” one if taken today. The rights to a “bad” project can still have value.



Insights for Investment Analyses

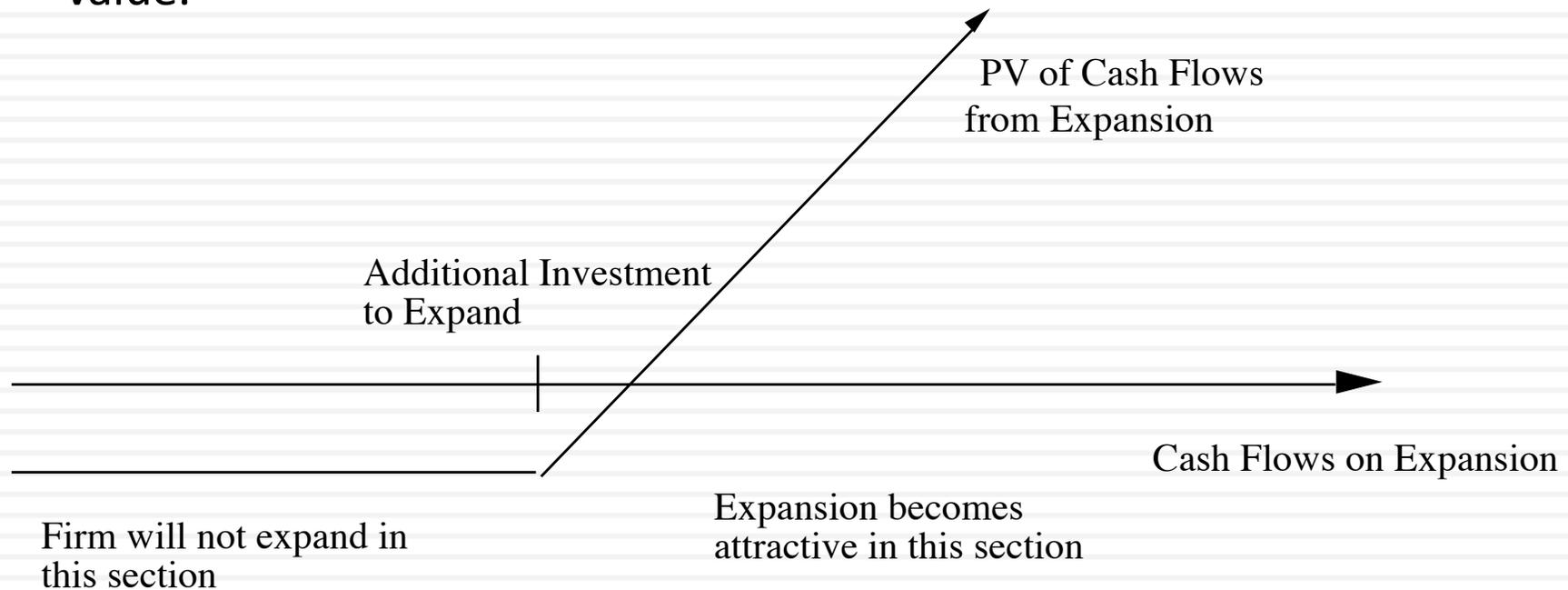
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- Having the exclusive rights to a product or project is valuable, even if the product or project is not viable today.
- The value of these rights increases with the volatility of the underlying business.
- The cost of acquiring these rights (by buying them or spending money on development - R&D, for instance) has to be weighed off against these benefits.

The Option to Expand/Take Other Projects

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- Taking a project today may allow a firm to consider and take other valuable projects in the future. Thus, even though a project may have a negative NPV, it may be a project worth taking if the option it provides the firm (to take other projects in the future) has a more-than-compensating value.



The Option to Abandon

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- A firm may sometimes have the option to abandon a project, if the cash flows do not measure up to expectations.
- If abandoning the project allows the firm to save itself from further losses, this option can make a project more valuable.

