

GESTÃO FINANCEIRA I

CADERNO DE EXERCÍCIOS 4

Capítulos 8, 9 e 10

Investment Decision Rules, Fundamentals of Capital
Budgeting & a second look at Stock Valuation

(de BERK, DEMARZO e HARFORD'S "FUNDAMENTALS OF
CORPORATE FINANCE")

LICENCIATURA

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Chapter 8

Investment Decision Rules

2. You have an opportunity to invest \$125,000 now in return for \$50,000 in one year and \$90,000 in two years. If your cost of capital is 12%, what is the NPV of this investment?
7. Marian Plunket owns her own business and is considering an investment. If she undertakes the investment, it will pay \$55,000 at the end of each of the next three years. The opportunity requires an initial investment of \$30,000 plus an additional investment at the end of the second year of \$35,000. What is the NPV of this opportunity if the cost of capital is 8% per year? Should Marian take it?
9. You are considering opening a new plant. The plant will cost \$100 million up front and will take one year to build. After that, it is expected to produce profits of \$30 million at the end of every year of production. The cash flows are expected to last forever. Calculate the NPV of this investment opportunity if your cost of capital is 8%. Should you make the investment? Calculate the IRR and use it to determine the maximum deviation allowable in the cost of capital estimate to leave the decision unchanged.
10. Bill Clinton reportedly was paid \$10 million to write his book *My Life*. The book took three years to write. In the time he spent writing, Clinton could have been paid to make speeches. Given his popularity, assume that he could earn \$8 million per year (paid at the end of the year) speaking instead of writing. Assume his cost of capital is 10% per year.
 - a. What is the NPV of agreeing to write the book (ignoring any royalty payment)?
 - b. Assume that, once the book was finished, it was expected to generate royalties of \$5 million in the first year (paid at the end of the year) and these royalties were expected to decrease at a rate of 30% per year in perpetuity. What is the NPV of writing the book with the royalty payments.
15. How many IRRs are there in part (a) of problem 10? Does the IRR rule give the correct answer in this case?
16. How many IRRs are there in part (b) of problem 10? Does the IRR rule give the correct answer in this case?
- *11. FastTrack Bikes, Inc. is thinking of developing a new composite road bike. Development will take six years and the cost is \$200,000 per year. Once in production, the bike is expected to make \$300,000 per year for 10 years. The cash inflows begin at the end of year 7. Assume the cost of capital is 10%.

- a. Calculate the NPV of this investment opportunity. Should the company make the investment?
 - b. By how much must the cost of capital estimate deviate to change the decision? (*Hint: Use Excel to calculate the IRR.*)
 - c. What is the NPV of the investment if the cost of capital is 14%?
20. Your firm is considering a project that will cost \$4.55 million up front, generate cash flows of \$3.5 million per year for three years, and then have a cleanup and shutdown cost of \$6 million in the fourth year.
- a. How many IRRs does this project have?
 - b. IGNORE
 - c. Using the MIRR and a cost of capital of 10%, would you take the project?
25. You are considering making a movie. The movie is expected to cost \$10 million upfront and take a year to make. After that, it is expected to make \$5 million when it is released in one year and \$2 million per year for the following four years. What is the payback period of this investment? If you require a payback period of two years, will you make the movie? Does the movie have positive NPV if the cost of capital is 10%?
26. You are choosing between two projects, but can only take one. The cash flows for the projects are given in the following table:

	0	1	2	3	4
A	-50	25	20	20	15
B	-100	20	40	50	60

- a. What are the IRRs of the two projects?
- b. If your discount rate is 5%, what are the NPVs of the two projects?
- c. Why do IRR and NPV rank these projects differently?

27. You are deciding between two mutually exclusive investment opportunities. Both require the same initial investment of \$10 million. Investment A will generate \$2 million per year (starting at the end of the first year) in perpetuity. Investment B will generate \$1.5 million at the end of the first year and its revenues will grow at 2% per year for every year after that.
- Which investment has the higher IRR?
 - Which investment has the higher NPV when the cost of capital is 7%?
 - In this case, for what values of the cost of capital does picking the higher IRR give the correct answer as to which investment is the best opportunity?

31. Gateway Tours is choosing between two bus models. One is more expensive to purchase and maintain, but lasts much longer than the other. Its discount rate is 11%. The company plans to continue with one of the two models for the foreseeable future. Based on the costs of each model shown below, which should it choose?

Model	0	1	2	3	4	5	6	7
Old Reliable	-200	-4	-4	-4	-4	-4	-4	-4
Short and Sweet	-100	-2	-2	-2	-2			

36. Orchid Biotech Company is evaluating several development projects for experimental drugs. Although the cash flows are difficult to forecast, the company has come up with the following estimates of the initial capital requirements and NPVs for the projects. Given a wide variety of staffing needs, the company has also estimated the number of research scientists required for each development project (all cost values are given in millions of dollars).

Project Number	Initial Capital	Number of Research Scientists	NPV
I	\$10	2	\$10.1
II	15	3	19.0
III	15	4	22.0
IV	20	3	25.0
V	30	12	60.2

- Suppose that Orchid has a total capital budget of \$60 million. How should it prioritize these projects?**
- Suppose that Orchid currently has 12 research scientists and does not anticipate being able to hire more in the near future. How should it prioritize these projects?**

Chapter 9

Fundamentals of Capital Budgeting

5. Kokomochi is considering the launch of an advertising campaign for its latest dessert product, the Mini Mochi Munch. Kokomochi plans to spend \$5 million on TV, radio, and print advertising this year for the campaign. The ads are expected to boost sales of the Mini Mochi Munch by \$9 million this year and by \$7 million next year. In addition, the company expects that new consumers who try the Mini Mochi Munch will be more likely to try Kokomochi's other products. As a result, sales of other products are expected to rise by \$2 million each year.

Kokomochi's gross profit margin for the Mini Mochi Munch is 35%, and its gross profit margin averages 25% for all other products. The company's marginal corporate tax rate is 35% both this year and next year. What are the incremental earnings associated with the advertising campaign?

22. Home Builder Supply, a retailer in the home improvement industry, currently operates seven retail outlets in Georgia and South Carolina. Management is contemplating building an eighth retail store across town from its most successful retail outlet. The company already owns the land for this store, which currently has an abandoned warehouse located on it. Last month, the marketing department spent \$10,000 on market research to determine the extent of customer demand for the new store. Now Home Builder Supply must decide whether to build and open the new store.

Which of the following should be included as part of the incremental earnings for the proposed new retail store?

- a. The original purchase price of the land where the store will be located.
- b. The cost of demolishing the abandoned warehouse and clearing the lot.
- c. The loss of sales in the existing retail outlet, if customers who previously drove across town to shop at the existing outlet become customers of the new store instead.
- d. The \$10,000 in market research spent to evaluate customer demand.
- e. Construction costs for the new store.
- f. The value of the land if sold.
- g. Interest expense on the debt borrowed to pay the construction costs.

11. **Castle View Games would like to invest in a division to develop software for video games. To evaluate this decision, the firm first attempts to project the working capital needs for this operation. Its chief financial officer has developed the following estimates (in millions of dollars):**

	Year 1	Year 2	Year 3	Year 4	Year 5
Cash	6	12	15	15	15
Accounts Receivable	21	22	24	24	24
Inventory	5	7	10	12	13
Accounts Payable	18	22	24	25	30

Assuming that Castle View currently does not have any working capital invested in this division, calculate the cash flows associated with changes in working capital for the first five years of this investment.

13. **Elmdale Enterprises is deciding whether to expand its production facilities. Although long-term cash flows are difficult to estimate, management has projected the following cash flows for the first two years (in millions of dollars):**

	Year 1	Year 2
Revenues	125	160
Costs of goods sold and operating expenses other than depreciation	40	60
Depreciation	25	36
Increase in net working capital	5	8
Capital expenditures	30	40
Marginal corporate tax rate	35%	35%

- a. **What are the incremental earnings for this project for years 1 and 2?**
 - b. **What are the free cash flows for this project for the first two years?**
- *16. **One year ago, your company purchased a machine used in manufacturing for \$110,000. You have learned that a new machine is available that offers many advantages and you can purchase it for \$150,000 today. It will be depreciated on a straight-line basis over 10 years and has no salvage value. You expect that the new machine will produce a gross margin (revenues minus operating expenses other than depreciation) of \$40,000 per year for the next 10 years. The current machine is expected to produce a gross margin of \$20,000 per year. The current machine is being depreciated on a straight-line basis over a useful life of 11 years, and has no salvage value, so depreciation expense for the current machine is \$10,000 per year. The market value today of the current machine is \$50,000. Your company's tax rate is 45%, and the opportunity cost of capital for this type of equipment is 10%. Should your company replace its year-old machine?**

29. Bauer Industries is an automobile manufacturer. Management is currently evaluating a proposal to build a plant that will manufacture lightweight trucks. Bauer plans to use a cost of capital of 12% to evaluate this project. Based on extensive research, it has prepared the following incremental free cash flow projections (in millions of dollars):

	Year 0	Years 1–9	Year 10
Revenues		100.0	100.0
– Manufacturing expenses (other than depreciation)		–35.0	–35.0
– Marketing expenses		–10.0	–10.0
– Depreciation		–15.0	–15.0
= EBIT		40.0	40.0
– Taxes (35%)		–14.0	–14.0
= Unlevered net income		26.0	26.0
+ Depreciation		+15.0	+15.0
– Increases in net working capital		–5.0	–5.0
– Capital expenditures	–150.0		
+ Continuation value			+12.0
= Free cash flow	–150.0	36.0	48.0

- For this base-case scenario, what is the NPV of the plant to manufacture lightweight trucks?**
- Based on input from the marketing department, Bauer is uncertain about its revenue forecast. In particular, management would like to examine the sensitivity of the NPV to the revenue assumptions. What is the NPV of this project if revenues are 10% higher than forecast? What is the NPV if revenues are 10% lower than forecast?**
- Rather than assuming that cash flows for this project are constant, management would like to explore the sensitivity of its analysis to possible growth in revenues and operating expenses. Specifically, management would like to assume that revenues, manufacturing expenses, and marketing expenses are as given in the table for year 1 and grow by 2% per year every year starting in year 2. Management also plans to assume that the initial capital expenditures (and therefore depreciation), additions to working capital, and continuation value remain as initially specified in the table. What is the NPV of this project under these alternative assumptions? How does the NPV change if the revenues and operating expenses grow by 5% per year rather than by 2%?**
- To examine the sensitivity of this project to the discount rate, management would like to compute the NPV for different discount rates. Create a graph, with the discount rate on the x-axis and the NPV on the y-axis, for discount rates ranging from 5% to 30%. For what ranges of discount rates does the project have a positive NPV?**

Chapter 10

Stock Valuation: a second look

5. Heavy Metal Corporation is expected to generate the following free cash flows over the next five years:

Year	1	2	3	4	5
FCF (\$ million)	53	68	78	75	82

After 5 years, the free cash flows are expected to grow at the industry average of 4% per year. Using the discounted free cash flow model and a weighted average cost of capital of 14%:

- Estimate the enterprise value of Heavy Metal.
- If Heavy Metal has no excess cash, debt of \$300 million, and 40 million shares outstanding, estimate its share price.

6. Covan Inc., is expected to have the following free cash flows:

Year	1	2	3	4	...
FCF	10	12	13	14	Grow by 4% per year

- Covan has 8 million shares outstanding, \$3 million in excess cash, and it has no debt. If its cost of capital is 12%, what should its stock price be?
- Covan reinvests all its FCF and has no plans to add debt or change its cash holdings. If you plan to sell Covan at the beginning of year 2, what should you expect its price to be?
- Assume you bought Covan stock at the beginning of year 1. What is your expected return from holding Covan stock until year 2?

10. You notice that Coca-Cola has a stock price of \$41.09 and EPS of \$1.89. Its competitor PepsiCo has EPS of \$3.90. But, Jones Soda, a small batch Seattle-based soda producer has a P/E ratio of 35. Based on this information, what is one estimate of the value of a share of PepsiCo stock price?
11. CSH has EBITDA of \$5 million. You feel that an appropriate EV/EBITDA ratio for CSH is 9. CSH has \$10 million in debt, \$2 million in cash, and 800,000 shares outstanding. What is your estimate of CSH's stock price?
16. Suppose that in July 2013, Nike had EPS of \$2.52 and a book value of equity of \$12.48 per share
- Using the average P/E multiple in Table 10.1, estimate Nike's share price.
 - What range of share prices do you estimate based on the highest and lowest P/E multiples in Table 10.1.
 - Using the average price-to-book value multiple in Table 10.1, estimate Nike's share price.
 - What range of share prices do you estimate based on the highest and lowest price-to-book value multiples in Table 10.1?

Table 10.1 Stock Prices and Multiples for the Footwear Industry (excluding Nike), July 2013

Name	Market Capitalization (\$ million)	Enterprise Value (\$ million)	P/E	Price/Book	Enterprise Value/Sales	Enterprise Value/EBITDA
Nike, Inc.	55,970	54,023	23.29	5.07	2.03	15.71
Adidas AG	23,105	23,317	32.33	3.06	1.20	11.88
Puma AG	4,330	4,085	70.56	1.96	0.96	9.34
Wolverine World Wide	2,910	3,981	37.6	4.13	1.22	9.28
Steve Madden, Ltd.	2,320	2,140	18.4	3.68	1.74	10.70
Deckers Outdoor Corp.	1,990	1,923	16.74	2.67	1.36	8.73
Crocs, Inc.	1,470	1,240	11.46	2.4	1.10	6.74
Skechers U.S.A.	1,340	1,213	67.41	1.54	0.78	18.16
Weyco Group, Inc.	301	325	16.53	1.71	1.11	9.69
R. G. Barry Corp.	197	174	14.92	2.31	1.19	6.44
Rocky Brands, Inc.	113	132	12.46	0.89	0.58	6.61
		Average	29.84	2.44	1.12	9.76
		Maximum	+136%	+70%	+55%	+86%
		Minimum	-62%	-63%	-48%	-34%