

Corporate Finance, Module 12, “Corporate Financing and Market Efficiency”

Required reading:

(The attached PDF file has better formatting.)

Updated:

{The Brealey and Myers textbook is excellent. We say to read certain sections and to skip others. This does not mean that certain sections are better; it means that the homework assignments and exam problems are based on the sections that you must read for this course. Some of the skipped sections are fascinating, but they are not tested.}

Read the boxed introduction on page 345; market efficiency is one of the core concepts in the Brealey and Myers text. If the capitalization rate is known and future cash flows can be estimated, we can derive the net present value of a project. To guide a firm’s financing and investment decisions, we must know where positive net present values come from.

Read section 13.1 on page 346. Focus on the second paragraph, which discusses the net present value of borrowing. The appropriate discount rate is the capitalization rate for the project, not the capitalization rate of the firm. If a firm borrows at market rates for that firm, the NPV of the loan is zero, regardless of the risk of the firm.

Illustration: A firm is offered a one-year bank loan for \$10 million at a 10% annual coupon rate: it receives \$10 million today and repays \$11 million in one year. The firm’s market capitalization rate is 15% per annum. The net present value of the loan is $\$10 \text{ million} / 1.10 - \$10 \text{ million} = \text{zero}$.

If a firm receives lower rates from a supplier seeking to entice customers to purchase the goods or from a foreign government seeking to raise exports, the loan has a positive net present value. The final exam tests this subject. The critical issue is the proper discount rate to determine the net present value.

Jacob: We just said above that the proper discount rate is the borrowing rate.

Rachel: Yes, we use the borrowing rate, not the capitalization rate for the firm. The issue is whether we use the pre-tax rate or the after-tax rate.

Jacob: For all cash flows, we use the pre-tax rate. Why is this suddenly a question?

Rachel: The interest paid by a firm on a commercial loan is an offset to taxable income. We determine the after-tax net present value of a subsidized loan.

Illustration: A airline could borrow \$10 million at a 10% effective annual interest rate from a bank. To induce the airline to buy its products, Airbus offer a \$10 million subsidized one year loan with a coupon rate of 5%, not 10%. What is the net present value of this loan?

We are inclined to say: “The firm receives now \$10 million. It repays \$10.5 million at the end of one year, whose present value is $\$10.5 \text{ million} / 1.10 = \$9,545,455$. The net present value of the loan is $\$10 \text{ million} - \$9,545,455 = \$454,545$.”

But this is not correct. We compare two scenarios:

- *Scenario A:* The firm takes a \$10 million loan from a bank, and invests the funds in bonds yielding 10% per annum.
- *Scenario B:* The firm receives a subsidized \$10 million loan from the manufacturer, and invests the funds in bonds yielding 10% per annum.

Jacob: The interest rate on debt is generally several points higher than the investment yield; otherwise the bank would not cover its expenses and cost of capital.

Rachel: We ignore expenses to focus on the financial theory. Brealey and Myers refer to this as perfect capital markets.

Jacob: Differences in risk affect the borrowing and lending rates. If the 10% borrowing rate is for a risky private borrower, the risk-free investment yield might be 8% per annum. If the firm invests in risky securities yielding 10%, the risk of default lowers the effective yield to 8%. This is the efficient market theory that Brealey and Myers espouse.

Rachel: For this illustration, assume the firm is non-risky. In truth, we can derive the proper capitalization rate using risky borrowing, but it is easier to avoid risk issues for this module.

Scenario A: The firm receives the \$10 million bank loan and invests the money in fixed-income securities yielding 10%. At the end of the year, the firm has \$11 million, which it uses to pay off the loan. The investment income is taxable, and the interest on the debt is an offset to taxable income, so its taxable income is zero, and its tax liability is zero. The firm’s income is zero, so the present value of its income is zero. This implies that the loan is a zero net present value project.

Scenario B: firm takes a \$10 million loan from the manufacturer, and invests the funds in fixed-income securities yielding 10% per annum. At the end of the year, the investment income is \$1 million, and the interest on the debt is \$0.5 million. The taxable income is $\$1 \text{ million} - \$0.5 \text{ million} = \$0.5 \text{ million}$. The tax liability is $\$0.5 \text{ million} \times 35\% = \0.175 million , and the after-tax income is $\$0.325 \text{ million}$. This is the value of the subsidized loan at the end of the year. At the beginning of the year, its present value is $\$0.325 \text{ million} / 1.1 = \0.295 million .

Read the subsection “differences between investment and financing decisions” on pages 346-347; the concepts are important and mis-understood by many firms, who assume that financing decisions affect the value of the firm. For instance, the CFO may believe that the value of the firm differs, depending on whether it is funded by stock or by debt. An insurer may set up a holding company to borrow money in the capital markets, instead of using equity financing. Some insurers even say that insurance markets are competitive, and all insurers underwrite the same way. The critical differences among insurers is their financing

decisions, not their underwriting abilities. Brealey and Myers disagree. In perfect capital markets, financing decisions are largely irrelevant.

Jacob: If Brealey and Myers are correct, why are insurers – like other firms – so concerned about financing decisions? The CEO may leave product pricing decisions to an actuary or an underwriter, but he or she carefully reviews how the firm raises capital.

Rachel: The capital markets are not perfect. The imperfections in the capital markets allow great differences between different methods of financing.

Jacob: But Brealey and Myers assume that capital markets are almost perfectly efficient.

Rachel: Yes, they are efficient, but they are imperfect. The imperfections refer to federal income taxes (and tax differences by investor and by investment vehicle), expenses, costs of bankruptcy, and similar matters.

Read section 13.2 on pages 347-356. Know well the three forms of market efficiency (page 351); the final exam tests this. Know how to calculate the expected stock return and the abnormal stock return, and how to use these figures to test market efficiency.

Jacob: The weak form of market efficiency says that charts of past price movements don't help predict future price movements. Do investment firms agree with this?

Rachel: Most investment firms agree with the market efficiency hypotheses.

Jacob: But I have seen investment firm weekly publications that show page after page of common stock price charts. An annual subscription costs \$3,000. If this publication is worthless (as Brealey and Myers imply), why does the investment firm produce it?

Rachel: Brealey and Myers say the publication is worthless. The firm produces it because 10,000 private investors are willing to buy it. Whether the publication helps us predict future stock prices is a financial question; stock market efficiency says no. Whether the firm should produce the publication is a question of supply and demand; the answer is yes.

Jacob: I assume that investors would do better reading the accounting statements of firms.

Rachel: The semi-strong form of market efficiency says they would not do better. All the information that can be extracted from accounting statements is already impounded in stock prices. Thousands of investors are analyzing accounting statements of each firm; many of these investors are professional fund managers. An individual investor has no advantage; in fact, an individual investor is at an enormous disadvantage, since he or she gets information much later than fund managers get information. Market efficiency says that the individual investor poring over accounting statements is wasting time.

Read the first half of section 13.3 on pages 356-357. Skip “stock market anomalies and behavioral finance” on pages 358-360, “professional investors, irrational exuberance, and the dot.com bubble” on page 360, and “the crash of 1987 and relative efficiency” on pages

361-362; these topics are interesting (and well-written), but they are not tested on the final exam. Read the sub-section “market anomalies and the financial manager” on pages 362-363; focus on the first two paragraphs on page 363.

Read section 13.4 (six lessons of market efficiency) on pages 363-370. These pages are wonderfully written, and the final exam tests these six lessons. (The “six lessons” are terms used by Brealey and Myers; they are not standard financial terms. Each has a humorous or catchy title.) Know especially the sixth lesson (seen one stock, seen ‘em all) and its implications for the price elasticity of demand for common stocks.

Read the summary on page 370.