

Introduction to Corporate Finance

(Welch, Chapter 01)

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Did you bring your calculator? Did you read these notes and the chapter ahead of time?

Leitmotif of Finance: Valuation

Capital Budgeting

- ▶ Should you take a particular project?
- ▶ What is this project worth?

Investments

- ▶ Where should you put your investment dollars, given the choice of many projects?
- ▶ How should an investor choose an investment portfolio?

Capital Structure

- ▶ To undertake a project, should you borrow money, sell a share to partners, or finance it yourself?
- ▶ Should firms finance projects or disperse funds?

The borders between these areas are gray, because they are all interrelated and connected—through the issue of valuation!

Background Disciplines

To answer these questions, Finance is a hybrid of

1. Economics (the science of choosing among tradeoffs),
2. Statistics (the science of dealing with uncertainty), and
3. Accounting (the language of business).

The relative importance of disciplines is probably in this order, too.

What is Valuation?

- ▶ Valuation is forward looking, not backward looking.
 - ▶ Value today depends on net cash flow from now to eternity.
 - ▶ History can matter because future cash flows can depend on the “stock” of your assets today that generate these future cash flows.
 - ▶ Historical experience can help you judge the future.
- ▶ Finance cannot estimate philosophical or moral value.
 - ▶ However, finance can deal with such values **if you** are willing to translate them into monetary values. For example, if you value your being honest at \$1 million, you can then use financial tools to analyze your decisions. Attaching such values is obviously subjective, not objective.

Law of One Price: Relative and Absolute Value

- ▶ **All financial valuation is relative to alternatives.**
- ▶ The “Law of One Price:”
 - Same things should cost the same.
- ▶ A natural extension:
 - Similar things should cost similarly.
- ▶ Relative valuation can be easy or hard, depending on the closeness to alternatives.

Easy Valuations

- ▶ One share of IBM vs. another share of IBM.
- ▶ One option of IBM vs. one share of IBM.
- ▶ One share of PepsiCo vs. one share of Coca Cola.
- ▶ One share of PepsiCo vs. one share of IBM.
- ▶ One 5 BR, 4 BT 4,000 sqft house on Foothill (BH) vs. a 4 BR, 4 BT 4,500 sqft house on Beverly (BH).

Hard valuation

- ▶ One house in Santa Monica vs. one house on Fifth Avenue.
- ▶ The White House
- ▶ A Nuclear Power Plant vs. Vacation Time.
- ▶ Mars Exploration vs. Treasury Bonds.
- ▶ The value of religious charity vs. the value of proving Fermat's last theorem.
- ▶ The value of religious charity vs. one share of IBM.
- ▶ The value of leaving Antarctica undisturbed vs. ... ?

A Project

A project is anything that generates a series of cash flows.

- ▶ A repair shop. Cost: \$500. Expected earnings: \$1,000 per month, starting next month, for 24 months.
- ▶ A company's environmental spill cleanup project.
Cash flows: **-\$20,000** per year for 5 years.
- ▶ An investor purchases a Certificate of Deposit (CD) from a bank for \$10,000. The bank will repay \$12,000 in two years.
- ▶ An education. It costs \$50,000, foregoes salary for two years, and pays off (an additional) \$20,000 in salary for 30 more years unless the holder dies.
- ▶ A lottery ticket that costs \$1, and pays \$14,000,000 with some prob.

Projects can range from true physical investments (the bicycle repair shop), to pure monetary investments (the CD), to pure gambles (the lottery ticket).

Whatever the source of the flows, finance concerns itself primarily with them. The inside of the “black box” that both “eats cash” and “produces cash” is often the domain of “more boring”¹ disciplines (e.g., production or marketing).

¹“more boring” is an attempt to be funny.

Bonds (Debt) and Stocks (Equity)

- ▶ Two particularly common projects: Stocks and Bonds.
- ▶ From the perspective of finance and valuation, these two kinds of claims are (primarily) sets of cash flow streams that is paid to the holders of these claims.
- ▶ Bonds (usually) promise given fixed payments at given fixed points in time. Thus, they are often called “fixed income.” (They are also often safer, but they don’t always pay out what they promise.)
- ▶ Stocks (usually) get what is left over after the bonds have been paid off. Stock is sometimes called “equity” or “levered equity.”

Debt and equity are often called financial securities.²

²The name *security* in this context can sometimes be incorrect. Strictly speaking, security means registered under the **1933 Securities Act**, but we will also use the name for unregistered, privately-held, and foreign claims.

Jargon: Bonds (Debt)

- ▶ A **Bond** is a contractual obligation by a borrower to pay certain amounts of cash in the future to a lender.
 - ▶ A 30-year fixed mortgage loan is a good example of a bond: the homeowner borrower promises the bank lender to pay a fixed amount of cash every month. The homeowner issues a bond to the bank. There is no difference between a bond and a loan.

A Bond is a particular type of Loan.

- ▶ Bonds were traditionally and many bonds still are fixed-rate loans (“fixed income” instruments): they have future payments which are fixed and thus do not change with the interest rate.
- ▶ How often can the interest rate in your bank savings deposit change?
- ▶ What kind of bond (from the bank to you) is a checking account?

A 1-day bond, reinvested. Like a floating-rate bond, with automatic reinvestment.

Just be aware that we often think of bonds as something with fixed promised payments in the future—a special kind of loan.

A Firm

A firm is a collection of projects, financed by claims, that provide the inflows that eventually should generate outflows.

- ▶ A firm or company invests in various projects.
- ▶ These projects generate expenses and produce revenues.
 - ▶ Firms are much simpler in finance than they are in other disciplines! In a sense, they are a block box. Do not worry: the situation will quickly become more than complex enough.
- ▶ Revenues in excess of expenses go either into new investments or back to the firm's claimants. Claimants can be debt and equity holders. Other claimants can be suppliers who sold product on credit, or Uncle Sam who demands income tax, or state governments who demand sales tax.

Corporate Accounting Identities

By definition, the sum of the value of all claims is the value of the firm.

$$\begin{aligned} & \text{Firm} \\ = & \text{“Debt (Loans)”} + \text{“Other Liabilities”} + \text{“(Levered) Equity (Owners)”} \\ & = \text{“All Future Payouts”} \end{aligned}$$

If you own all claims, you own the firm!

If the value of the firm's assets (and future opportunities) were not equal to the value of all its securities, you could get rich easily—at least if the market is close to perfect, a concept you will learn in Chapter 2.

Corporate Accounting Identities

- ▶ If you purchase all claims of the projects today, you own the project,

firm value = value of all claims

- ▶ The firm value is also all current and future net flows. If you own the project, you own all net earnings of the project,

firm value = value of all current and future project generated net cash flows

- ▶ If you own the project, you receive all net payouts of the project,

firm value = value of all current and future payouts (dividends, interest, tax payments, etc.)

Moving flows across time

The time distribution of future inflows or outflows can be shifted neutrally **in a perfect market**, properly accounted for.

- ▶ For example, you can pay out D in dividends today, or $D \cdot (1 + r)$ (r is the correct rate of return) in dividends tomorrow—the project value remains the same.
- ▶ Whether the cash flows (or earnings) grow or shrink, or whether dividends are zero today or zero next year or growing or shrinking is all irrelevant. All that matters are the projects' total present value (PV) of all future net cash flows today.
- ▶ You can easily reduce cash flows today in order to jack them up tomorrow (i.e., by reinvesting them at rate r). You can easily increase dividends today at the expense of dividends tomorrow. It ain't make no difference.