

# Chapter 1

## Finance

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### 1.1 What is Finance?

Finance is study of the valuation and management of *risk*.

There are two components to risk.

1. The time of its revelation.
2. The nature of its randomness.

We start with the “timing” problem by considering valuation and management of *risk free* cash flows at different points in time.

The second problem is more tricky. How can one distinguish between different classes, or categories, of risky cash flows? We all know how to distinguish between apples and pears, but what is the equivalent for risky cashflows?

### 1.2 Corporate Finance

This book is about financial issues connected with *corporations*. Typical definitions of corporations deal with the legalities of defining the ownership and control. But we will largely abstract from these. From a finance point of view, the corporation is a *bundle of risky cash flows*. To *value* a corporation, we disentangle

the components of the risky cash flows (including the date of revelation), value these separately, and, finally, apply *value additivity* to sum all the components.

For our purposes, managing a company is largely playing around with the bundling of the risky components of the corporation. For example, reshuffling of cash flows in time to postpone tax payments, or understanding how bundling creates incentives for participants, such as management, bondholders and equity owners.

### 1.3 Financial Markets

For our purposes, financial markets can be thought of as supermarkets for risky cash flows. Unlike regular supermarkets where you shop among products on the shelves, financial supermarkets work as organized *exchanges*, where financial *securities* are bought and sold in continuous *auctions*. Financial *securities* are best thought of as *packages of cash flows*, and they come in all sorts. Let us look at some examples.

Most governments need to finance their deficits. To do so they issue government *debt*. The debt can be short term, in which case we call it a *Treasury Bill*, which will promise a given cashflow sometime within the next year. A treasury bill is the typical example of a risk free security, there is no uncertainty about the future payments. If government debt is long term, over a year, it is typically issued as government *bonds*, with annual payments of coupons and a repayment of the face value at the bond maturity. Since governments can always print money, there is no uncertainty about whether you get your money back when you hold a long term government bond. But government bonds are still not as risk free as treasury bills. The reason is that there is always uncertainty about the *future worth* of a dollar (or pound, or mark) due to *inflation*.

A more risky security is corporate *equity*, or *stocks*. A corporate equity gives the owner the right to a *dividend* from the corporation. The dividend is a function of the profitability of the corporation. Since this profitability is quite variable for most companies, the cashflows from a stock will be *risky*. Historically, though, at least in the U.S, the *return* from holding equity has been on average much higher than the return from holding government debt.

Some of the largest financial markets are markets in *derivatives*, securities whose payoff depend on the price of some other security, or even on the prices of real (as opposed to financial) goods. *Futures markets* are markets where one can fix a price *today* for a *future* delivery of some good. *Options markets* are markets where one can fix a price today for a future *contingent* delivery of some good.

We usually make a distinction between the *primary* and the *secondary* market. The primary market is at the *issue* of a security. Treasury securities are often issued to the general public by an auction where anybody can send in bids. This is then the primary market for treasury securities. When a corporation issues equities for the first time, the *Initial Public Offering*, this is the primary market for equities.

When securities are traded after they have been issued (in the primary market), they are said to be traded in the *secondary* market. In terms of volume and value, the secondary market dwarfs the primary market. Many do not understand why secondary markets are important, because they only seem to be “zero sum games.” (If somebody makes a gain buying a stock the seller must be a loser.) These people miss some important services that financial markets provide:

- Hedging (risk insurance).
- Intertemporal matching of liquidity needs.
- Price signals to primary market.

Relative to the amounts being bought and sold in financial markets, the *costs of transacting* are small. (Hey, all you are doing is shuffling paper around.) The costs are not zero (How do you think stockbrokers survive?), but they are closer to the economist’s definition of a *perfect market* than most other markets. It is this that makes it justifiable for us to make an assumption of *perfect capital markets*, markets where it is costless to transact. Their existence would in practice lead to extreme investment strategies, like: “Never realize any capital gains until you die, realize losses as soon as they occur, shield dividends from taxation by borrowing money.” When we use them in our models, they are best thought of as reasonable approximations to the “true” market.