

---

# Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Present value relations</b>	<b>5</b>
2.1	Cashflows and Assets . . . . .	5



---

# Chapter 1

## Introduction

There four components of economy that we will investigate:

1. Households
2. Product market
3. Labor market
4. Financial intermediaries

There are two aspects of financial analysis:

1. valuating assets
2. managing assets : Objective + Valuation = Decision

The two factors that make finance interesting are time and risk. Six principle of finance:

1. No free lunches.
2. Other things equal, individuals:
  - Want more money than less (non-satiation)
  - Prefer money now to later (impatience)
  - Prefer to avoid risk (risk aversion)
3. All agents act to further their own self-interest
4. Financial market prices shift to equalize supply and demand
5. Financial markets are highly adaptive and competitive
6. Risk-sharing and frictions are central to financial innovation



---

# Chapter 2

## Present value relations

### 2.1 Cashflows and Assets

Cashflow is the flow of cash :). Asset is a sequence of cashflows.

$$\text{Asset}_t = \{CF_t, CF_{t+1}, \dots\}$$

The value of an asset is a function of its cashflows.

$$\text{Value of asset}_t = V_t(CF_t, CF_{t+1}, \dots)$$

There are two distinct cases we valuating an assets

- with no uncertainty; all the cashflows are known
- with uncertainty;

#### 2.1.1 No uncertainty

A **numeraire** date should be picked, typically  $t = 0$ , then cashflows are converted to **present value**

$$V_0(CF_1, CF_2, \dots) = \left(\frac{\$1}{\$0}\right) \times CF_1 + \left(\frac{\$2}{\$0}\right) \times CF_2 + \dots$$

then the **net present value** is

$$V_0(CF_0, CF_1, \dots) = CF_0 + \left(\frac{\$1}{\$0}\right) \times CF_1 + \dots$$

1. when there is up front investment  $CF_0$  is negative.
2. Note that any  $CF_t$  can be negative (future costs).

$$\begin{aligned}\$0 &= (1+r)\$1 \\ \$0 &= (1+r)^2\$2 \\ &\vdots \\ \$0 &= (1+r)^T\$T\end{aligned}$$

where  $r$  is **opportunity cost of capital** and  $\frac{\$t}{\$0}$  is called the **discount factor**.