International Management Studies

Lecture 6

April 9, 2025

Contents: April 9 (Lecture 6)

I. Macro Event News (Trump's New Tarriff Policy)
II. How to Evaluate the Value of a Stock
III. Time value of money (basic principle of finance)
IV. Notes: Quiz1(April 9), Mid-term Exam: April 23

I. Macro Event News (Trump’s New Tarriff Policy)

● Live

Stocks Tumble on Bigger-Than-Expected Trump Tariffs

Top Stories | Live Updates

Trump Has Announced Reciprocal Tariffs. What Are They?

US Tariffs Seen as Far Worse Shock to China Than First Trade War

US Emerges as Biggest Loser in Markets From Trump's Tariffs

$$\Delta\tau_i = \frac{x_i - m_i}{\varepsilon * \varphi * m_i}.$$

USTR

This Is the Formula Trump's Team Used to Calculate Tariffs

Politics

Trump Tariffs Everyone, With China and Europe Vowing Retaliation

President Donald Trump during an event in the White House Rose Garden, where he announced his tariff plan. *Source: Bloomberg*

https://www.bloomberg.com/news/articles/2025-04-02/trump-says-he-s-signing-executive-order-on-reciprocal-tariffs?utm_source=website&utm_medium=share&utm_campaign=copy

II. What is the most promising company (firm or stock) over the next five years ? (team presentation)

Evaluation Methods for the Value of a Stock

When evaluating the **value of a stock**, investors and analysts use several methods, broadly categorized into **fundamental analysis, technical analysis, and market-based approaches**. Below are the key **stock valuation methods**:

1. Fundamental Valuation Methods

Fundamental valuation methods focus on analyzing a company's financial health, earnings potential, and intrinsic value.

(1) Discounted Cash Flow (DCF) Analysis

- **Concept**: Determines the present value of a stock based on expected future cash flows.
- **Formula**:

$$PV = \sum \frac{CF_t}{(1+r)^t}$$

  where:

  - PV = Present Value
  - CF_t = Cash flow in year t
  - r = Discount rate (cost of equity or WACC)
  - t = Time period

- **Pros**: Comprehensive, accounts for future growth
- **Cons**: Requires accurate cash flow estimates, sensitive to discount rate assumptions

(2) Dividend Discount Model (DDM)

- **Concept**: Values a stock based on the present value of expected future dividends.
- **Formula (Constant Growth Model - Gordon Growth Model)**:

$$P_0 = \frac{D_1}{r - g}$$

where:

- P_0 = Stock price today
- D_1 = Expected dividend next year
- r = Required rate of return
- g = Dividend growth rate

- **Pros**: Simple and useful for dividend-paying stocks
- **Cons**: Not useful for companies that do not pay dividends or have unpredictable dividend growth

(3) Price-to-Earnings (P/E) Ratio Approach

- **Concept**: Compares a stock's price to its earnings per share (EPS) to determine valuation.
- **Formula**:

$$P/E = \frac{\text{Stock Price}}{\text{Earnings Per Share (EPS)}}$$

- **Pros**: Easy to use, widely accepted
- **Cons**: Earnings can be manipulated, does not account for future growth

(4) Price-to-Book (P/B) Ratio

- **Concept**: Compares a stock's price to its book value per share.
- **Formula**:

$$P/B = \frac{\text{Stock Price}}{\text{Book Value per Share}}$$

- **Pros**: Useful for valuing asset-heavy companies like banks
- **Cons**: Not ideal for companies with high intangible assets (e.g., tech firms)

---

2. Relative Valuation Methods

Relative valuation methods compare a stock's value to industry peers.

(1) Price-to-Sales (P/S) Ratio

- **Formula**:

$$P/S = \frac{\text{Market Capitalization}}{\text{Total Revenue}}$$

- **Use Case**: Good for early-stage or loss-making companies where earnings are not stable.

(2) Enterprise Value-to-EBITDA (EV/EBITDA)

- **Formula**:

$$EV/EBITDA = \frac{\text{Enterprise Value}}{\text{Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA)}}$$

- **Use Case**: Common in mergers & acquisitions, suitable for capital-intensive industries.

III. Time Value of Money

Time Value of Money (TVM) – Lecture Explanation for University Students

Introduction

The concept of the **Time Value of Money (TVM)** is one of the fundamental principles in finance. It states that **a dollar today is worth more than a dollar in the future** due to its earning potential. This concept is crucial in financial decision-making, including investment analysis, capital budgeting, and retirement planning.

$$FV = PV\,(1+r)^n$$

Rearranging the variables, we can develop equations to calculate the Present Value , Interest Rate, and Time.

$$PV = \frac{FV}{(1+r)^n} \qquad r = \left(\frac{FV}{PV}\right)^{\frac{1}{n}} - 1 \qquad n = \frac{\ln(\frac{FV}{PV})}{\ln(1+r)}$$

1. Why Does Money Have Time Value?

There are three main reasons why money today is worth more than the same amount in the future:

1. **Inflation** – Over time, the purchasing power of money decreases due to rising prices.
2. **Opportunity Cost** – Money can be invested to earn interest or returns.
3. **Risk and Uncertainty** – Future cash flows are uncertain, so money today is more valuable.

Example 1: Simple Interest vs. Compound Interest

Let's assume you invest **$1,000** in a savings account with a **5% annual interest rate** for **three years**.

(1) Simple Interest Calculation

With simple interest, the formula is:

$$FV = PV(1 + r \cdot t)$$

Where:

- FV = Future Value
- PV = Present Value ($1,000)
- r = Interest Rate (5% or 0.05)
- t = Time in years (3)

$$FV = 1,000(1 + 0.05 \times 3) = 1,000(1.15) = 1,150$$

So, after 3 years, you will have **$1,150** with simple interest.

(2) Compound Interest Calculation

With compound interest, the formula is:

$$FV = PV(1+r)^t$$

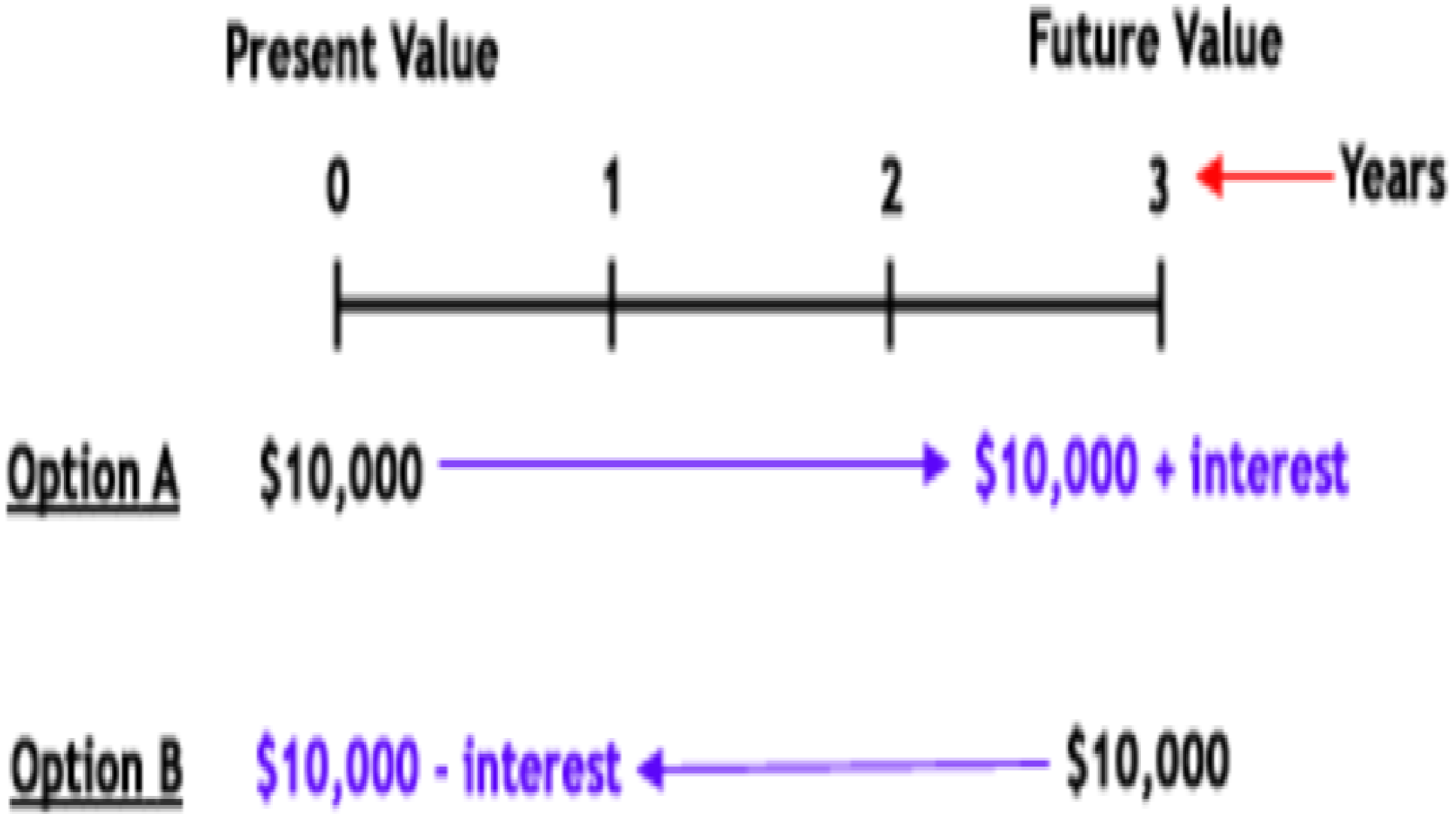
$$FV = 1,000(1.05)^3 = 1,000 \times 1.1576 = 1,157.63$$

So, with compound interest, you will have **$1,157.63**, which is **more than the simple interest case** because interest is earned on both the principal and previously earned interest.

Wall Street Prep

$$\text{Present Value (PV)} = \frac{\text{Future Value (FV)}}{(1 + \text{Discount Rate})^{\text{Number of Periods}}}$$

$$\text{Future Value (FV)} = \text{PV} \times (1 + \text{Discount Rate})^{\text{Number of Periods}}$$


Present Value
Future Value
0
1
2
3
Years
Option A
$10,000
$10,000 + interest
Option B
$10,000 - interest
$10,000

2. Present Value and Discounting

Present Value (PV) helps determine how much future money is worth today. It is calculated using the formula:

$$PV = \frac{FV}{(1+r)^t}$$

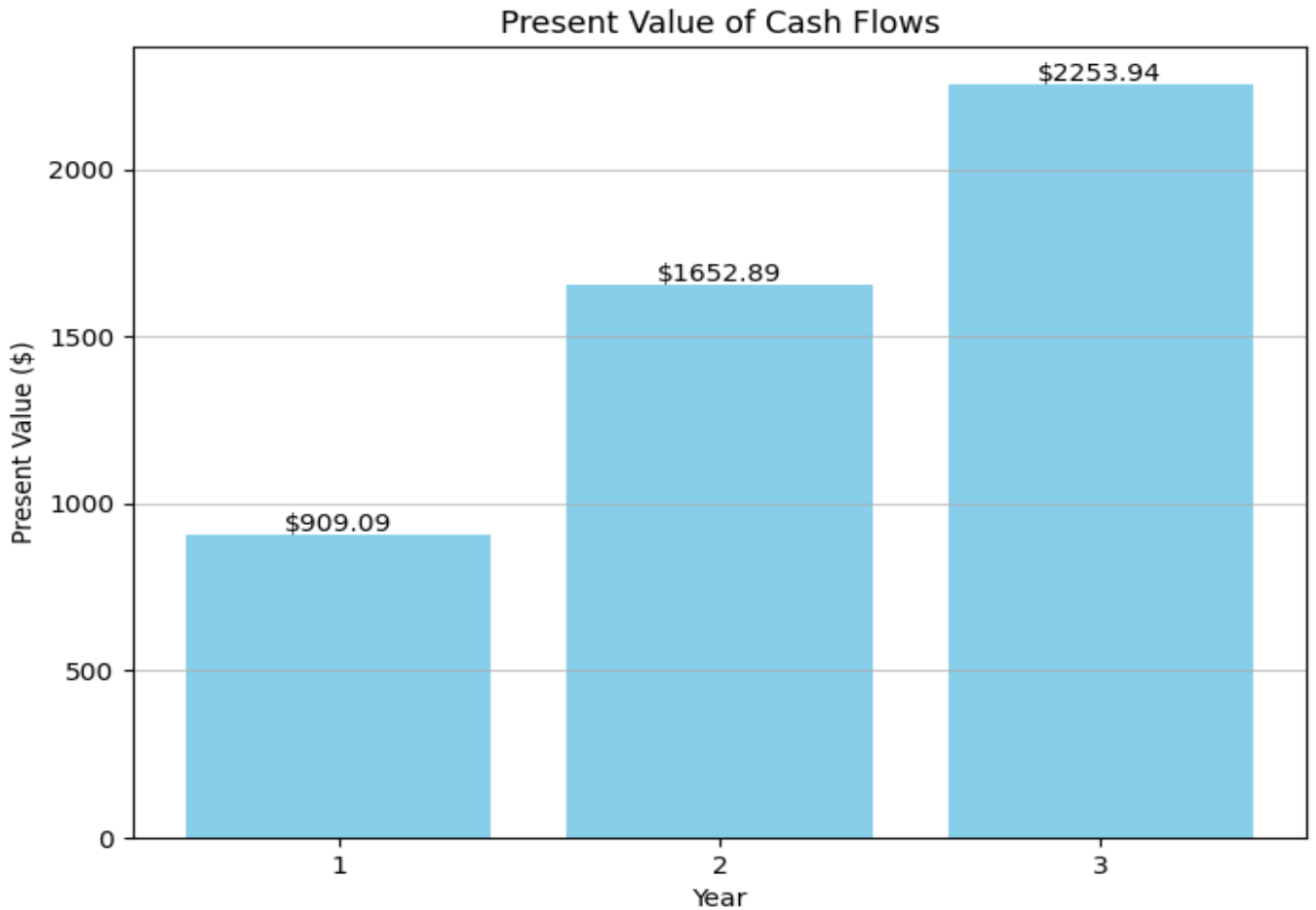
Example 2: Discounting a Future Payment

Suppose you will receive **$1,500** in **4 years**, and the discount rate is **6% per year**. The present value is:

$$PV = \frac{1,500}{(1.06)^4} = \frac{1,500}{1.2625} = 1,188.07$$

This means **$1,500 in 4 years is worth only $1,188.07 today** at a 6% discount rate.

What is the present value of the cash flows (at the end of year one=$1000, at the end of year two = $2000, at the end of year three = $3000, discount rate is 10% ?



Detailed Present Value Calculation:

Cash flow in year 1: $1000
Discount factor for year 1: (1 + 0.1)^{1} = 1.1000
Present value of $1000 received in year 1: $1000 / 1.1000 = $909.09

Cash flow in year 2: $2000
Discount factor for year 2: (1 + 0.1)^{2} = 1.2100
Present value of $2000 received in year 2: $2000 / 1.2100 = $1652.89

Cash flow in year 3: $3000
Discount factor for year 3: (1 + 0.1)^{3} = 1.3310
Present value of $3000 received in year 3: $3000 / 1.3310 = $2253.94

Total present value of all cash flows: $4815.93

Calculate the present value for the cash flows ($1000 each year for the next 30 years

$$PV = PMT * [(1 - (1 + r)^-n) / r]$$

Calculating Present Value of Annuity:
Payment Amount (PMT): $1000
Discount Rate (r): 0.1000
Number of Years (n): 30

Step 1: (1 + r) = 1 + 0.1000 = 1.1000
Step 2: -n = -30 = -30
Step 3: (1 + r)^-n = 1.1000^-30 = 0.0573

Step 4: 1 - (1 + r)^-n = 1 - 0.0573 = 0.9427

Step 5: [1 - (1 + r)^-n] / r = 0.9427 / 0.1000 = 9.4269

Step 6: PMT * Present Value Factor = $1000 * 9.4269 = $9426.91

The present value of receiving $1000 per year for 30 years at a discount rate of 10.0% is: $9426.91

TVM Calculation Example

Suppose you're offered the following two options to pick from:

- Option 1 → Receive $225,000 in Year 4
- Option 2 → Receive $50,000 from Year 1 to Year 4

The determinant of which option is more profitable is the time value of money (TVM).

If we assume a 10% discount rate, which option should you proceed with?

For both option 1 and option 2, we'll list out the cash inflow for each year.

While option 1 consists of a one-time payment of $225,000, option 2 consists of four payments of $50,000.

The formula for discounting each cash flow is the future value (FV) divided by (1 + discount rate), which is then raised to the power of the period number.

Once completed for each year, the sum of the discounted cash flows equals the present value of the option, i.e. how much the future cash flows are worth on the present date.

- Option 1 = $154,000
- Option 2 = $158,000

$$PV_{Annuity} = \left(\frac{Annuity}{r}\right)\left(1 - \frac{1}{(1+r)^{t}}\right)$$

- PV = Present Value
- Annuity = Annuity Payment Per Period ($)
- t = Number of Periods
- r = Yield to Maturity (YTM)

Annuity Formula

cuemath
THE MATH EXPERT

The future value of an annuity

$$FV = P \times \left(\frac{(1+r)^{n} - 1}{r} \right)$$

The present value of an annuity

$$PV = P \times \left(\frac{1 - (1+r)^{-n}}{r} \right)$$

Quiz1 and Mid-term Exam