Introduction to Business Valuation

Course Instructor - Jeff

Jeff Schmidt

VP, Financial Modeling

About Jeff...

Prior to joining CFI, for over a decade Jeff taught financial modeling and valuation to thousands of students all over the world. Before his career in financial education, Jeff covered approximately 50 companies with a combined market cap of $500 billion during his career in equity research. He also worked in corporate development leading M&A modeling and due diligence, and FP&A, as well as working in investment banking and restructuring. Jeff has a B.S. from Texas A&M University and obtained his MBA from the University of Houston. He is a CFA charterholder.

CFI

Learning Objectives

Identify a wide range of valuation methods.

Understand the difference between enterprise value and equity value.

Explore the three main business valuation techniques.

Determine the pros and cons of different valuation methods.

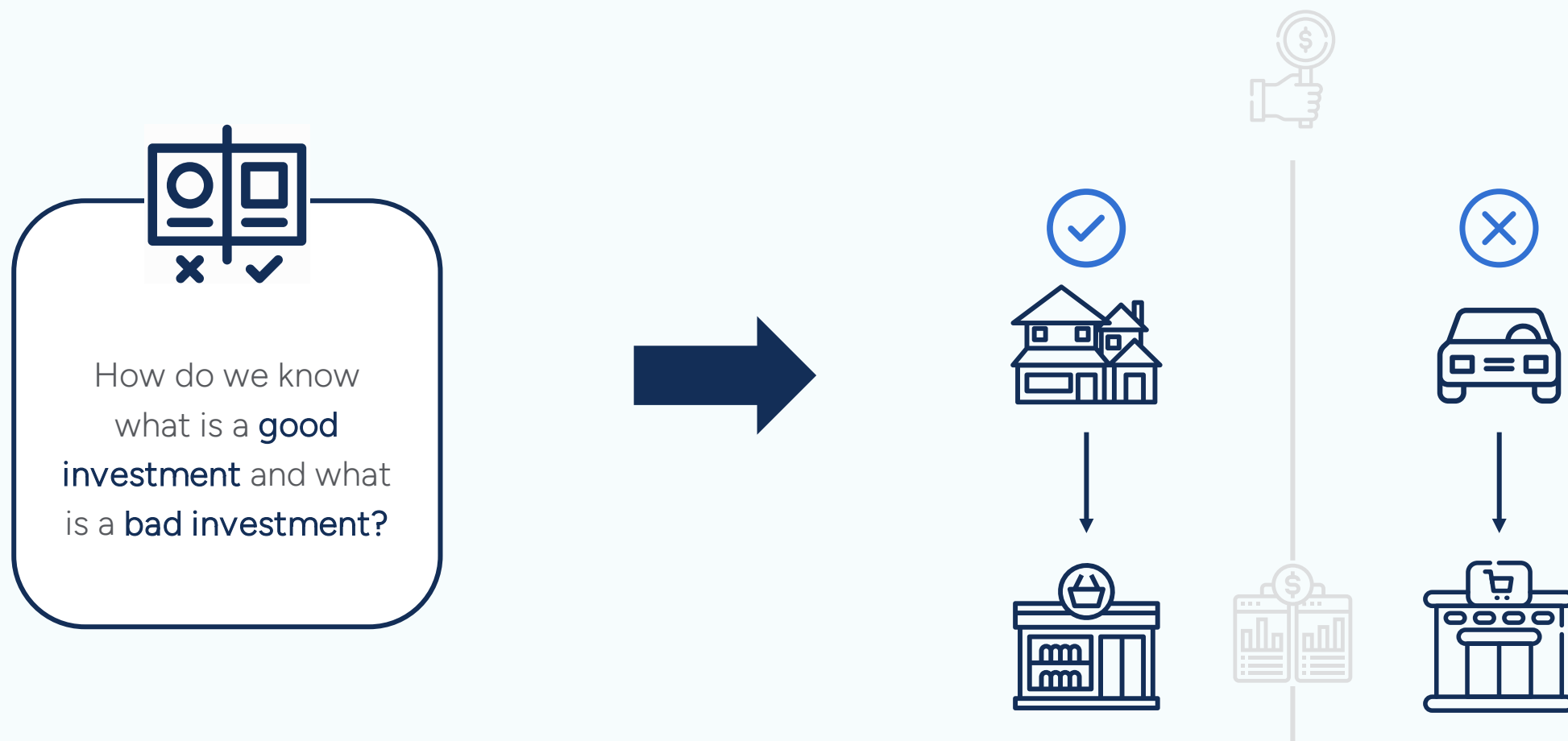Discover how to present your analysis like a world-class financial analyst.

Calculate key outputs within the model structure.

CFI

Why Value Companies

What is Valuation

Valuation is the art and science of **attributing value to an asset, investment, or company.**

How do we know what is a **good investment** and what is a **bad investment?**

CFI

Why Perform Valuation

Valuing a Business for Investment Purposes

Selling a business

Acquiring a business
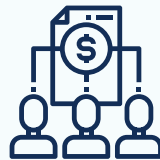
Raising money (i.e., IPO)

Investment recommendations (i.e., buy, hold, sell)

Internal business decision-making

Impairment testing

Valuing employee options and compensation

Bankruptcy

Estate planning

Litigation

CFI

Valuation Is an Art and a Science

Science

Historical Financials
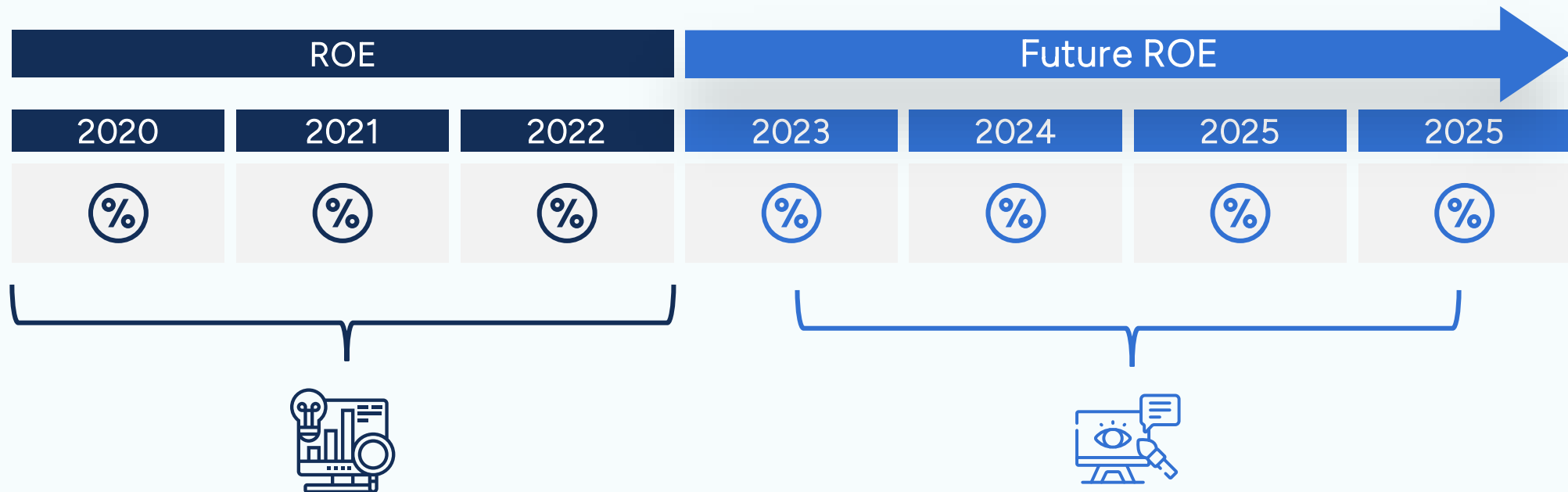Ratios
Track Record
Statistical Analysis

Art

Management Team
Culture and Strategy
"Moat"
Competition
Macroeconomic Factors
Cost of Capital
Forecasting

Valuation Is an Art and a Science

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Shareholder's Equity}}$$

$$= \%$$

ROE			Future ROE			
2020	2021	2022	2023	2024	2025	2025
%	%	%	%	%	%	%

CFI

Valuation Is an Art and a Science

We must have a **deep understanding of the business and where it's going** for our forecast to be meaningful.

Company management

Industry and competition

Threats and challenges

Microeconomic environment

Macroeconomic environment

Based on this, we **apply acceptable valuation methods** to determine a company's worth.

CFI

Valuation Is an Art and a Science

We must have a deep understanding of the business and where it's going for our forecast to be meaningful.

Company management

Macroeconomic environment

For a more in-depth look at how to examine micro and macroeconomic environments, check out our course called **Analyzing Growth Drivers & Business Risks.**

Based on this, we apply acceptable valuation methods to determine a company's worth.

CFI
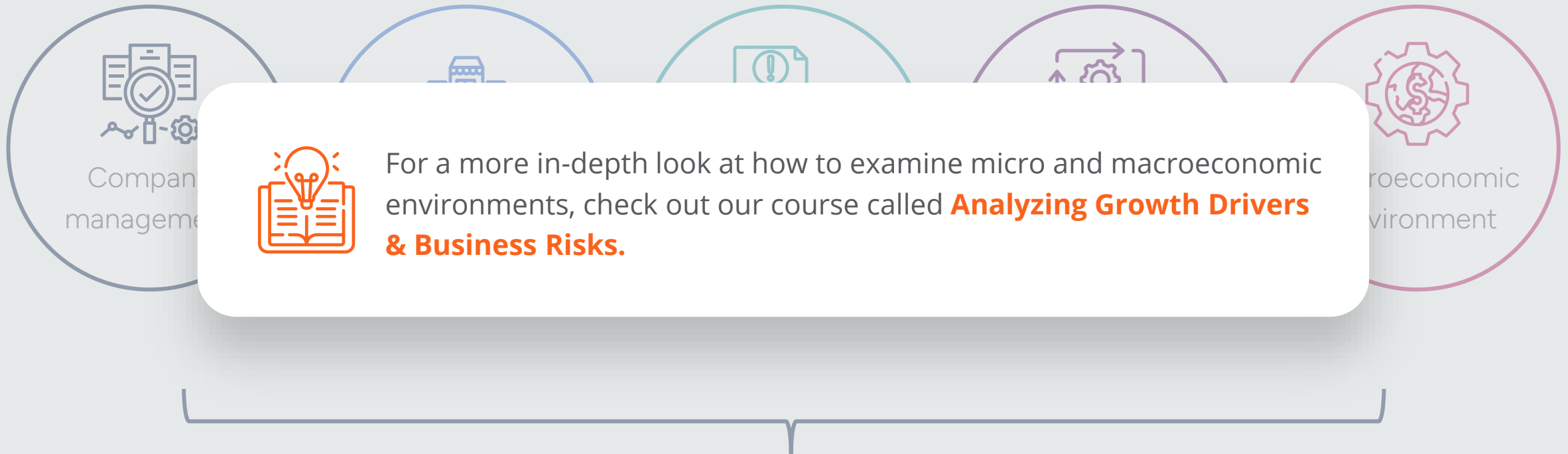
Valuation Techniques

Valuation Techniques

**Asset Approach
(FMV of Net Assets)**

- Cost to Build
- Replacement Cost
- Liquidation Value

**Intrinsic Value
(Income Approach)**

- Discounted Cash Flows (DCF)

**Relative Value
(Market Approach)**

- Public Company Comparables
- Precedent Transactions

CFI

Intrinsic Value – DCF

Intrinsic Value (Income Approach)

- Discounted Cash Flows (DCF)

Intrinsic valuation means **looking at a company in isolation** without worrying about peers.

Involves: **forecasting future performance, calculating future cash flows, and discounting back to the present.**

It doesn't directly depend on the mood of the market since we are **more focused on the fundamentals of the company.**

CFI

Relative Value – Public Company Comparables

**Relative Value
(Market Approach)**

- **Public Company Comparables**
- Precedent Transactions

Peers are generally easy to find because these companies' shares are publicly traded on a stock exchange.

We **use multiples to find the worth of the company** we are trying to value (i.e., Price-to-earnings multiple).

It is **more likely to reflect the mood of the market** and produce a valuation that is closer to market price than DCF.

CFI

Relative Value – Precedent Transactions

Relative Value
(Market Approach)

- Public Company Comparables
- **Precedent Transactions**

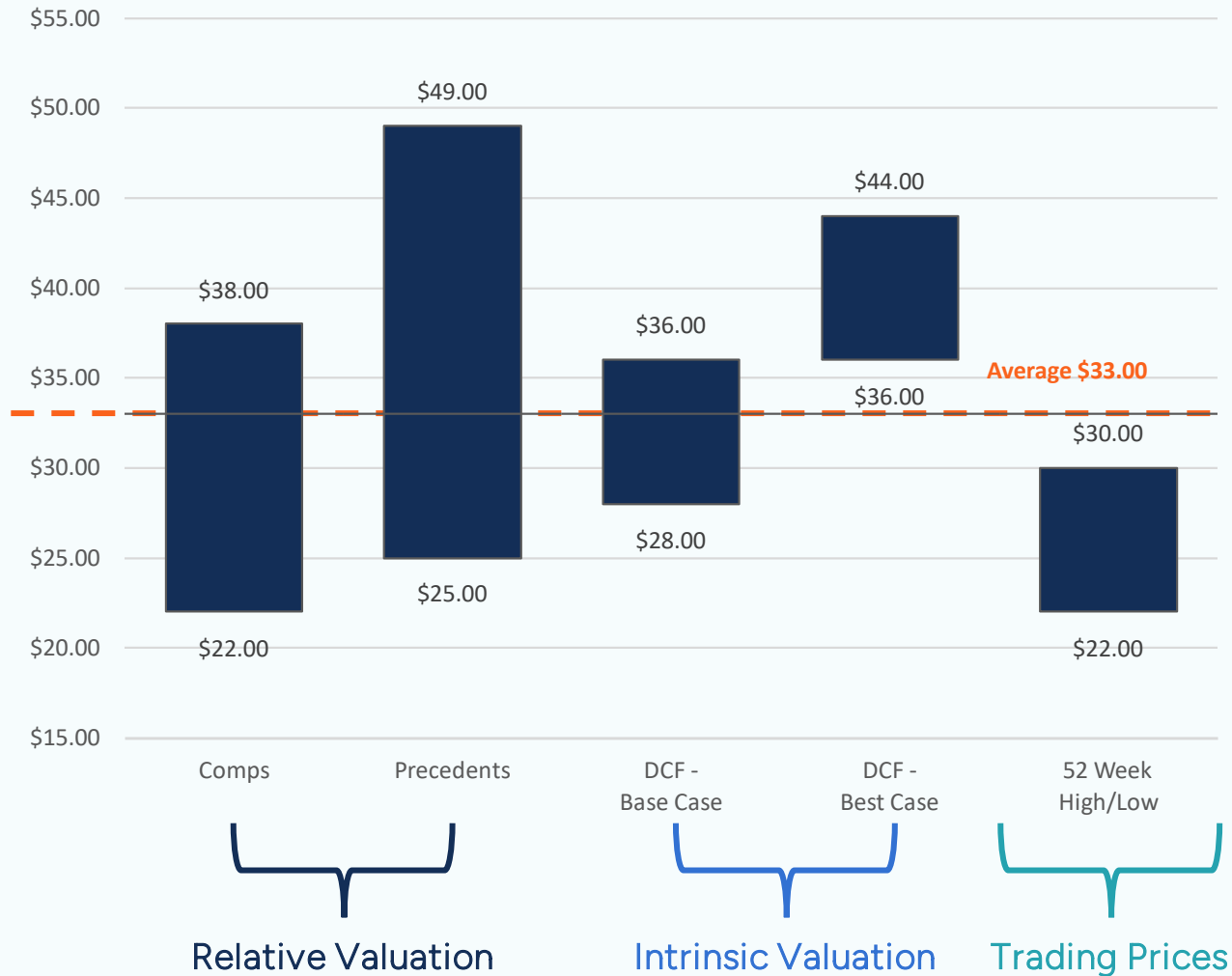Precedent transactions relate to **past mergers and acquisitions.**

This form of valuation includes a takeover premium (generally, more money is paid for a controlling position).

CFI

Presenting Valuation Results

Football Field Chart

$55.00 —

$50.00 — $49.00

$45.00 — $44.00

$40.00 — $38.00

$35.00 — $36.00   **Average $33.00**
                                                                                                   $36.00

$30.00 — $30.00

$25.00 — $25.00

                                                       $28.00
$22.00 — $22.00 $22.00

$15.00 —

Comps   Precedents   DCF -   DCF -   52 Week
                                 Base Case   Best Case   High/Low

Relative Valuation   Intrinsic Valuation   Trading Prices

It's the job of **analysts to weigh the different methods.**

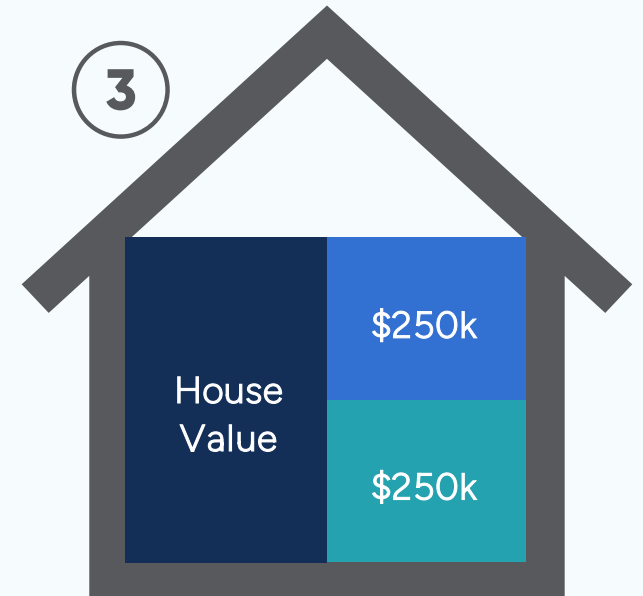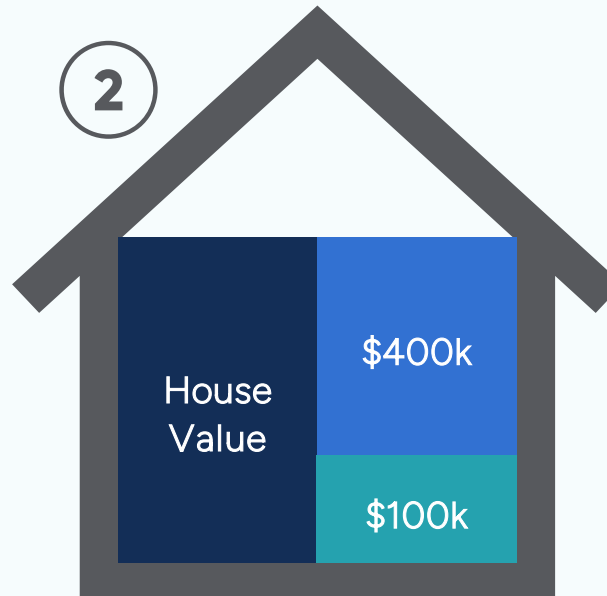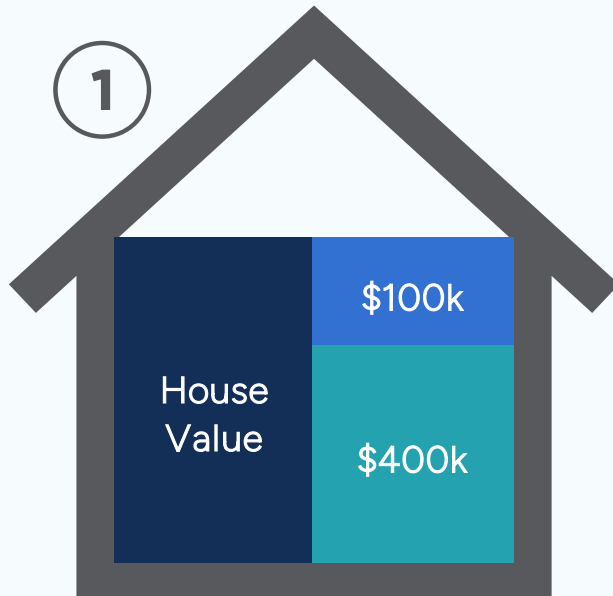Value can never be truly observed, so we **use all of these techniques.**

CFI

Enterprise Value vs. Equity Value

Enterprise Value vs. Equity Value

Enterprise Value

Assets

25% Debt Financing

75% Equity Financing

Equity Value

CFI
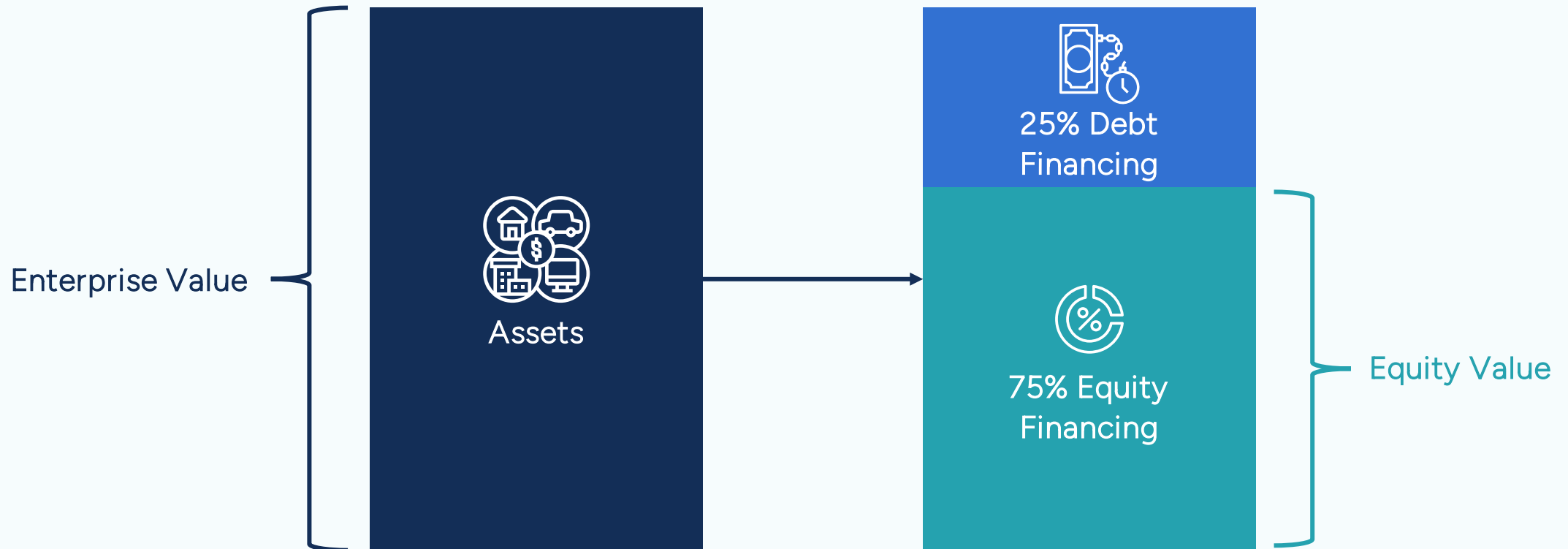
House Example

What are each of these houses worth?

Answer: $500,000

- The **funding mix is independent of the value** of the house.
- The value of the house is what enterprise value reflects for companies.
- Regardless of how the house is financed, the price (or enterprise value) remains the same.

CFI

Calculating Enterprise Value

Enterprise Value = **Market Cap** + [**Debt** − **Cash**] Net Debt

✓ Bonds
Revolving Credit Line

✗ Accounts Payable
Deferred Revenues

Calculating Enterprise Value

Net Debt

| Enterprise Value | = | Market Cap | + | Debt | − | Cash |

Net Debt Defined ($MM)

Short-term Interest-bearing Debt	5,000
Long-term Interest-bearing Debt	35,000
Gross Debt	40,000
Less: Cash and Cash Equivalents	10,000
Net Debt	30,000

» Think about **cash as offsetting debt** because cash can be used to pay debt off.

» Cash is **not included in firm value** as it is not an operating asset that generates cash.

CFI

Calculating Enterprise Value

Net Debt

| Enterprise Value | = | Market Cap | + | Debt | − | Cash |

Net Debt Defined ($MM)

Short-term Interest-bearing Debt	5,000
Long-term Interest-bearing Debt	35,000
Gross Debt	40,000
Less: Cash and Cash Equivalents	10,000
Net Debt	30,000

Net Debt (with positive net cash position) ($MM)

Short-term Interest-bearing Debt	5,000
Long-term Interest-bearing Debt	0
Gross Debt	5,000
Less: Cash and Cash Equivalents	20,000
Net Debt	(15,000)
Net Cash	15,000

CFI

Advantages and Disadvantages

Let's look at the advantages and disadvantages of enterprise value and equity value.

Enterprise Value

✓ More useful when comparing companies with different capital structures.

✓ Minimizes accounting policies relative to net income and earnings per share.

✗ There are other debt and cash-like items that may be difficult to measure.

✗ Less useful for analyzing stocks since enterprise value is total business value, not equity value.

Equity Value
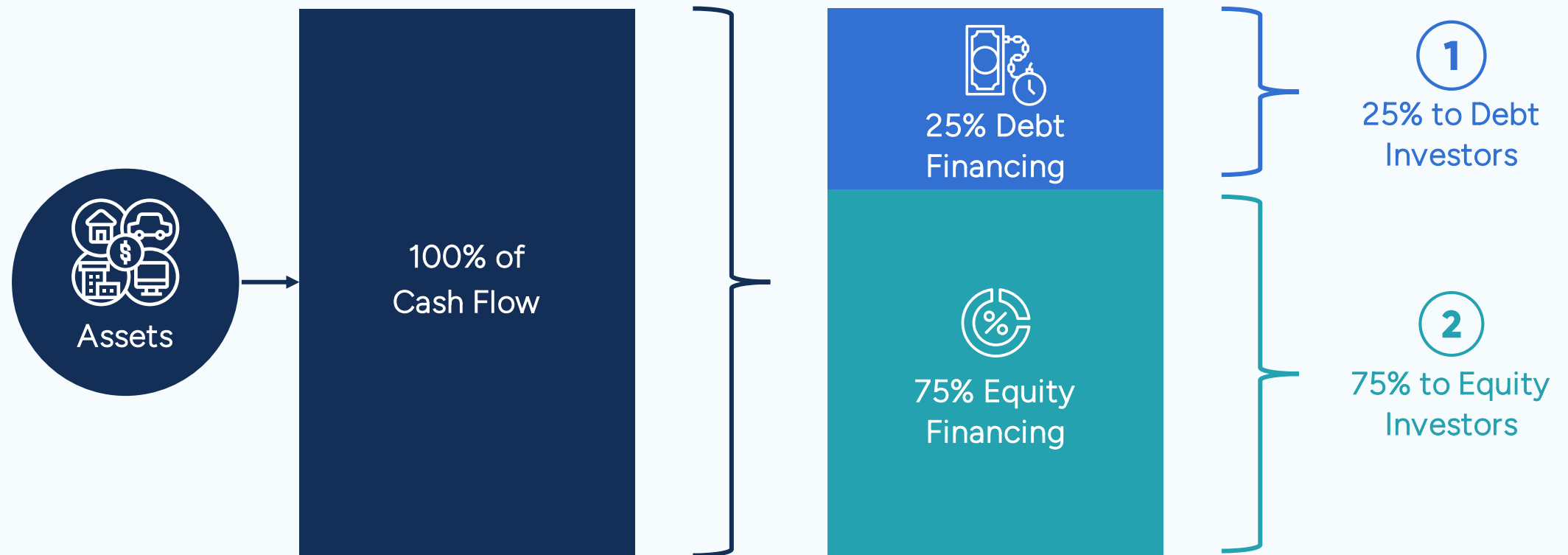
✓ More relevant to equity valuation, which is just a portion of a business.

✓ Requires less judgment than enterprise value, where there is debate over cash and debt.

✗ Multiples rely on accrual accounting, which can be manipulated.

✗ Different capital structures impact earnings, even if the businesses are otherwise identical.

CFI

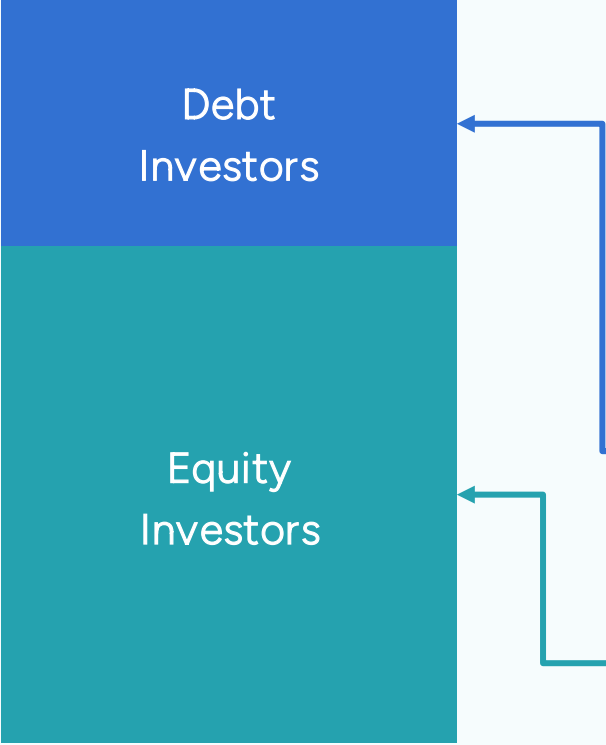# Numerator/Denominator Consistency

Valuation Consistency

We start with assets, which can be funded by either debt or equity.

Assets → 100% of Cash Flow

25% Debt Financing

75% Equity Financing

1 — 25% to Debt Investors

2 — 75% to Equity Investors

Valuation Consistency

Now, let's look at how this really flows through the income statement.

XYZ Inc. Income Statement		
Income Statement	$Millions	
Sales	1,000	
Operating Expenses	(350)	Venders & Employees
EBITDA	650	
Depreciation	(400)	Non-cash
EBIT	250	
Interest	(100)	Debt Holders
Earnings Before Tax	150	
Tax	(50)	Government
Net Earnings	100	Shareholders
No. of Shares	100 Million	
Earnings per Share	$1.00	

Debt Investors

Equity Investors

CFI

Valuation Consistency

Now, let's look at how this really flows through the income statement.

XYZ Inc. Income Statement	
Income Statement	**$Millions**
Sales	1,000
Operating Expenses	(350)
EBITDA	**650**
Depreciation	(400)
EBIT	**250**
Interest	(100)
Earnings Before Tax	**150**
Tax	(50)
Net Earnings	**100**
No. of Shares	100 Million
Earnings per Share	$1.00

If the denominator is before interest expense, it's an enterprise value multiple.

- EV/Sales
- EV/EBITDA
- EV/EBIT

If the denominator is after interest expense, it's an equity value multiple.

- P/E
- P/B

CFI

Discounted Cash Flow Valuation

Intrinsic Value

The intrinsic value of an asset or business is based on its future profits.

Discounted Future Cash Flows

$$\text{Net Present Value (NPV)} = \frac{FV_1}{[1+i]^1} + \frac{FV_2}{[1+i]^2} + \frac{FV_3}{[1+i]^3} + \ldots + \frac{FV_n}{[1+i]^n}$$
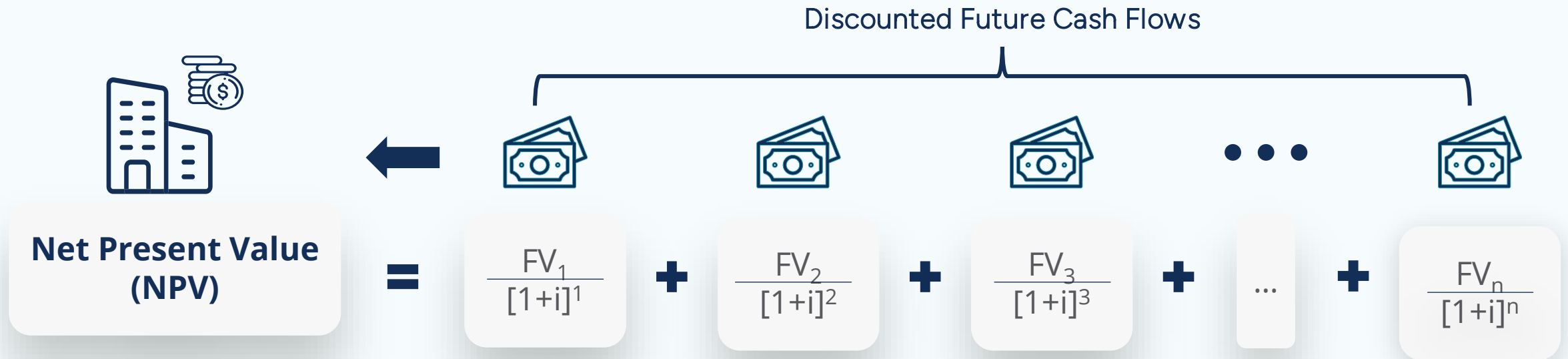
Where:

FV_n = Net cash flow for the nth period

i = Annual interest rate

n = Number of periods

CFI

Types of Free Cash Flows

There are two types of discounted cash flow calculations:

More common in practice

Unlevered Free Cash Flow (UFCF)

The cash flow that a business has **before** paying its debt obligations.
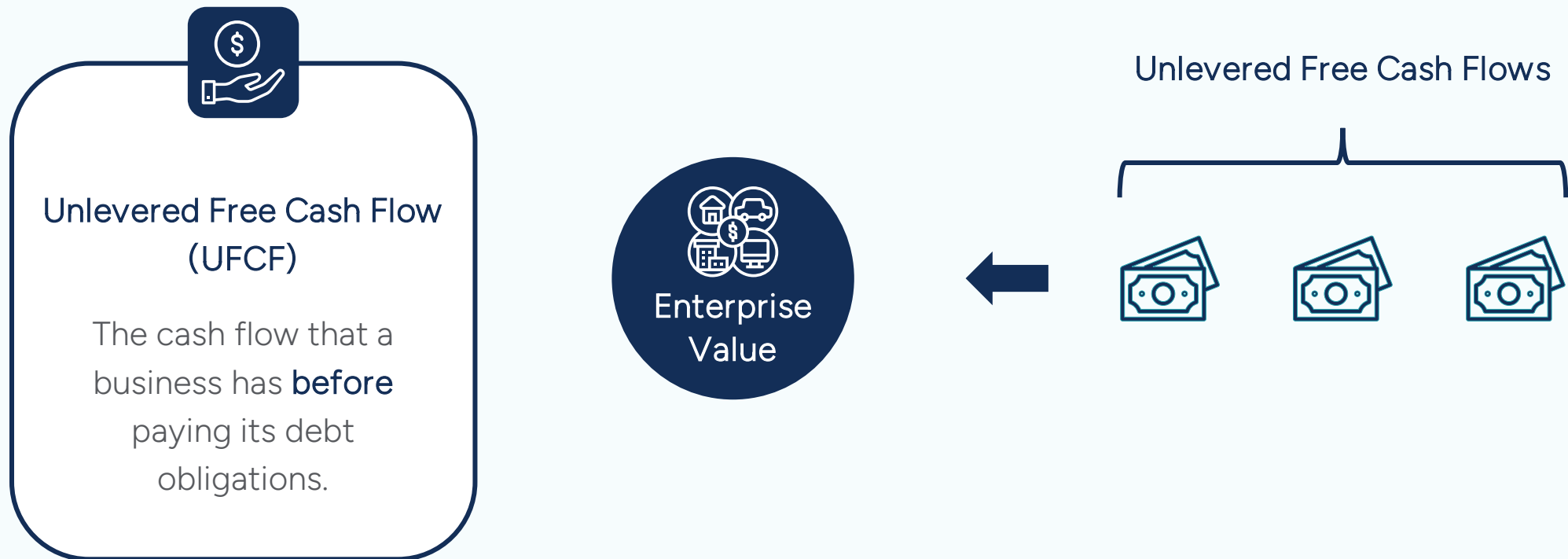
Levered Free Cash Flow (LFCF)

The cash flow a business has **after** it has met its debt obligations.

CFI

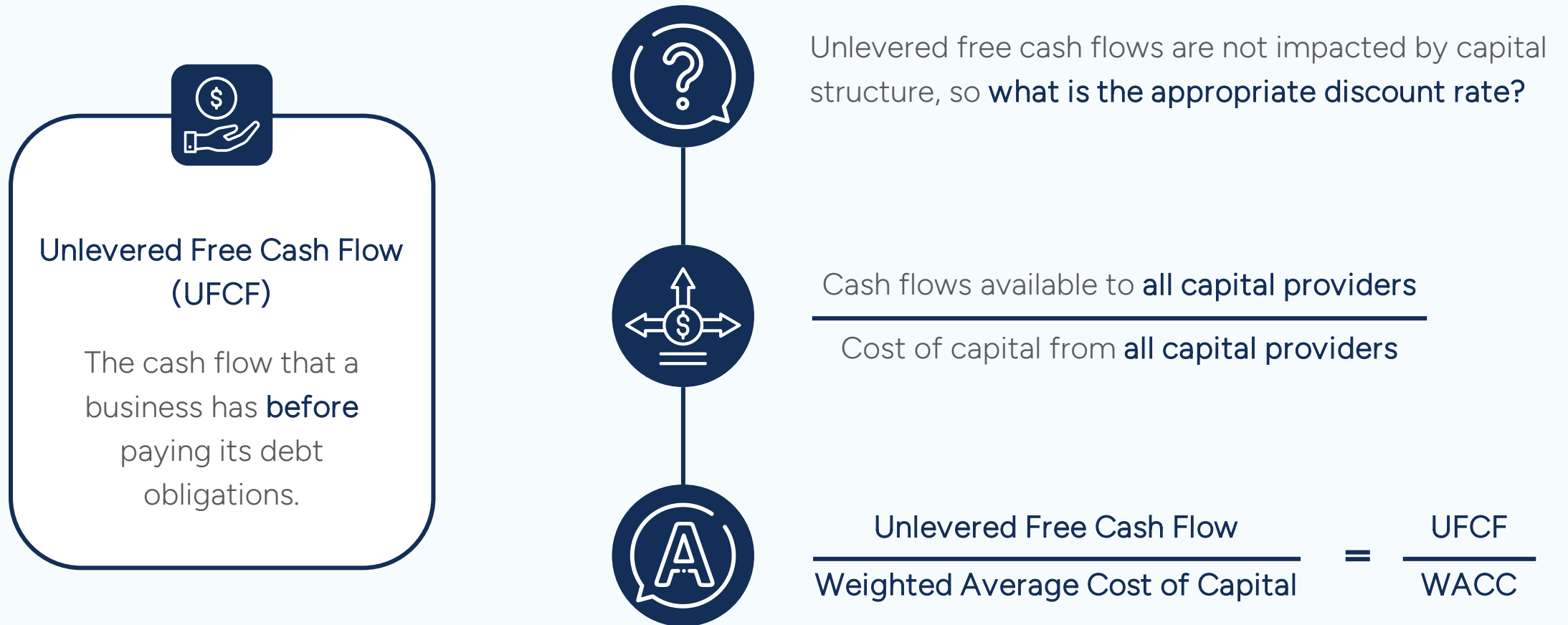# Numerator and Denominator Consistency

We need **consistency** between the numerator and denominator.

Unlevered Free Cash Flows

Unlevered Free Cash Flow (UFCF)

The cash flow that a business has **before** paying its debt obligations.

Enterprise Value

CFI

Numerator and Denominator Consistency

We need **consistency** between the numerator and denominator.

Unlevered Free Cash Flow (UFCF)

The cash flow that a business has **before** paying its debt obligations.

Unlevered free cash flows are not impacted by capital structure, so **what is the appropriate discount rate?**

$$\frac{\text{Cash flows available to } \textbf{all capital providers}}{\text{Cost of capital from } \textbf{all capital providers}}$$

$$\frac{\text{Unlevered Free Cash Flow}}{\text{Weighted Average Cost of Capital}} = \frac{\text{UFCF}}{\text{WACC}}$$

CFI

DCF Considerations

A DCF is **easiest to use on a company that has positive and fairly predictable** cash flows.

A DCF becomes more **difficult for younger companies** and companies that are in **financial distress.**

While a private company can be valued using a DCF, the **most difficult part is estimating a discount rate.**

CFI

Two Parts to a Typical DCF Forecast

The **further we predict** into the future, the **more prone to error** our estimates become.

Stage 1:
Discrete Forecast

Time Period
- Typically covers a **period of 5 to 10 years.**

Description
- Involves **calculating free cash flows each year** based on projections.

Stage 2:
Terminal Value

Time Period
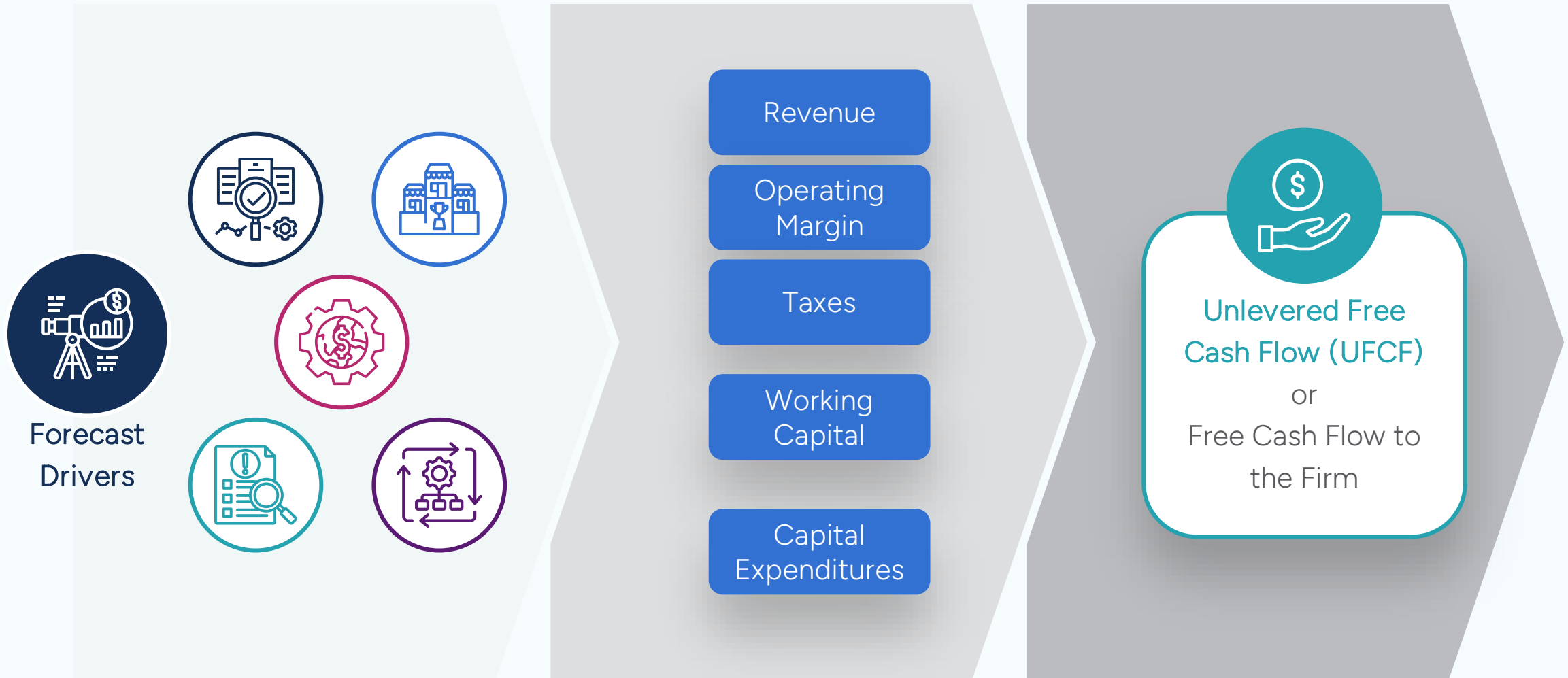- Assumes cash flows grow **infinitely** or company is acquired.

Description
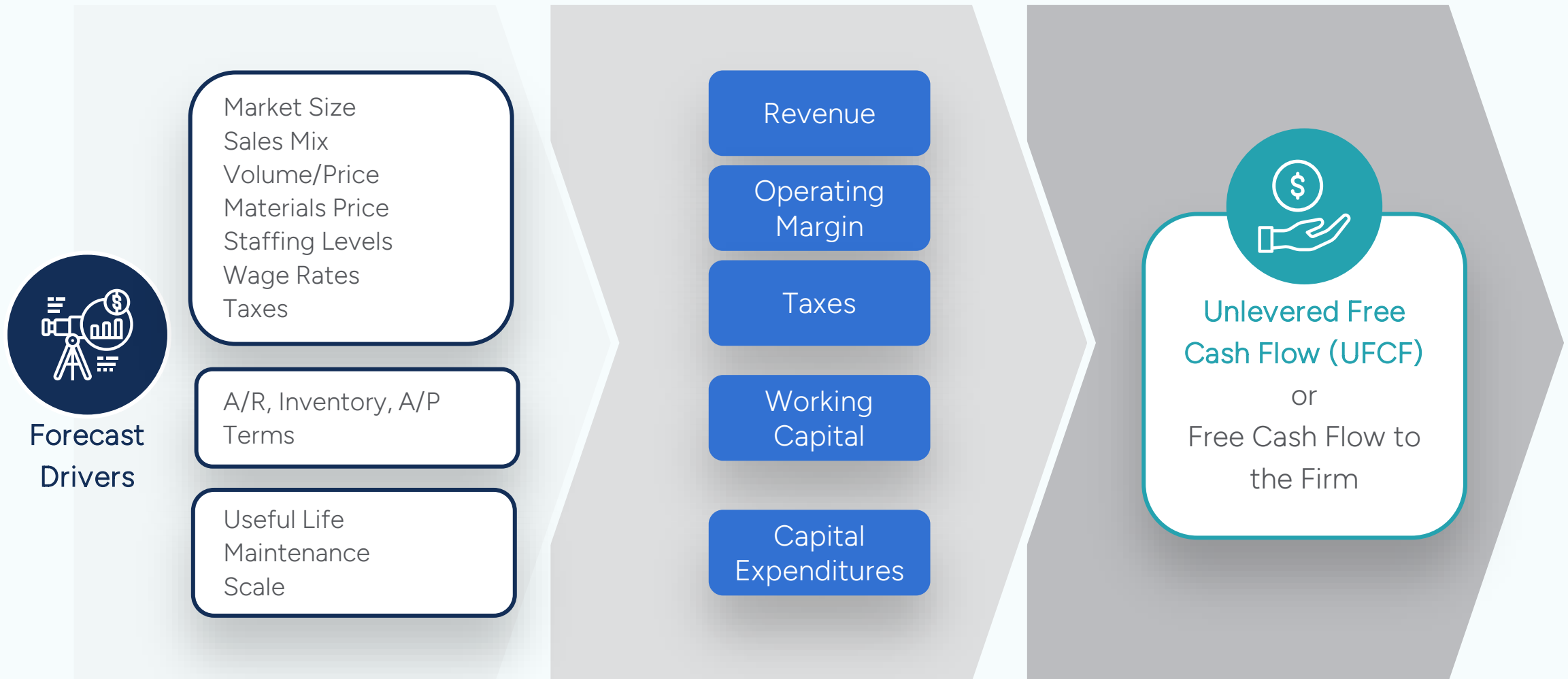- Assumes **cash flows grow at a steady rate** or acquired at some multiple.

We will **discount all cash flows and the terminal value** back to the present at the appropriate discount rate.

CFI

Key Assumptions

Forecast Drivers

Revenue

Operating Margin

Taxes

Working Capital

Capital Expenditures

Unlevered Free Cash Flow (UFCF)
or
Free Cash Flow to the Firm

CFI

Key Assumptions

Forecast Drivers

Market Size
Sales Mix
Volume/Price
Materials Price
Staffing Levels
Wage Rates
Taxes

A/R, Inventory, A/P Terms

Useful Life
Maintenance
Scale

Revenue

Operating Margin

Taxes

Working Capital

Capital Expenditures

Unlevered Free Cash Flow (UFCF) or Free Cash Flow to the Firm

CFI

Unlevered Free Cash Flows

The EBIT method is most commonly used to calculate unlevered free cash flows.

	EBIT
✖	**(1 − Tax Rate)**
=	**NOPAT** (Net Operating Profit After Tax)
+	**Depreciation and Amortization**
−	**Capital Expenditures**
−	**Changes in Working Capital** (Deduct net increase in working capital)
=	**Unlevered Free Cash Flows**

CFI
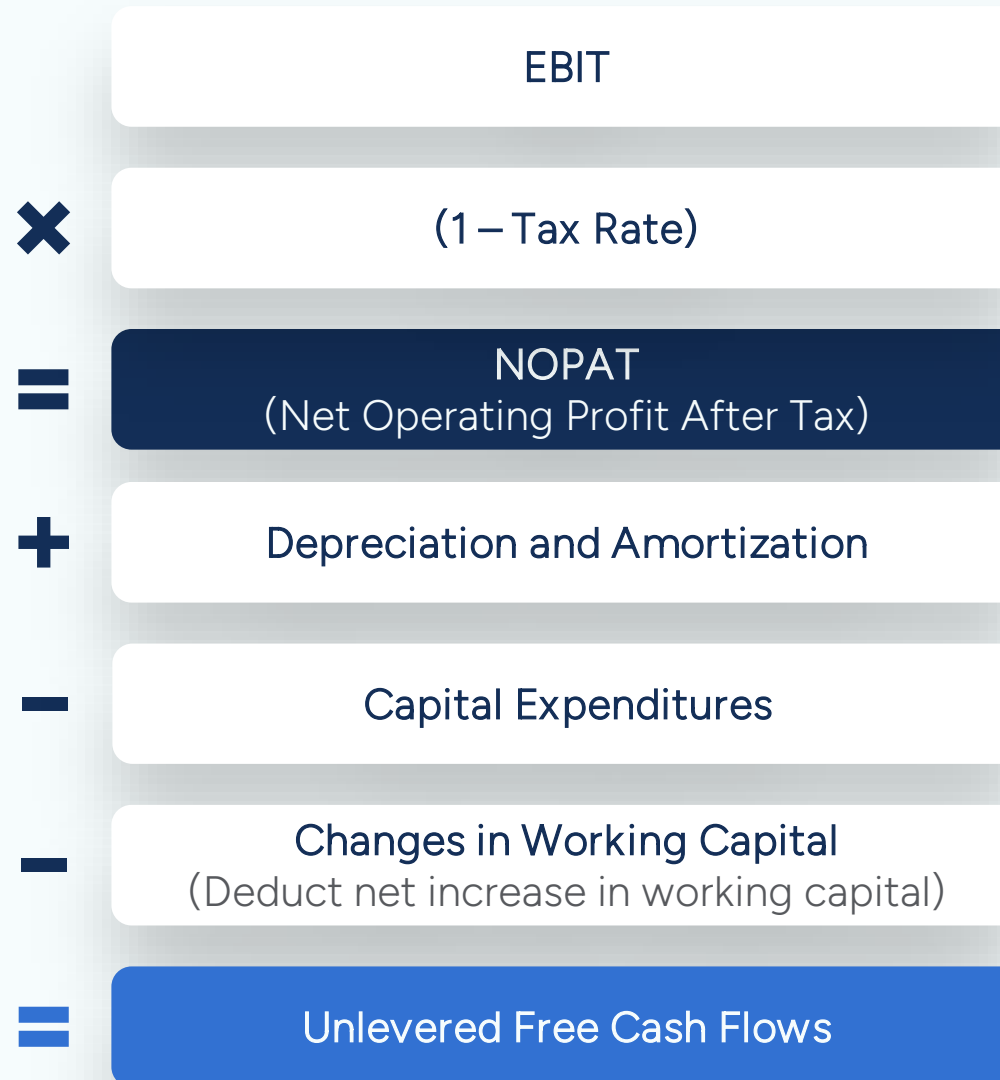
Unlevered Free Cash Flows

There are two other methods to calculate unlevered free cash flows.

	Net Income			EBITDA
+	After-tax Interest Expense [Int Exp x (1-Tax)]		**–**	Unlevered Cash Taxes
+	Depreciation and Amortization		**–**	Changes in Working Capital (Deduct net increase in working capital)
–	Capital Expenditures		**–**	Capital Expenditures
–	Changes in Working Capital (Deduct net increase in working capital)		**=**	Unlevered Free Cash Flows
=	Unlevered Free Cash Flows			

CFI
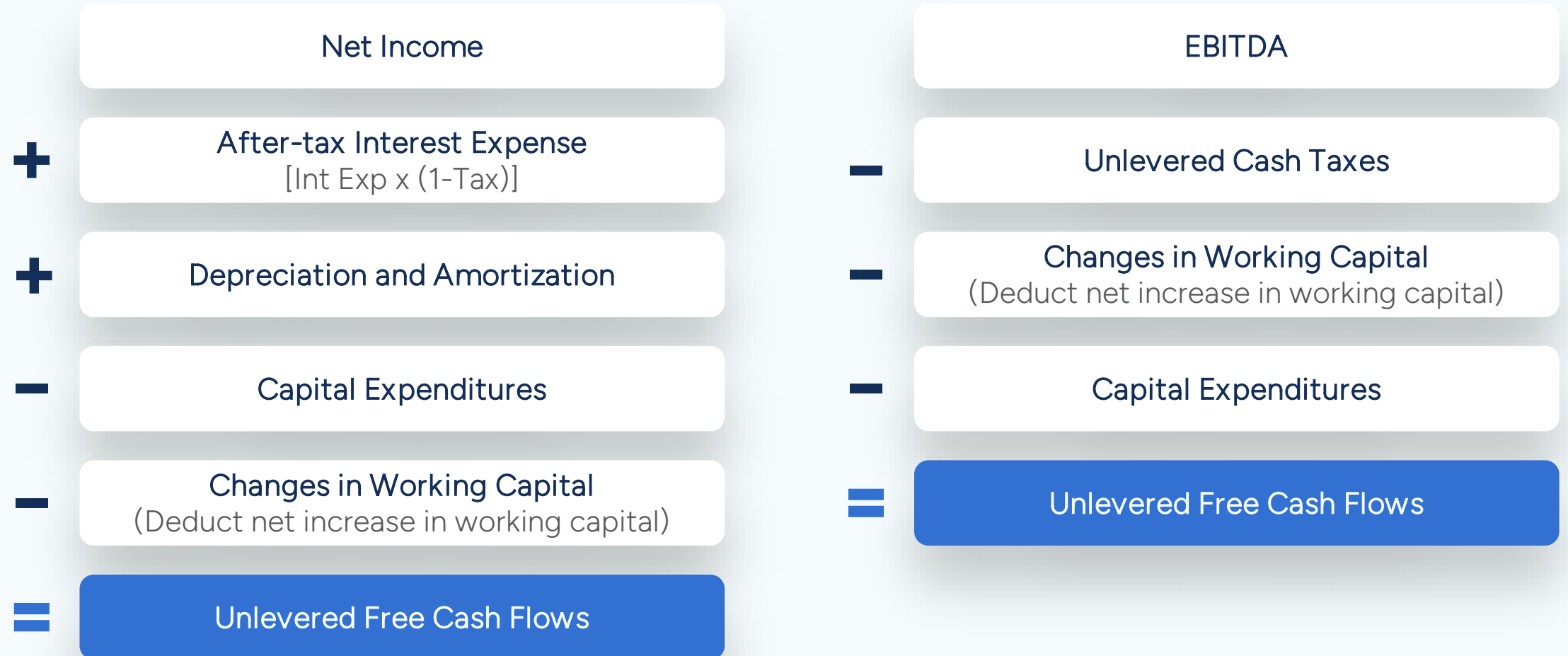
Cost of Capital

Risk Spectrum

High Risk

High risk means **the required rate of return is even higher**.
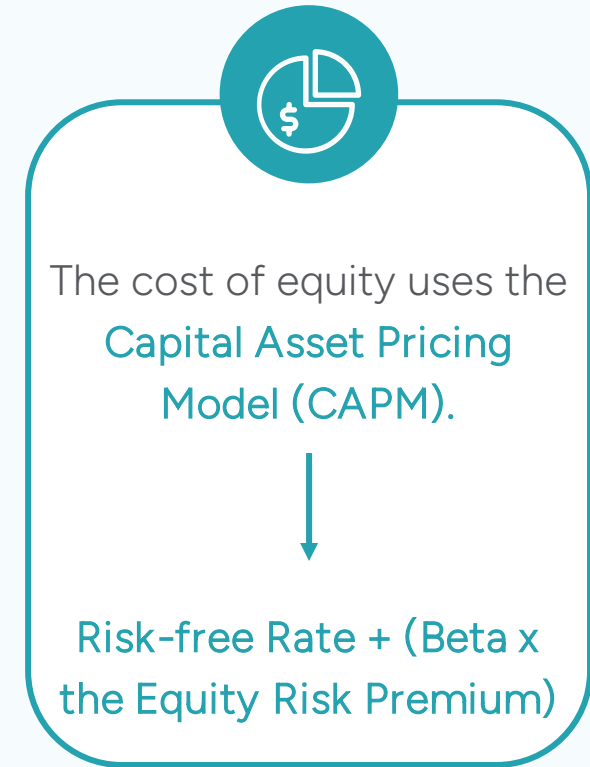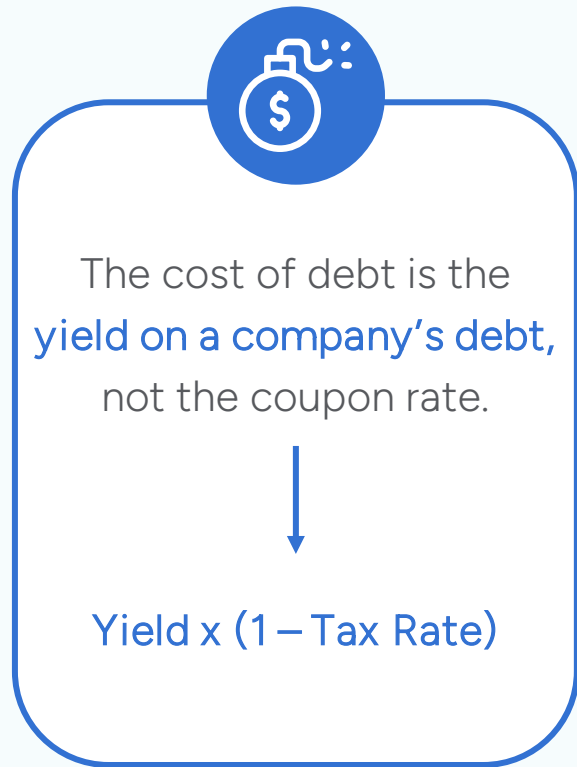
Equity

Corporate Debt

The **required rate of return must be higher** to compensate for taking on more risk.

Low risk means the **required rate of return is low** as well.

Government Bonds

Low Risk

CFI

Calculating WACC

The cost of debt is the **yield on a company's debt,** not the coupon rate.

↓

Yield x (1 − Tax Rate)

WACC

WACC is the **Weighted Average Cost of Capital** or the weighted average **cost of debt and the cost of equity.**

The cost of equity uses the **Capital Asset Pricing Model (CAPM).**

↓

Risk-free Rate + (Beta x the Equity Risk Premium)

CFI

Capital Asset Pricing Model (CAPM)

Risk-free Rate

Risk-free Rate

Normally **the yield on a long-term government bond.**

Free from default risk.

Premium

Beta

The output of a statistical regression that measures **change in a stock return vs. the overall market.**

Equity Risk Premium

This is the **return of the stock market over and above the risk-free rate.**

Usually **4% - 8%.**

CFI

Factors that Impact Cost of Equity

Let's analyze some **factors that impact the cost of equity** for a business.

β **Beta**

α **Alpha**

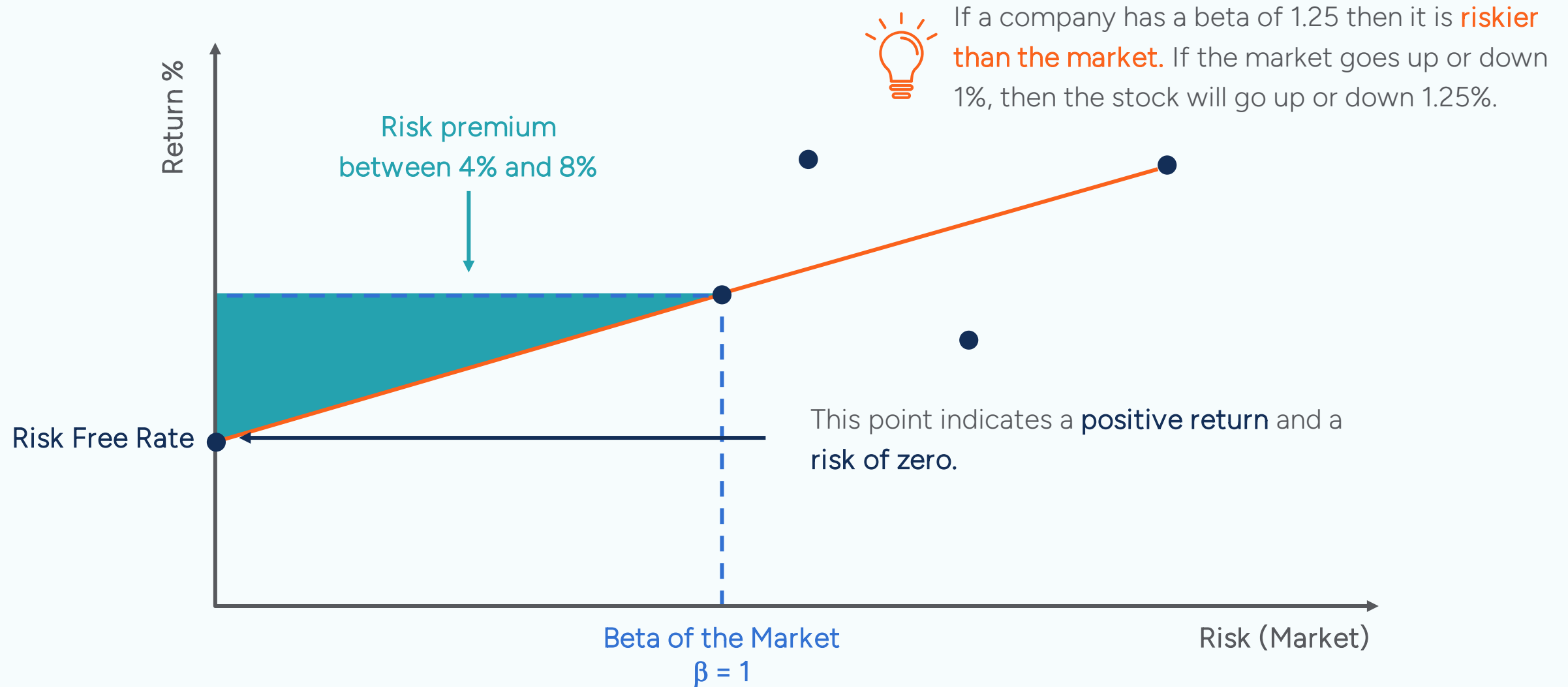Diversified portfolios of stocks are **only exposed to market risk,** or the beta.

Market Risk

01. Interest Rates

02. Business/Economic Cycle

03. Inflation

04. Political/Legislation

05. Socio-economic

Firm-Specific Risk

01. Management

02. Profits

03. Operations

04. Projects

05. Products

CFI

Understanding the CAPM

If a company has a beta of 1.25 then it is **riskier than the market.** If the market goes up or down 1%, then the stock will go up or down 1.25%.

Return %

Risk premium between 4% and 8%

Risk Free Rate

This point indicates a **positive return** and a **risk of zero.**

Beta of the Market
β = 1

Risk (Market)

CFI

Beta

We can observe or calculate an individual company's Beta, but the **company's beta might not be meaningfully impacted by the overall stock market.**

Beta = Slope of the Line

Market (% Change)

Share (% Change)
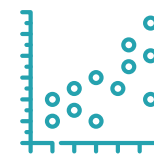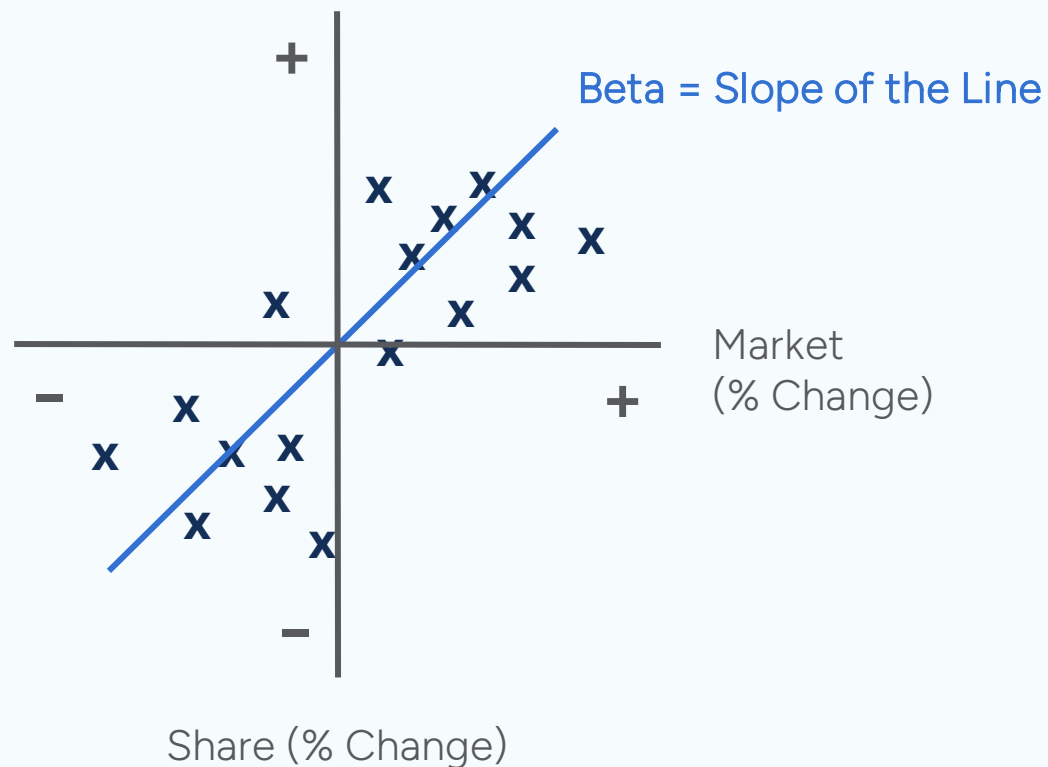
R-Squared

R-Squared (R^2 or the coefficient of determination) is a statistical measure that **shows the goodness of fit.**

Correlation

Higher R^2 indicates **more correlation between the stock and the market.** If it is low, we might opt to use industry beta.

Industry Beta

If there is a low R-squared, we can improve our beta calculation by **calculating an industry beta.**

1

Unlever Beta

$$\frac{\text{Levered Beta}}{(1 + (1 - \text{tax rate}) \times (\text{Debt/Equity}))}$$

2

Take an **average or median** of the unlevered betas

3

Re-lever Beta

Unlevered Beta x (1 + (1 − tax rate) x (Debt/Equity))

Terminal Value

Terminal Value Calculation Methods

Perpetuity Growth Method

$$\text{Terminal Value} = \frac{\text{Last Forecast UFCF x (1 + g)}}{(\text{WACC} - \text{g})}$$

» We will still have to **discount this terminal value back to the present value.**

Terminal Multiple Method

$$\text{Terminal Value} = \text{Last Forecast EBITDA} \ \text{x} \ \frac{\text{EV}}{\text{EBITDA}}$$

» Still must **discount this terminal value back to the present value.**

» Always assume this approach happens at the **end of the year.**

CFI

DCF Advantages and Disadvantages

Let's look at the advantages and disadvantages of discounted cash flow models.

Advantages	Disadvantages
✓ Theoretically, the most "correct" way to value companies or investments.	✗ Requires a lot of inputs, and the model is only as good as those inputs.
✓ Provides an opportunity to learn about the company and industry.	✗ Given all of the inputs, it is easier to "manipulate" a DCF to a desired outcome.
✓ Less prone to market conditions (since it's an intrinsic valuation, not a relative one).	✗ Greater complexity may give an analyst a false sense of precision.

CFI

NPV and IRR in Excel

Discounted Cash Flow Analysis – NPV Function

The NPV function is **used in Excel to quickly calculate net present value.**

Cash Flow 1 ▼ Cash Flow 2 ▼ Cash Flow 3 ▼ Cash Flow 4 ▼

T = 0   T = 1   T = 2   T = 3   T = 4   } Number of periods
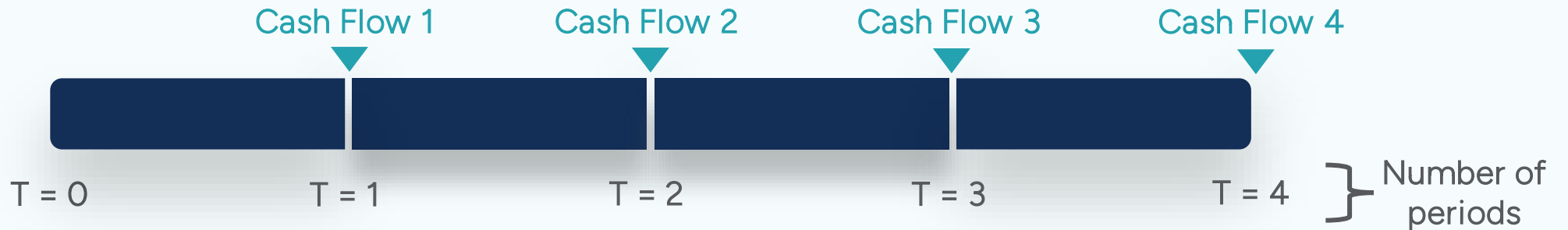
Key Assumptions:

1. NPV discounts all cash flows.

2. Cash flows occur at regular intervals.

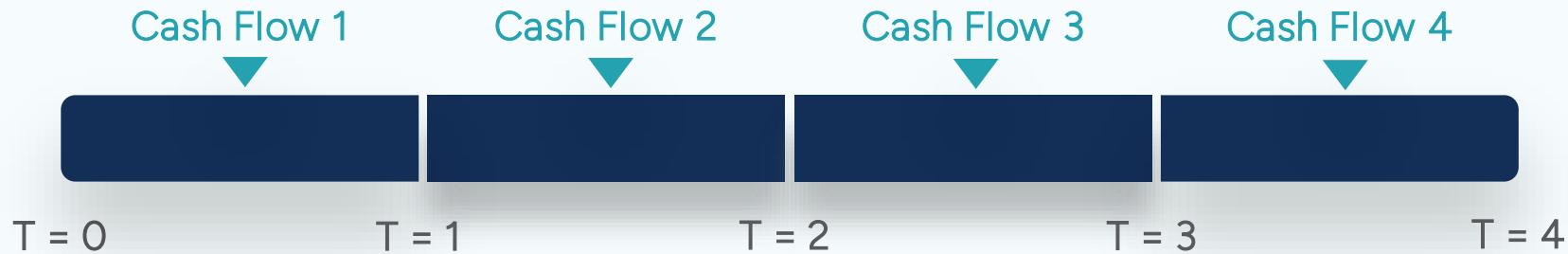3. Cash flows occur at the end of the period.

Excel Syntax:

$$=NPV(rate, value_1, value_2, \ldots value_n)$$

Where:

rate	=	The discount rate
$value_n$	=	Cash flows for the nth period
n	=	Number of periods

CFI

Discounted Cash Flow Analysis – Adjusted NPV Function

Mid-period discounting is **used to account for the inaccuracy of end-of-period cash flow timing** and assumes that cash flows occur at the midpoint of the period.

Cash Flow 1   Cash Flow 2   Cash Flow 3   Cash Flow 4

T = 0   T = 1   T = 2   T = 3   T = 4

Key Assumptions:

1. NPV discounts all cash flows.

2. Cash flows occur at regular intervals.

3. **Compounds cash flows at WACC by half a period.**

Excel Syntax:

$$=NPV(rate, value_1, value_2, \ldots value_n) \times (1 + rate)^{0.5}$$

Where:

rate	=	The discount rate
$value_n$	=	Cash flows for the nth period
n	=	Number of periods

CFI

Discounted Cash Flow Analysis – XNPV Function

The XNPV function is **used when cash flows occur at irregular intervals.**

| Cash Flow 1 | Cash Flow 2 | Cash Flow 3 | Cash Flow 4 |

T = 0   T = 1   T = 2   T = 3   T = 4

Excel Syntax:

$$=XNPV(rate, values, dates)$$

Where:

rate	=	The discount rate
$value_n$	=	Cash flows for the nth period
dates	=	An array of dates corresponding to an array of payments

Key Assumptions:

1. =XNPV() function discounts on a daily basis (i.e., each cash flow is discounted to the day on which it occurs).

2. The initial cash flow is not discounted.
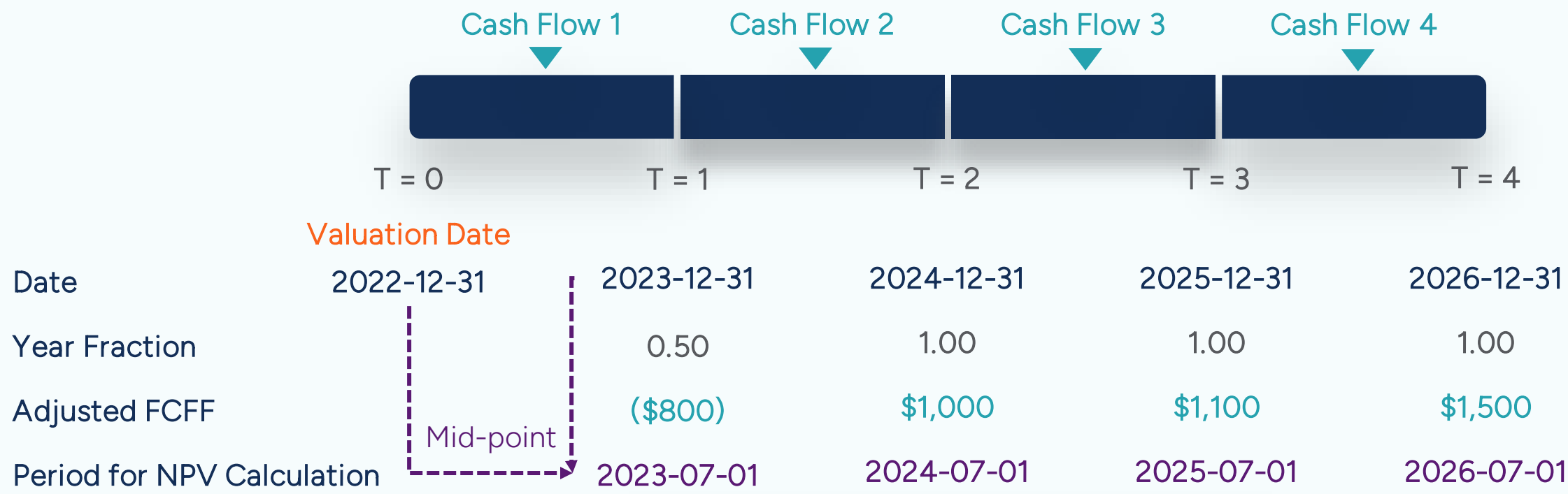
3. Dates must correspond to the periodic cash flows.

CFI

Discounted Cash Flow Analysis – XNPV Function (Mid-point Discounting)

The =XNPV() function is also easily **used when cash flows occur over a period.** In calculating the NPV, one **would choose a specific date that corresponds to the mid-point** of the period.

Cash Flow 1 ▼   Cash Flow 2 ▼   Cash Flow 3 ▼   Cash Flow 4 ▼

T = 0   T = 1   T = 2   T = 3   T = 4

Valuation Date

Date	2022-12-31	2023-12-31	2024-12-31	2025-12-31	2026-12-31

|				
Year Fraction		0.50	1.00	1.00	1.00
Adjusted FCFF		($800)	$1,000	$1,100	$1,500
Period for NPV Calculation	Mid-point	2023-07-01	2024-07-01	2025-07-01	2026-07-01

Discount Rate = 10%

Excel Syntax:

PV of FCF = XNPV(rate, values, dates)

CFI

Internal Rate of Return – IRR Function

The internal rate of return, or IRR, is the discount rate that makes the **net present value of an investment equal to zero.**

In general, if the IRR is **greater than the cost of capital,** then the project **should be profitable.**
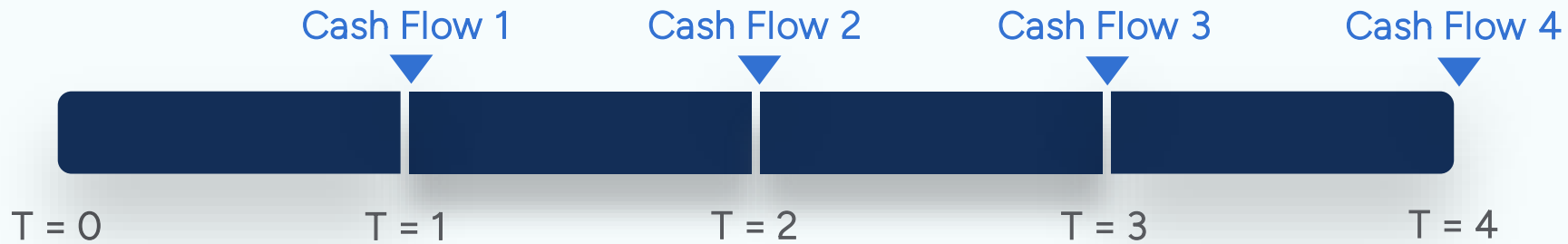
Cash Flow 1 ▼ Cash Flow 2 ▼ Cash Flow 3 ▼ Cash Flow 4 ▼

T = 0   T = 1   T = 2   T = 3   T = 4

Key Assumptions:

1. The value inputs must contain at least one positive value and one negative value.

2. Values should be in chronological order.
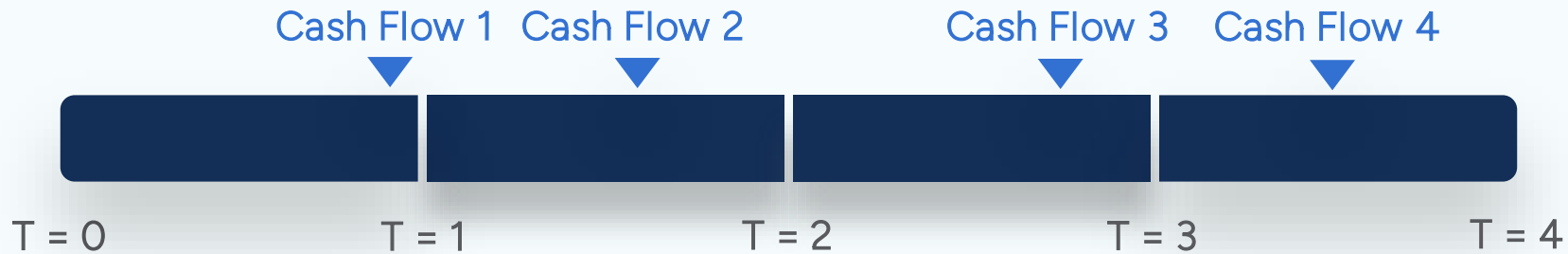
Excel Syntax:

$$=IRR(\text{values, [guess]})$$

Where:

value_n = Cash flows for the nth period

guess = An estimate of the IRR

CFI

Internal Rate of Return – XIRR Function

The XIRR function is **used when cash flows occur at irregular intervals.**

Cash Flow 1 ▼   Cash Flow 2 ▼   Cash Flow 3 ▼   Cash Flow 4 ▼

T = 0   T = 1   T = 2   T = 3   T = 4

Key Assumptions:

1. The value inputs must contain at least one positive value and one negative value.

2. Values should be in chronological order.

3. Dates must correspond to the periodic cash flows.

Excel Syntax:

=XIRR(values, dates, [guess])

Where:

value	=	Cash flows for the nth period
dates	=	An array of dates corresponding to an array of payments
guess	=	An estimate of the XIRR

CFI

Relative Valuation

Relative Valuation

Under this methodology, the target company's **valuation is relative to other companies or transactions.**

Relative Valuation

Compares prices of similar assets to determine value.

Assumes other assets are priced correctly by market.

Public Company Comparables
Looks at the valuation for similar peer companies that are publicly traded.

Precedent Transactions
Looks at the acquisition prices for similar peer companies in recent transactions.
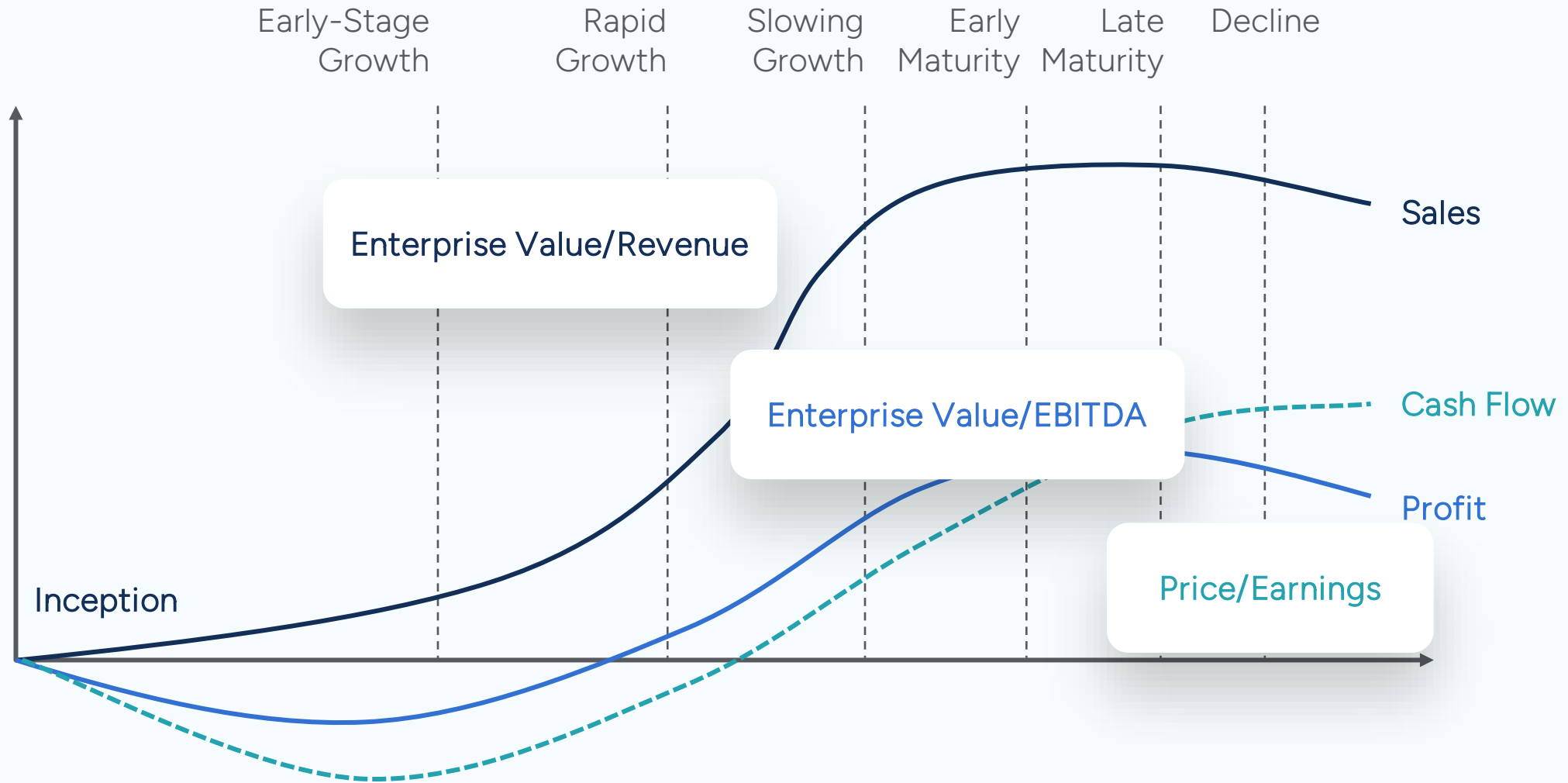
- Multiples are **ratios that scale companies by size.**

- Alternatively, we can see how a **company's multiple has changed over time.**

CFI

When Is a Multiple Appropriate

Multiple	Utility	Drawbacks
Enterprise Value/Revenue	Younger companies that haven't reached profitability	• Doesn't account for company's costs • Revenue is an incomplete measure of performance
Enterprise Value/EBITDA	Investment banking and private equity Industries with large amounts of long-term assets	• EBITDA is not the "bottom line" that net income is • EBITDA doesn't include any reinvestment in the business
Price/Earnings	Mature, publicly traded companies	• The denominator is based on accrual accounting which requires many assumptions (can be manipulated)
Price/Book	Financial service firms (e.g., banks)	• Limited usefulness for non-banks

CFI

Firm Life Cycle and Choosing Multiples

Early-Stage Growth | Rapid Growth | Slowing Growth | Early Maturity | Late Maturity | Decline

Enterprise Value/Revenue

Enterprise Value/EBITDA

Price/Earnings

Inception

Sales

Cash Flow

Profit

CFI

Relative Valuation Advantages and Disadvantages

Let's look at the advantages and disadvantages of relative valuation.

Advantages

- ✓ Calculating and applying multiples is relatively simple and user-friendly.

- ✓ Data is observable since we can directly look at a public company's market capitalization.

- ✓ Relative valuation reflects market conditions.

- ✓ Precedent transactions are useful for mergers and acquisitions due to the control premium.

Disadvantages

- ✗ Sometimes relative valuation can be too simplistic.

  Companies have lots of complex value drivers that multiples don't explicitly account for.

- ✗ Since no companies are exactly alike, relative valuation can be difficult and subjective.

  There are many reasons multiples, companies, and transactions may vary.

CFI

Differences in Multiples, Transactions & Companies

Growth Rates
Higher growth companies typically command a higher multiple and, thus, a higher valuation.

Management Team
Higher-quality businesses with better management should trade at higher multiples.

Mispricing
A company might simply be mispriced by investors and be under or overvalued.

Accounting Policies
Policies may impact accounting profits and, therefore, company multiples.

Older Deals
Outdated deals may not be representative of the current market for similar assets and companies.
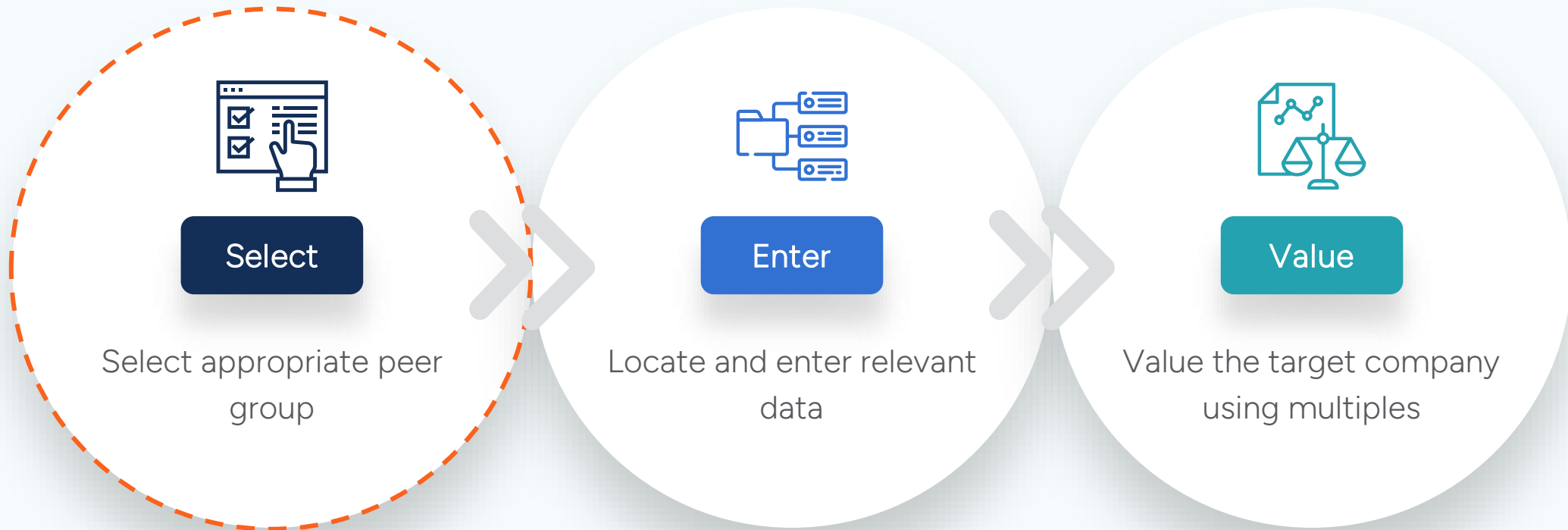
Inaccessibility
May be difficult to find transactions without a paid subscription or within a specific timeframe.

CFI

Comparable Company Valuation

Steps in Performing a Comparable Trading Analysis

We must thoroughly **understand the target's business** before going through a comparable company analysis.

Select

Select appropriate peer group

Enter

Locate and enter relevant data

Value

Value the target company using multiples

Selecting comparables is the **most important part** of a comparable trading analysis.

CFI

Selecting Peer Companies

Let's go over what characteristics to look for when selecting the best comparables.

Industry

Geographic Location

Size & Growth Profiles

Profitability

Accounting Policies

Capital Structure

CFI

Selecting Peer Companies

	Company Name	Location	Business Description
✓	Alpha.com	Canada	Leading supermarket chain with over 200 locations. Specializes in middle-income consumers.
✓	Big Bucks Company	United States	Supermarket chain with over 500 locations, targeting lower or middle-income consumers.
✓	Centibillions Inc.	United States	Supermarket and discount chain with 150 locations.
✓	Deep Pockets Ltd.	United States	Owns several different supermarket concepts, mostly in smaller towns.
✓	Evergreen Co.	Canada	75-location supermarket chain serving the central Provinces in Canada (for example, Manitoba and Saskatchewan).
✓	Fat Cat Inc.	Canada	Supermarket and discount chain with 100 locations.

CFI

Selecting Peer Companies

	Company Name	Location	Business Description
⊗	Nav Inc.	United States	High-end supermarket chain, primarily in wealthy cities on the coasts.
⊗	JJ Co.	Canada	Large supermarket chain targeting middle-income consumers. Also has 400 gas stations.
⊗	LRM Ltd.	Ghana	Large supermarket chain with 200 locations.
⊗	Zhao Ltd.	China	Large supermarket chain with 700 locations.

💡 We can further screen by looking at **different financial metrics** like growth rates, leverage, margins, etc..

CFI

Selecting Peer Companies

Company Name	Location	Business Description
⊗ Nav Inc.	Uni…	…market chain, primarily in wealthy cities on
⊗ JJ Co.	C…	…chain targeting middle-income …s 400 gas stations.
⊗ LRM Ltd.	C…	…chain with 200 locations.
⊗ Zhao Ltd.	C…	…chain with 700 locations.

Precedent Transactions

The analysis is similar for performing a precedent transactions valuation, but we also include:

- Acquisition timing
- Control premium
- Type of buyer

We can … …rent financial metrics like growth rates, leverage, margins, etc..
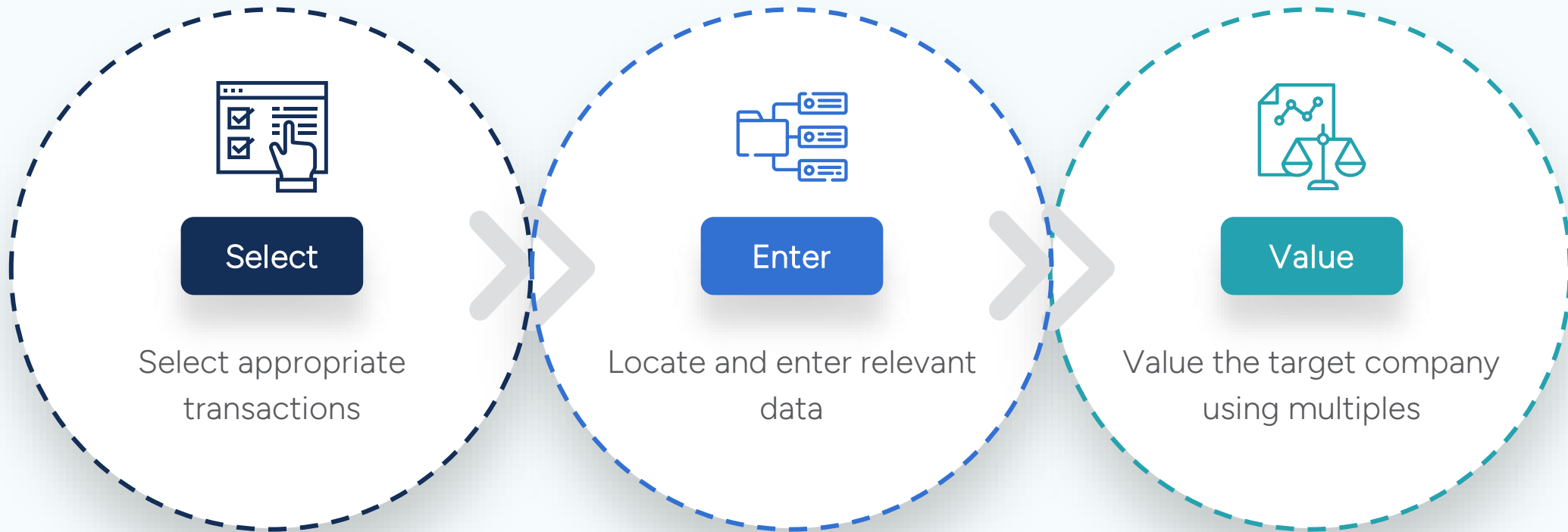
CFI

Selecting Peer Companies

	Financial Data	Trading Multiples	Operating Statistics	Business Description	Implied Valuation	Valuation Chart	Credit Health Panel	

Options ▼ ⊞ Add Companies ⊞ Display Options   Currency: | US Dollar ▼ | Data as of: | 03/22/2023 | ▦ ▼

Apple Inc. (NasdaqGS:AAPL) | Technology Hardware, Storage and Peripherals (Primary) | Consumer Discretionary | Financials | Communication Services

	Company Name	TEV/Total Revenues LTM - Latest	TEV/EBITDA LTM - Latest	TEV/EBIT LTM - Latest	P/Diluted EPS Before Extra LTM - Latest	P/TangBV LTM - Latest	NTM TEV/Forward Total Revenue (Capital IQ)	NTM TEV/Forward EBITDA (Capital IQ)	NTM Forward P/E (Capital IQ)
	Amazon.com, Inc. (NasdaqGS:AMZN)	2.2x	17.1x	90.8x	NM	8.4x	1.99x	12.86x	68.90x
	Alphabet Inc. (NasdaqGS:GOOGL)	4.4x	13.2x	16.7x	22.7x	5.9x	4.17x	10.75x	20.20x
	Microsoft Corporation (NasdaqGS:MSFT)	9.8x	19.9x	24.0x	30.3x	19.3x	9.16x	18.84x	27.50x
	Dell Technologies Inc. (NYSE:DELL)	0.5x	7.2x	8.4x	11.8x	NM	0.55x	5.13x	7.16x
	HP Inc. (NYSE:HPQ)	0.6x	6.4x	7.9x	11.0x	NM	0.68x	6.79x	8.09x
	Hewlett Packard Enterprise Company (NYSE:HPE)	1.0x	5.7x	11.4x	22.3x	9.8x	1.02x	5.56x	7.41x
	NetApp, Inc. (NasdaqGS:NTAP)	2.0x	9.0x	11.2x	10.7x	NM	2.07x	7.97x	11.36x
	QUALCOMM Incorporated (NasdaqGS:QCOM)	3.4x	8.8x	10.0x	11.7x	21.2x	3.63x	9.47x	12.10x
	Advanced Micro Devices, Inc. (NasdaqGS:AMD)	6.5x	31.7x	120.8x	116.2x	25.8x	6.51x	21.64x	31.99x
	Western Digital Corporation (NasdaqGS:WDC)	1.1x	9.2x	19.0x	NM	5.7x	1.34x	22.20x	NM
	Apple Inc. (NasdaqGS:AAPL)	6.3x	17.2x	21.4x	26.9x	44.1x	6.13x	19.34x	25.43x

Displaying 11 Companies.

	Summary Statistics	TEV/Total Revenues LTM - Latest	TEV/EBITDA LTM - Latest	TEV/EBIT LTM - Latest	P/Diluted EPS Before Extra LTM - Latest	P/TangBV LTM - Latest	NTM TEV/Forward Total Revenue (Capital IQ)	NTM TEV/Forward EBITDA (Capital IQ)	NTM Forward P/E (Capital IQ)
	High	9.8x	31.7x	120.8x	116.2x	25.8x	9.16x	22.20x	68.90x
	Low	0.5x	5.7x	7.9x	10.7x	5.7x	0.55x	5.13x	7.16x
	Mean	3.1x	12.8x	32.0x	29.6x	13.7x	3.11x	12.12x	21.64x
	Median	2.1x	9.1x	14.1x	17.0x	9.8x	2.03x	10.11x	12.10x

CFI

Precedent Transaction Valuation

Steps in Performing a Precedent Transaction Analysis

Select

Select appropriate transactions

Enter

Locate and enter relevant data

Value

Value the target company using multiples

Determining appropriate transactions is the **most important part** of this analysis.

The **data may be hard to find** depending on the transaction.

Usually has the highest valuation due to the control premium.

Corporate Finance Institute®

CFI

Selecting Relevant Transactions

Let's go over what characteristics to look for when selecting the best comparables.

Recent Deals
Try not to use older transactions **as industries and market conditions change.** However, older deals may be necessary for a robust valuation.
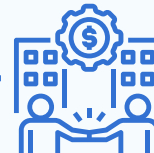
Buyer Awareness
Is it a strategic buyer that operates in the same or adjacent industry, or is the buyer a financial firm like private equity?

Strategic buyers are able to pay more due to synergies in an acquisition.

Private Equity buyers likely to pay less since they keep management in place.

CFI

Selecting Relevant Transactions

Let's go over what characteristics to look for when selecting the best comparables.

Recent Deals
Try not to use older transactions **as industries and market conditions change.** However, older deals may be necessary for a robust valuation.

Buyer A...
Is it a str... ...ent industry, or is the bu...

> **Enterprise value** is effectively the **purchase price.**

Strategic buyers are able to pay more due to synergies in an acquisition.

Private Equity buyers likely to pay less since they keep management in place.

CFI

Appendix

Implied Growth Rate and Implied Terminal Multiple

Formula for terminal value (TV) using perpetuity growth method

$$TV = \frac{FCF \times (1 + g)}{(WACC - g)}$$

Factor FCF

$$TV = \frac{(FCF + FCF \times g)}{(WACC - g)}$$

Multiply both sides of the equation by (WACC – g)

$$TV \times (WACC - g) = FCF + FCF \times g$$

Factor Terminal Value

$$TV \times WACC - TV \times g = FCF + FCF \times g$$

Move FCF to other side of the equation

$$TV \times WACC - TV \times g - FCF = FCF \times g$$

Move TV x g to other side of the equation

$$TV \times WACC - FCF = FCF \times g + TV \times g$$

Factor out g

$$TV \times WACC - FCF = g (FCF + TV)$$

Divide both sides by (FCF + TV)

$$\frac{(TV \times WACC - FCF)}{(FCF + TV)} = g$$

CFI

Implied Growth Rate and Implied Terminal Multiple

Formula for terminal value (TV) using perpetuity growth method

$$TV = \frac{FCF \times (1 + g)}{(WACC - g)}$$

Factor FCF

$$TV = \frac{(FCF + FCF \times g)}{(WACC - g)}$$

Multiply b

For mid-period discounting we need to adjust our terminal value, as seen below:

$$g = \frac{((TV / (1 + WACC)^{0.5}) \times WACC - FCF)}{(FCF + (TV / (1 + WACC)^{0.5}))}$$

Move TV x g to other side of the equation

$$TV \times WACC - FCF = FCF \times g + TV \times g$$

Factor out g

$$TV \times WACC - FCF = g (FCF + TV)$$

Divide both sides by (FCF + TV)

$$\frac{(TV \times WACC - FCF)}{(FCF + TV)} = g$$

CFI

Implied Growth Rate and Implied Terminal Multiple

Formula for terminal value (TV) using perpetuity growth method

$$TV = \frac{FCF \times (1 + g)}{(WACC - g)}$$

Factor FCF

$$TV = \frac{(FCF + FCF \times g)}{(WACC - g)}$$

Multiply b

For mid-period discounting we need to adjust our terminal value, as seen below:

$$\frac{(TV \times WACC - FCF)}{(FCF + TV)} = g \qquad \longrightarrow \qquad g = \frac{((TV / (1 + WACC)^{0.5}) \times WACC - FCF)}{(FCF + (TV / (1 + WACC)^{0.5}))}$$

Move TV x g to other side of the equation

$$TV \times WACC - FCF = FCF \times g + TV \times g$$

Factor out g

$$TV \times WACC - FCF = g (FCF + TV)$$

Divide both sides by (FCF + TV)

$$\frac{(TV \times WACC - FCF)}{(FCF + TV)} = g$$

CFI

Implied Growth Rate and Implied Terminal Multiple

Formula for terminal value (TV) using perpetuity growth method $\longrightarrow$ $\dfrac{\text{FCF} \times (1 + g)}{(\text{WACC} - g)}$

Implied Terminal Value Multiple **(End of Period)** $\longrightarrow$ $\dfrac{\left[\dfrac{\text{FCF} \times (1 + g)}{(\text{WACC} - g)}\right]}{\text{Last Forecasted EBITDA}}$

Implied Terminal Value Multiple **(Middle of Period)** $\longrightarrow$ $\dfrac{\left[\dfrac{\text{FCF} \times (1 + g)}{(\text{WACC} - g)}\right] \times (1 + \text{WACC})^{0.5}}{\text{Last Forecasted EBITDA}}$

CFI

Levered Free Cash Flows

Remember when we perform a DCF we only discount future free cash flows.

	Cash from Operations
–	Capital Expenditures
–	Debt Principal Payments
+	Debt Borrowings
=	**Levered Free Cash Flows**

CFI