

**Stock Valuation**

1. **Dividend Discount Model (DDM)**

* Values a stock as the **present value of all expected future dividends**.
* Useful when firm **pays regular dividends**.
* Assumes either **constant**, **zero-growth**, or **constant growth** in dividends.
* Formulas:

**One – period**

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**Constant growth (Gordon)**

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Where:

* : Price today
* ​: Dividend next year
* : Equity cost of capital
* g: Dividend growth rate

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**: Divident yield**

**: Capital gain rate**

**A multiyear investor timeline**

* Year 0: Buy the stock, pay price (Price today)
* ​Year 1: Receive dividend (Dividend next year)
* **Year 2: Receive divident**  and sell stock at

**At year 0:**

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**But**

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**Substitute into :**

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**General Form of DDM: (g ko ổn định)**

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**Infinite Horizon (Stock never sold):**

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* This means the price of the stock is the present value of all expected future dividends.

**Special Case – Perpetuity (Constant Dividend):**

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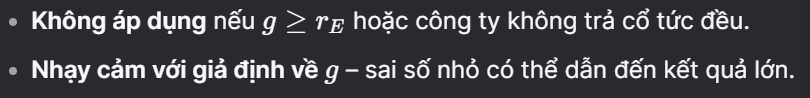
* Constant dividend forever
* No growth (g = 0)

**Constant dividend growth (perpetuity):**

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**Rearranging for**

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**Limitations:   
  
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**With constant expected dividend growth, the expected growth rate of the share price matches the growth rate of dividends.**

1. **Dividends Versus Investment and Growth**

**A Simple Model of Growth**

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| **Dividend payout rate: The fraction of its earnings that a firm pays as div each year** |
| **Change in Earnings = New Investment \* ROI** |
| **New investment = Earnings \* Retention rate** |
| **Change in Earnings = Earnings \* Retention Rate \* ROI** |
| **= Retention Rate \* ROI** |
| **EPS growth (g) = Retention Rate \* ROI** |
| **Sustainable Growth Rate: The rate ai which a firm can grow using only retained earnings** |

**Changing Growth Rates**

* Terminal Value at Year N (assuming constant growth g starting Year N+1

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| **=> This is the Continuation or Terminal Value** |

**Constant Long-Term Growth (g ổn định)**

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**Limitations of the Dividend-Discount Model**

* **Uncertain Dividends**: Future dividends are hard to predict, especially for firms without stable dividend policies.
* **Sensitive to Growth Rate**: Small changes in assumed growth (g) can cause large changes in stock value.
* **Managerial Discretion (Quyền quyết định của quản lý)**: Earnings, payout ratios, and share counts depend on management decisions, which are hard to forecast.

1. **Total Payout and Free Cash Flow Valuation Models**

**Share Repurchase:**

* When a firm uses excess cash to **buy back its own shares**.
* **Impacts on DDM:**
* The more cash a firm uses to repurchase shares, the less it has available to pay dividends.
* By repurchasing shares, the firm **decreases its share count**, which **increases its earnings** **and dividends on a per-share** basis.

**Total Payout Model**

* Values the entire equity of the firm rather than a single share
* Takes into account **both dividends and share repurchases**

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| **Total Firm Value = PV(Future Total Dividends and Repurchases)** |
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* Discount total dividends and share repurchases; use the growth rate of total earnings (rather than EPS) when forecasting the growth of the firm's total payouts.

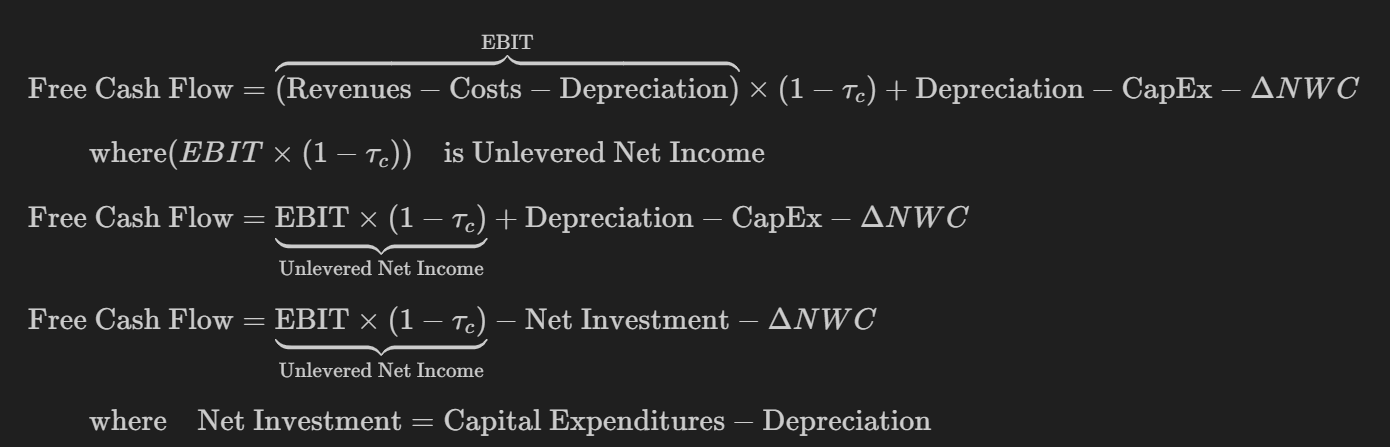
1. **The Discounted Free Cash Flow Model (DCF)**

* **Estimate the Enterprise Value** of a firm by discounting its expected future Free Cash Flows (FCF) available to all capital providers (equity + debt holders).

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| **Enterprise Value** (= Total value of the firm’s core operations |

* Suitable for firms that do not pay dividends or are growing.
* **Market Capitalization:** The market value of the firm's equity, or the value that remains after the firm has paid its debts.

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| **Market value of equity = share price × number of shares** |

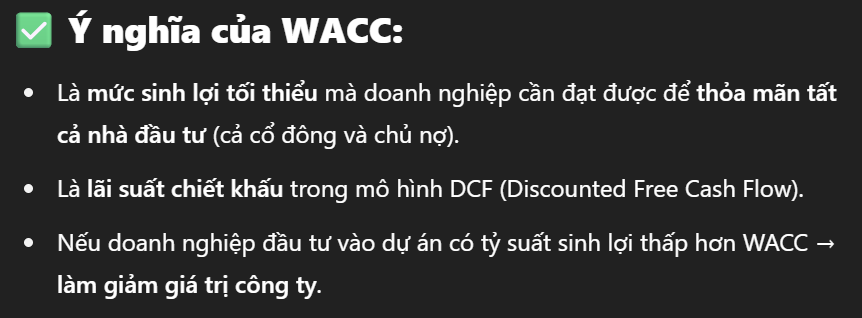
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**DCF Valuation Process**

* **Estimate Enterprise Value**

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Where is the Weighted Average Cost of Capital



* **Estimate Terminal Value**

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Where is long – run growth rate of FCF

* **Calculate Equity Value & Share Price**

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| **Equity Value = – Debt + Cash** |
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* **Weighted Average Cost of Capital (WACC)**
* The average return required by **all investors** (debt + equity).
* If no debt →
* If debt exists →
* **WACC reflects the overall risk of the firm’s operations.**

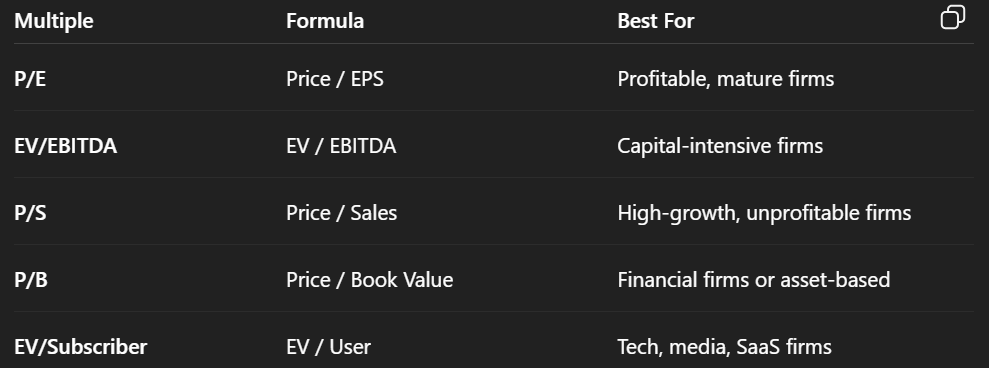
1. **Valuation Based on Comparable Firms**

* Valuation multiples are relative valuation tools that compare a firm’s market value to a financial metric (like earnings, revenue, or book value).
* Used to assess **how expensive or cheap** a company is **relative to peers or industry norms**.
* Estimate value by comparing with similar companies.
* **Types of P/E Ratios:**
* Trailing P/E: Uses historical earnings (last 12 months).
* Forward P/E: Uses expected future earnings (next 12 months).

**Price-Earnings (P/E) Ratio**

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* Measures: How much investors are willing to pay for $1 of earnings.
* High P/E → market expects high future growth.
* Low P/E → could mean undervaluation or weak growth prospects.
* **Use for**: Comparing firms in the **same industry** with similar accounting policies.

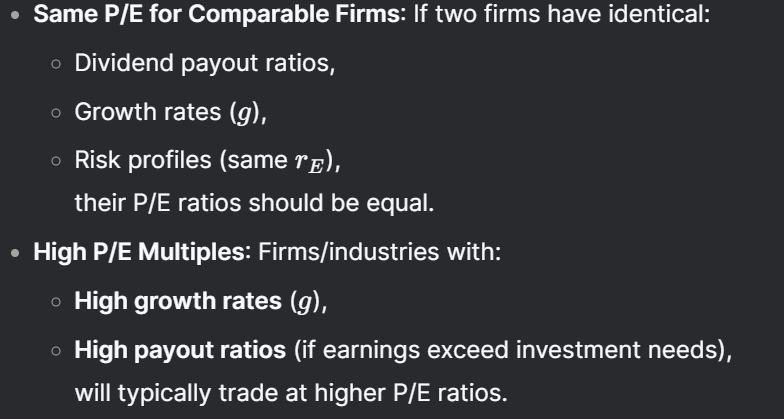


**Link to Dividend-Discount Model (DDM)**

* The forward P/E is derived from the DDM, assuming constant growth (g)

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* Dividend Payout Ratio: (portion of earnings paid as dividends).
* : Cost of equity (required return).
* : Expected growth rate of dividends/earnings.



**Key Valuation Multiples Discussed**

* Multiple of sales: Compares a company's market value to its revenue
* Price to book value: Compares market price per share to book value per share
* Enterprise value per subscriber: Used particularly for subscription-based businesses

**Important Limitations of Multiples Valuation**

* **Lack of identical comparables:** No two companies are exactly alike in operations, growth prospects, or risk
* **Relative nature:** Multiples only show value relative to peers, not absolute intrinsic value
* **Different value drivers:** Each multiple emphasizes different aspects (revenue, book value, subscribers)
* **Adjustment challenges:** No standardized method to account for differences between companies

**Stock Valuation Techniques**

* No single technique provides a final answer regarding a stock's true (intrinsic) value.
* All approaches require assumptions or forecasts that are too uncertain to provide a definitive assessment of the firm's value.
* In practice, a combination of these methods is used.

**Enterprise Value Multiples**

* Enterprise Value (EV - ) multiples are widely used in company valuation, especially when comparing firms with different capital structures (debt levels)

**Common EV Multiples:** EV ( is compared to pre-interest earnings metrics:

* EV/EBIT: Enterprise Value ÷ Earnings Before Interest and Taxes.
* EV/EBITDA: Enterprise Value ÷ Earnings Before Interest, Taxes, Depreciation & Amortization.

**Linking EV/EBITDA to Discounted Cash Flow (DCF)**

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