Comprehensive Learning: Stock Valuation with Dividend Discount Model (DDM)

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1. Overview of Stock Valuation

- Definition: Estimation of the intrinsic value of a stock based on future performance metrics.

- Types:

  - Absolute Valuation (e.g., DDM, DCF).

  - Relative Valuation (e.g., P/E or P/B ratios).

2. Dividend Discount Model (DDM)

- Concept: Calculates the present value of future expected dividends.

- Key Principle: A stock's value equals the present value of all expected dividends.

- Formula: $P_0 = D_1 / (1+r)^1 + D_2 / (1+r)^2 + ...$

3. Key Assumptions in DDM

- Regular and predictable dividend payments.

- Known and constant required rate of return (r).

- Dividends grow predictably or vary in defined stages.

4. Types of DDM

1. Zero Growth DDM:

   - Dividends remain constant over time.

   - Formula: $P_0 = D / r$.

   - Example: $5 annual dividend, 10% required return: $P_0 = 5 / 0.10 = 50$.

2. Constant Growth DDM (Gordon Growth Model):

   - Dividends grow at a constant rate (g).

   - Formula: $P_0 = D_1 / (r - g)$.

   - Example: $2 next dividend, 5% growth, 10% return: $P_0 = 2 / (0.10 - 0.05) = 40$.

3. Multi-Stage DDM:

   - Dividends grow at varying rates over different periods.

   - Example: 10% growth for 3 years, then 5% constant growth.

5. Inputs to DDM

- Dividends (D): Recent dividends and projections.

- Growth Rate (g): Historical data or industry trends.

- Required Rate of Return (r):

  - CAPM Formula: $r = R_f + B * (R_m - R_f)$.

    - Rf: Risk-free rate, B: Beta, Rm: Market return.

6. Sensitivity Analysis in DDM

- Purpose: Test impact of changes in growth or return rates.

- Example: How stock value changes with growth rates of 4%, 5%, or 6%.

7. Advantages and Limitations of DDM

- Advantages:

  - Simple and effective for dividend-paying stocks.

  - Reflects tangible returns for investors.

- Limitations:

  - Not suitable for non-dividend-paying companies.

  - Highly sensitive to growth and return rate assumptions.

8. Real-World Applications

- Identify undervalued stocks based on intrinsic value.

- Combine DDM with other models for comprehensive analysis.

9. Advanced Concepts in DDM

- Adjusted Present Value (APV): Includes tax benefits.

- Dividend Payout Ratio: Links earnings to dividends.

- Terminal Value: Captures value at the end of a projection period.

10. Case Studies and Examples

1. Tech Company Paying Dividends:

   - Analyze variable dividend trends for a tech stock.

2. Banking Stock Sensitivity Analysis:

   - Assess price changes due to 1% growth rate adjustment.

11. Key Takeaways

- Use DDM when companies pay consistent dividends.

- Combine with sensitivity analysis for robust valuation.

- Cross-verify results with alternative valuation models.