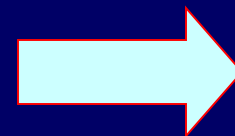




EQUITY DISCOUNTED CASH FLOWS APPROACH TO VALUATION

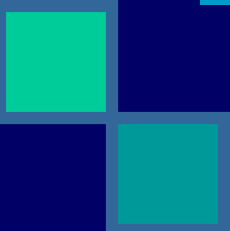


Ram Kumar Kakani
SPJCM Singapore





Dividend Discount Model ...

- The model is flexible enough to allow for time varying discount rates, where the time variation is caused by expected changes in interest rates or risk across time.
- 

Gordon Growth Model ...

- The growth rate taken should always be less than or equal to the growth rate of the economy
- Cannot be used when there is volatility in earnings
- Can be used when ...
- [a] A firm has a average growth rate that is close to stable growth rate; [b] the dividend payout policies of the firm are well-established and expected to continue (in future)
- Reason – [a] dividends are smoothed even while earnings fluctuate; [b] mathematical affects of using an average growth rate rather than a constant growth rate are small

Valuation with Stable-Growth Dividend Discount Model ...

Hindustan Unilever – November 2007

- All data from Anand Rathi Securities and Reuters
- Last years Dividend = 6.00 and DP Ratio = 87%
- $R_m = 13\%$, Beta = 0.81, $R_f = 8\%$
- Long-term Growth Rate can be taken as ...
- ROE X Retention Ratio
- Intrinsic value of Hindustan Lever per share as per above computations would be around ...

| Financials Rs (in Crores) | Hindustan Unilever Limited | | | | | |
|----------------------------------|-----------------------------------|--------------|--------------|--------------|--------------|---------------|
| For the year | 612 | 512 | 412 | 312 | | |
| No. of Shares (in crore) | 220.7 | 220.1 | 220.1 | 220.1 | | |
| Adjusted EPS (Rs) | 6.8 | 5.8 | 5.3 | 7.8 | | |
| Book value per Share (Rs) | 12.3 | 10.5 | 9.5 | 9.7 | 87.7% | Plough |
| Dvdnd per Share (Rs) | 6.0 | 5.0 | 5.0 | 5.5 | 12.0% | Ke |
| Lt Debt Equity | 0.0 | 0.0 | 0.6 | 0.6 | 6.8% | G |
| Return on Equity (%) | 55.4% | 55.8% | 55.3% | 80.3% | 122.7 | IV |

Two-Stage Dividend Discount Model ...

- Best suited for firms that are in high growth and expect to maintain that growth rate for a specific time period, after which the sources of the high growth are expected to disappear.
- Example: Essel Propack, Kilburn Chemicals, Monsanto India, ...
- Characteristics of the firm in the stable period should be consistent with the assumption of stability
- So, for a stable period ... a beta of 0.8 to 1.2 is okay

Valuing a Firm with the Two-Stage Dividend Discount Model ...

Punjab National Bank – November 2007

| Punjab National Bank | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Existing payout ratio | 30.7% | 15.0% | 14.0% | 10.8% | 11.5% | 11.6% |
| Return on Equity | 15.5% | 16.4% | 21.4% | 23.3% | 23.1% | 17.5% |
| Expected growth rate in EPS | 0.107721 | | | | | |
| Beta current | 0.82 | | | | | |
| Beta estimated for stable phase | 0.85 | | | | | |
| Cost of equity for high growth phase | 11.42% | | | | | |
| Cost of equity for stable growth phase | 12.90% | | | | | |
| Stable Period Assumed Growth Rate | 5.50% | | | | | |
| Stable Period Payout ratio | 57.36% | | | | | |
| Current Dividend Per Share | 15.00 | 6.84 | | | | |
| Current Earnings Per Share | 48.84 | 45.65 | | | | |


Valuing a Firm with the Two-Stage Dividend Discount Model ...

Punjab National Bank – November 2007 (copy paste scenario)

| Punjab National Bank \ Year ==> | 2007 | 2006 | | | | |
|---|----------|--------|-------|-------|----------|-------|
| DPS | 15.00 | 6.84 | | | | |
| EPS | 48.84 | 45.65 | | | | |
| BV/Share | 330.97 | 297.38 | | | | |
| ROE | 15.55% | | | | | |
| Payout Ratio | 30.71% | | | | | |
| High Growth Rate | 10.77% | | | | | |
| Stable Growth Rate | 5.50% | | | | | |
| Dividends | 15.00 | | | | | |
| Cost of Equity (High Growth) | 12.42% | 0.075 | 0.135 | | | |
| Cost of Equity (Stable Growth) | 12.90% | | | | | |
| ROE in Stable Period | 12.90% | | | | | |
| Estimated Retention Ratio in Stable Phase | 42.64% | | | | | |
| Estimated EPS in 2013 | 85.93 | | | | | |
| Estimated Dividend in 2013 | 49.29 | | | | | |
| PNB | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Estimated Dividend | 16.62 | 18.41 | 20.39 | 22.58 | 25.02 | 49.29 |
| Estimated Terminal Value | | | | | 666.1478 | |
| Estimated DDM | 16.62 | 18.41 | 20.39 | 22.58 | 691.16 | |
| Share Price (Intrinsic) | \$442.75 | | | | | |

Valuing a Firm with the Two-Stage Dividend Discount Model ...

Punjab National Bank – November 2007 (TTM Adjustment)

| Punjab National Bank \ Year ==> | 2007ttm | 2006 | | | | |
|---|---|-------------|-------------|-------------|-------------|-------------|
| DPS | 15.00 | 6.84 | | | | |
| EPS | 61.39 | 45.65 | | | | |
| BV/Share | 330.97 | 297.38 | | | | |
| ROE | 19.54% | | | | | |
| Payout Ratio | 24.43% | | | | | |
| High Growth Rate | 14.77% | | | | | |
| Stable Growth Rate | 5.50% | | | | | |
| Dividends | 15.00 | | | | | |
| Cost of Equity (High Growth) | 12.42% | 0.075 | 0.135 | | | |
| Cost of Equity (Stable Growth) | 12.90% | | | | | |
| ROE in Stable Period | 12.90%  | | | | | |
| Estimated Retention Ratio in Stable Phase | 42.64% | | | | | |
| Estimated EPS in 2013 | 128.95 | | | | | |
| Estimated Dividend in 2013 | 73.97 | | | | | |
| PNB | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Estimated Dividend | 17.21 | 19.76 | 22.67 | 26.02 | 29.86 | 73.97 |
| Estimated Terminal Value | | | | | 999.5873 | |
| Estimated DDM | 17.21 | 19.76 | 22.67 | 26.02 | 1029.45 | |
| Share Price (Intrinsic) | \$636.50 | | | | | |

Three-Stage Dividend Discount Model ...

- Highly useful for firms whose earnings are growing at high rates, are expected to continue growing at those rates for an initial period, but are expected to start declining gradually toward a stable rate as the firm becomes larger and loses its competitive advantages.
- Example: Yes Bank, Cipla, Larsen & Toubro, Infosys Technologies, Pantaloons India, ...

Valuing a Firm with the Three-Stage Dividend Discount Model ... Hexaware Technology – November 2007

| Hexaware Technologies Limited | 2006 | 2005 | 2004 | 2003 | 2002 |
|--------------------------------------|---------------------|-------|-------|-------|------|
| PAT for common equity | 114 | 78 | 43 | 30 | 6 |
| Net worth for common equity | 560 | 326 | 261 | 228 | 212 |
| Return on Equity | 25.6% | 26.4% | 17.7% | 13.8% | |
| Dividend Payout Ratio | 22.6% [▲] | 21.1% | 30.6% | 16.8% | |
| Expected Growth Rate | 19.8% | | | | |
| Cost of Equity in High Growth Period | 12.60% [▲] | | | | |

Valuing a Firm with the Three-Stage Dividend Discount Model ...

Hexaware Technologies – November 2007 (copy paste scenario)

| Year | EPS | Expected Growth Rate | Payout Ratio | Dividends | Cost of Equity | Cumulated Cost of Equity | Present Value of DPS |
|---|------|----------------------|--------------|-----------|----------------|--------------------------|----------------------|
| Current | 8.6 | | 22.63% | 1.9 | | | |
| 1 | 10.3 | 19.84% | 22.63% | 2.3 | 12.60% | 1.126 | 2.1 |
| 2 | 12.4 | 19.84% | 22.63% | 2.8 | 12.60% | 1.268 | 2.2 |
| 3 | 14.8 | 19.84% | 22.63% | 3.4 | 12.60% | 1.428 | 2.3 |
| 4 | 17.8 | 19.84% | 22.63% | 4.0 | 12.60% | 1.608 | 2.5 |
| 5 | 21.3 | 19.84% | 22.63% | 4.8 | 12.60% | 1.810 | 2.7 |
| 6 | 25.5 | 19.84% | 22.63% | 5.8 | 12.60% | 2.038 | 2.8 |
| 7 | 30.6 | 19.84% | 22.63% | 6.9 | 12.60% | 2.295 | 3.0 |
| PV of Dividends in High Growth Phase | | | | | | | 17.6 |

| | |
|---|-----------------------------------|
| Hexaware Technologies Limited | 2007ttm |
| EPS for common equity | 9.2 |
| book value for common equity | 53.8 |
| Return on Equity | 17.1% |
| Dividend Payout Ratio | 17.4% |
| Expected Growth Rate | 14.1% |
| Cost of Equity in High Growth Period | 12.60% |
| High Growth Period | 7 years |
| Transition Phase Period | 5 years |
| Cost of Equity in Stable Period | 12.90% (increased beta) |
| Estimated Return on Equity for Stable | 12.90% (equal to cost of capital) |
| Estimated Growth Rate for Stable Period | 5.50% |
| Stable Period Payout Ratio | 57.4% |

Valuing a Firm with the
Three-Stage Dividend
Discount Model ...
Hexaware Technologies –
November 2007 (TTM
Adjustment)

| | Expected Growth Rate | Payout Ratio | Dividends | Cost of Equity | Cumulated Cost of Equity | Present Value of DPS |
|---|----------------------------|-----------------|-----------|-------------------|--------------------------------|----------------------------|
| Year | EPS | | | | | |
| Current | | 17.43% | 0.0 | | | |
| 1 | 9.2 | 14.08% | 1.6 | 12.60% | 1.126 | 1.4 |
| 2 | 10.5 | 14.08% | 1.8 | 12.60% | 1.268 | 1.4 |
| 3 | 11.9 | 14.08% | 2.1 | 12.60% | 1.428 | 1.5 |
| 4 | 13.6 | 14.08% | 2.4 | 12.60% | 1.608 | 1.5 |
| 5 | 15.5 | 14.08% | 2.7 | 12.60% | 1.810 | 1.5 |
| 6 | 17.7 | 14.08% | 3.1 | 12.60% | 2.038 | 1.5 |
| 7 | 20.2 | 14.08% | 3.5 | 12.60% | 2.295 | 1.5 |
| PV of Dividends in High Growth Phase | | | | | | 10.3 |
| 9 | 22.7 | 12.08% | 5.8 | 12.65% | 2.585 | 2.2 |
| 10 | 25.0 | 10.08% | 8.6 | 12.70% | 2.914 | 3.0 |
| 11 | 27.0 | 8.08% | 11.7 | 12.75% | 3.285 | 3.6 |
| 12 | 28.6 | 6.08% | 14.4 | 12.80% | 3.706 | 3.9 |
| 13 | 30.2 | 5.50% | 17.3 | 12.90% | 4.184 | 4.1 |
| PV of Dividends in Transition Phase | | | | 12.90% | 4.723 | 16.8 |
| EPS for year 14 | 31.9 | | | | | |
| Terminal price | 260.6 | | | | | |
| PV of Dividends in Transition Phase | | | | | | 55.2 |
| Value of Hexaware Technologies | | | | | | 82.3 |

Applicability of DDM

It is useful for firms with stable earnings, especially in mature businesses, that try to calibrate their dividends to available cash flows. Large Power and FMCG Firms are good examples.

Sectors where cash flow estimation is difficult (for example, financial services sector)

- **Extension of model for equity buyback**
- Modified dividend payout = $[\text{dividends} + \text{stock buybacks} - \text{long-term debt issues}] / [\text{net income}]$
- Modified growth rate = $[1 - \text{Modified payout ratio}] \times [\text{return on equity}]$