

CRISIL Ltd.

Estimating Discount Rates

Corporate Valuation Assignment - IV

KAKKANUMILLET

GMAY08 – IB100

11/12/2008

Estimating Discount Rates

To determine the Cost of Capital we need to calculate the Cost of Equity (Ke) and Cost of Debt (Kd) for CRISIL.

COST OF EQUITY

First, we calculate the Ke using the CAPM model.

$$K_e = R_{fr} + \text{Beta} * (R_m - R_{fr})$$

- Where Rfr = Risk free rate of return
- Rm = Market Rate of Return
- Beta = Volatility of the stock

We have calculated the Beta of CRISIL in 2 ways:

- Firstly, using the 5 year weekly returns⁽¹⁾ which gives us a **Beta of 0.64**
- Secondly, using 1 year weekly returns⁽²⁾ which gives us a **Beta of 0.54**

$$\text{Beta} = (\text{Covariance of Returns of CRISIL with Nifty Returns}) / \text{Variance of Nifty Returns}$$

Case I: Ke based on 5-year weekly returns

Assumptions:

- Rm⁽¹⁾ = 5-year weekly returns of NIFTY
- Rfr for risk premium⁽²⁾ = 5-year weekly data of 10-year Indian government bond
- Rfr⁽³⁾ = 10 years government bond due 2018 which is 8.24%

Rfr	8.24%
Rm	37.70%
Rfr (for Risk Premium)	6.75%
Beta	0.63
Ke	27.89%

Using the above data, we have calculated the Ke as 27.89%

Notes:

- (1) We have downloaded the 5-year weekly prices of NIFTY from Yahoo Finance website and then calculated the returns of the same.
- (2) Source: www.rbi.org
- (3) 10 year government bond rate due 2018 is 8.24% sourced from RBI website: <http://www.rbi.org.in/scripts/AnnualReportPublications.aspx?Id=883>

Case 2: Ke based on 1-year daily returns

Assumptions:

- $R_m^{(4)}$ = 1-year weekly returns of NIFTY
- Rfr for risk premium⁽⁵⁾ = 1-year daily yield of 10-year Indian government bond
- $R_{fr}^{(6)}$ = 10 years government bond due 2018 which is 8.24%

Rfr	8.24%
R_m	67.77%
Rfr (for Risk Premium)	7.91%
Beta	0.54
Ke	40.46%

Using the above data, we have calculated the Ke as 40.46%.

Based on both the cases, we consider that considering the 5 year weekly returns is a better indicator to calculate the Beta of CRISIL as well to calculate the Risk Premium.

Moreover, the Ke is very high when we used last 1-year return (1st Jan 2007 to 31st Dec 2007).

Case 3: Ke based on past 16 years return

Additionally, we have calculated Ke using the past 16 years Risk-Premium.

The risk premium is calculated over the last 16 years return of Sensex.

Rfr	8.24%
Risk Premium ⁽⁷⁾ - 1992-2008 (16 years)	8.17%
Beta	0.63
Ke	13.43%

This gives us a cost of equity which is 13.43%.

Notes:

- (4) We have downloaded the 1-year weekly prices of NIFTY from Yahoo Finance website and then calculated the returns of the same.
- (5) Source: www.rbi.org
- (6) 10 year government bond rate due 2018 is 8.24% sourced from RBI website:
<http://www.rbi.org.in/scripts/AnnualReportPublications.aspx?Id=883>
- (7) Risk premium is calculated using Sensex data from BSE website.

COST OF DEBT (KD)

CRISIL is a debt-free company and hence there is no cost of debt. Since inception, the company has not raised any debt. Also, CRISIL is closely held company with S&P holding around 55% of the equity share.

COST OF CAPITAL

The cost of capital for CRISIL is the same as K_e which is 13.43%, 27.89% or 40.46% as there is no debt and no preference shares issued by CRISIL.

ALTERNATIVE METHODS OF CALCULATING K_e

1) $K_e = R_{fr} + \text{Country Risk Premium} + \text{Beta} * \text{Mature Market Risk premium}$

$R_{fr}^{(8)} = 8.24\%$

Country Risk Premium for India⁽⁹⁾ = 3.75%

Beta⁽¹⁰⁾ = 0.63

Mature market risk premium⁽¹¹⁾ (USA) = 6.29%

Therefore, $K_e = 15.95\%$.

2) $K_e = R_{fr} + \text{Beta} * (\text{Mature market risk premium} + \text{Country risk premium})$

$R_{fr}^{(12)} = 8.24\%$

Country Risk premium for India⁽¹³⁾ = 3.75%

Beta⁽¹⁴⁾ = 0.63

Mature market risk premium⁽¹⁵⁾ (USA) = 6.29%

Therefore, $K_e = 14.57\%$

CONCLUSION

CRISIL is a growing company and has a current ROE of around 24%. Also, there have been many structural changes in the business over the last 5 years in terms of business mix, acquisition of international research business, diversification into new ventures and new projects.

Additionally, the company's share price has moved from Rs. 450 levels to Rs. 3600 levels in the past 5 years. As CRISIL is a high value stock, this growth will stabilize over the next 7-10 years.

The calculations seem to be in line using past 5 year Beta and we expect the Beta to move into the range of 0.8 to 1.2

Notes:

(8)(12) 10 year government bond rate due 2018 is 8.24% sourced from RBI website:

<http://www.rbi.org.in/scripts/AnnualReportPublications.aspx?id=883>

(9)(13) Source: www.stern.nyu.edu/~adamodar/

(10)(14) Calculate on page 1

(11)(15) Source: www.stern.nyu.edu/~adamodar/