

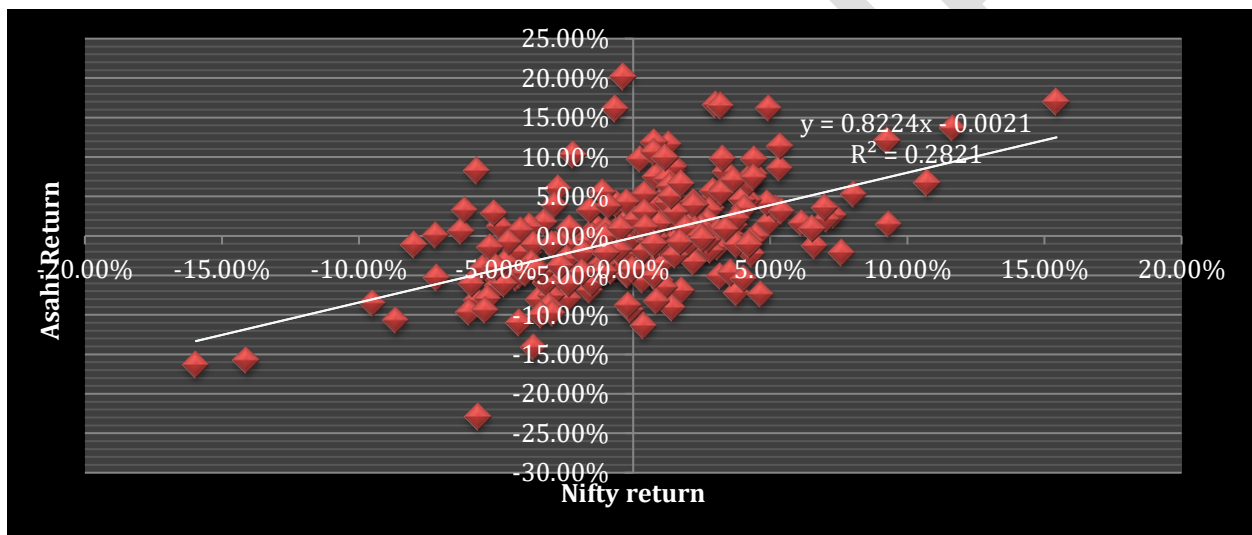
PART I: RETURN AND RISK ESTIMATIONS USING CAPM

AVERAGE RETURNS, GEOMETRIC RETURNS, STANDARD DEVIATION

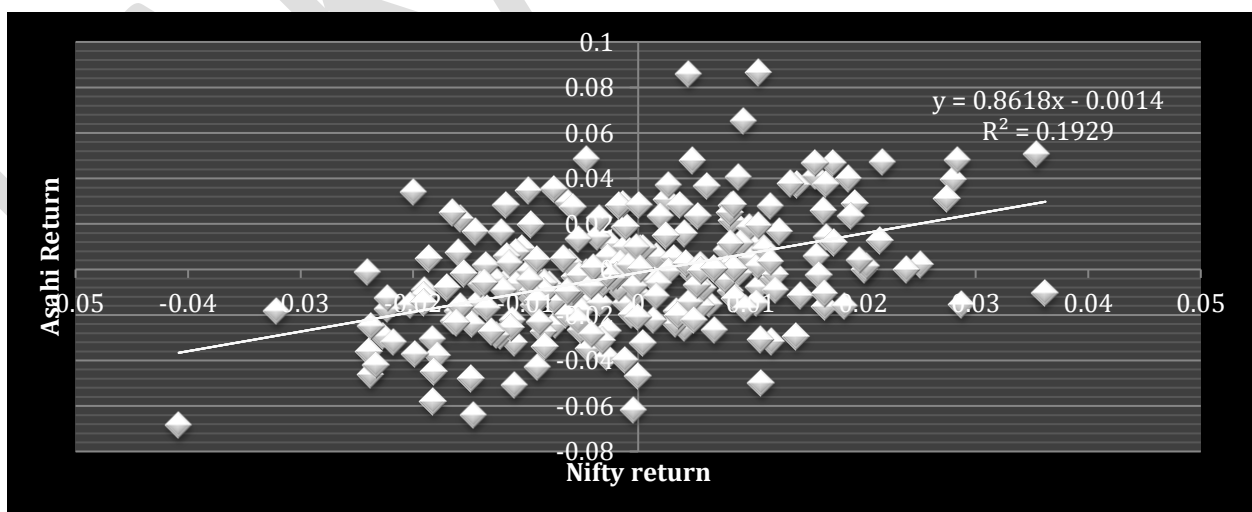
Using historical data both 5-yearly weekly data and 1-yearly daily data for Asahi¹ and NIFTY²,

	Arithmetic Returns (%)		Geometric Returns (%)		Standard Deviation (%)	
	Weekly 5-yearly	Daily 1-yearly	Weekly 5-yearly	Daily 1-yearly	Weekly 5-yearly	Daily 1-yearly
Asahi	0.40%	0.263%	0.40%	0.264%	6.00%	2.46%
NIFTY	-0.04%	0.084%	-0.04%	0.085%	3.90%	1.25%

5-Yearly Weekly Returns



1-Yearly Daily Returns



¹ <http://www.google.com/finance/historical?q=BOM%3A515030&histperiod=daily&start=240&num=30>

² <http://www.google.com/finance/historical?q=NSE%3ANIFTY&histperiod=daily&start=240&num=30>

BETA CALCULATION

$$\beta = \text{Cov}(R_i, R_m) / \text{Var}(R_m)$$

Beta calculation	5 year weekly	1 year daily
Sum of Product of Deviations	0.3173	0.03450
Covariance between Asahi & NIFTY	0.0012	0.00013
Sum of squares of NIFTY deviations	0.3853	0.03923
Variance for NIFTY	0.0015	0.00015
Beta for Asahi	0.8235	0.86179
R Squared	0.2821	0.1929

Regression Line: $y = 0.8224x + 0.0021$ (Weekly 5-year)

$$y = 0.8618x + 0.0014 \text{ (Daily 1-year)}$$

The value of Beta (Weekly) is 0.8235 which seems to indicate that Asahi has a close relationship to market movements. However, the R-square value is moderately low which means that it is not correlated much to market behavior.

COMPARISON WITH BETA OF PEER COMPANY

Beta for Sundram Fasteners is 1.21. The beta for other players like Amtek Auto is 1.41, Exide is 0.91 & Lumax is 1.28. Therefore, the average is around 1.13. So Sundram has a higher beta than the auto parts and equipment market average and that of Asahi which indicates increased volatility and more growth potential.

VALUE OF BETA OVER A PERIOD OF TIME

The value of Beta for AIS is more for the last 1 year timeframe as compared to the 5 year one. This can be attributed to the recent large scale expansion which has resulted in AIS making profits in the FY 2010-11 for the 1st time after the expansion. So as the market looks up post the recession in 2009, AIS is gradually becoming more responsive to market behaviour. The 5 year beta includes the expansion period where an improvement in market conditions might not have an improvement to a similar extent for AIS due to the capex trapped in expansion.

EXPECTED RATE OF RETURN

5-Year Weekly Returns

$$\beta = 0.8284$$

$$R_f = 8.10\%$$

$$(R_m - R_f) = 9.84\%$$

$$R = R_f + \beta * (R_m - R_f)$$

So the expected rate of return on the security is

$$= 8.1 + 0.8284 * 9.84 = 16.25 \%$$

5-Year Weekly Returns

$$\beta = 0.8681$$

$$R_f = 8.10\%$$

$$(R_m - R_f) = 9.84\%$$

$$R = R_f + \beta * (R_m - R_f)$$

So the expected rate of return on the security is

$$= 8.1 + 0.8681 * 9.84 = 16.64 \%$$

OBSERVATIONS

- Beta as per Reuters is 0.80, which is comparable to the value computed above. The difference can be attributed to different time period and different span of time taken.

PART II: POST TAX COST OF DEBT AND COST OF CAPITAL

COST OF DEBT

Cost of debt can be calculated by using following methods:

- **YIELD TO MATURITY**

As Asahi does not issue any debt instruments³ (bonds and debentures), this method cannot be used.

- **INTEREST EXPENSE/AVERAGE INTEREST BEARING LIABILITIES**

Average interest bearing liabilities (in Rs. lakhs), according to balance sheet 2010-11

$$= ((\text{secured loans} + \text{unsecured loans})_{2011} + (\text{secured loans} + \text{unsecured loans})_{2010}) / 2$$

$$= ((132,190 + 23,123) + (125,517 + 24,248)) / 2$$

$$= (155,313 + 149,765) / 2 = 152,539$$

$$\text{Tax Rate} = 30\%^{13}$$

Post Tax Cost of Debt, $K_d = \text{Interest Expense} * (1 - \text{Tax rate}) / \text{Average Interest bearing liabilities}$

$$= 12905 * (1 - 0.30) / 152,539 = \mathbf{12.08 \%$$

- **LATEST LOAN BORROWED**

No information on interest rates available.

- **CREDIT RATING**

The credit rating of Asahi is BBB- as given by CARE⁴. Hence the spread for this credit is +2.25 %⁵

The risk free rate of return is 8.10%

$$\begin{aligned}\text{Thus the cost of debt } K_d &= (R_f + 2.25) * (1-t) \\ &= (8.1+2.25) * (1-0.3) = 7.24\%\end{aligned}$$

Credit rating method is the most suited one since it is more responsive to overall details and changes in market. The financial market relies heavily on the rating agencies' opinion of credit worthiness of companies & not just on the interest expenses paid.

COST OF CAPITAL

Cost of capital is calculated using weighted average cost of capital,

$$WACC = (K_d * MV_d + K_e * MV_e + K_p * MV_p) / (MV_d + MV_e + MV_p),$$

Where the subscripts d, e, p stand for debt, equity and preference shares respectively.

- **COST OF EQUITY**

CAPM METHOD

Cost of capital = Risk free rate + beta * (Market Premium)

- **ASAHI**

$$\begin{aligned}\text{Cost Of Equity} &= 8.1 + 0.8284 * 9.84 \\ &= 16.25 \%\end{aligned}$$

- **SUNDRAM FASTENERS**

$$\begin{aligned}\text{Cost Of Equity} &= 8.1 + 1.21 * 9.84 \\ &= 20 \%\end{aligned}$$

As it does not issue preference shares or debt, therefore WACC = cost of equity.

COMMENTS

- Cost of capital is directly related to risk and inversely proportional to valuation of a company
- The WACC value of Sundram (20%) is higher than that of AIS (16.25%), which shows that risk involved with Sundram.
- Asahi is looking up in terms of growth prospects as compared to Sundram and hence more intrinsic value as compared to its peer.
- It is costlier for Sundram to raise money than Asahi.

<http://www.cafestocks.com/newsDetails.do?newsId=9000152775>

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/valquestions/syntrating.htm

<http://in.reuters.com/finance/stocks/overview?symbol=LUMA.NS>



Assignment 4
Calculations.xlsx

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