

Waive First Securities

*Submitted By: Suman Kumari (18HS20039), Kush Verma (18HS20020),
Siddhant Vishwakarma (18HS20036), Shashank Shrivastava (18HS20032)*

Introduction

Harold Gagnon, a client of Waite First Securities has his eyes on three stocks- Apple, Safeway and Intel. He believes he has done his research and is confident about the opportunity, however he is doubtful about the fluctuations of the market. In his attempt to safeguard himself from the ups and downs of the larger market conditions he wishes to add that stock to his portfolio with the least volatility.

He discovered that one such way was to analyse the betas of the stock. So, he called his broker and asked them to analyse the betas of the stocks.

Beta

We know that the relevant risk measure for any asset is its covariance with the market portfolio. However, it is more convenient to use a standardized measure of the systematic risk that cannot be avoided through diversification. Beta relates the covariance of an asset with the market portfolio to the variance of the market portfolio, and is defined as

$$\beta_{i,m} = \text{Cov}(i, m) / \sigma_m^2$$

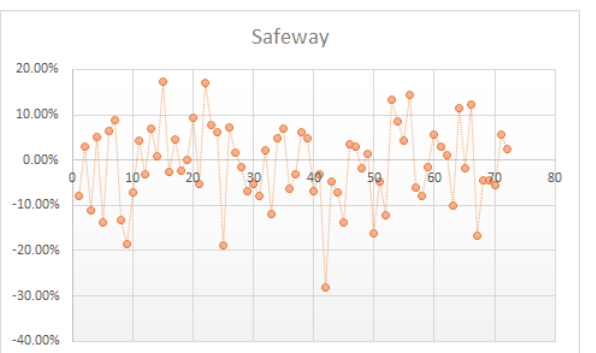
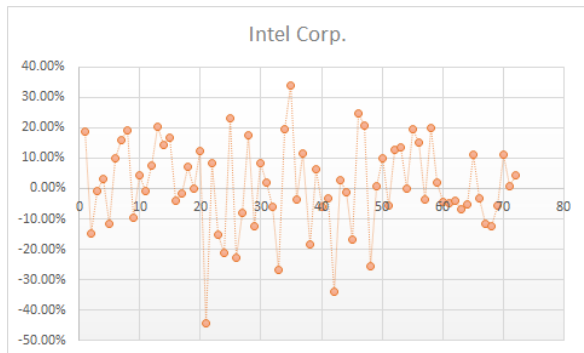
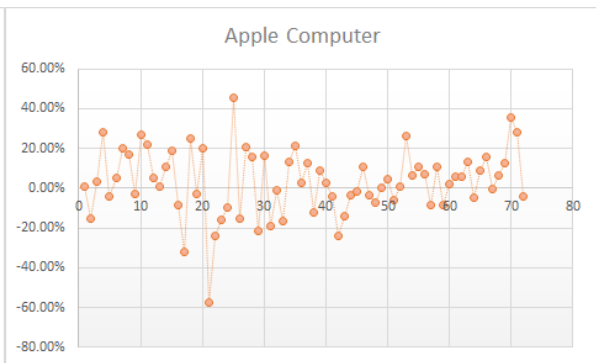
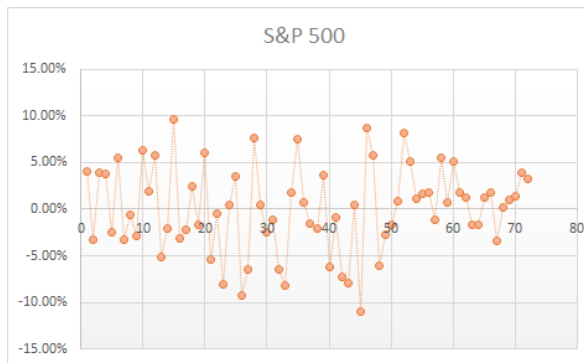
Beta is a relative measure of risk—the risk of an individual stock relative to the market portfolio of all stocks.

If the security's returns move more (less) than the market's returns as the latter changes, the security's returns have more (less) volatility (fluctuations in price) than those of the market. For example, a security whose returns rise or fall on average 15 percent when the market return rises or falls 10 percent is said to be an aggressive, or volatile, security.

Regression Analysis

The Beta is calculated by regressing the market risk premium as the independent variable and stock risk premium as dependent variable for Apple, Intel and Safeway.

$$\text{Risk premium} = \text{Return} - \text{Risk Free Rate}$$



Stock	Beta	R^2 - Value
Apple Computers	1.81	0.25
Intel	2.05	0.41
Safeway	0.50	0.07



Results

- Models and Beta values of all the three stocks are statistically significant at 5% level. (Regression results are attached with the file).
- Safeway has the lowest Beta value, with the value being less than 1 which means it is less volatile than S&P 500.
- Apple and Intel both have a very high value of Beta, meaning that they are more volatile than S&P 500, with Intel being more than twice volatile.
- This makes Safeway the least risky and Intel the riskiest stock among the three.
- All three have low values of R^2 , with Intel having the highest and Safeway the lowest, which is evident from their respective Beta values (low Beta signifies low R^2 value).

$$\beta = R \times \sigma_x / \sigma_y$$

where x = standard deviation of market and y = standard deviation of the stock.

- This means that the variations in prices of all the three stocks are not very well explained by the CAPM model.

Conclusion

Considering the market volatility and the risk tolerance of the client (who is risk averse), Investing in **Apple Computers** and **Intel** can be quite risky as the Beta is significantly larger than 1.0. But the **Safeway** seems as a perfect suggestion which is having approximate Beta 0.50. Thus, it is less volatile than market. Although the regression results says that the Linear regression is failed to explain the distribution having a R^2 Score 0.07 (Standard Deviation is large).

Since, the only aim of the client is to minimize the risk thus Safeway offers a safe choice as the client is confident about all the three stocks going up.