

Technical Report

Source of the data: The information comes from six years of monthly total returns, which include dividends, sourced from a newly acquired database of New York Stock Exchange prices.

Variables includes returns of stocks and S&P500.

Stock return is appreciation in the value of a stock from one period to another.

$R1 = [(P1 - P0) + D]/P0$ where

P0 represents the initial stock price.

P1 represents the ending stock price.

D represents dividends

Return on S&P500: The performance or gain an investor has realized by investing in the S&P 500 index. It's a measure of how well an investment in the S&P 500 has done over a specific period.

Sample Size: 72 months of stock prices from 2015-2020

Estimated SLR Model for Apple Computer Based on 2015-2020 Data:

Residuals:

	Min	1Q	Median	3Q	Max
	-22.167958990	-3.358629850	-0.643150848	4.144691515	14.286392502

Coefficients:

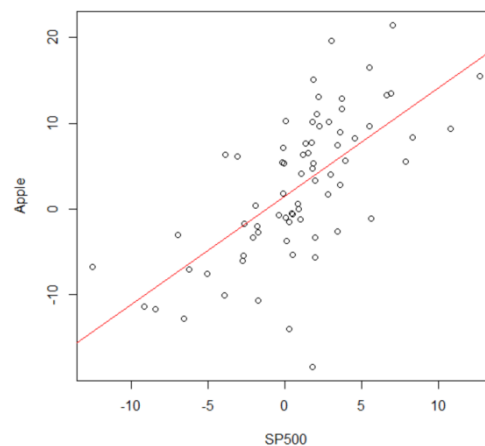
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.498982949	0.768210941	1.95126	0.055028 .
SP500	1.267978117	0.174962773	7.24713	4.4172e-10 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 6.37030185 on 70 degrees of freedom

Multiple R-squared: 0.428668933, Adjusted R-squared: 0.420507061

F-statistic: 52.5209062 on 1 and 70 DF, p-value: 4.41719354e-10



Estimated SLR Model for Intel Computer Based on 2015-2020 Data:

Residuals:

	Min	1Q	Median	3Q	Max
	-24.610377177	-4.570054935	0.860829204	4.211582566	17.559585326

Coefficients:

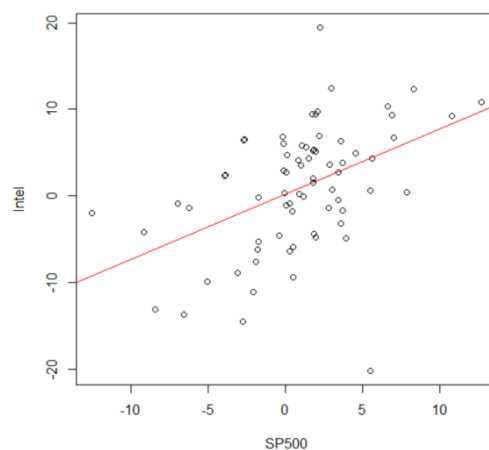
	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.222927032	0.771579610	0.28892	0.77349
SP500	0.755605010	0.175729999	4.29981	5.4298e-05 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 6.39823616 on 70 degrees of freedom

Multiple R-squared: 0.208935295, Adjusted R-squared: 0.197634371

F-statistic: 18.4883367 on 1 and 70 DF, p-value: 5.42982214e-05



Estimated SLR Model for Kroger Computer Based on 2015-2020 Data:

Residuals:

	Min	1Q	Median	3Q	Max
	-21.670096558	-6.302491175	0.418183296	5.040647461	23.855137130

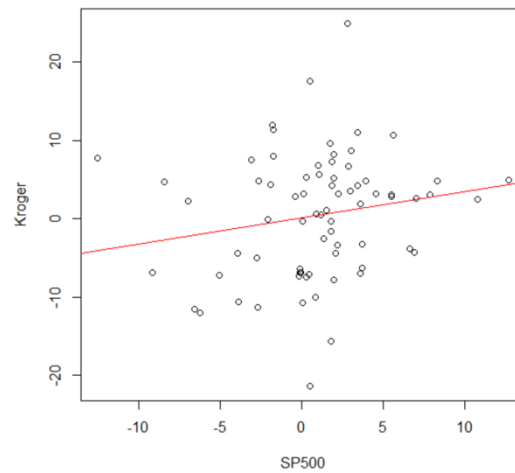
Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.130250970	0.945763820	0.13772	0.89086
SP500	0.335475809	0.215401072	1.55745	0.12387

Residual standard error: 7.84263891 on 70 degrees of freedom

Multiple R-squared: 0.0334914801, Adjusted R-squared: 0.0196842155

F-statistic: 2.42564194 on 1 and 70 DF, p-value: 0.123874307



Beta analysis:

Here are the observed results after conducting the null hypothesis on $\beta=1$ to assess the variance between the estimated investment beta of each stock and that of the index.

Apple and Intel's estimated Investment Beta are not statistically significantly different from 1 at 5% level of significance. Kroger's estimated Investment Beta is statistically significantly different from 1 at 1% level of significance.

We considered the null hypothesis for $\beta=1$ instead of $\beta=0$ as it helps you understand how much the stock is influenced by the market. Test of $\beta=0$ tells us if there is a linear relationship between stock and index which is not very informative.

S&P is performing comparatively well in the years 2015-2020 as compared to that in 1999-2004. This could be due to a variety of factors such as economic growth, technological advancements, etc. The average compounded returns of Intel and Kroger turned positive from negative which is a good indicator of company health. The index and all the three stocks became less risky probably due to better risk management practices. Decrease in beta value for Intel from 2.05 to 0.8 makes it less sensitive to market fluctuations. The doubling of market risk for Apple could be due to its aggressive growth strategies. In summary, it can be said that the index as well as the stocks are performing better in recent years than in the past.