

# ECON106V LAB #5



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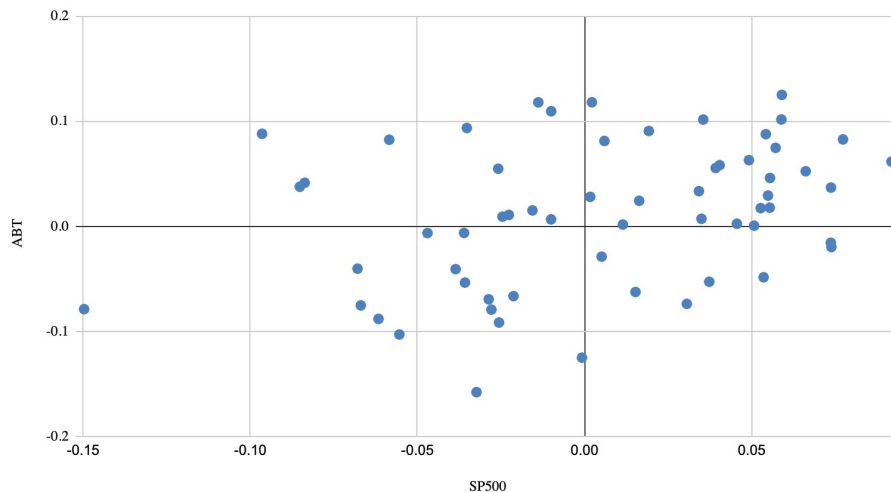
# Beta of One Stock – Stock Ticker: ABT

	Slope	Intercept
Estimated Coefficient	0.2500331826	0.001478348092
Standard Error	0.09417438562	0.006455989463
R^2	0.1083649523	0.04933454131

Confidence Interval for Beta	
0.025 Quantile	0.975 Quantile
0.06545138683	0.4346149784

Confidence Interval for Intercept	
0.025 Quantile	0.975 Quantile
-0.01117539126	0.01413208744

Excess Return of SP500 vs Excess Return of ABT



	Fraction
Systematic Risk: 0.0001674770561	0.9967538942
Idiosyncratic Risk: 0.0000005454187228	0.003246105757

# Beta of All Stocks

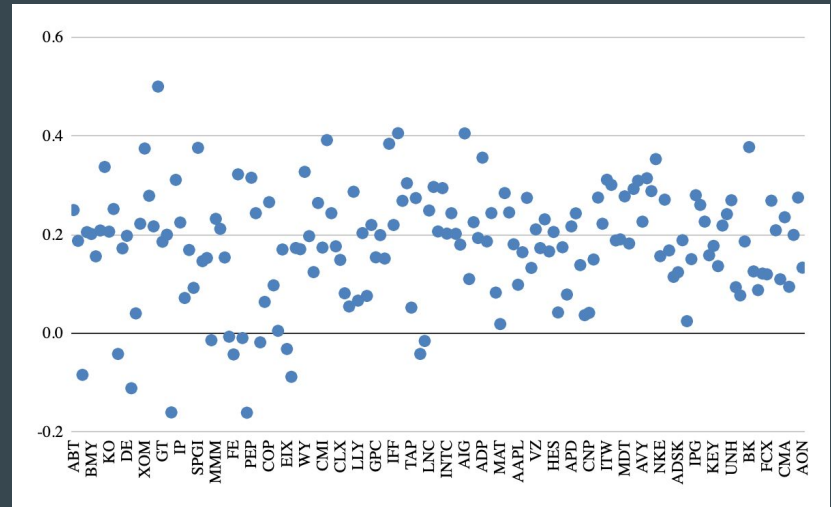
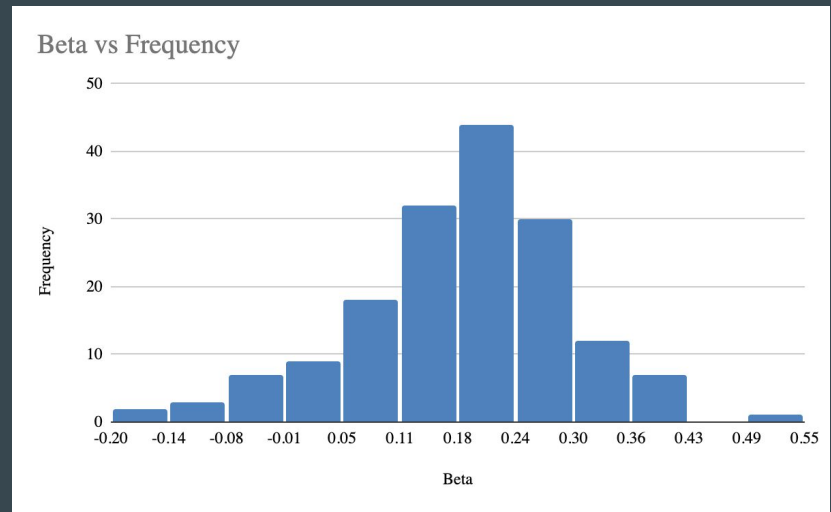
Beta (SP500): 1.0

Average Beta (All Stocks): 0.1805518151

Variance of Beta (All Stocks): 0.01302744287

In the dataset, there are 14 stocks with negative beta.

According to CAPM, the relationship between the **actual** expected excess return of each stock vs the CAPM-predicted expected excess return of each stock is that the CAPM-predicted expected excess return represents the return that an investor should expect given the stock's systematic risk measured by beta and the risk-free rate. If the **actual** expected excess return of a stock is higher than the expected excess return predicted by the CAPM model, the stock is said to be “overpriced” and vice versa. The relationship between the two returns is used to determine whether a stock is overvalued or undervalued relative to its expected return based on its risk. If a stock's **actual** expected excess return is higher than its CAPM-predicted expected excess return, it is considered to be offering a higher return than would be expected based on its risk, and may be a good investment. Conversely, if a stock's **actual** expected excess return is lower than its CAPM-predicted expected excess return, it may be overpriced relative to its risk and may not be a good investment.



# Beta of All Stocks

Actual Expected Excess Return (SP500): 0.004281671283

CAPM-Predicted, Expected Excess Return (SP500): 0.008172083333

Actual Expected Excess Return (1-Month Treasury Bill): 0.00389041205

CAPM-Predicted, Expected Excess Return (1-Month Treasury Bill): 0.0605563242142

The expected excess return of the 1-month Treasury bill can be estimated as the difference between the yield on the bill and the risk-free rate of return. The relationship between the expected excess returns predicted by CAPM and the actual expected excess returns can be used to evaluate the attractiveness of the S&P 500 index and the 1-month Treasury bill as investments. If the actual expected excess return of the S&P 500 is higher than the CAPM-predicted expected excess return, the index may be considered attractive because it is offering a higher return than would be expected based on its risk. If the actual expected excess return of the 1-month Treasury bill is higher than the expected excess return predicted by CAPM, the bill may be considered an attractive investment because it is offering a higher return than would be expected based on its risk. Conversely, if the actual expected excess return is lower than the CAPM-predicted expected excess return, it may be considered overpriced relative to its risk and may not be a good investment.

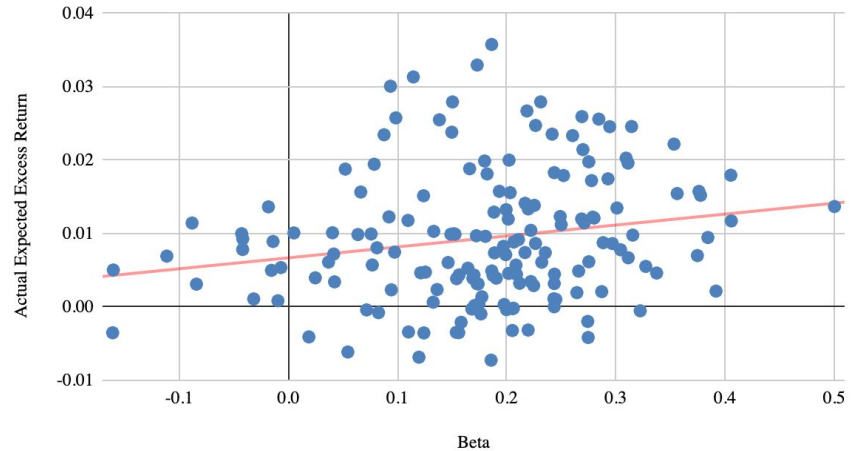
# Beta of All Stocks

According to the trendline of the scatterplot, larger beta values are generally associated with a higher average excess return, but this relationship is not always consistent and can vary depending on the specific assets and market conditions.

Beta is a measure of an asset's sensitivity to movements in the overall market, with a beta of 1 indicating that the asset moves in line with the market, while a beta greater than 1 suggests that the asset is more volatile than the market, and a beta less than 1 indicates that the asset is less volatile than the market.

The capital asset pricing model (CAPM) suggests that the expected return on an asset is a function of its beta, with the expected return increasing as beta increases. According to the CAPM, an asset's expected excess return is equal to the risk-free rate plus the market risk premium multiplied by its beta.

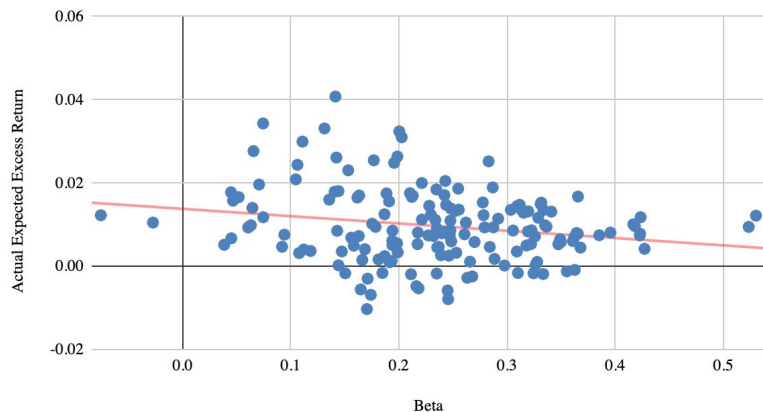
Actual Expected Excess Return vs. Beta



Excess Return vs Beta	Slope	Intercept
Estimated Coefficient	-0.001176373224	0.01385488217
Standard Error	0.00154126449	0.0006554230575
Variance	0.00000237549	4.29579384e-7
R^2	0.003561221062	0.006356926741

# Beta of All Stocks

Actual Expected Excess Return vs. Beta (2002 - 2006)



Excess Return vs Beta	Slope	Intercept
Estimated Coefficient	-0.006127855345	0.01105513749
Standard Error	0.003945144592	0.001111970016
R^2	0.01458553912	0.008716529885

Average Beta (All Stocks): 0.2232900652

Variance of Beta (All Stocks): 0.02976579929

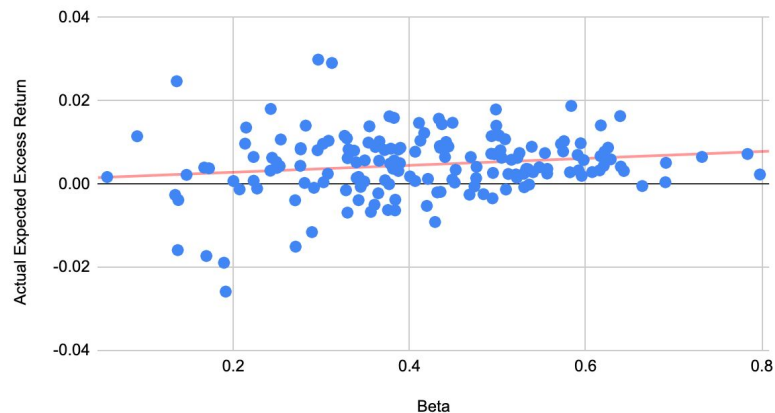
Actual Expected Excess Return (1-Month Treasury Bill): 0.001902634087

Actual Expected Excess Return (SP500): 0.002176165913

In the dataset, there are 3 stocks with negative beta.

# Beta of All Stocks

Actual Expected Excess Return vs. Beta (2007 - 2011)



Excess Return vs Beta	Slope	Intercept
Estimated Coefficient	0.0003757441508	0.004474343507
Standard Error	0.001269041468	0.0007673359832
R^2	0.0005375411451	0.007690001928

Average Beta (All Stocks): 0.378241289

Variance of Beta (All Stocks): 0.2239017162

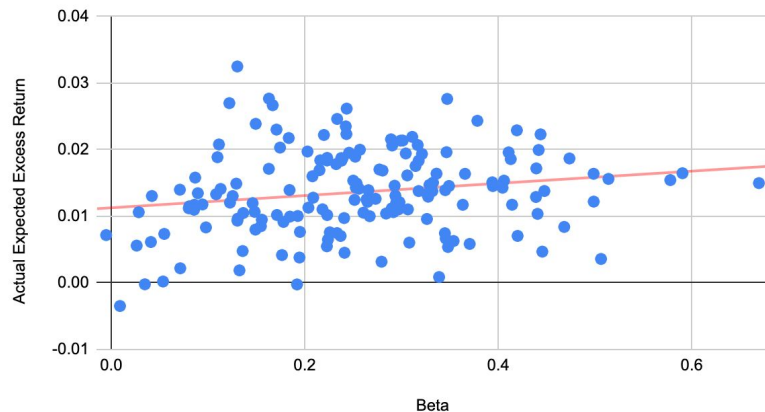
Actual Expected Excess Return (1-Month Treasury Bill): 0.001030320135

Actual Expected Excess Return (SP500): -0.001466103469

In the dataset, there is 1 stock with a negative beta.

# Beta of All Stocks

Actual Expected Excess Return vs. Beta (2011 - 2016)



Excess Return vs Beta	Slope	Intercept
Estimated Coefficient	-0.0005707960237	0.01373036019
Standard Error	0.001543357123	0.0006563129501
R^2	0.0008384499161	0.00636555778

Average Beta (All Stocks): 0.2788159783

Variance of Beta (All Stocks): 0.1037280515

Actual Expected Excess Return (1-Month Treasury Bill): 0.00004900819099

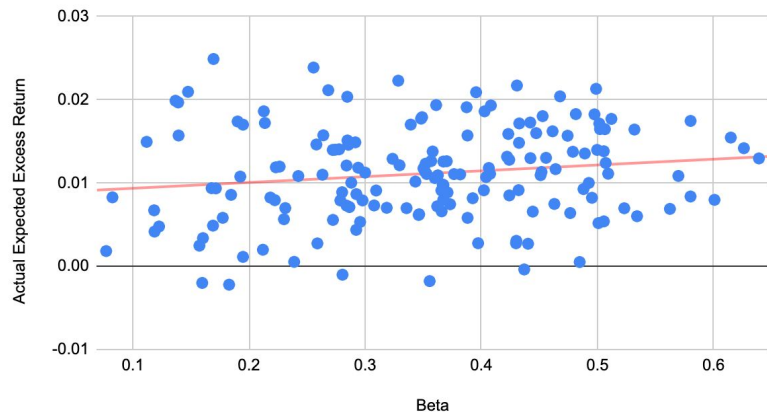
Actual Expected Excess Return (SP500): 0.009885591809

In the dataset, there is 1 stock with a negative beta.



# Beta of All Stocks

Actual Expected Excess Return vs. Beta (2017 - 2021)



Excess Return vs Beta	Slope	Intercept
Estimated Coefficient	0.00699462331	0.008667560648
Standard Error	0.003525465292	0.001318132728
R^2	0.02358005494	0.005632582333

Average Beta (All Stocks): 0.352594255

Variance of Beta (All Stocks): 0.01556461428

Actual Expected Excess Return (1-Month Treasury Bill): 0.00086325

Actual Expected Excess Return (SP500): 0.0123640014

In the dataset, there are 0 stocks with a negative beta.

# Beta of All Stocks

According to the trendline of the scatterplots for periods *2007-2011*, *2011-2016*, and *2017-2021*, larger beta values are generally associated with a higher average excess return. However, period *2002-2006* has a downward trendline, indicating larger beta values were not associated with a higher average excess return. The downward trendline could be explained by the shift in market conditions in the period of *2002-2006*. It can be seen from the range of the scatterplot that the beta values are not stable from one period to the next. Beta can be stable over certain time periods, but can also change over time, particularly during periods of market stress or volatility. Beta can explain a significant portion of a stock's return, particularly in the short term. However, over longer time horizons, other factors such as company-specific factors, industry trends, macroeconomic conditions, and other market anomalies can also play a significant role in determining a stock's returns.