

Introduction

Inflation is one of the most closely watched macroeconomic indicators in the United States, and it is always headlines on the news. When consumer prices rise faster than expected, markets quickly start pricing in changes to interest rates, corporate profits, and household purchasing power. All of these variables should, in theory, explain some of the movements in the stock market. The Consumer price index (CPI) measures inflation over time by looking at market prices, while the Standard and Poor 500 (S&P 500) represent the broader US economy and market. So, to what extent does CPI inflation affect and explain movements in the S&P 500?

Data Methods

I use monthly U.S. CPI data and S&P 500 index levels from standard public sources such as FRED and the Bureau of Labor Statistics. From these series I model the monthly CPI inflation rate (percent change in CPI) and the monthly S&P 500 return (percent change in the index).

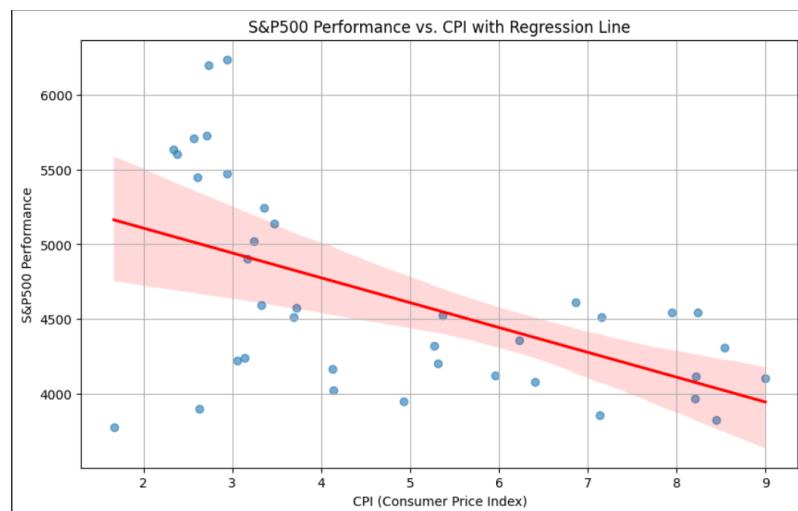


Figure 1 Shows S&P 500 returns against CPI inflation.

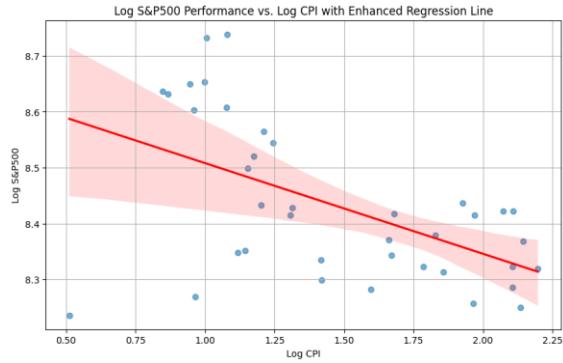


Figure 2 shows the Log of CPI and S&P500 compared.

This scatterplot shows us an apparent negative linear relationship between CPI and the S&P 500 performance, as shown by the red regression line. As the CPI values on the x-axis increase, the S&P500 values on the y-axis generally decrease. The red regression line clearly slopes downwards and suggests that periods of higher inflation are associated with a decline in the S&P500's market performance. However, the data points are somewhat spread around this regression line, suggesting that this trend isn't 100% caused by the CPI, but a collection of market factors like we suspected. Statistical methods and regressions can show us how closely tied they really are.

Statistical Methods

To quantify the relationship, I estimate ordinary least squares (OLS) regressions of S&P 500 returns on CPI inflation. My baseline model is

$$\text{S\&P500return}(t) = B(0) + B(1)\text{CPIinflation}(t) + \varepsilon(t)$$

I also estimate versions that include a lag of inflation and report robust standard errors to account for possible heteroskedasticity. ($\varepsilon(t)$)

Results

OLS Regression Results

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===== Dep.
Variable: SP500 R-squared: 0.290 Model: OLS Adj. R-squared: 0.270 Method: Least Squares F-statistic:
14.70 Date: Fri, 05 Dec 2025 Prob (F-statistic): 0.000488 Time: 01:05:03 Log-Likelihood: -295.23 No.
Observations: 38 AIC: 594.5 Df Residuals: 36 BIC: 597.7 Df Model: 1 Covariance Type: nonrobust
=====
coef std err t P>|t| [0.025 0.975] -----
Intercept 5440.7317 229.808 23.675 0.000 4974.659 5906.804 CPIAUCSL_PC1 -166.2841 43.372 -3.834
0.000 -254.246 -78.322
=====
Omnibus: 0.228 Durbin-Watson: 0.211 Prob(Omnibus): 0.892 Jarque-Bera (JB): 0.010 Skew: -0.040
Prob(JB): 0.995 Kurtosis: 2.997 Cond. No. 13.1
=====
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This model finds that every 1% increase in the cpi is associated with a roughly 166.28 decrease in S&P500 performance. This would happen by chance less than 1 percent of the time under the default null of no relationship ($p < 0.001$)."

Sources:

- <https://www.bls.gov/data/>
- <https://fred.stlouisfed.org>
- Gemini, HYPERLINK "https://gemini.google.com/,"<https://gemini.google.com/>, for assisting with editing code and simulating data.