Various Topics

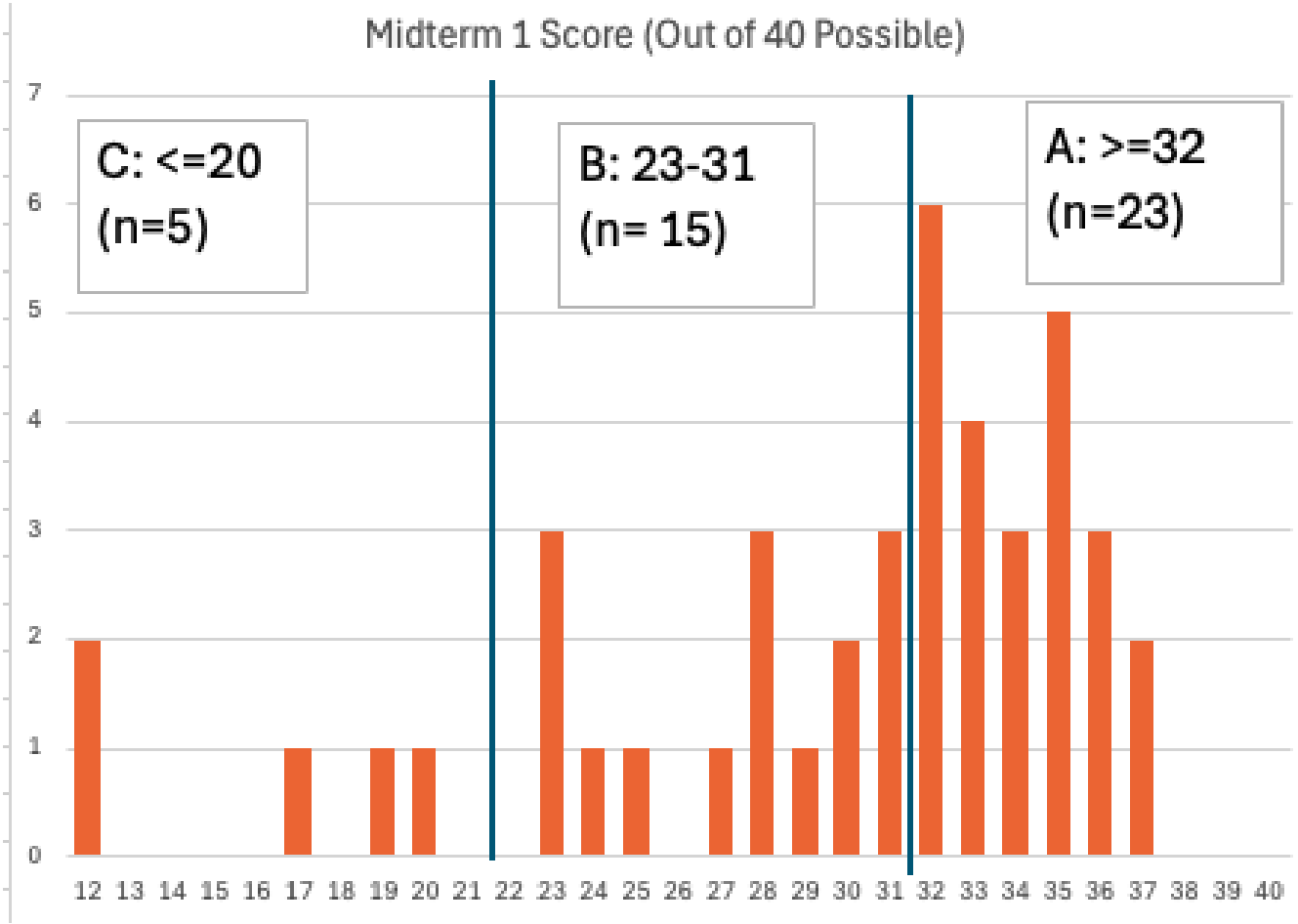
Econ 457

Week 7-a

Outline

1. Midterm
2. Stocks and Bonds Correlations
3. CAPM and Bond Yields
4. Regression in Excel

1. Midterm


Midterm 1 Score (Out of 40 Possible)
C: <=20
(n=5)
B: 23-31
(n= 15)
A: >=32
(n=23)
0
1
2
3
4
5
6
7
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

1. Midterm

Grading

Table: Grades for Econ 457

Item	Percent of Total
Homework	25%
Mid-term 1	20%
Mid-term 2	20%
Final	35%

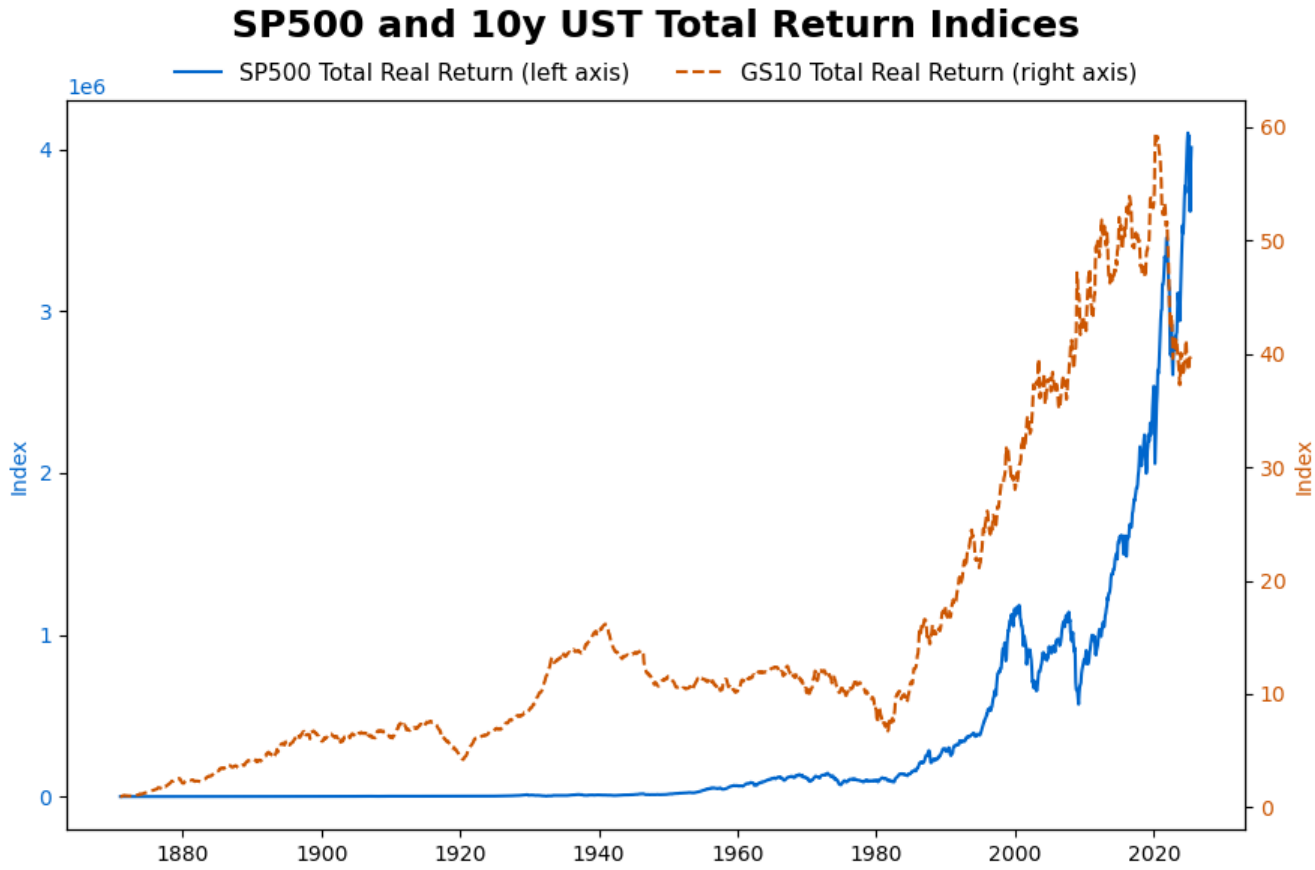
1. Midterm

Review Topics

1. Charts for each section
2. Standard Deviation of a two asset portfolio
3. EAR
4. Variance and Covariance

2. Correlations in Practice: SPY and US Treasuries

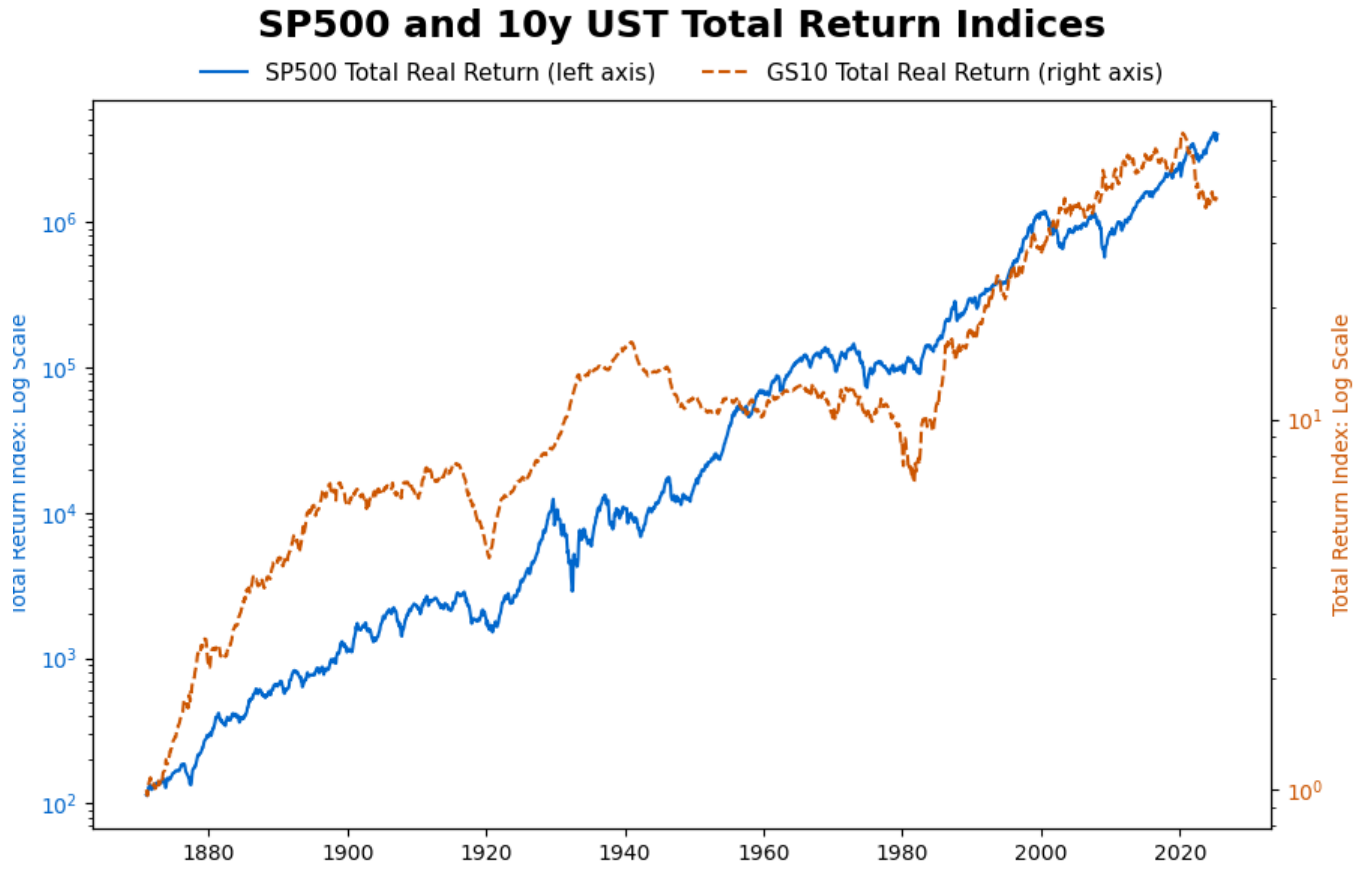
Total Return Indices



Data Source: Robert Shiller

2. Correlations in Practice: SPY and US Treasuries

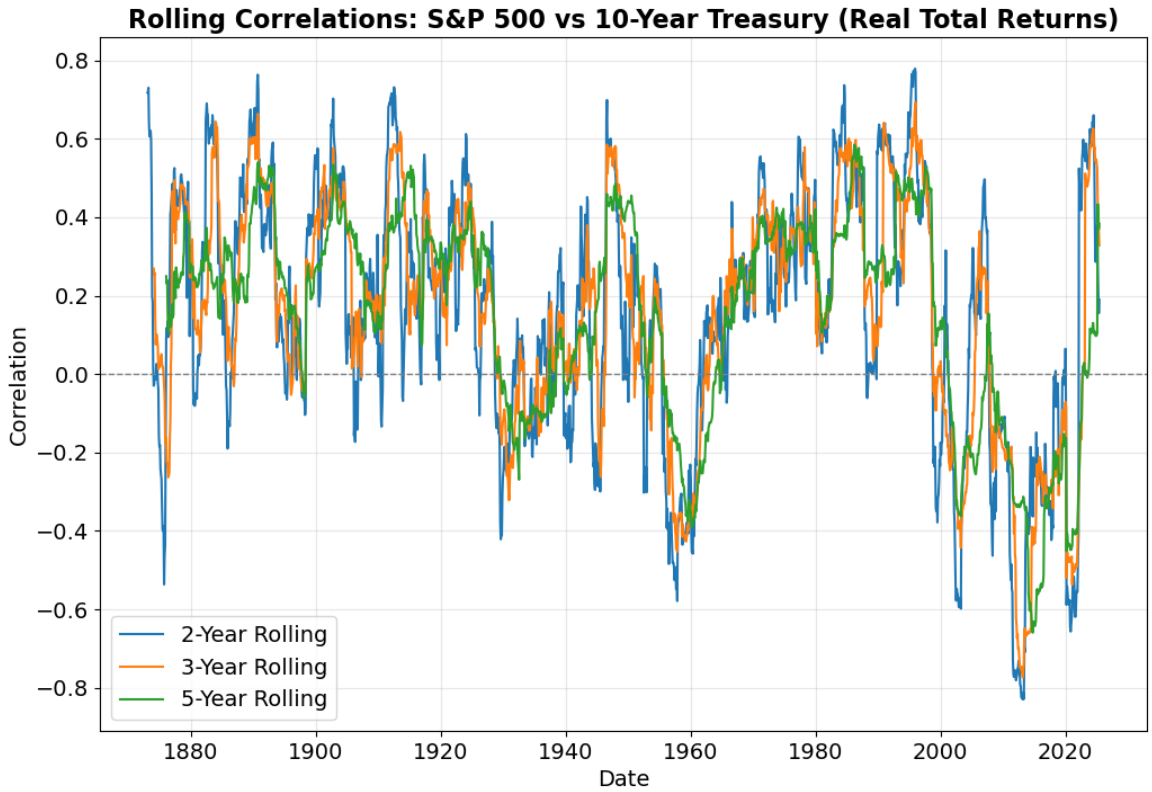
Total Return Indices - Log Scale



Data Source: Robert Shiller

2. Correlations in Practice: SPY and US Treasuries

Rolling Correlations



Data Source: Robert Shiller

2. Correlations in Practice: SPY and US Treasuries

Rolling Correlations

Preview from fixed income section: *bond prices and yields are inversely related.*

2. Correlations in Practice: SPY and US Treasuries

Rolling Correlations

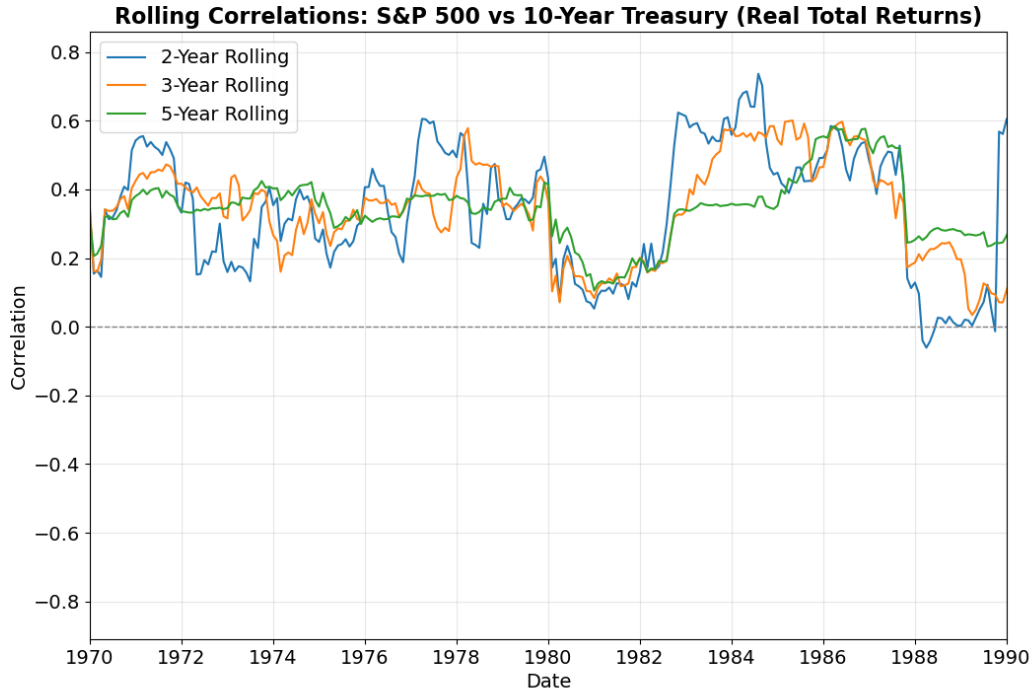
What drives the correlation between stocks and bonds?

- **Positive Correlation:**
  1. Inflation shocks: Higher (lower) inflation expectations lead to tighter (easier) monetary policy
  2. Higher (lower) discount rates reduce (increase) present value of future cash flows, lowering (raising) both stock and bond prices
- **Negative Correlation:**
  1. Growth shocks: Lower (higher) growth expectations reduce (increase) equity valuations while increasing (decreasing) demand for safe assets
  2. Monetary policy response: Growth concerns lead to easier (tighter) monetary policy, lowering (raising) bond yields while equity markets decline (rise)
  3. Safe haven demand: Economic uncertainty drives investors from risky stocks to safe government bonds

2. Correlations in Practice: SPY and US Treasuries

1970s and 1980s

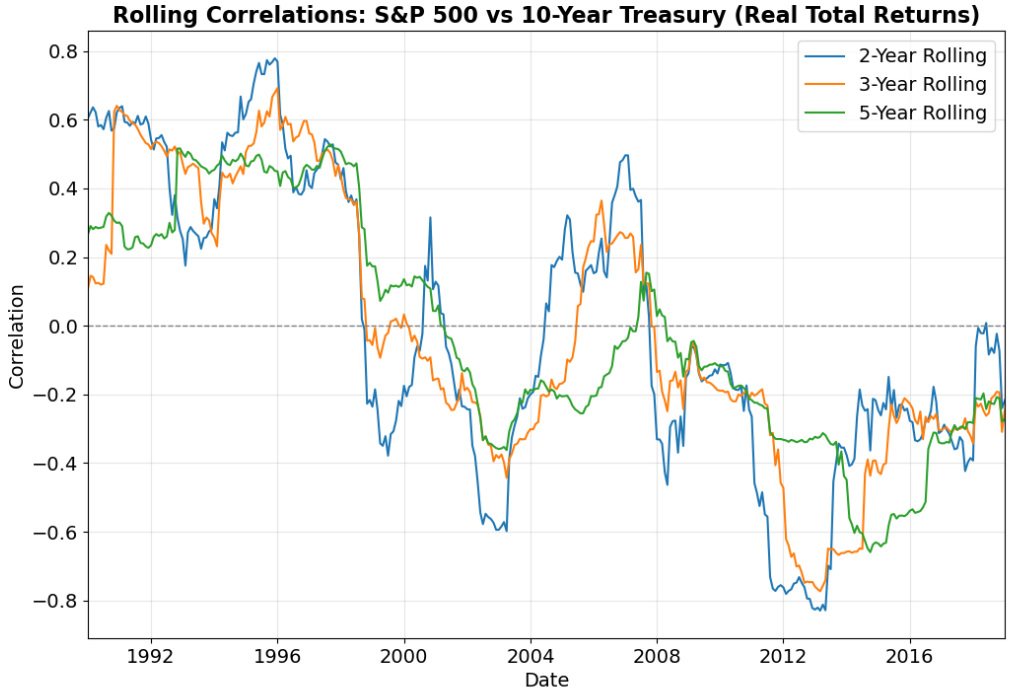
- Inflation shocks led to higher interest rates and lower equities, contributing to a *positive* correlation.
- Lower inflation allowed the Fed to ease policy in the 1980s, again contributing to *positve* correlation



2. Correlations in Practice: SPY and US Treasuries

2000s

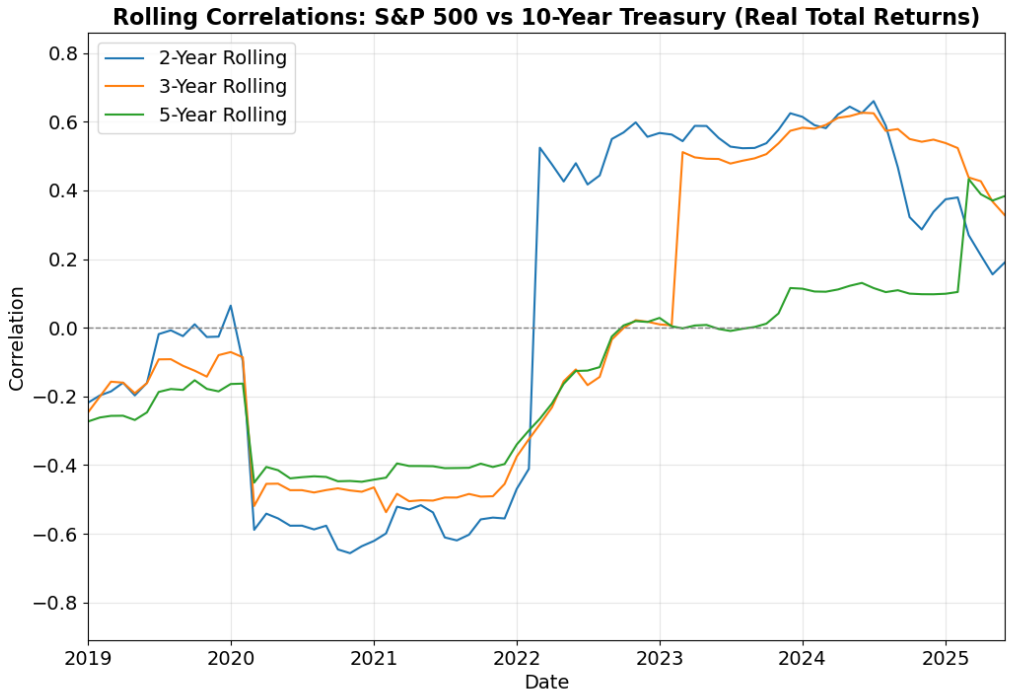
- Low and stable inflation started in the 1990s.
- Growth shocks and safe haven demand *negative* correlation in 2008.



2. Correlations in Practice: SPY and US Treasuries

2020s

- Safe haven demand drove *negative* correlation in 2020
- Inflation shock drove *positive* correlation in 2022



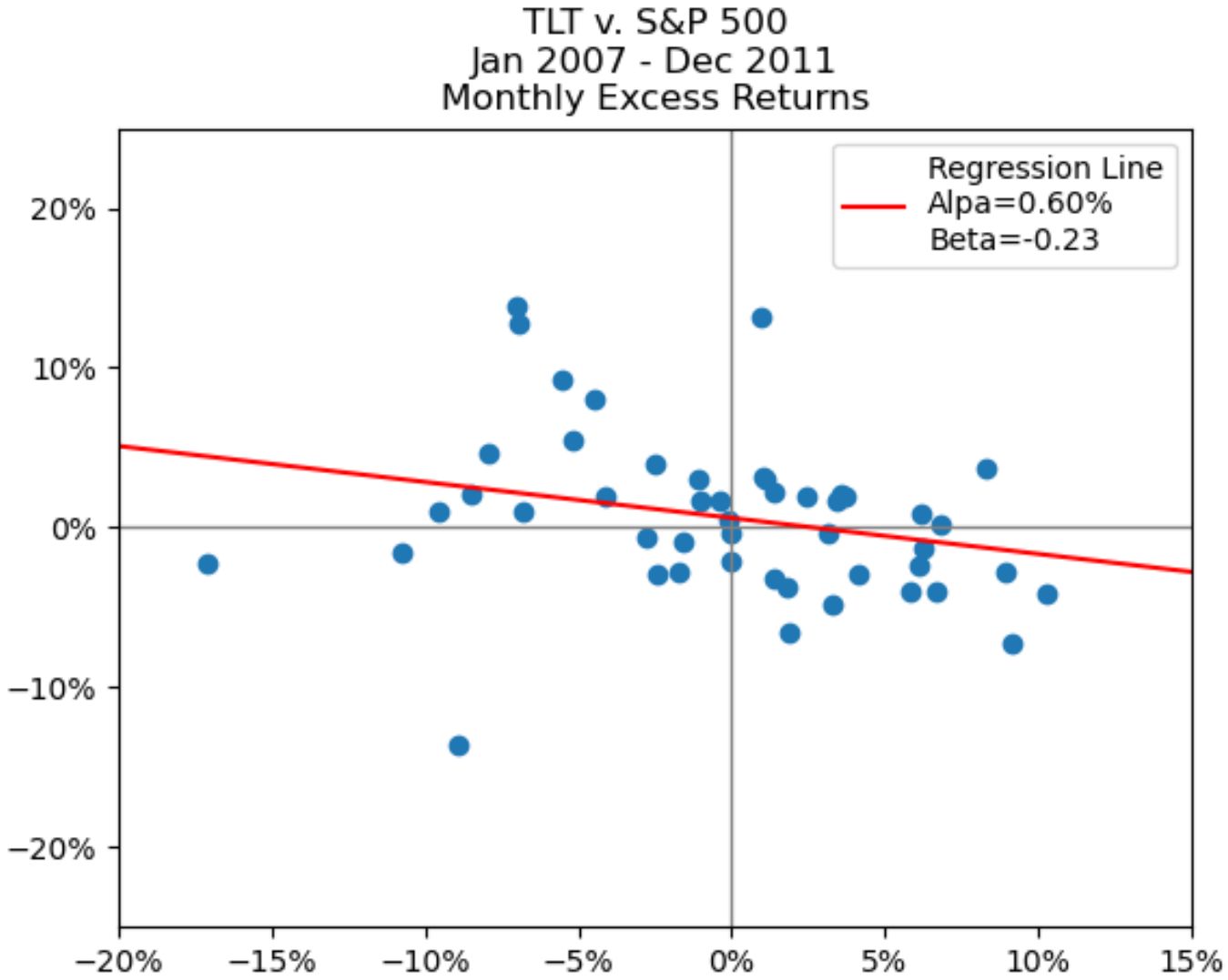
2. Correlations in Practice: SPY and US Treasuries

Takeaways

1. Correlations can and do change!
2. Correlations reflect the macro environment.
3. Correctly anticipating the correlations can greatly enhance returns.
4. Incorrectly anticipating the correlations can cause big problems.

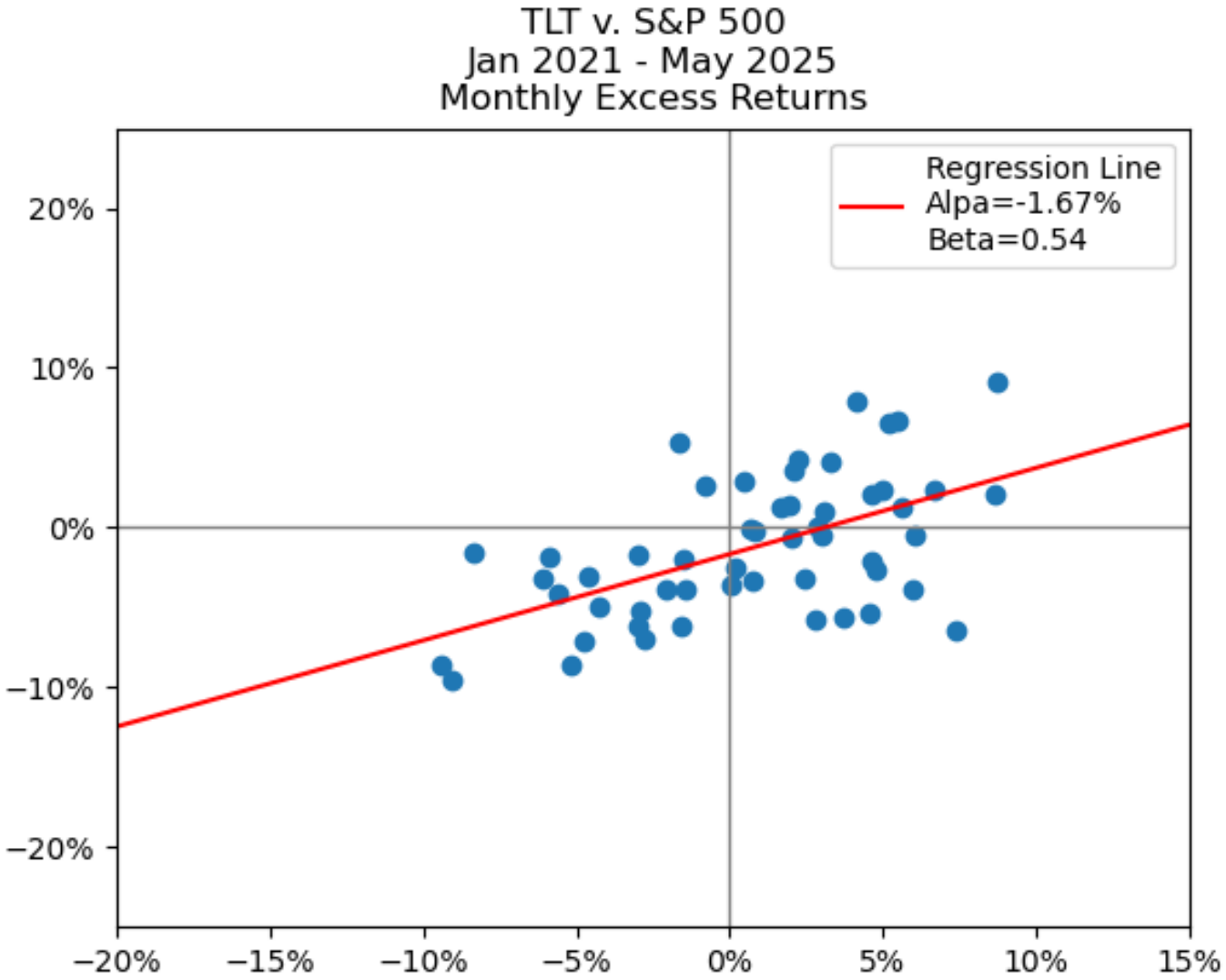
3. CAPM and Bond Yields

2007-2011



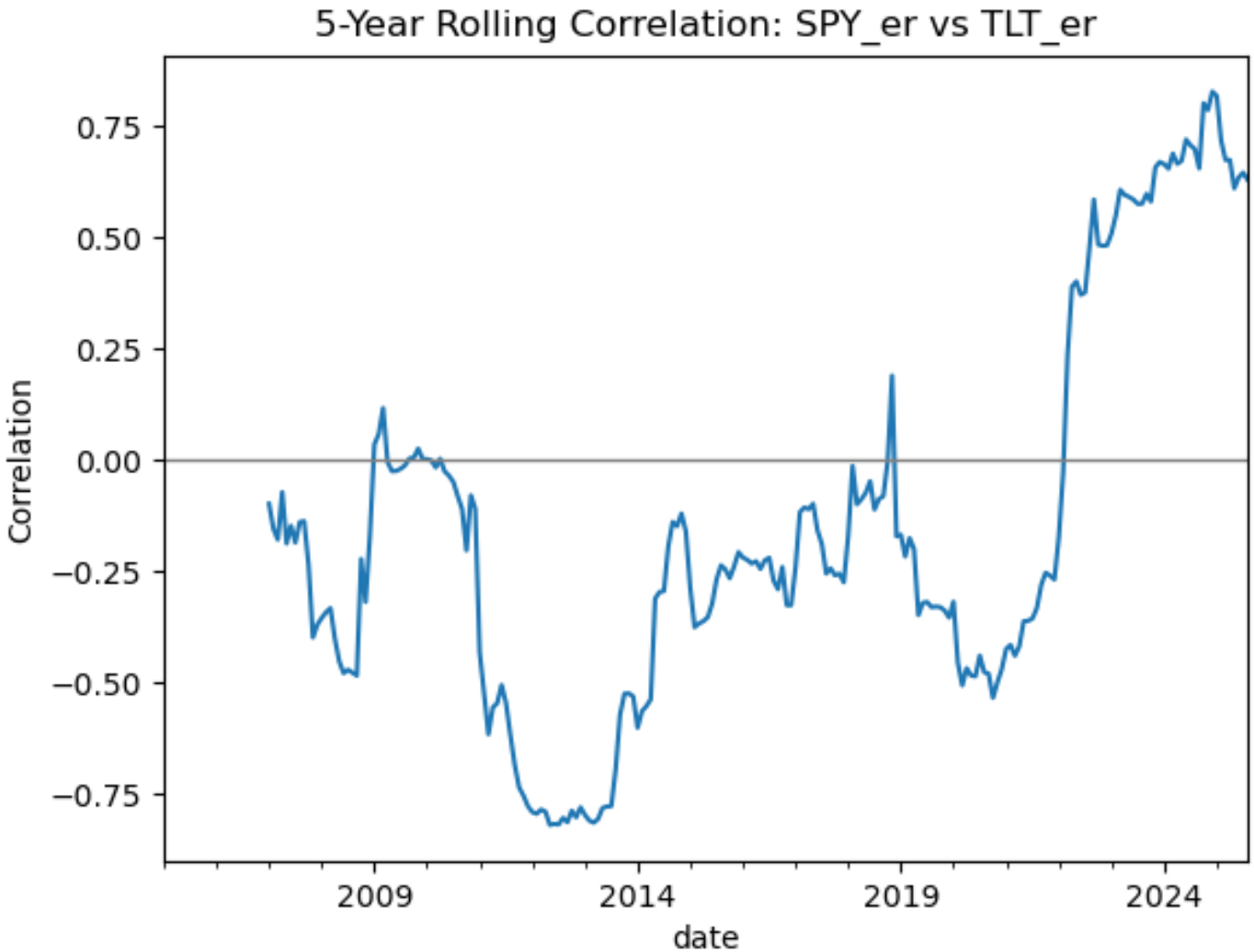
3. CAPM and Bond Yields

2021-2025



3. CAPM and Bond Yields

Rolling Correlations



3. CAPM and Bond Yields

Implications for Bond Yields

If bond returns are negatively correlated with the S&P, then the expected return of bonds will be *less* than the return on the risk-free rate.

In contrast, a positive correlation between bond returns and S&P returns would be associated with expected bond returns *higher* than the return on the risk-free rate.

Conclude: The sharp change in correlations in 2021-2022 likely contributed to the increase in bond yields during that time.

3. CAPM and Bond Yields

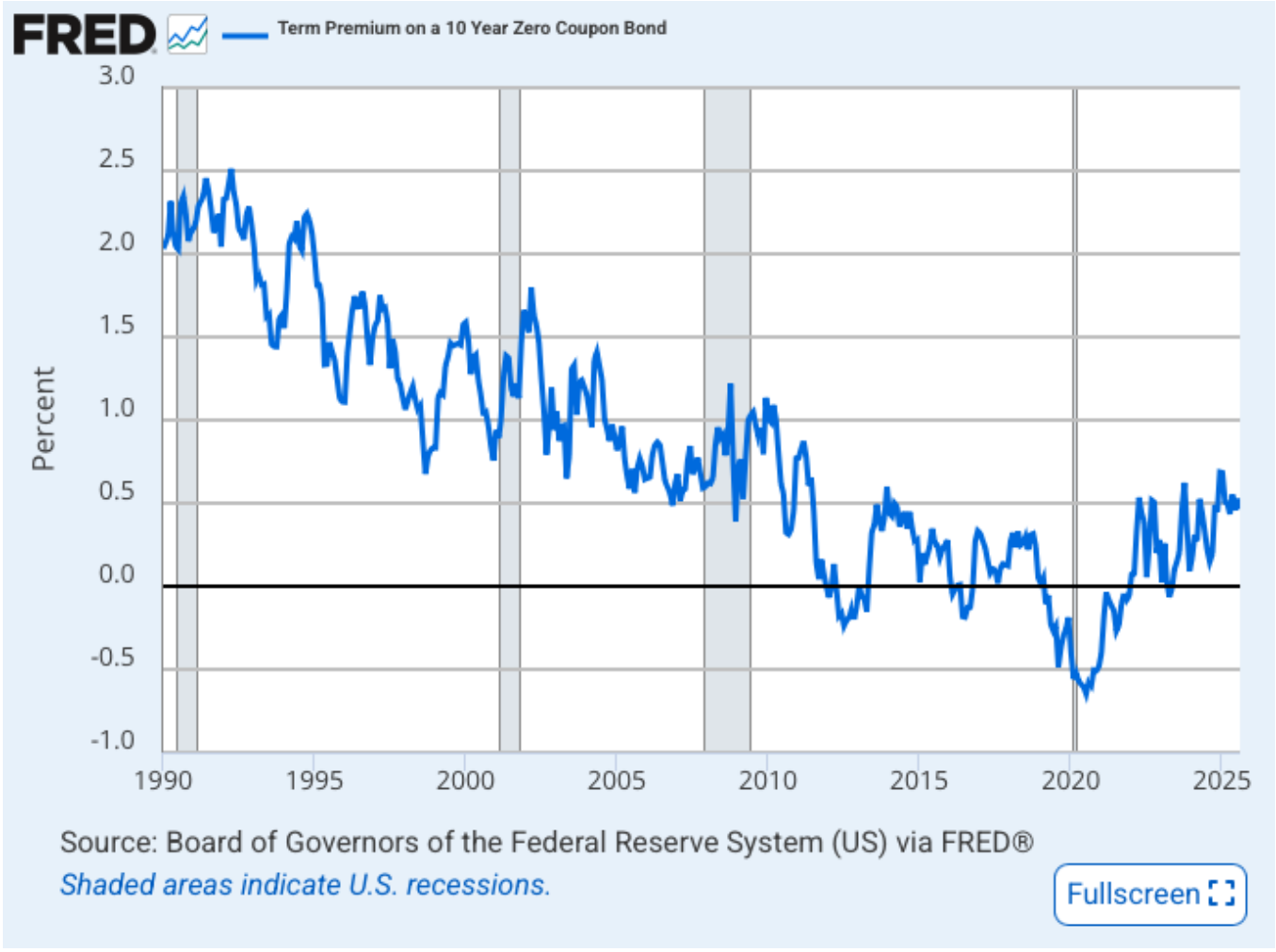
Term Premium

Term premium models attempt to estimate the expected return of Treasury bonds in excess of the risk-free rate over the life of the bond.

These models depend on a number of assumptions and complicated mathematics. They are unlikely to be used as trading tools, but nevertheless can be useful in characterizing the drivers of changes in prices and yields.

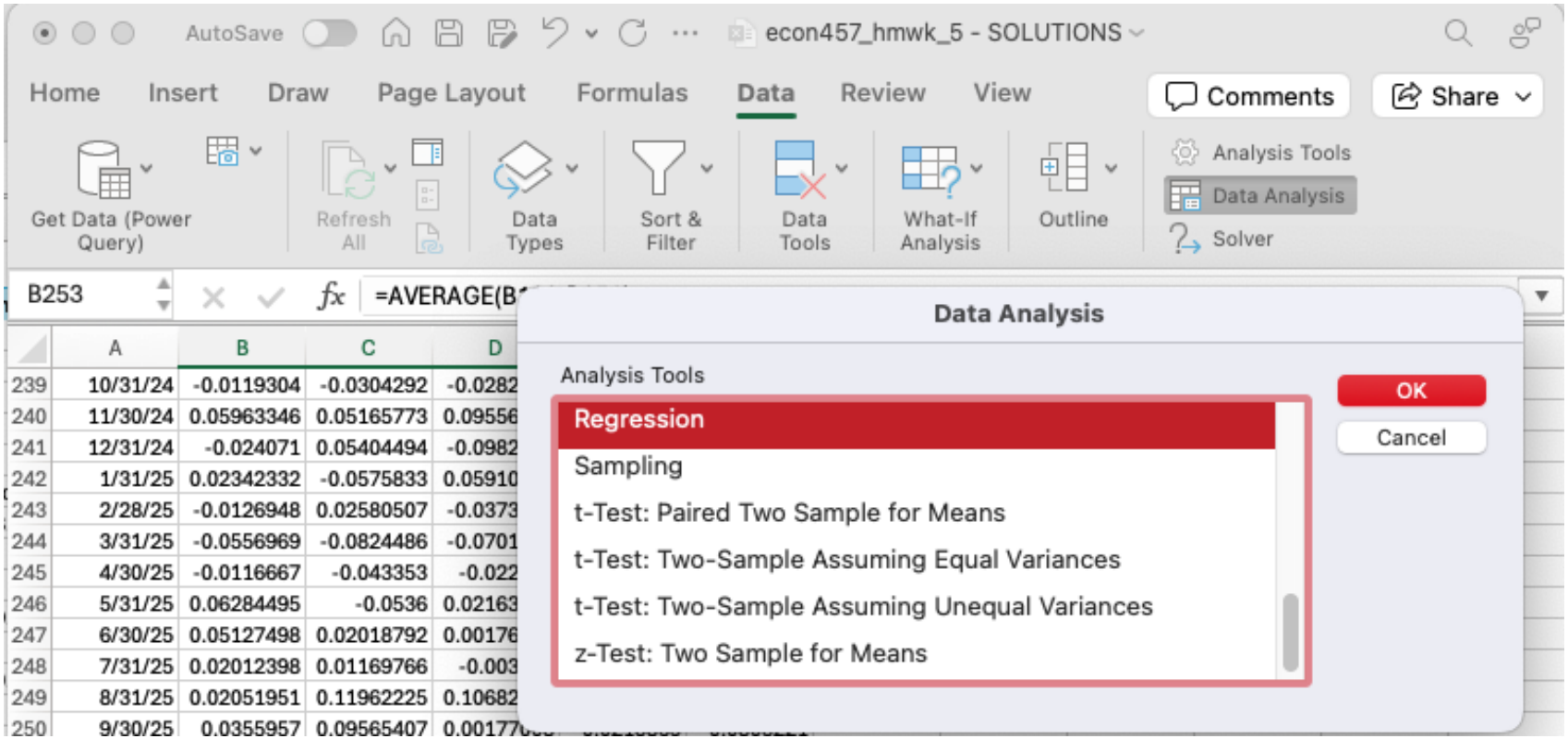
3. CAPM and Bond Yields

Term Premium



4. Regression

MS Excel



4. Regression

MS Excel

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.68996203							
R Square	0.47604761							
Adjusted R Square	0.47160733							
Standard Error	0.0391565							
Observations	120							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.16437971	0.16437971	107.211301	2.8878E-18			
Residual	118	0.18092128	0.00153323					
Total	119	0.34530099						
	Coefficients	*Standard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00846944	0.00370113	2.2883399	0.02389758	0.0011402	0.01579867	0.0011402	0.01579867
X Variable 1	1.0461308	0.10103357	10.354289	2.8878E-18	0.84605682	1.24620477	0.84605682	1.24620477