

Stock Returns and Safe Interest Rates: An Empirical Analysis, 2001 – 2019

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Study Objectives:

1. Determine the relationship between safe interest rates and stock returns.
2. Determine if there was a 2008 recession effect in the relationship between stock returns and safe interest rates

Period of Analysis: 2001 – 2019

Safe Interest Rates = 10- and 20-year Treasury Notes and Bonds

Research Design:

Develop Regression Models:

- $Y = \text{S\&P 500 Index (SPY – SPDR S\&P 500 Trust ETF)}$
- $X_1 = 10 \text{ YR Treasury Notes (T10)}$
- $X_2 = 20 \text{ YR Treasury Bond (T20)}$

Model Specifications:

- $\text{LN SPY}_T = A + B (\text{LN T10}_T)$
- $\text{LN SPY}_T = A + B (\text{LNT20}_T)$
- $A, B = \text{Equation Parameters}$
- $T = \text{Time in Quarters Annualized}$

Time Periods:

1. 2001 – 2019
2. 2001 – 2007
3. 2009 – 2019

Research Outcome:

Regression Model Log-Log (1)

$$Y = \text{SPY} \mid X = \text{T20}$$

Periods	R ²	B Coefficient	T-Stat
2001 - 2019	0.7803	-1.2183	-16.1018
2001 - 2007	0.7006	-3.6082	-7.6483
2009 - 2019	0.9715	-2.1214	-38.2596

Regression Model Log-Log (2)

$$Y = \text{SPY} \mid X = \text{T10}$$

Periods	R ²	B Coefficient	T-Stat
2001 - 2019	0.5186	-0.6705	-8.8673
2001 - 2007	0.0169	-0.1344	-0.6551
2009 - 2019	0.5361	-1.3624	-7.0498

1. When T10 and T20 are declining over time:
 - $\Delta \text{SPY} = -B * -\Delta \text{T10}$ and $\Delta \text{SPY} > 0$
 - $\Delta \text{SPY} = -B * -\Delta \text{T20}$ and $\Delta \text{SPY} > 0$
2. Regression coefficients are elasticity coefficients. They are interpreted to mean a 1% change in T10 or T20 results in a B percent change in SPY. If T10 and T20 are declining, the B percent change generates a positive change in SPY. If T10 and T20 are increasing, then the change in SPY is negative.