



Title: U.S. Govt. Debt, Safe Rates and Stock Returns: An Empirical Analysis, 2009 - 2021

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Study Objective: In this study, I test 3 hypotheses:
(1) U.S. government debt is inversely related to safe interest rates, (2) safe interest rates are inversely related to stock returns, and (3) safe interest rates are a priced-in risk factor in the equity markets

Research Design:

Two Step Regression Model:

(1) $LNSR(t) = A + B (LN D(t))$

(2) $LNS(it) = A + B (LNSR(t))$

Portfolio Weighting Model:

(1) $LNS(it) = A(i) + B(i) (LNSR(t))$

(2) $WI(it) = Bi / \sum Bi$

(3) $DI(it) = WI(it) * \$1,000,000$

(4) $SHRS(it) = DI(it) / P(it)$

(5) $MVi (t+1) = SHRS(it) * Pi (t+1)$

(6) $PV(t) = \sum MVi (t+1)$

Where:

S_i = S&P Sector (XLY, XLV, XLK, XLI, XLP, and XLF)

A, B = Parameters

SR = Predicted values, safe rates

SR = T20 Government Bond

W_{li} = Portfolio weight

D_{li} = Dollars invested

$SHRS_i$ = shares held

MV_i = Market Value

PV = Portfolio Value

t = 2009

t + 1 = 2010

Table 1:

	Total	T20 Log-Log Models		
	Public Debt	FR Debt	PR Debt	FOR Debt
R^2	0.97619994	0.79647048	0.98260887	0.86706306
B Coeff.	-0.6893688	-0.3041893	-0.7552761	-0.8085947
T-Stat	-41.996646	-12.971953	-49.290212	-16.746989

Table 2:

Public Held Debt Predicted T20 Model			
Sector:	R^2	B Coeff.	T Stat
XLI	0.937804825	-2.225441138	-25.463149
XLV	0.919087686	-2.474819722	-22.10066753
XLY	0.972405378	-2.962948699	-38.92652908
XLK	0.921134967	-2.615432803	-22.41060682
XLP	0.948541879	-1.760047937	-28.15370267
XLF	0.847134748	-1.972997041	-15.43675768

Table 3:

Total Public Held Debt Predictive T20 Model Cumulative Returns			
Sector	2009 - 2019	2009 - 2020	2009 - 2021
SPY	256.7%	307.6%	424.7%
XLY	481.5%	639.7%	846.4%
XLK	494.9%	735.8%	1028.3%
XLV	283.7%	319.7%	430.7%
XLI	247.9%	271.9%	351.8%
XLP	163.8%	174.4%	221.6%
XLF	202.8%	183.9%	282.6%
Total Return	332.80%	420.10%	570.50%

Conclusion:

Debt is inversely related to safe rates.
Safe rates are inversely related to sector indexes.
Safe rate portfolio weighting model outperforms the market (SPY)