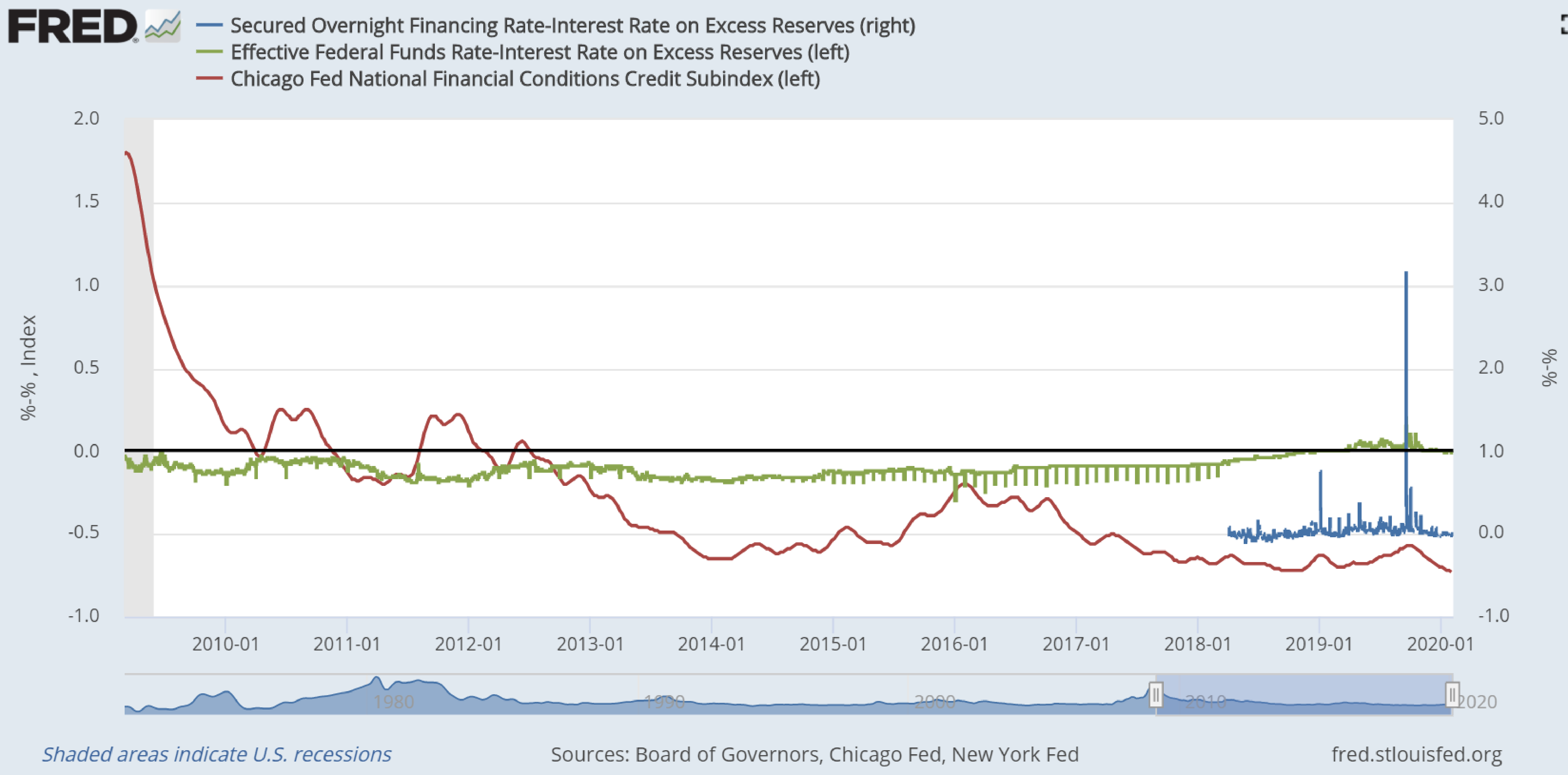
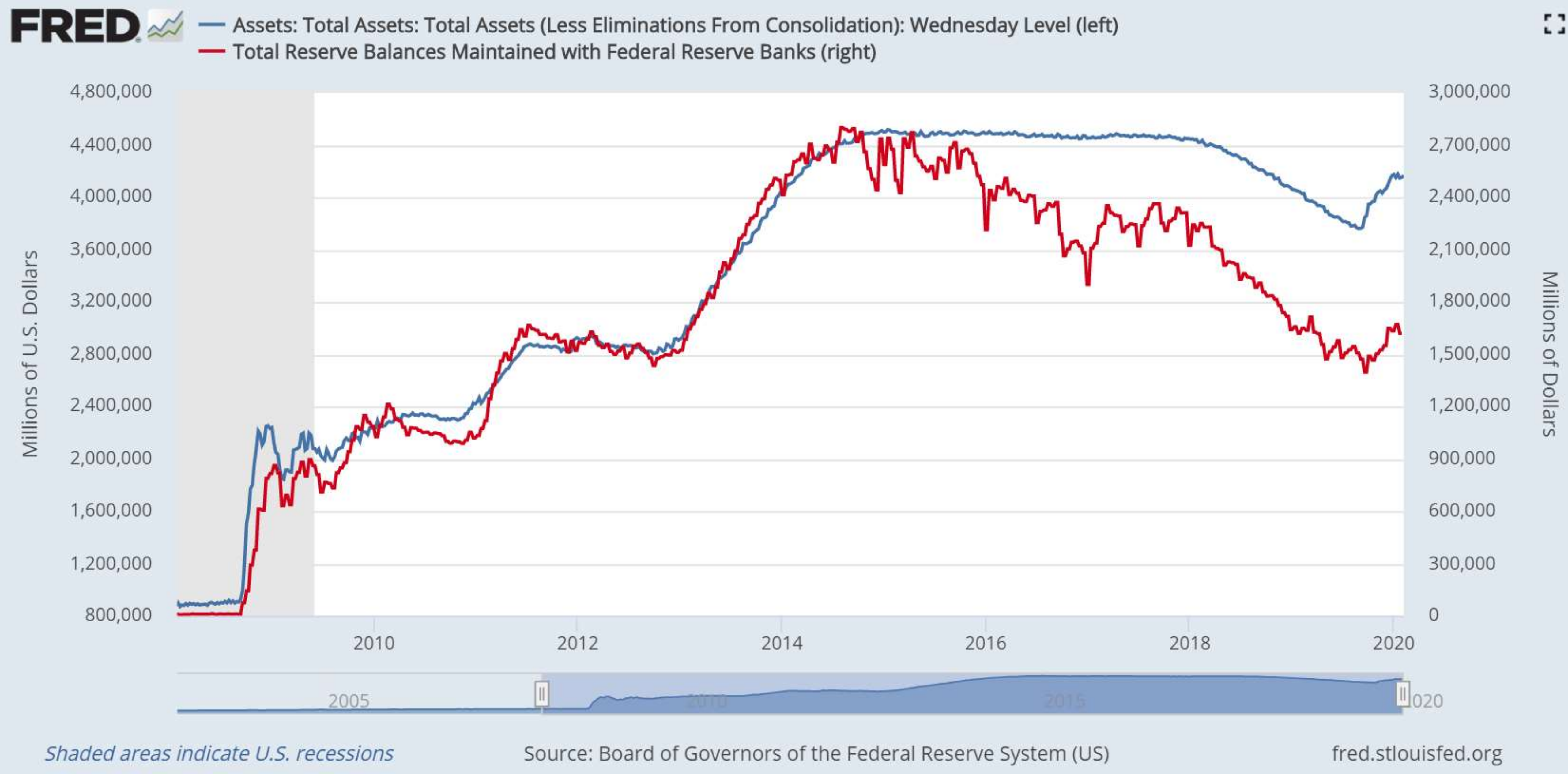
Market Update

2-22-2020

Repo crisis averted

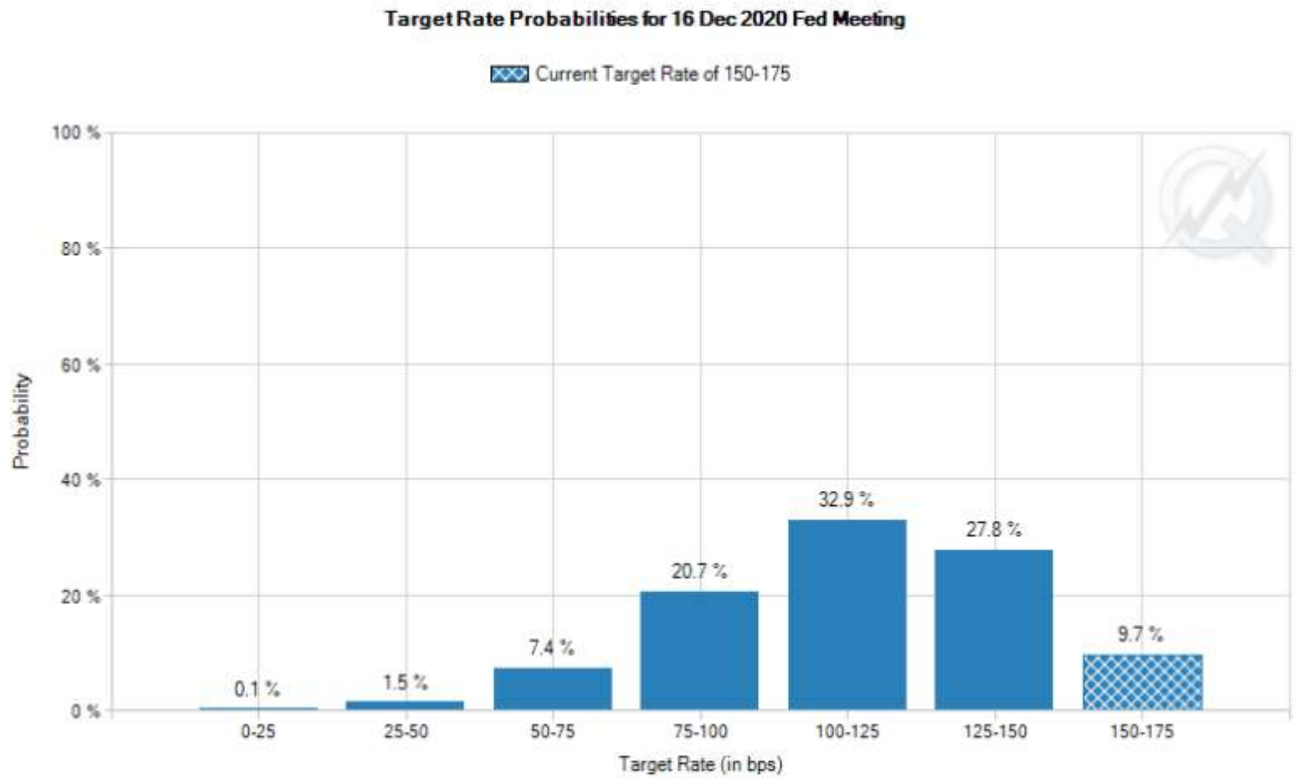


Bank reserves & Fed balance sheet trading back up



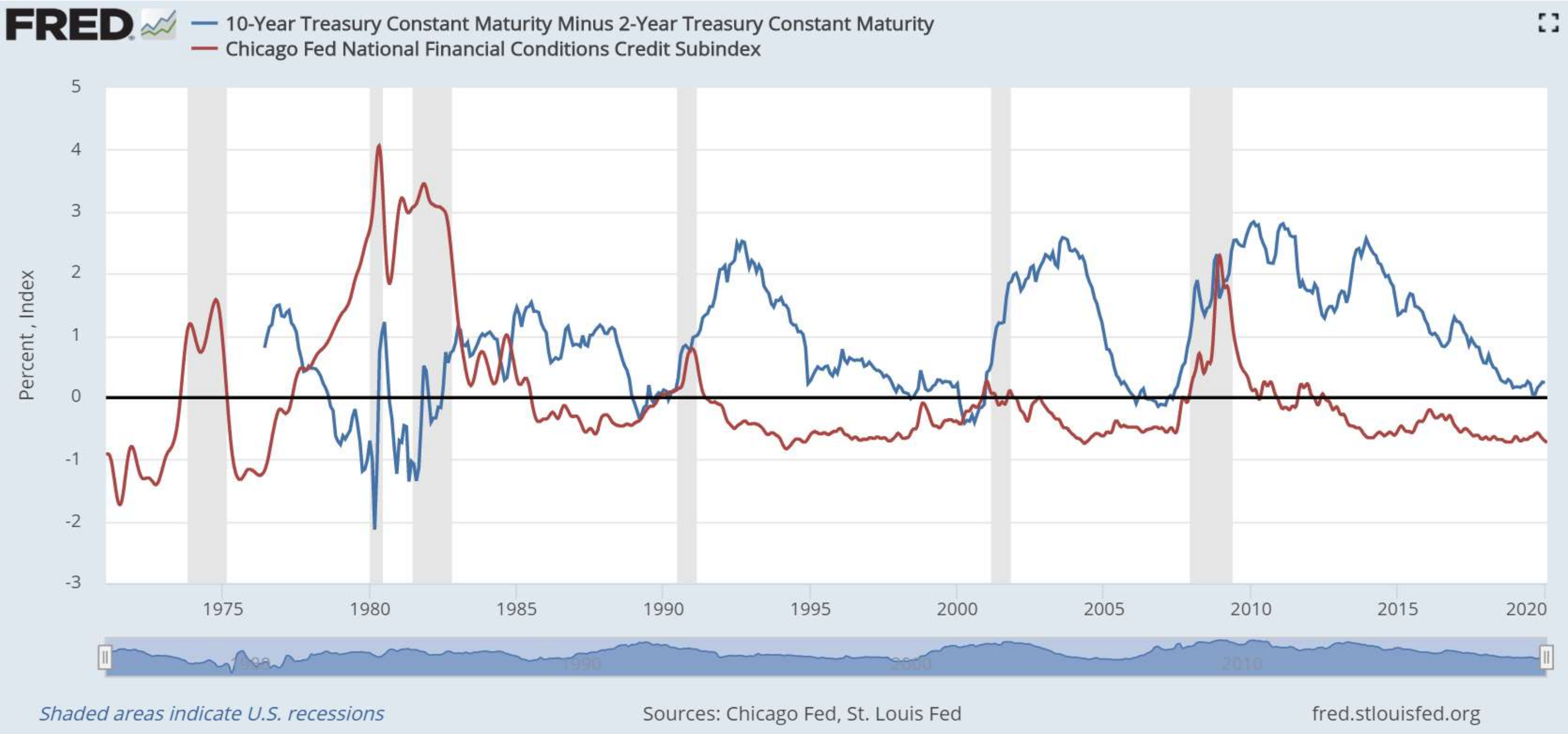
Fed to continue repo liquidity until April

- “we expect to continue offering repos at least through April to ensure a consistently ample supply of reserves.” Jay Powell FOMC on Jan 29
- No issue but worth checking if the repo markets shows signs of stress in Q2.
- Pre FOMC 60% chance of rate cut in 2020
- Post FOMC 80% chance of rate cut

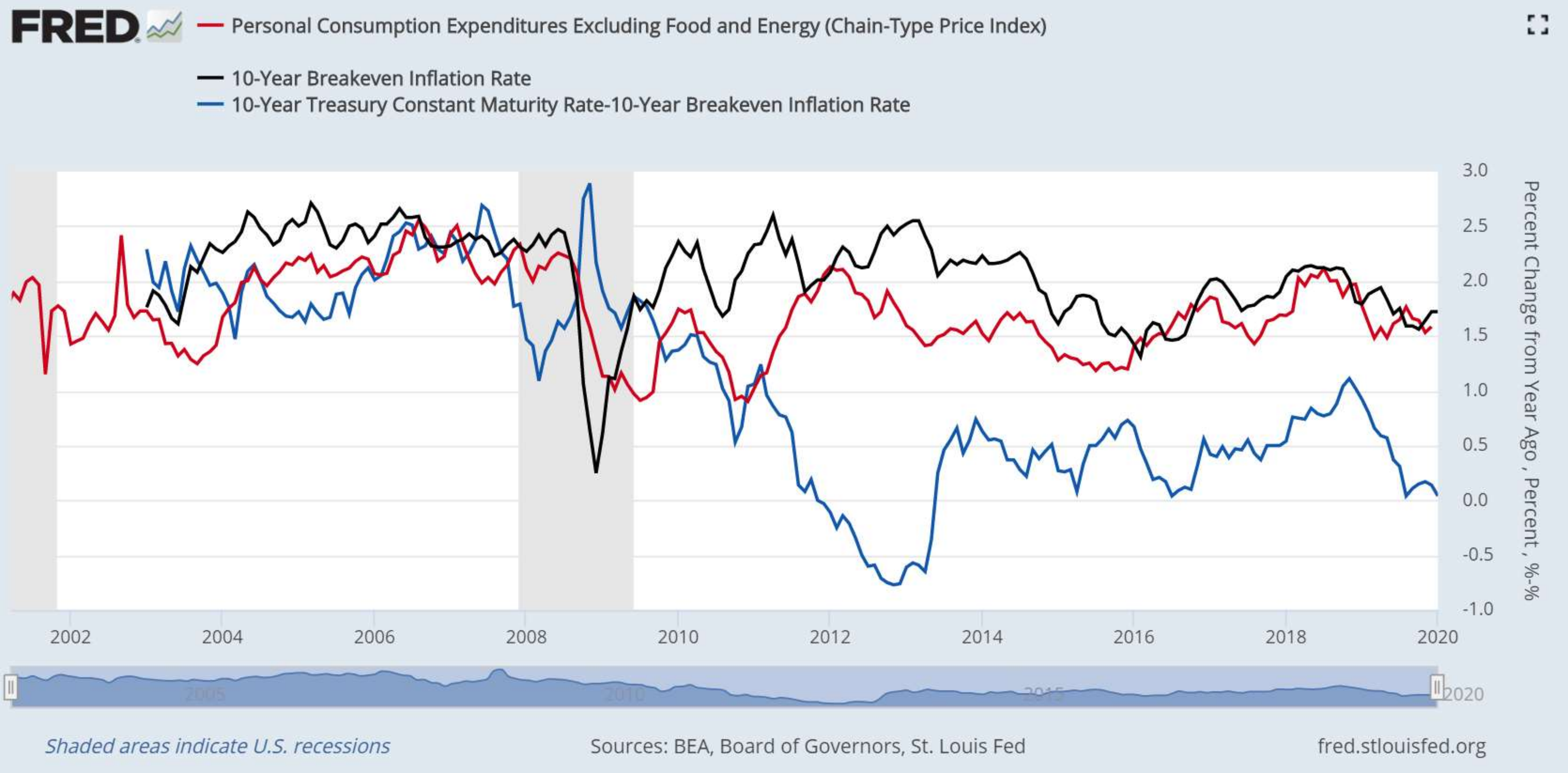


TARGET RATE (BPS)	PROBABILITY(%)			
	NOW *	1 DAY 21 FEB 2020	1 WEEK 14 FEB 2020	1 MONTH 22 JAN 2020
0-25	0.1%	0.1%	0.0%	0.0%
25-50	1.5%	1.5%	0.5%	0.1%
50-75	7.4%	7.4%	3.4%	0.7%
75-100	20.7%	20.7%	13.1%	5.1%
100-125	32.9%	32.9%	29.4%	19.1%
125-150	27.8%	27.8%	35.6%	38.1%
150-175 (Current)	9.7%	9.7%	17.9%	32.7%
175-200	0.0%	0.0%	0.0%	4.2%

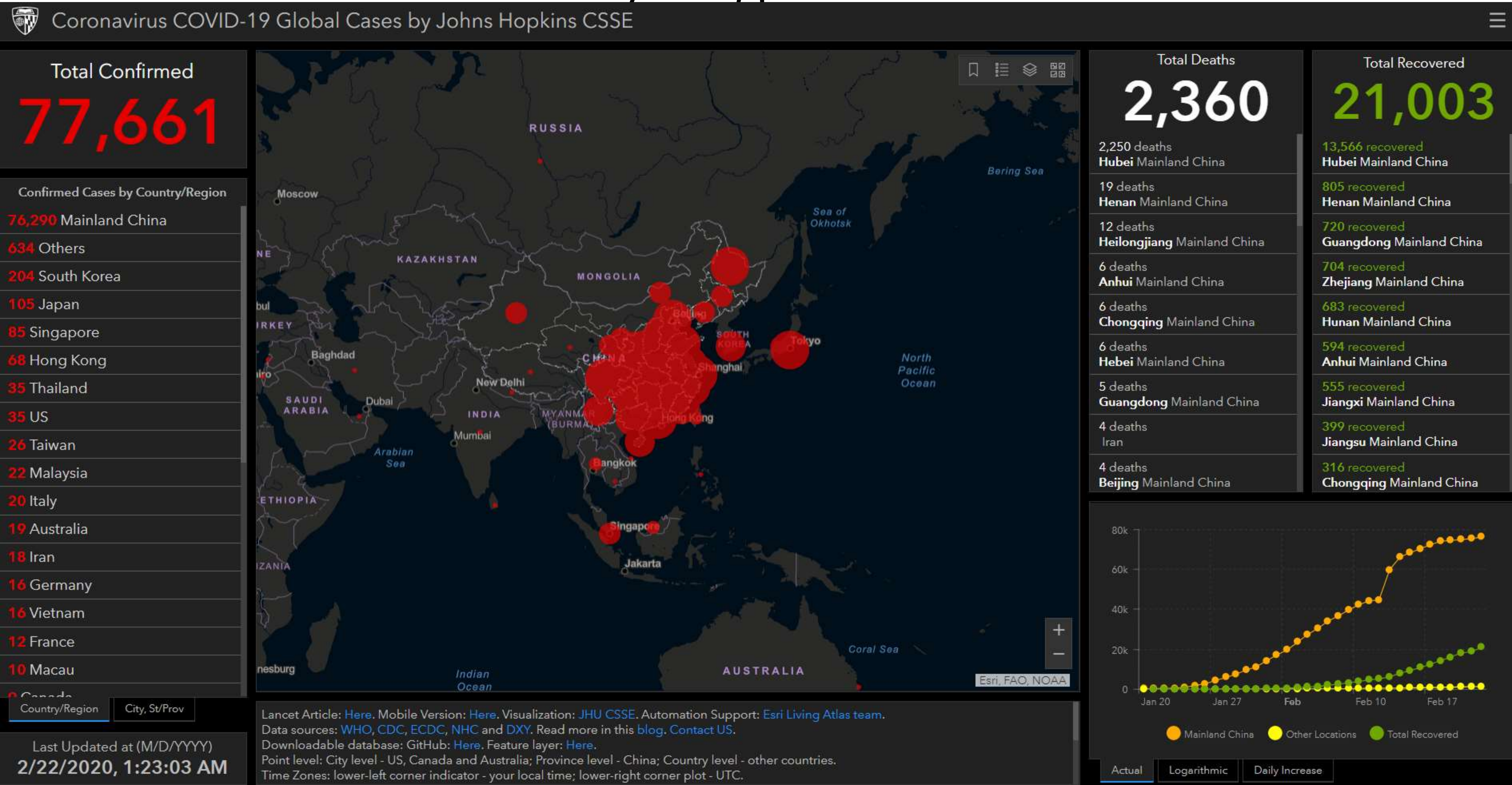
Credit conditions easiest since 1994



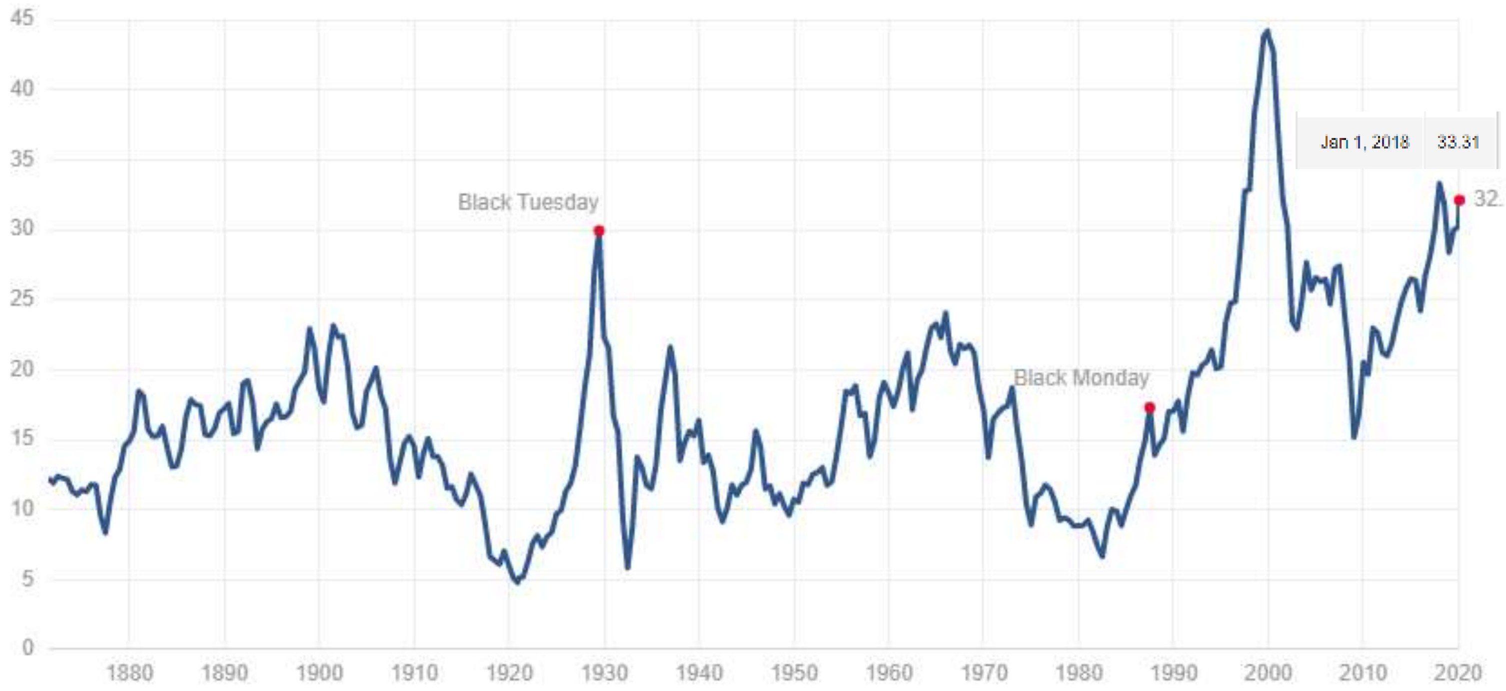
Inflation gives room to the Fed : 10y breakeven 1.72%



Coronavirus mostly negative on Chinese GDP



Coronavirus had big effect on China

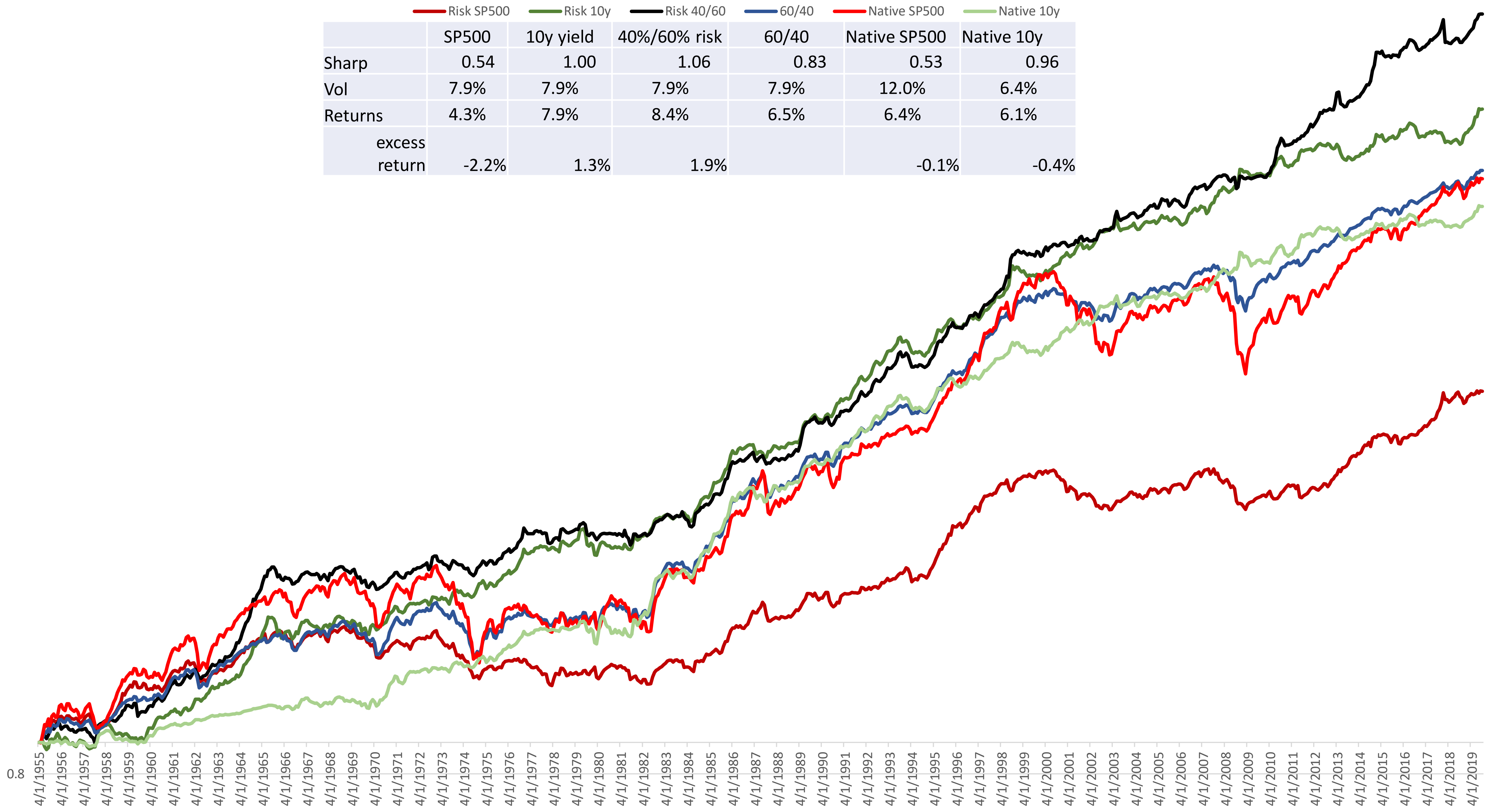


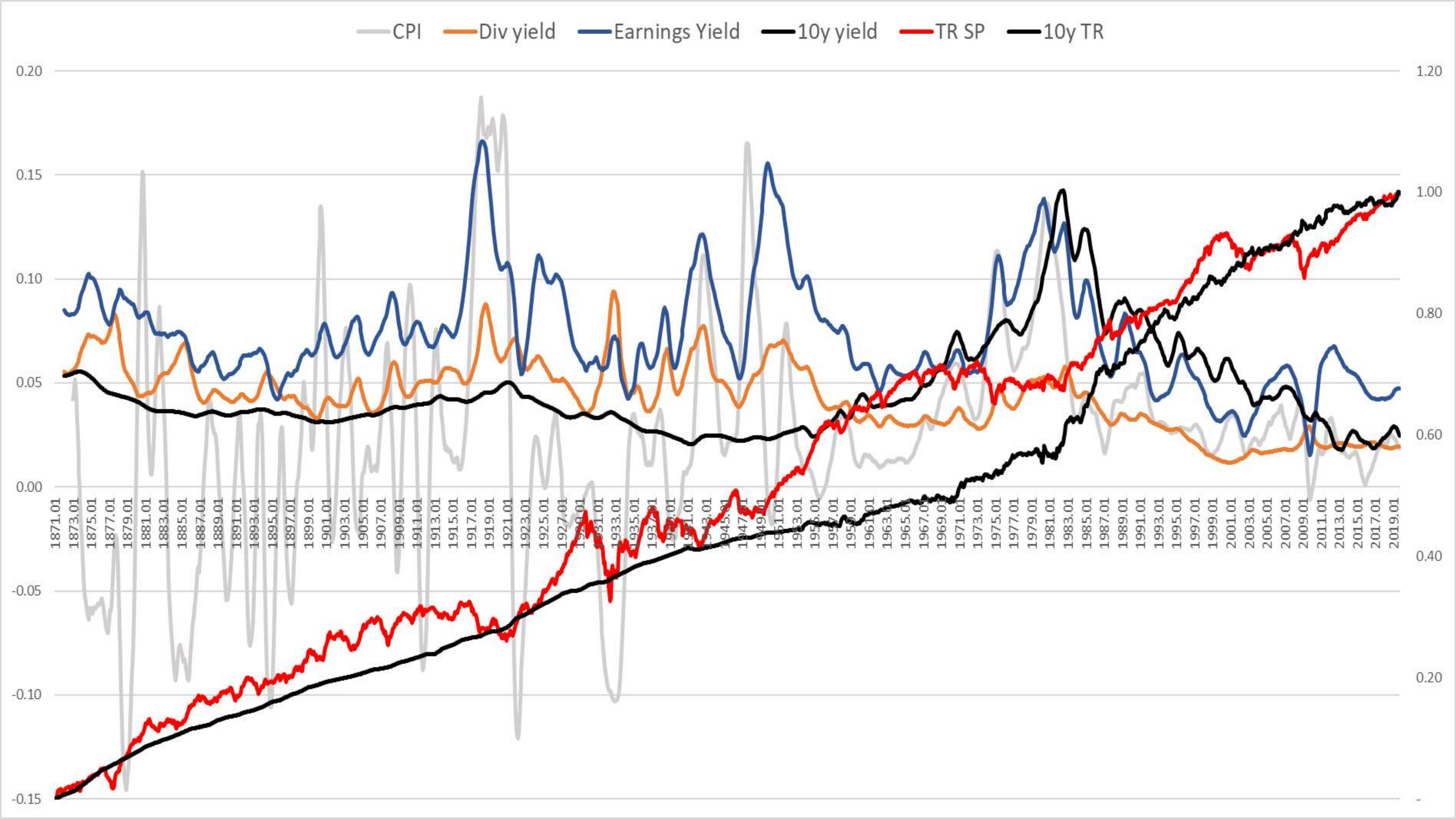
SP500 would be back to 33.31 CAPE when SP500 hits about 3500 without any earnings growth

Coronavirus effect small on SP500

60/40
risk adjusted

	SP500	10y yield	40%/60% risk	60/40	Native SP500	Native 10y
Sharp	0.54	1.00	1.06	0.83	0.53	0.96
Vol	7.9%	7.9%	7.9%	7.9%	12.0%	6.4%
Returns	4.3%	7.9%	8.4%	6.5%	6.4%	6.1%
excess return	-2.2%	1.3%	1.9%		-0.1%	-0.4%




CPI
Div yield
Earnings Yield
10y yield
TR SP
10y TR
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
1.20
1.00
0.80
0.60
0.40
0.20
-

Bridgewater Estimate of Discounted Expected Returns (the lower the level, the lower the hurdle to beat to have positive returns)

	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	Now
Est. Discounted Earnings Growth	-7.3%	-0.3%	-4.0%	-8.2%	0.2%	2.5%	-0.3%	3.3%	5.0%	0.4%	0.1%
Breakeven Inflation	3.1%	0.7%	0.3%	0.7%	1.5%	4.0%	8.3%	4.7%	2.3%	2.5%	1.9%

Asset Class Nominal Returns by Decade

	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Stocks	17%	-2%	9%	18%	8%	5%	17%	18%	0%	13%
Bonds (at Equity Vol)	15%	37%	31%	-7%	-3%	4%	12%	10%	10%	8%
Gold	0%	5%	1%	-1%	0%	30%	-3%	-3%	15%	2%
Silver	-6%	-3%	8%	2%	7%	27%	-12%	0%	13%	-1%
Commodities	-4%	-2%	8%	0%	1%	15%	-1%	2%	12%	0%

Asset Class Real Returns by Decade

	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Stocks	18%	0%	4%	16%	5%	-2%	11%	14%	-2%	12%
Bonds (at Equity Vol)	16%	39%	24%	-9%	-6%	-4%	7%	7%	7%	7%
Gold	1%	8%	-4%	-3%	-2%	21%	-7%	-6%	12%	1%
Silver	-5%	-1%	2%	0%	4%	18%	-17%	-3%	10%	-3%
Commodities	-3%	0%	3%	-2%	-1%	7%	-6%	-1%	9%	-2%

Economic Activity and Interest Rates, Average over Each Decade

	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Real Growth	3.9%	1.8%	5.1%	4.1%	4.2%	3.3%	3.2%	3.3%	1.8%	2.3%
T-Bill Yield	4.0%	0.6%	0.5%	2.1%	4.2%	6.7%	9.5%	5.1%	2.8%	0.5%
Bond Yield	4.1%	3.0%	2.0%	3.0%	4.8%	7.7%	10.9%	6.8%	4.5%	2.5%
Unemployment	4.5%	16.2%	5.5%	4.5%	4.8%	6.2%	7.3%	5.8%	5.5%	6.5%
Inflation	-1.1%	-2.1%	5.4%	2.3%	2.6%	7.5%	5.0%	2.9%	2.5%	1.7%

Average Annual Nominal Debt Growth in Each Decade (USD)

	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Total Debt	4%	1%	13%	6%	7%	11%	11%	7%	7%	3%
Public Debt	0%	3%	18%	3%	5%	9%	11%	4%	7%	6%
Private Debt	7%	-1%	6%	11%	9%	12%	12%	8%	7%	1%

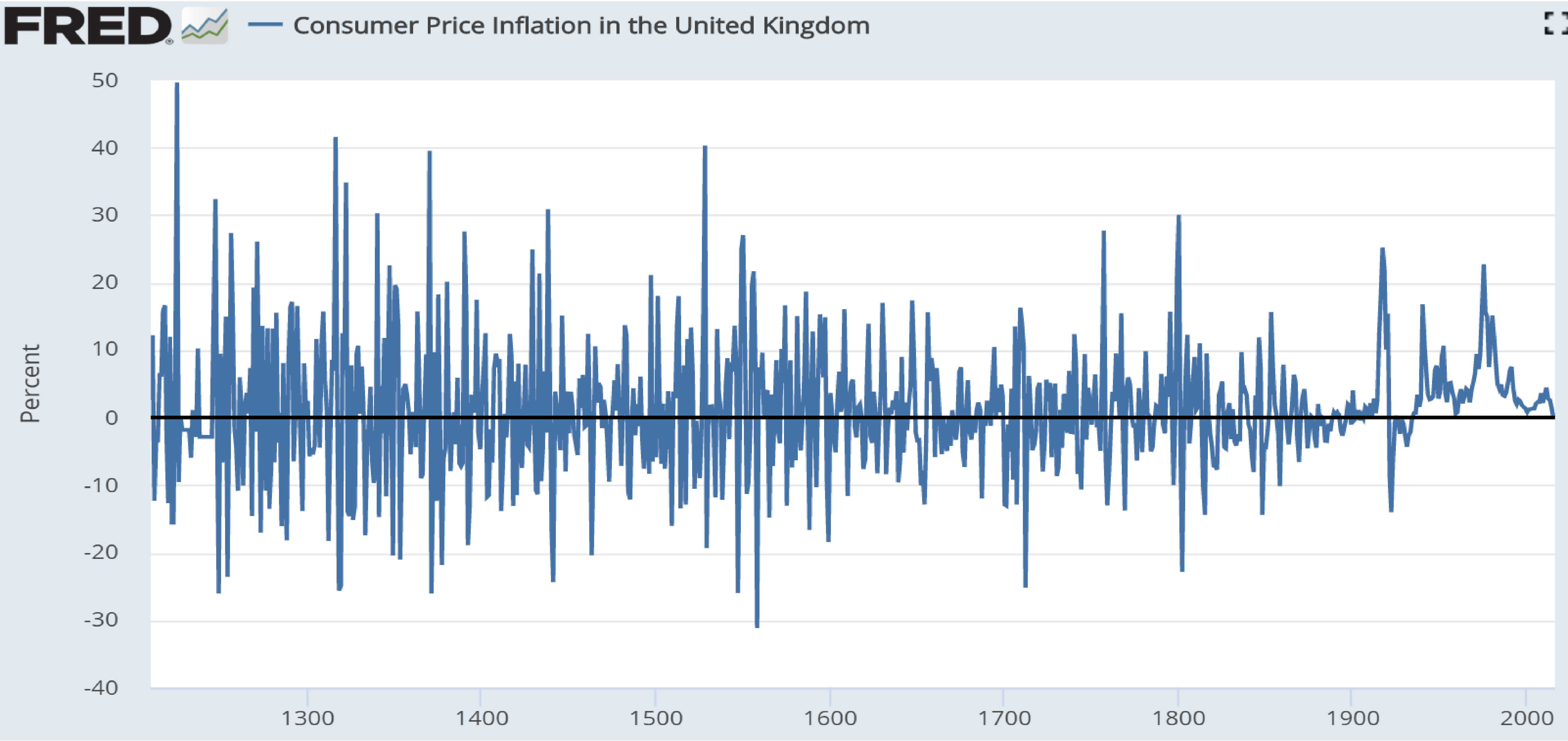
Average Annual Real Debt Growth in Each Decade (USD)

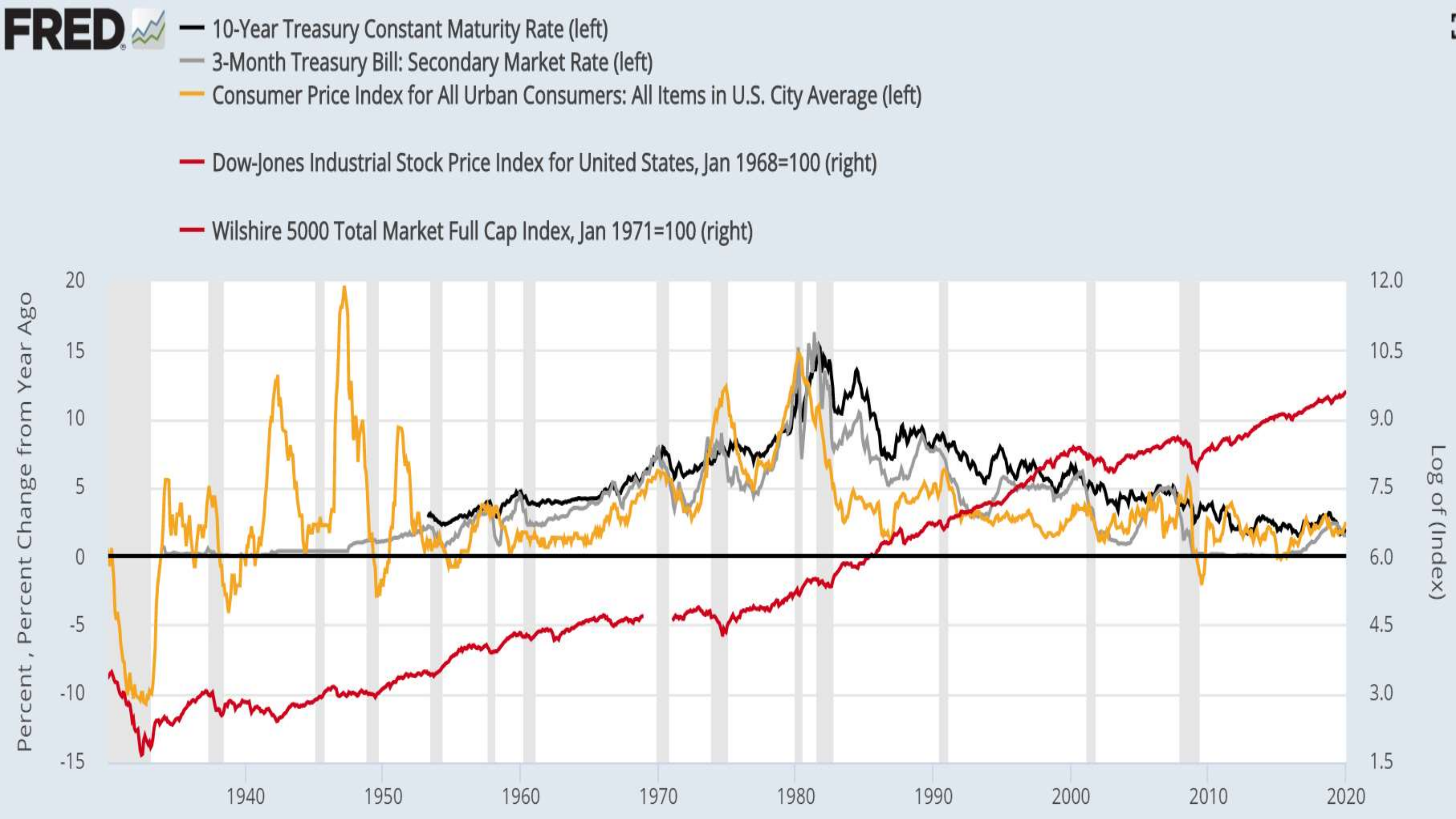
	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Total Debt	5%	3%	7%	4%	5%	3%	6%	4%	4%	1%
Public Debt	1%	5%	12%	1%	3%	1%	5%	2%	4%	4%
Private Debt	8%	1%	0%	8%	6%	4%	6%	5%	4%	0%

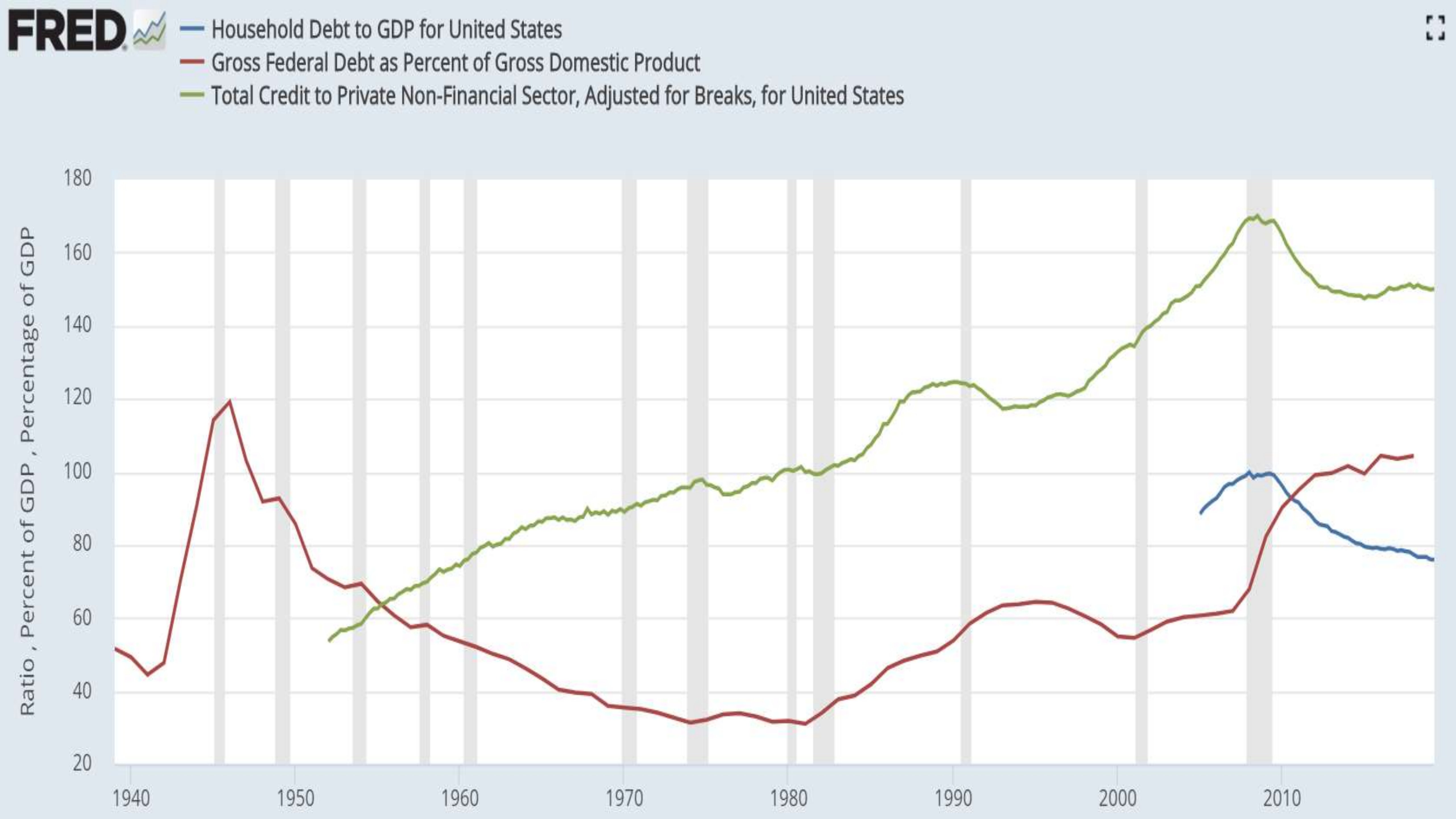
Money and Credit at Beginning of Each Decade

	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	Now
Total Debt (%GDP)	102%	132%	143%	165%	153%	161%	168%	234%	270%	362%	328%
M0 (%GDP)	7%	7%	13%	11%	7%	6%	5%	5%	6%	13%	16%

Inflation was messy before Central Banks

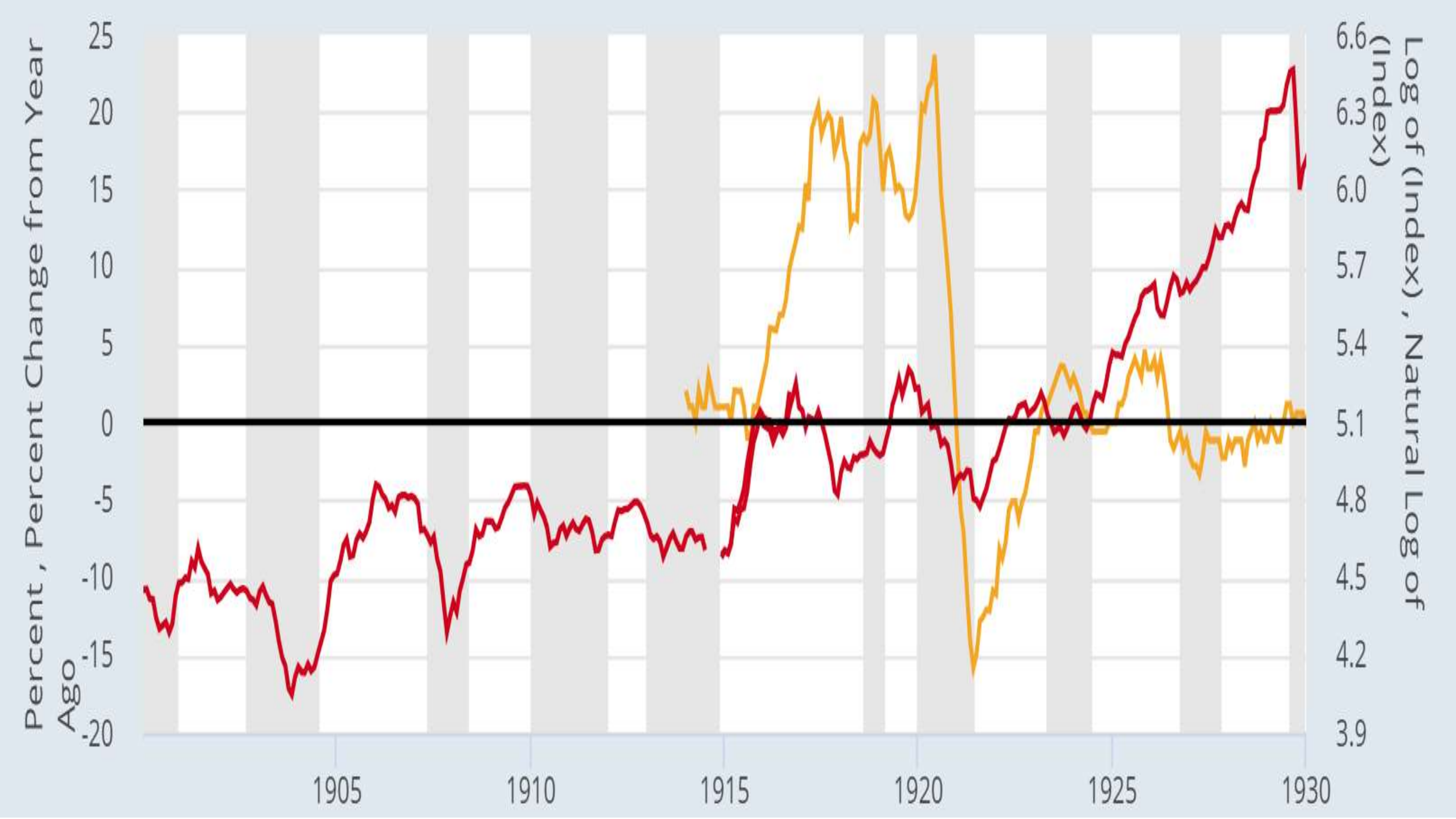



FRED
10-Year Treasury Constant Maturity Rate (left)
3-Month Treasury Bill: Secondary Market Rate (left)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
Dow-Jones Industrial Stock Price Index for United States, Jan 1968=100 (right)
Wilshire 5000 Total Market Full Cap Index, Jan 1971=100 (right)
Percent , Percent Change from Year Ago
Log of (Index)
20
15
10
5
0
-5
-10
-15
12.0
10.5
9.0
7.5
6.0
4.5
3.0
1.5
1940
1950
1960
1970
1980
1990
2000
2010
2020


FRED
Household Debt to GDP for United States
Gross Federal Debt as Percent of Gross Domestic Product
Total Credit to Private Non-Financial Sector, Adjusted for Breaks, for United States
Ratio , Percent of GDP , Percentage of GDP
180
160
140
120
100
80
60
40
20
1940
1950
1960
1970
1980
1990
2000
2010

1920s

- When the war ended in november 1918, the Federal Reserve let money and credit grow at fast rates and inflation soar
- automobile, radio, film, and early commercial flight: investing in these and other similar growth industries became so popular that late in the decade this investing became a bubble
- Fed tightened in 1928-29, and the bubble burst in late 1929
- US stocks boomed, returning 17% on an average annual basis

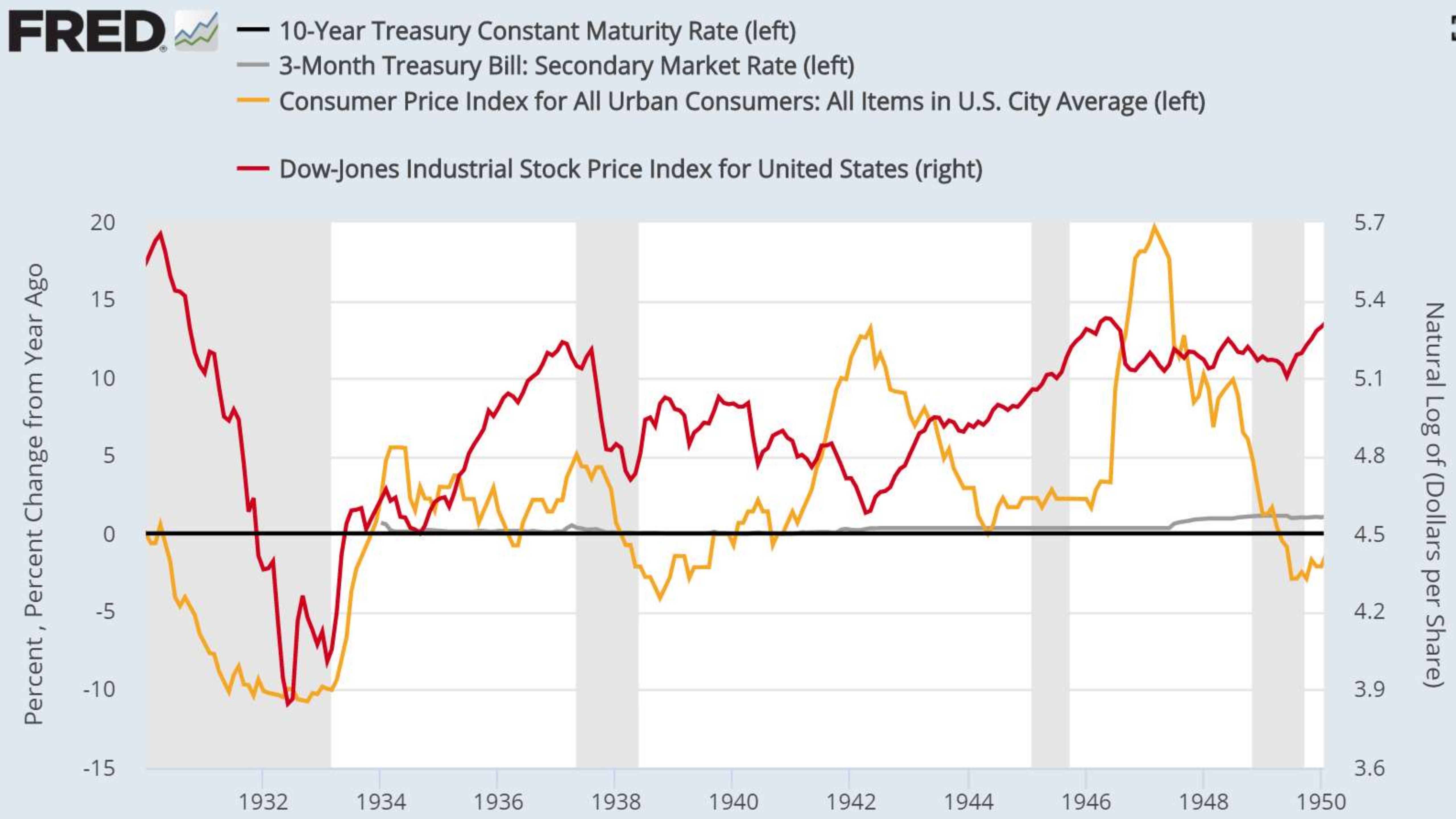

Percent , Percent Change from Year Ago
Log of (Index) , Natural Log of (Index)
25
20
15
10
5
0
-5
-10
-15
-20
6.6
6.3
6.0
5.7
5.4
5.1
4.8
4.5
4.2
3.9
1905
1910
1915
1920
1925
1930

1930s

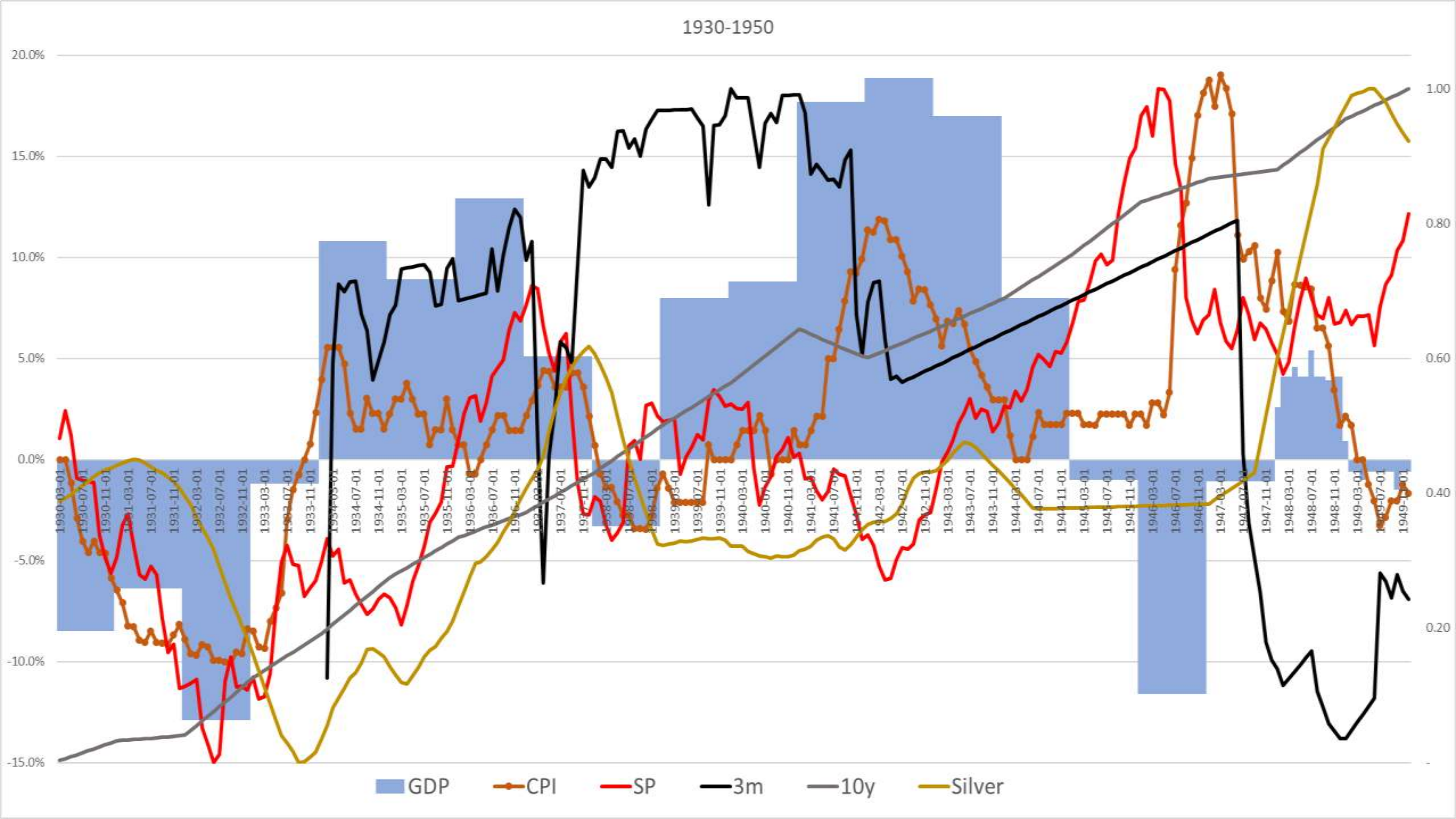
- breaking the link to gold, interest rates hitting 0%, the printing of a lot of money, and the devaluing of the dollar
- rises in gold prices, stock prices and commodity prices from 1932 to 1937 ; defaults, guarantees, and monetization of debts along with a lot of fiscal stimulation
- monetary policy caused asset prices to rise because compensation didn't keep up, the wealth gap widened
- 1937-38, Fed tightening -> stocks crashed
- long-term government bonds (returning 37%) and gold (returning 5% annualized) outperformed

1940s

- classic measures of growth and unemployment are misleading due to war time economics and the build and destruction of assets
- War-effort spend ended the depression changed inflation expectation
- Enormous monetary and fiscal stimulus (war prod + Marshall plan)



FRED
10-Year Treasury Constant Maturity Rate (left)
3-Month Treasury Bill: Secondary Market Rate (left)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
Dow-Jones Industrial Stock Price Index for United States (right)
Percent , Percent Change from Year Ago
Natural Log of (Dollars per Share)
20
15
10
5
0
-5
-10
-15
5.7
5.4
5.1
4.8
4.5
4.2
3.9
3.6
1932
1934
1936
1938
1940
1942
1944
1946
1948
1950



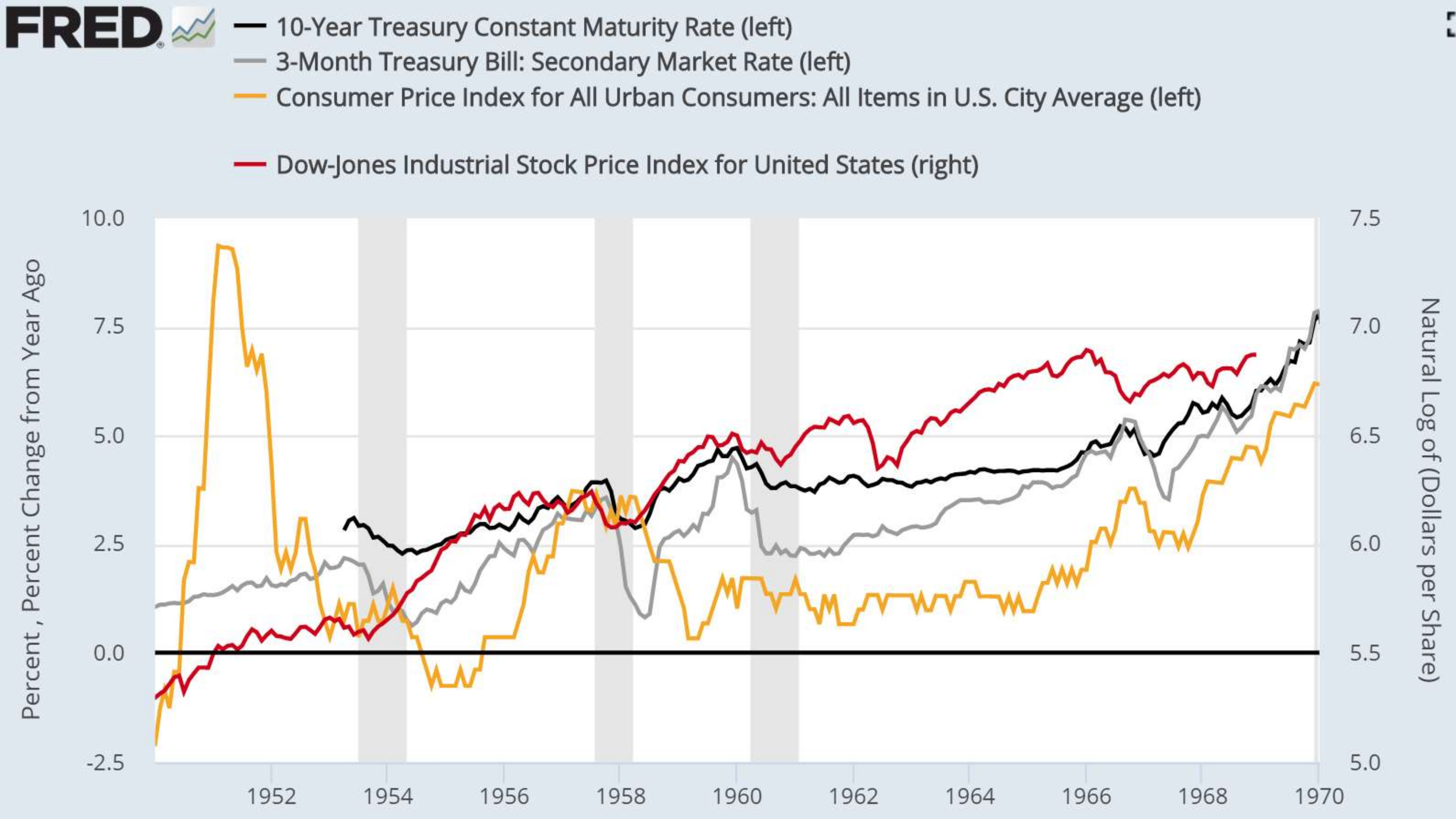
1930-1950
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
1.00
0.80
0.60
0.40
0.20
-
GDP
CPI
SP
3m
10y
Silver

1950s

- World War II left the United States with the only industrialized economy
- pricing in negative levels of earnings growth with very high risk premia (S&P 500 dividend yields in 1950 were 6.9%, 10-year bond yield of 2.4% (Shiller))
- US held 65% of the world's gold reserves
- Unlike the 1930s, Americans entered the '50s with low debts and
- huge pent-up demand—the optimal ingredients for economic expansion

1960s

- First half of decade, Fed increased the supply and allowed strong credit creation to allow strong growth which worsened the balance of payments problem
- The increased supply of money stimulated inflation, which made it that much more desirable to borrow and buy
- Spending easier than taxing -> Debt financed boom; government's debts grew fast, private debts grew even faster
- balance of payments problem -> eventually Bretton Woods
- Avoided tight monetary policy to avoid crash led to drop of Bretton Woods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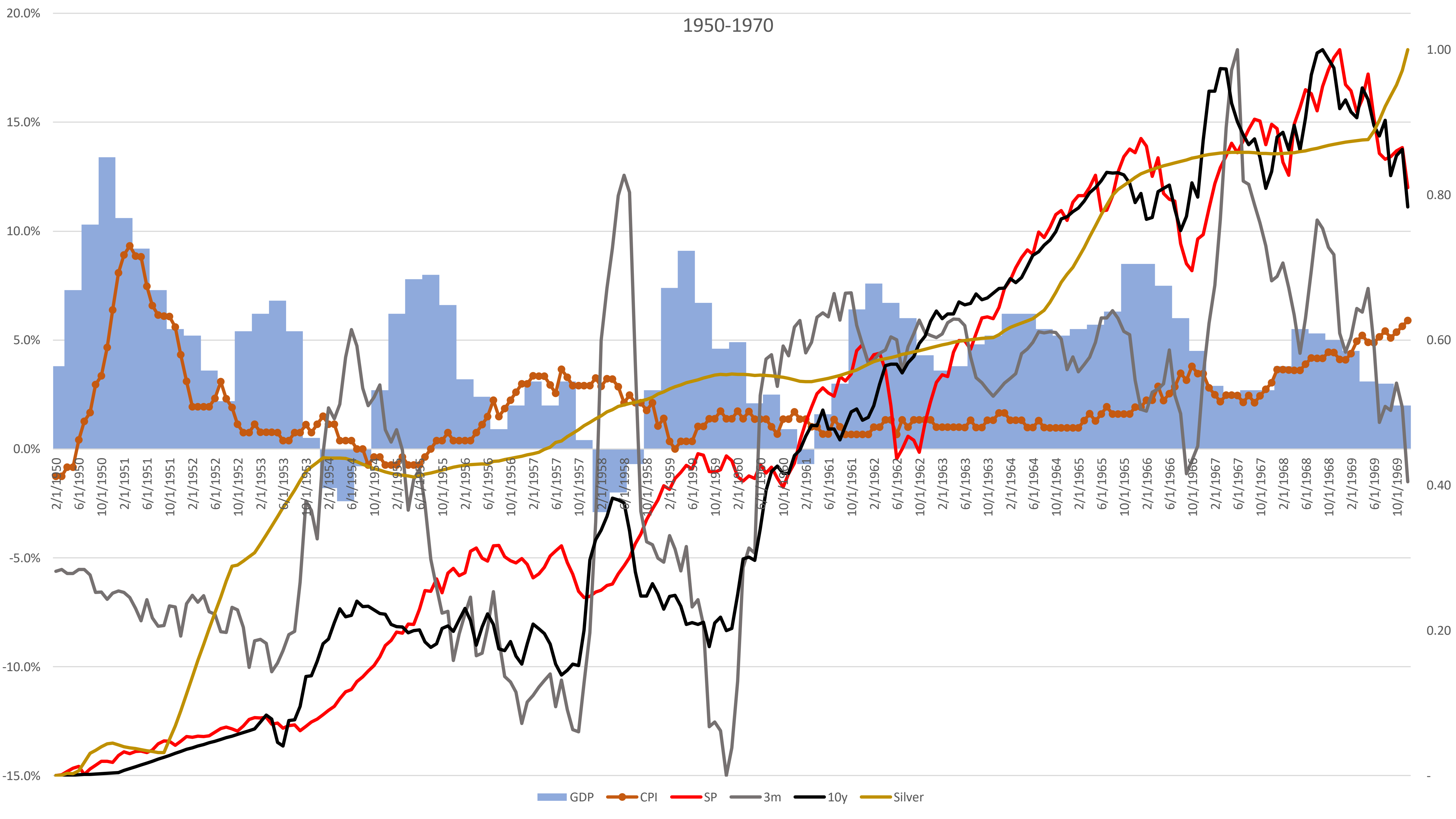
3-Month Treasury Bill: Secondary Market Rate (left)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
Dow-Jones Industrial Stock Price Index for United States (right)
Percent , Percent Change from Year Ago
Natural Log of (Dollars per Share)
10.0
7.5
5.0
2.5
0.0
-2.5
7.5
7.0
6.5
6.0
5.5
5.0
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970



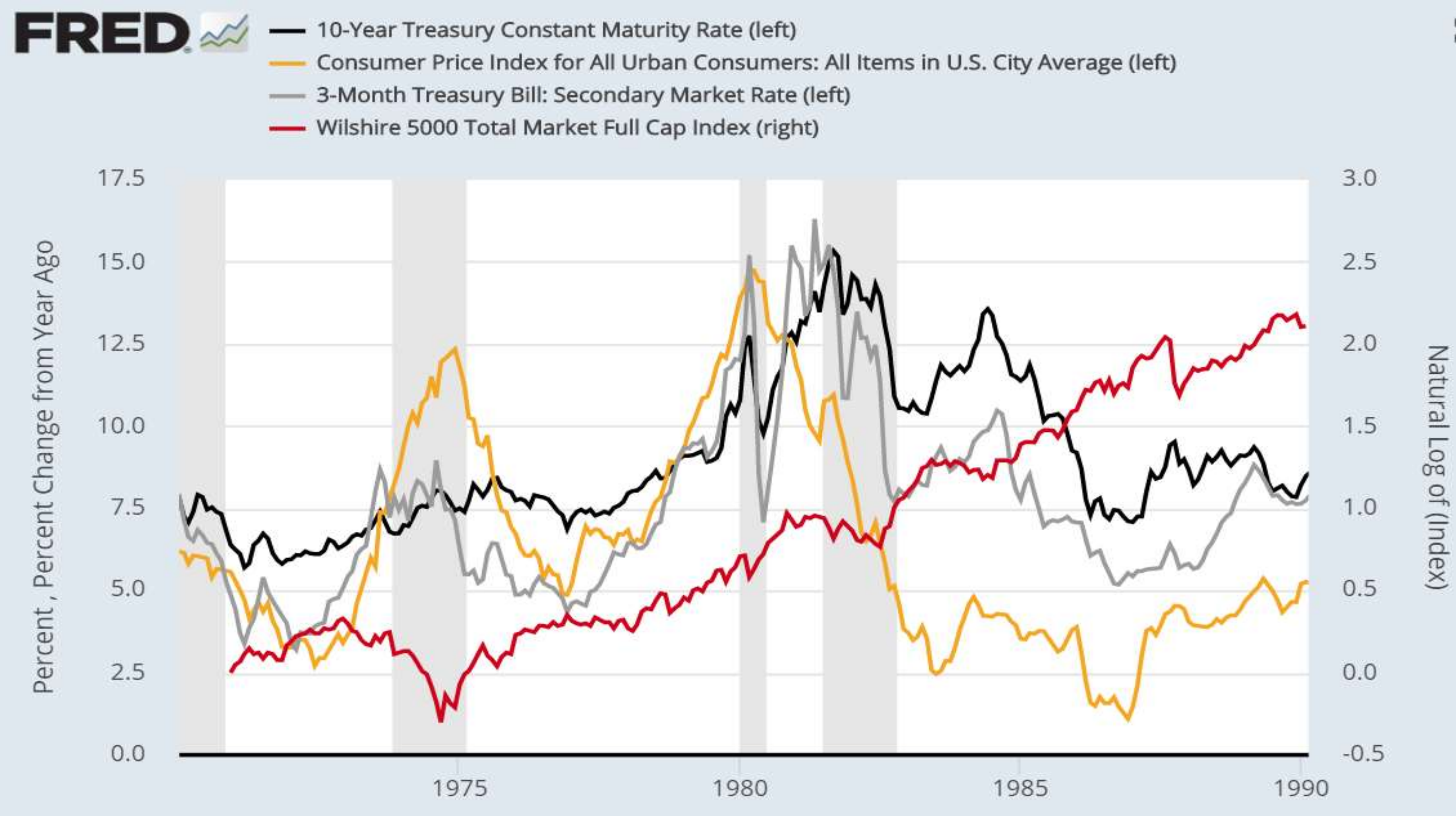
1950-1970
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
1.00
0.80
0.60
0.40
0.20
-
GDP
CPI
SP
3m
10y
Silver

1970s

- Stagflation: high level of debt, balance of payments problem, gold standard abandoned
- Inflation assets did well: bonds did not do well ; stocks were down
- 2 inflation waves: 1972 to 1975 ; 1977 to 1980 -> gold does well

1980s

- Volcker hikes rates to stem inflation -> falling inflation and good growth
- shortage of dollars and capital flows that led the dollar to rise
- disinflationary growth:
  - interest rates decline
  - growth was strong
  - Stocks and bonds up (positive correlation)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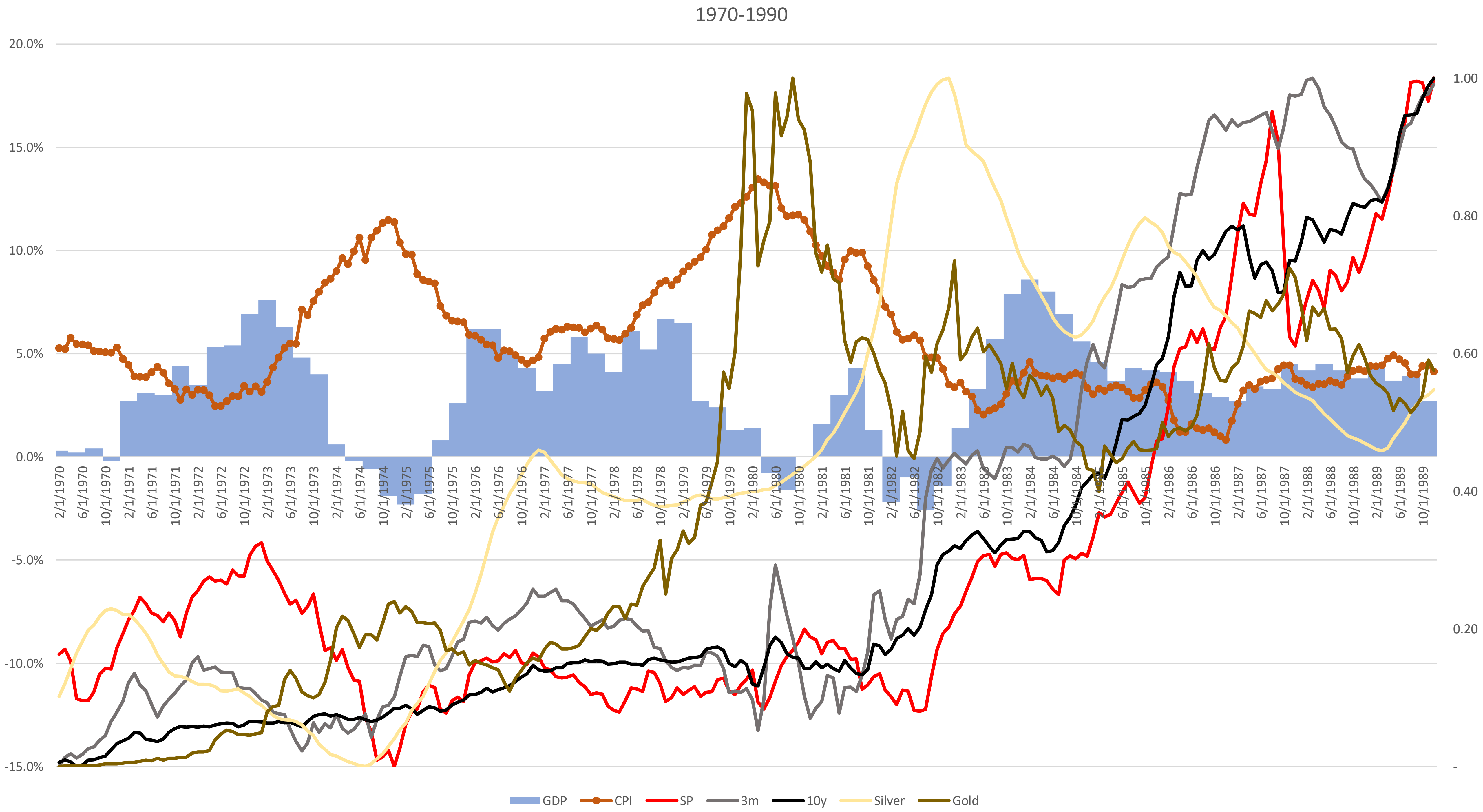
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
3-Month Treasury Bill: Secondary Market Rate (left)
Wilshire 5000 Total Market Full Cap Index (right)
Percent , Percent Change from Year Ago
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Natural Log of (Index)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
1975
1980
1985
1990

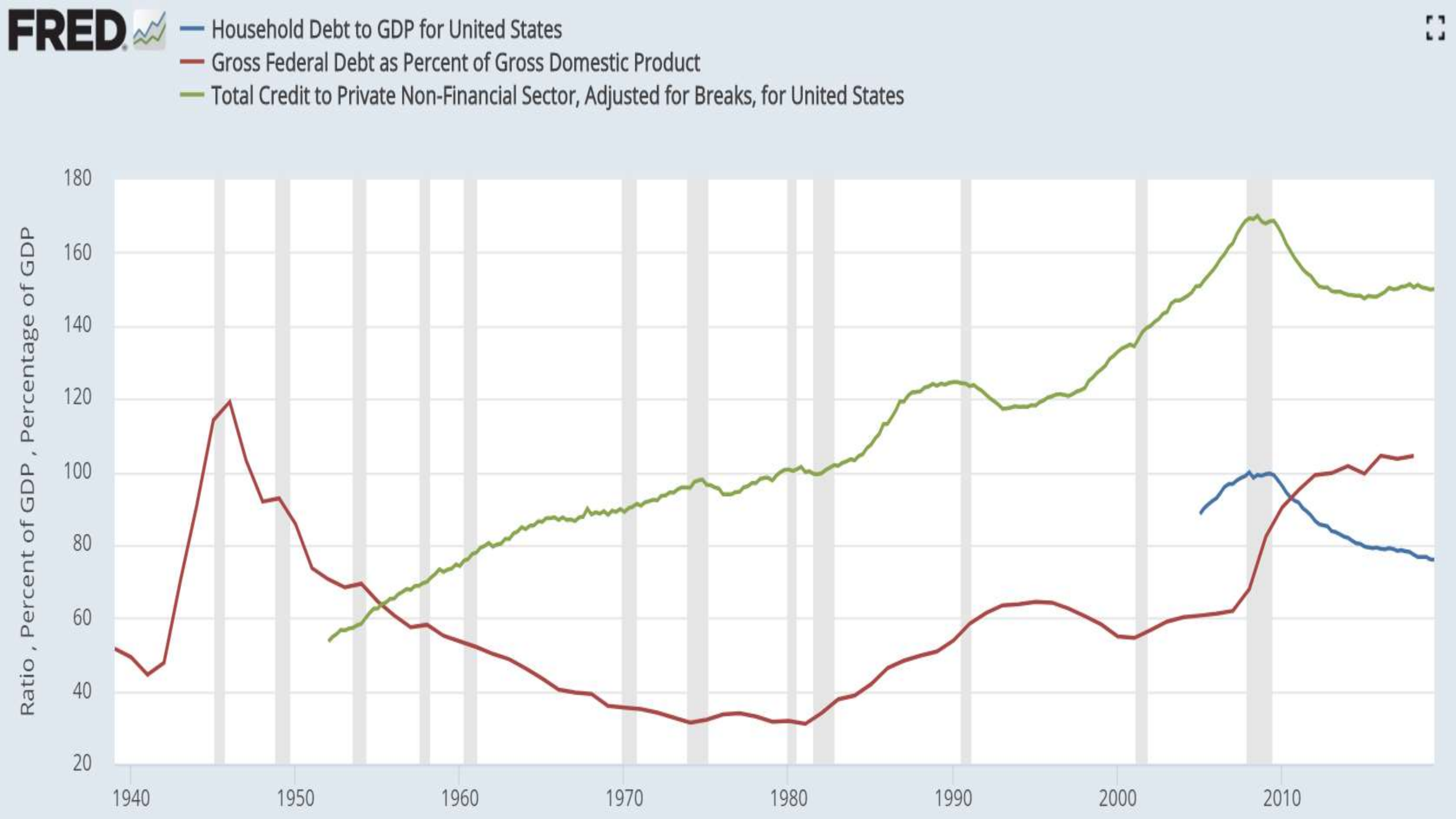

1970-1990
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
1.00
0.80
0.60
0.40
0.20
-
GDP
CPI
SP
3m
10y
Silver
Gold

1990s

- Stable growth, stable inflation
- Easy money policy: 1998 Asian crisis plus housing for all increased debt levels

2000s

- Dot-com burst
- Costly wars in Iraq and Afghanistan -> increase in federal debt adding to household debt -> debt bust
- Interest rates hit 0 + QE
- Gold and bonds did well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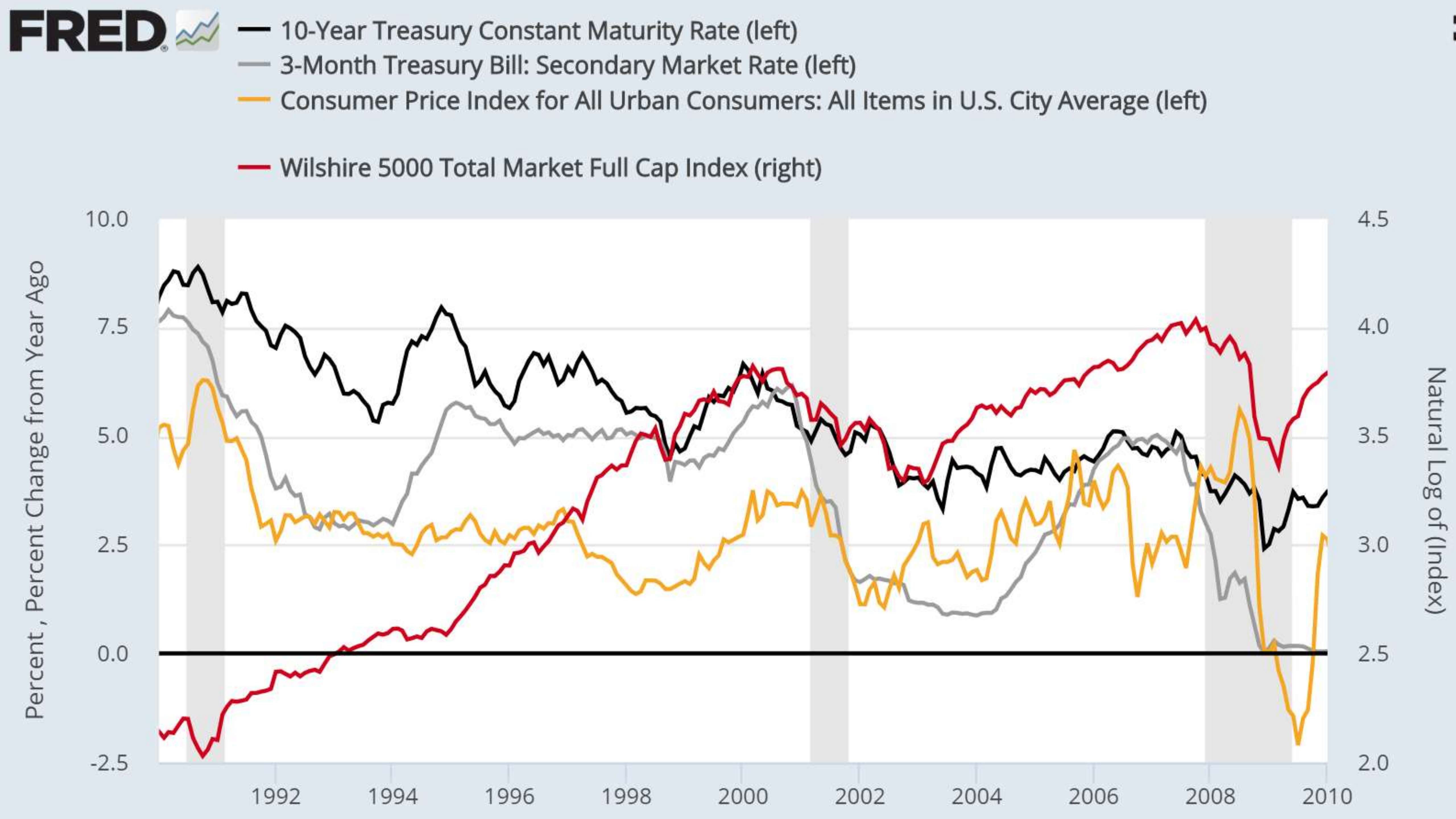
Ratio , Percent of GDP , Percentage of GDP
180
160
140
120
100
80
60
40
20
1940
1950
1960
1970
1980
1990
2000
2010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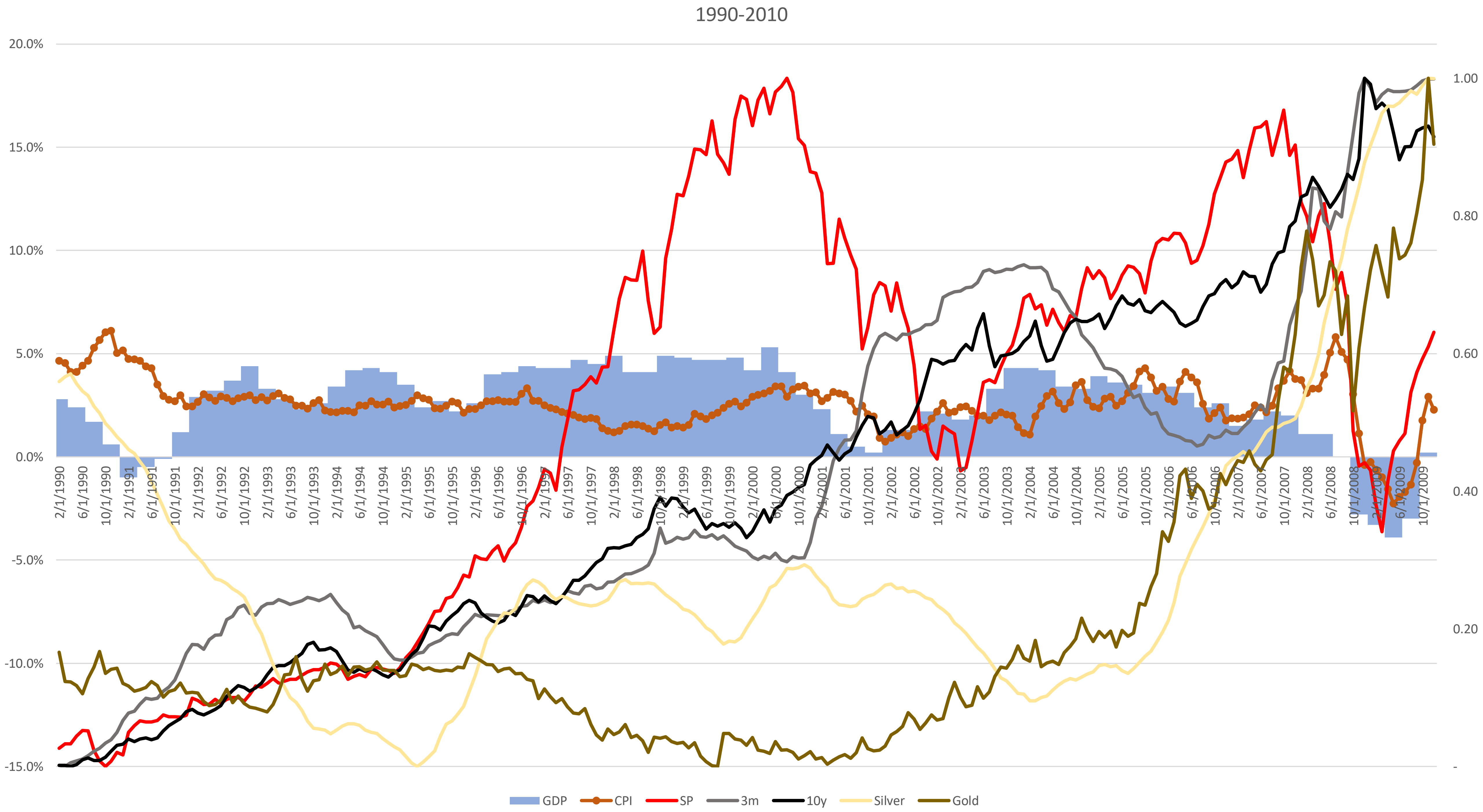
10-Year Treasury Constant Maturity Rate (left)
3-Month Treasury Bill: Secondary Market Rate (left)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
Wilshire 5000 Total Market Full Cap Index (right)
Percent , Percent Change from Year Ago
Natural Log of (Index)
10.0
7.5
5.0
2.5
0.0
-2.5
4.5
4.0
3.5
3.0
2.5
2.0
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010



1990-2010
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
1.00
0.80
0.60
0.40
0.20
-
2/1/1990
6/1/1990
10/1/1990
2/1/1991
6/1/1991
10/1/1991
2/1/1992
6/1/1992
10/1/1992
2/1/1993
6/1/1993
10/1/1993
2/1/1994
6/1/1994
10/1/1994
2/1/1995
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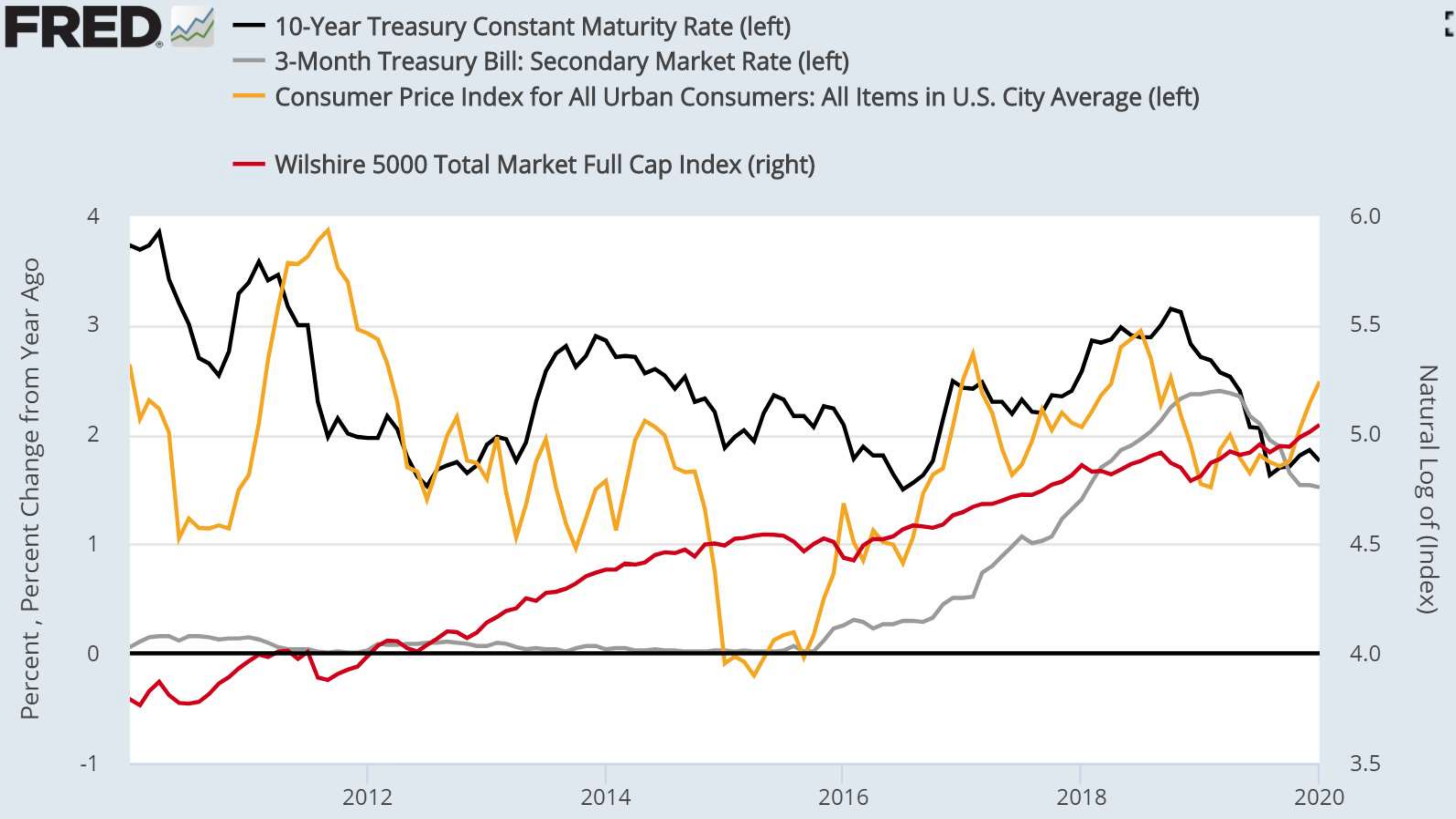
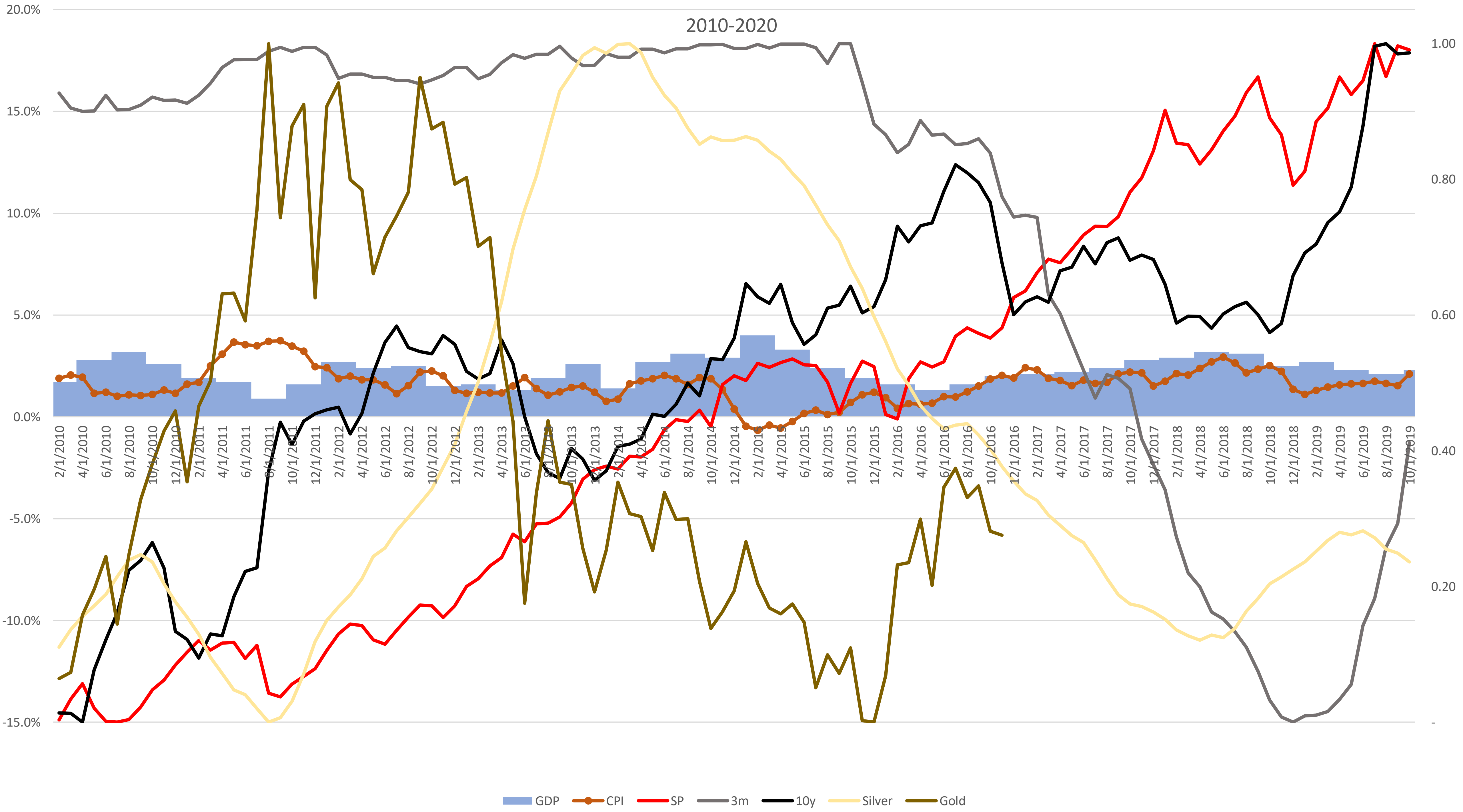
10/1/2005
2/1/2006
6/1/2006
10/1/2006
2/1/2007
6/1/2007
10/1/2007
2/1/2008
6/1/2008
10/1/2008
2/1/2009
6/1/2009
10/1/2009
GDP
CPI
SP
3m
10y
Silver
Gold

2010s

- Interest rates at lower bound
- More QE -> bonds, equities and gold up
- Inflation does not materialize so gold backs off a bit
- Bonds and equities high ; growth expected to be moderate ; inflation expected to be low


FRED
10-Year Treasury Constant Maturity Rate (left)
3-Month Treasury Bill: Secondary Market Rate (left)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
Wilshire 5000 Total Market Full Cap Index (right)
Percent , Percent Change from Year Ago
Natural Log of (Index)
4
3
2
1
0
-1
6.0
5.5
5.0
4.5
4.0
3.5
2012
2014
2016
2018
2020



2010-2020
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
1.00
0.80
0.60
0.40
0.20
-
GDP
CPI
SP
3m
10y
Silver
Gold

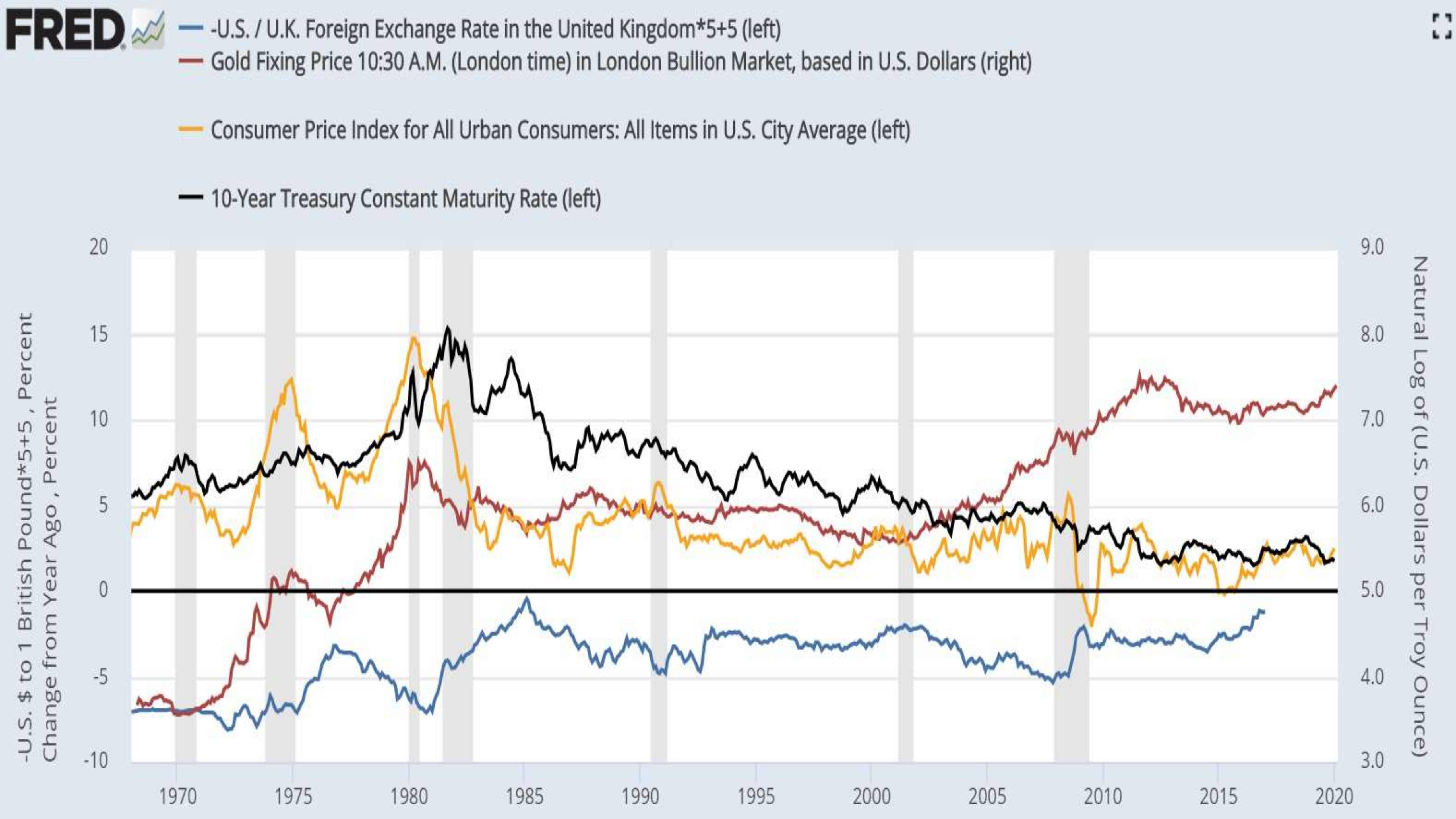
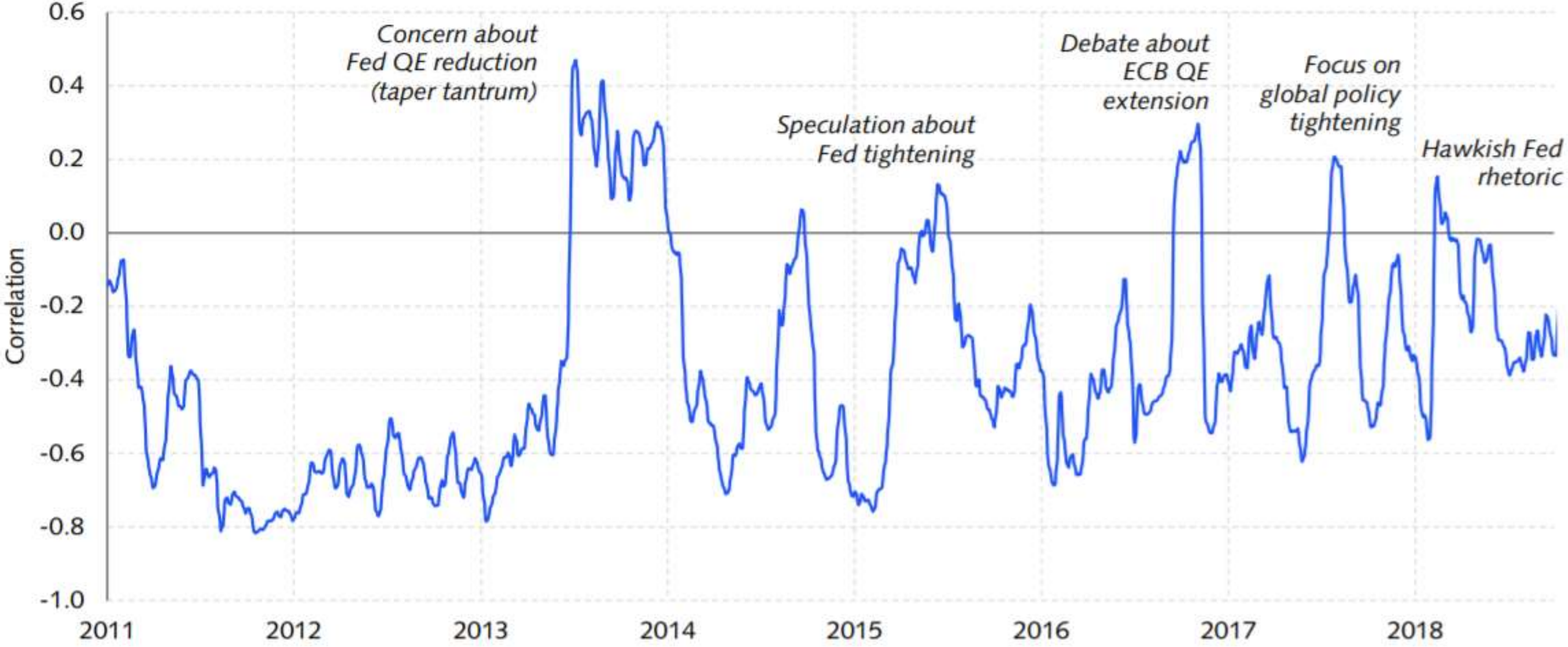

FRED
-U.S. / U.K. Foreign Exchange Rate in the United Kingdom*5+5 (left)
Gold Fixing Price 10:30 A.M. (London time) in London Bullion Market, based in U.S. Dollars (right)
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average (left)
10-Year Treasury Constant Maturity Rate (left)
-U.S. $ to 1 British Pound*5+5 , Percent Change from Year Ago , Percent
Natural Log of (U.S. Dollars per Troy Ounce)
20
15
10
5
0
-5
-10
9.0
8.0
7.0
6.0
5.0
4.0
3.0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020

Figure 1: Correlation Between S&P 500® and 10-year U.S. Treasury Returns

Correlations based on daily returns using exponential weighting with a 2-year half-life. Source: Bloomberg.

Fed Intervention creates positive correlation

Figure 4: Correlation Between S&P 500® and 10-year U.S. Treasury Returns



Correlations based on daily returns using exponential weighting with a 40-day half-life over a 1-year rolling window.
Source: Bloomberg; U.S. Treasury.

Figure 5: Stock-Bond Correlation on FOMC and non-FOMC Days

Correlations based on a regression of S&P 500® returns on 10-year U.S. Treasury note returns, with a dummy variable included for days with the release of FOMC statements or minutes. The regression uses exponential weighting with a 2-year half-life.
Source: Bloomberg; Federal Reserve Board.

Figure 9: Stock-Bond Correlation in Japan, Germany, and United Kingdom

Correlations based on daily futures returns using exponential weighting with a 2-year half-life. For Japan, data represents TOPIX and 10-year JGBs; for Germany, DAX and long-term bunds; for United Kingdom, FTSE 100 and long-term gilts. Source: Bloomberg.

Daniel’s Whiteboard Notes