

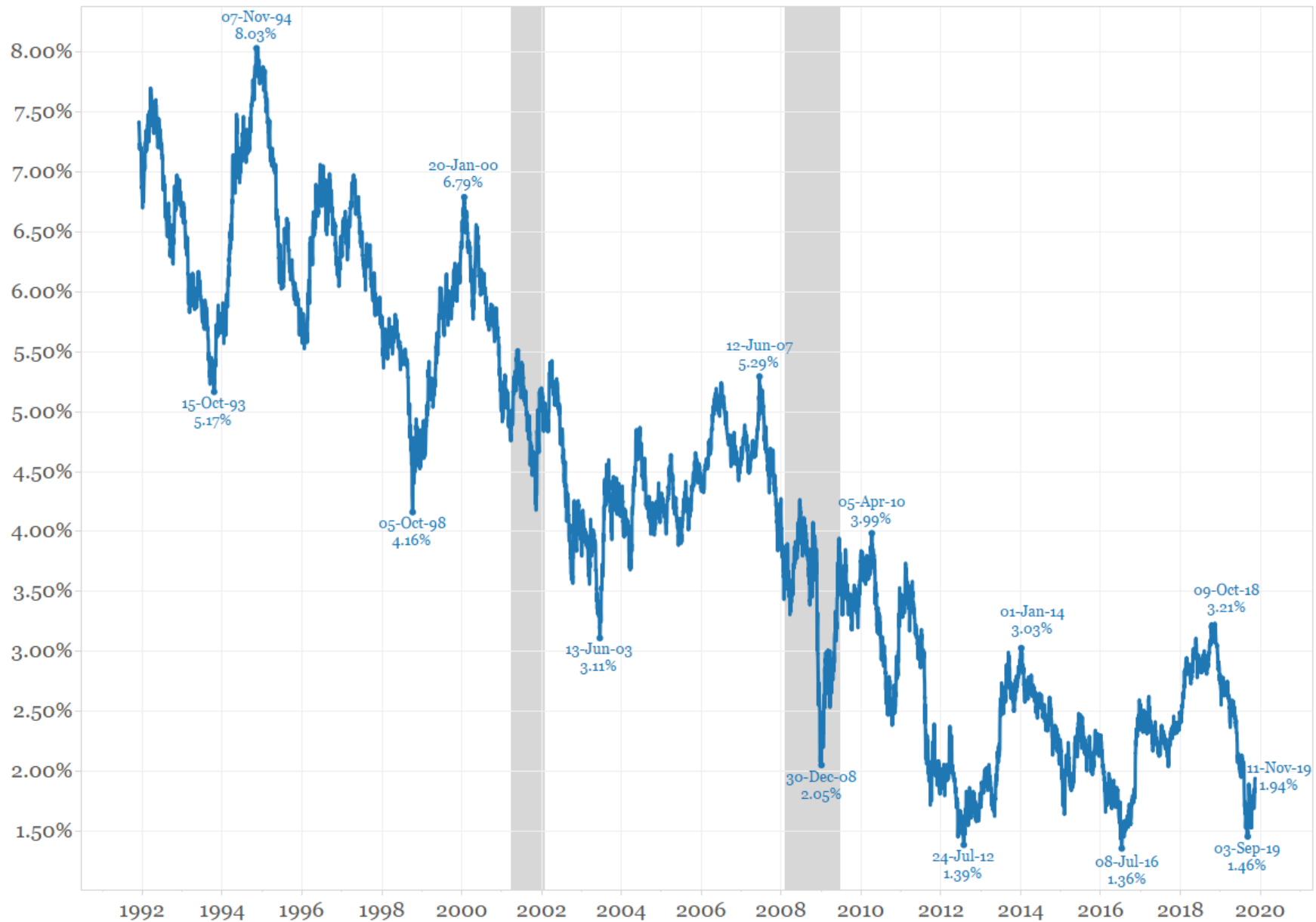
James Bianco

Understanding Fixed Income

Inside Fixed Income ETF Conference
San Diego, California
November 13, 2019



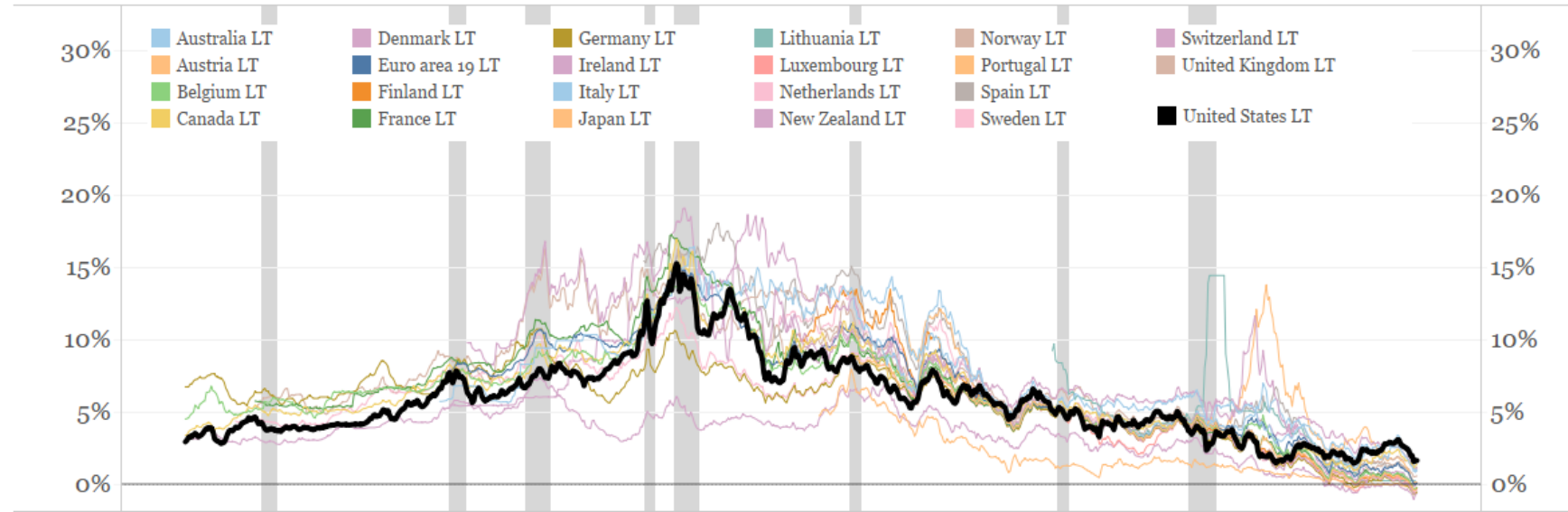
U.S. 10-Year Yield



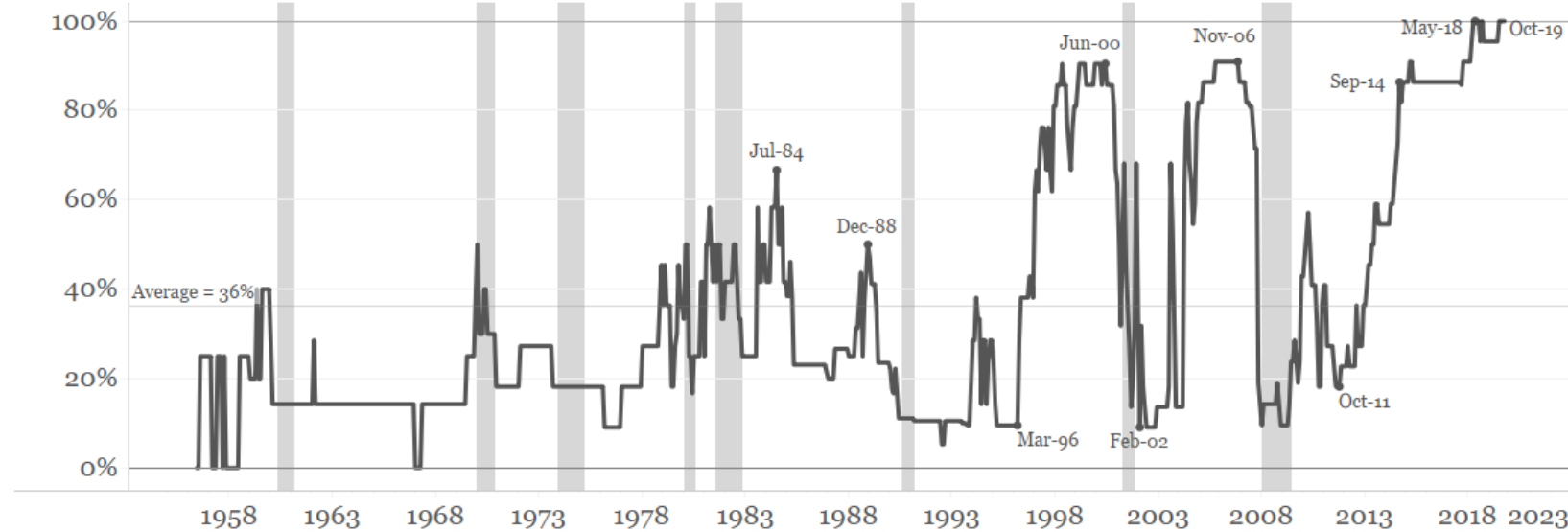
Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Long-Term Yields - Developed Countries



Percentage of Countries With Long-Term Yields Below The United States



Source: Organization for Economic Cooperation and Development

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/d>

Interest Rates in the Developed World

As of 11/11/2019

Country	Policy Rate	6-Month	1-Year	2-Year	3-Year	4-Year	5-Year	6-Year	7-Year	8-Year	9-Year	10-Year	15-Year	30-Year
Switzerland	-0.75	-0.79	-0.87	-0.76	-0.74	-0.68	-0.63	-0.59	-0.56	-0.51	-0.47	-0.42	-0.20	0.00
Germany	-0.50	-0.61	-0.62	-0.62	-0.63	-0.59	-0.52	-0.50	-0.45	-0.39	-0.32	-0.25	-0.10	0.29
Netherlands	-0.50	-0.60		-0.62	-0.62	-0.56	-0.47	-0.40	-0.33	-0.24	-0.19	-0.12	0.03	0.29
Finland	-0.50		-0.60	-0.61	-0.55	-0.48	-0.43	-0.30	-0.25	-0.15	-0.09	-0.01	0.23	0.49
Sweden	-0.25	-0.45		-0.35		-0.38	-0.31	-0.22		-0.13	-0.05	0.06	0.19	
Denmark	-0.75	-0.78		-0.66			-0.48			-0.37		-0.23		
Austria	-0.50		-0.60	-0.56	-0.55	-0.49	-0.37	-0.31	-0.22	-0.17	-0.11	-0.02	0.24	0.57
Japan	-0.10	-0.18	-0.19	-0.20	-0.20	-0.20	-0.20	-0.21	-0.19	-0.18	-0.13	-0.07	0.12	0.44
France	-0.50	-0.60	-0.59	-0.58	-0.54	-0.45	-0.33	-0.29	-0.20	-0.16	-0.04	0.05	0.31	0.85
Belgium	-0.50	-0.61	-0.60	-0.60	-0.54	-0.45	-0.34	-0.28	-0.20	-0.11	-0.04	0.04	0.32	0.88
Ireland	-0.50		-0.53		-0.42	-0.39	-0.30	-0.16	-0.07		0.06	0.14	0.44	1.00
Spain	-0.50	-0.50	-0.47	-0.39	-0.36	-0.18	-0.09	0.05	0.16	0.24	0.33	0.43	0.83	1.30
Portugal	-0.50	-0.44	-0.43	-0.51	-0.34	-0.17	-0.12	0.02	0.09	0.17	0.29	0.35	0.72	1.24
Italy	-0.50	-0.23	-0.14	-0.08	0.17	0.32	0.59	0.62	0.92	1.02	1.06	1.26	1.82	2.37
United Kingdom	0.75	0.76	0.68	0.56	0.52	0.55	0.56	0.51	0.56	0.63	0.72	0.81	1.05	1.32
Australia	0.75	0.95	0.90	0.87	0.86	0.88	0.92	1.01	1.09	1.22	1.28	1.30	1.53	1.88
New Zealand	1.00		1.73	0.89			1.08		1.25			1.39	1.74	
Canada	1.75	1.73	1.71	1.58	1.58	1.57	1.56		1.57			1.58		1.74
United States	1.63	1.56	1.57	1.67	1.70		1.75		1.86			1.94		2.42

Concept courtesy of @CharlieBilello

<https://www.biancoresearch.com>

Total Negative Yielding Bonds Outstanding



Source: Bloomberg

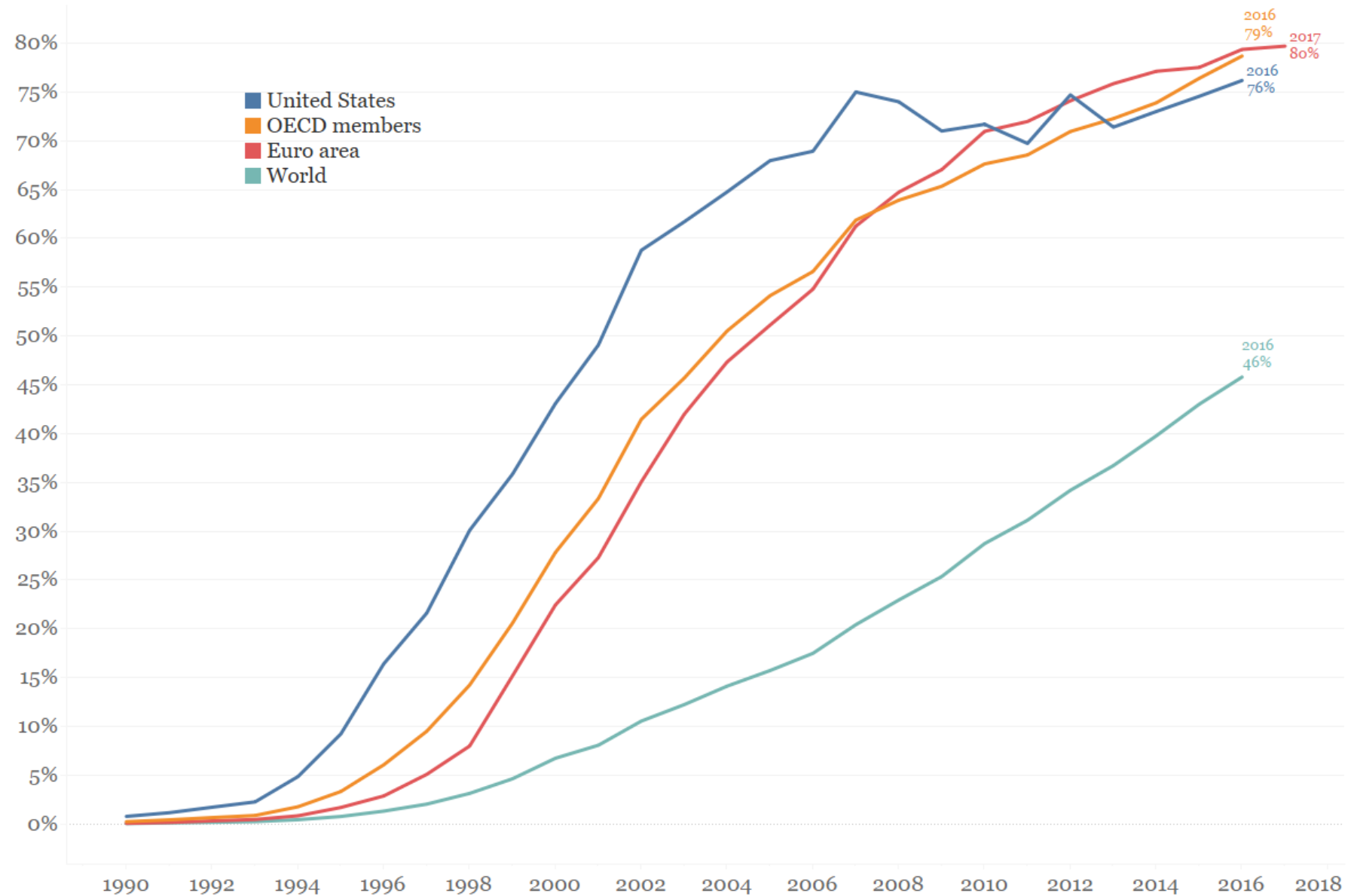
© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Technology/Globalization

Demographics

Central Banks

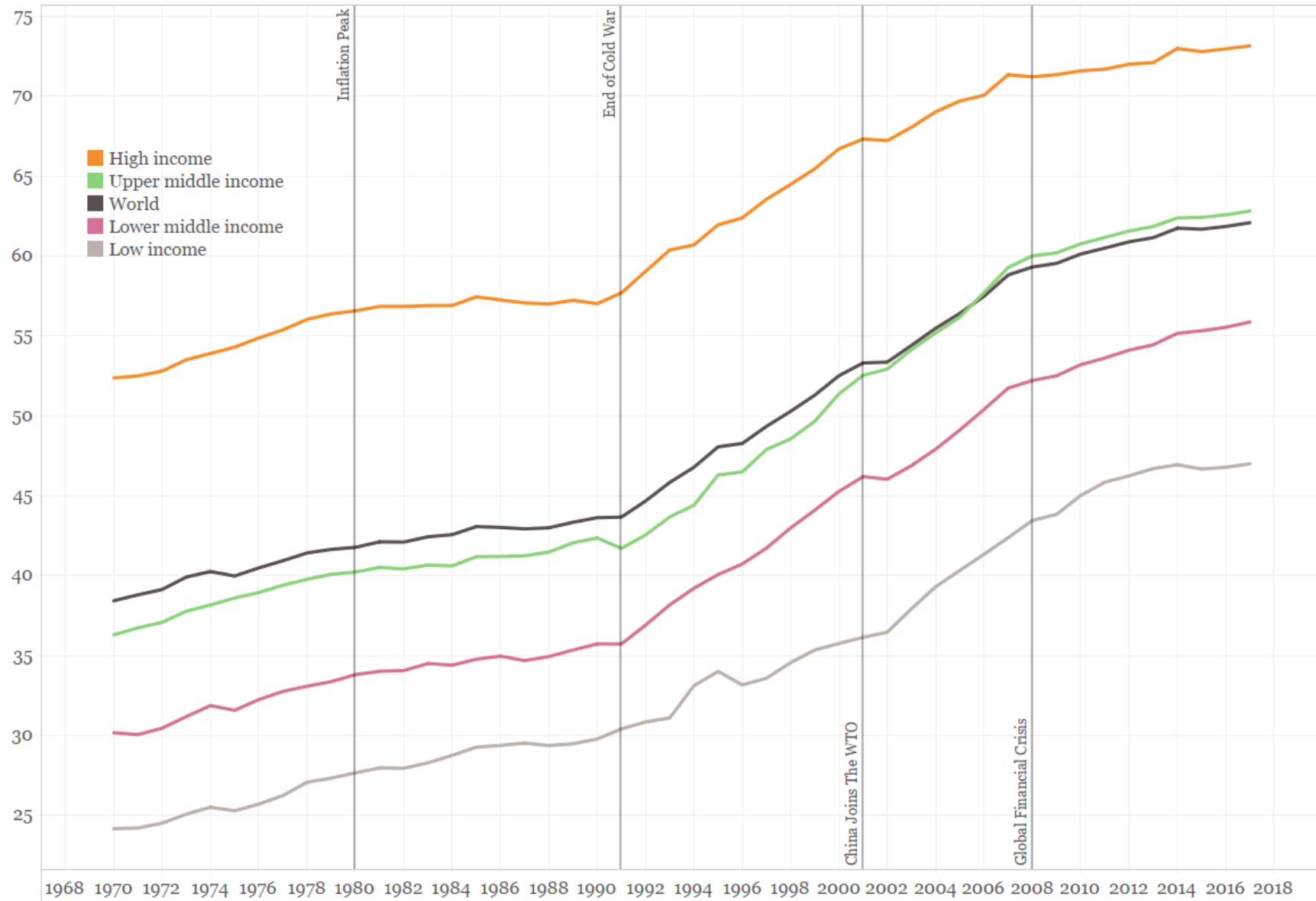
Percent of the Population Using the Internet



Data Source: The World Bank- World Development Indicators
data.worldbank.org

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

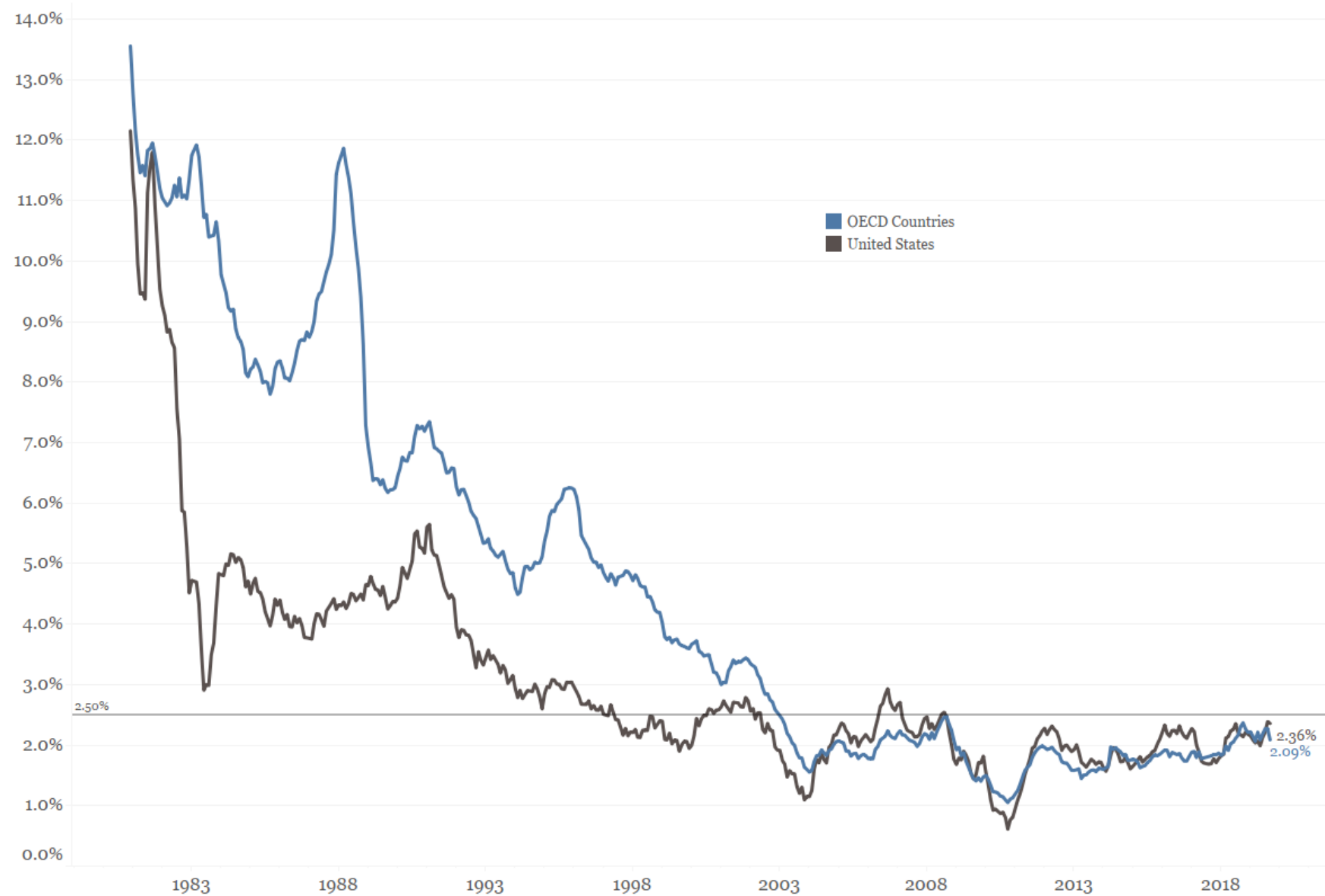
KOF Swiss Economic Institute - Globalisation Index, overall



Gygli, Savina, Florian Haelg, Niklas Potrafke and Jan-Egbert Sturm (2019): The KOF Globalisation Index – Revisited, *Review of International Organizations*, 14(3), 543-574 <https://doi.org/10.1007/s11558-019-09344-2>

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com>

Technology Squashes Inflation



Source: Organization for Economic Cooperation and Development

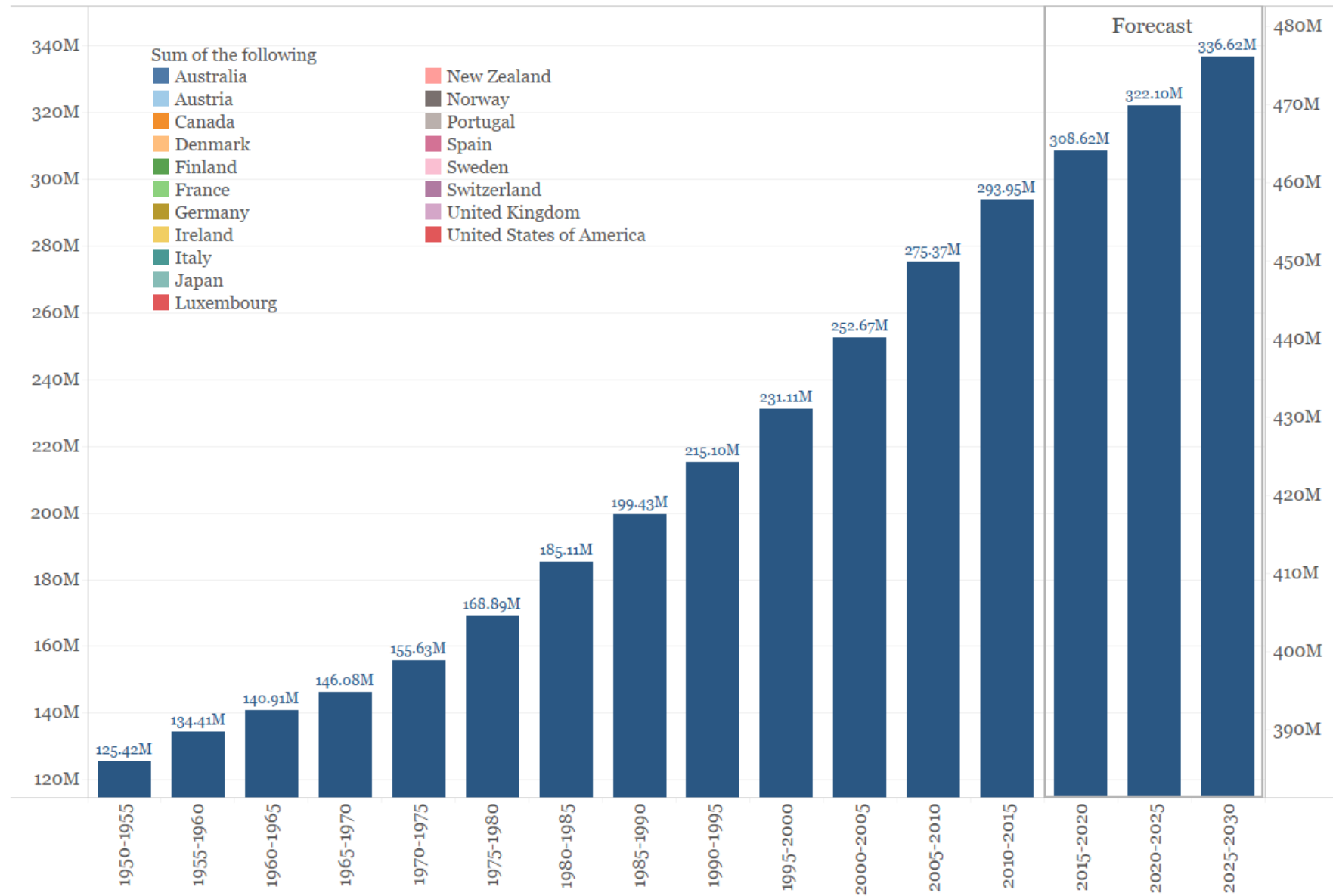
© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Technology/Globalization

Demographics

Central Banks

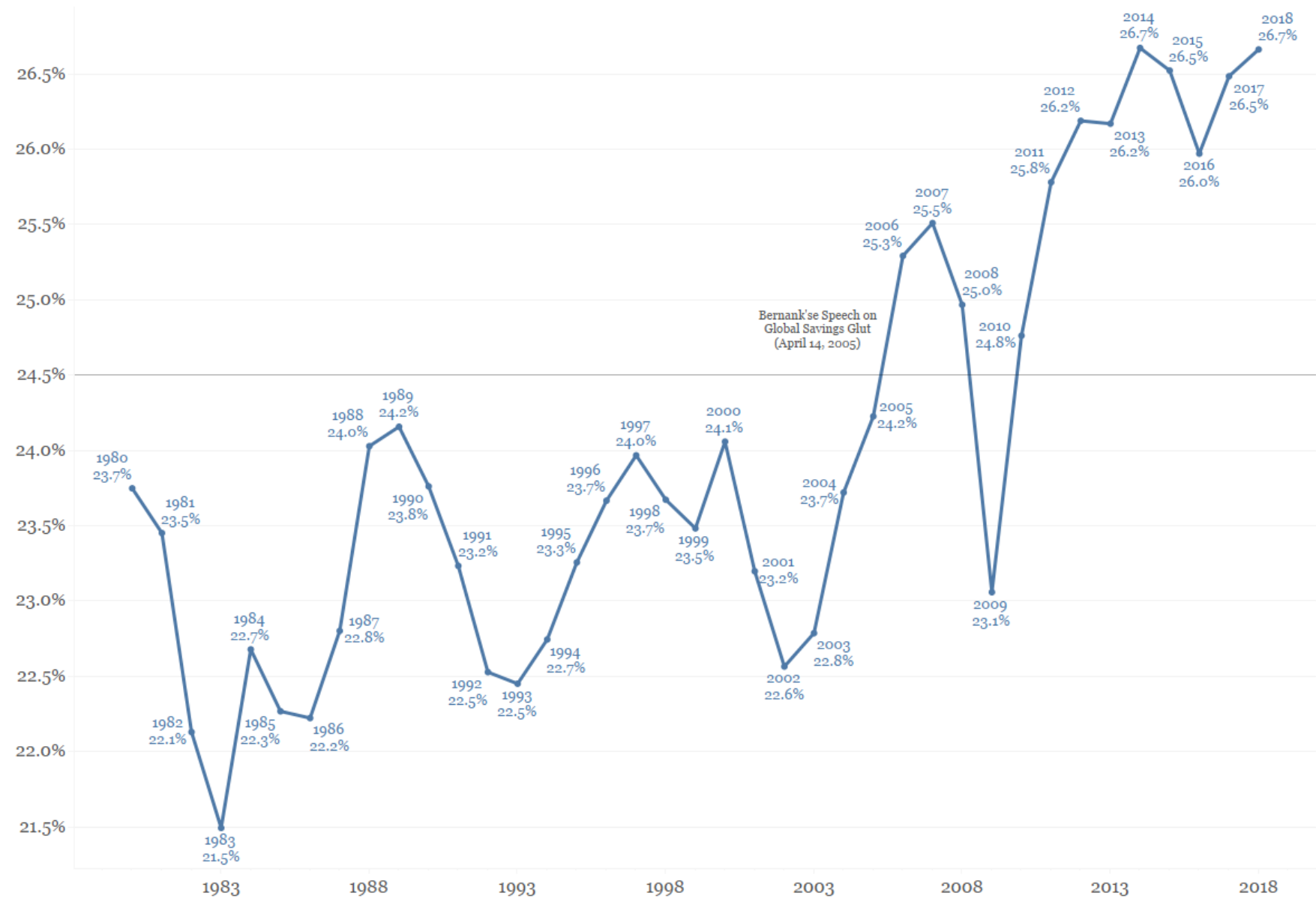
Total Population over 65



Data Source: United Nations, Department of Economic and Social Affairs, Population Division
<http://population.un.org/wpp>

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com>

IMF World Gross National Savings as a Percent of GDP



Data Source: International Monetary Fund, Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Real Interest Rates in the Developed World (Nominal Minus CPI)

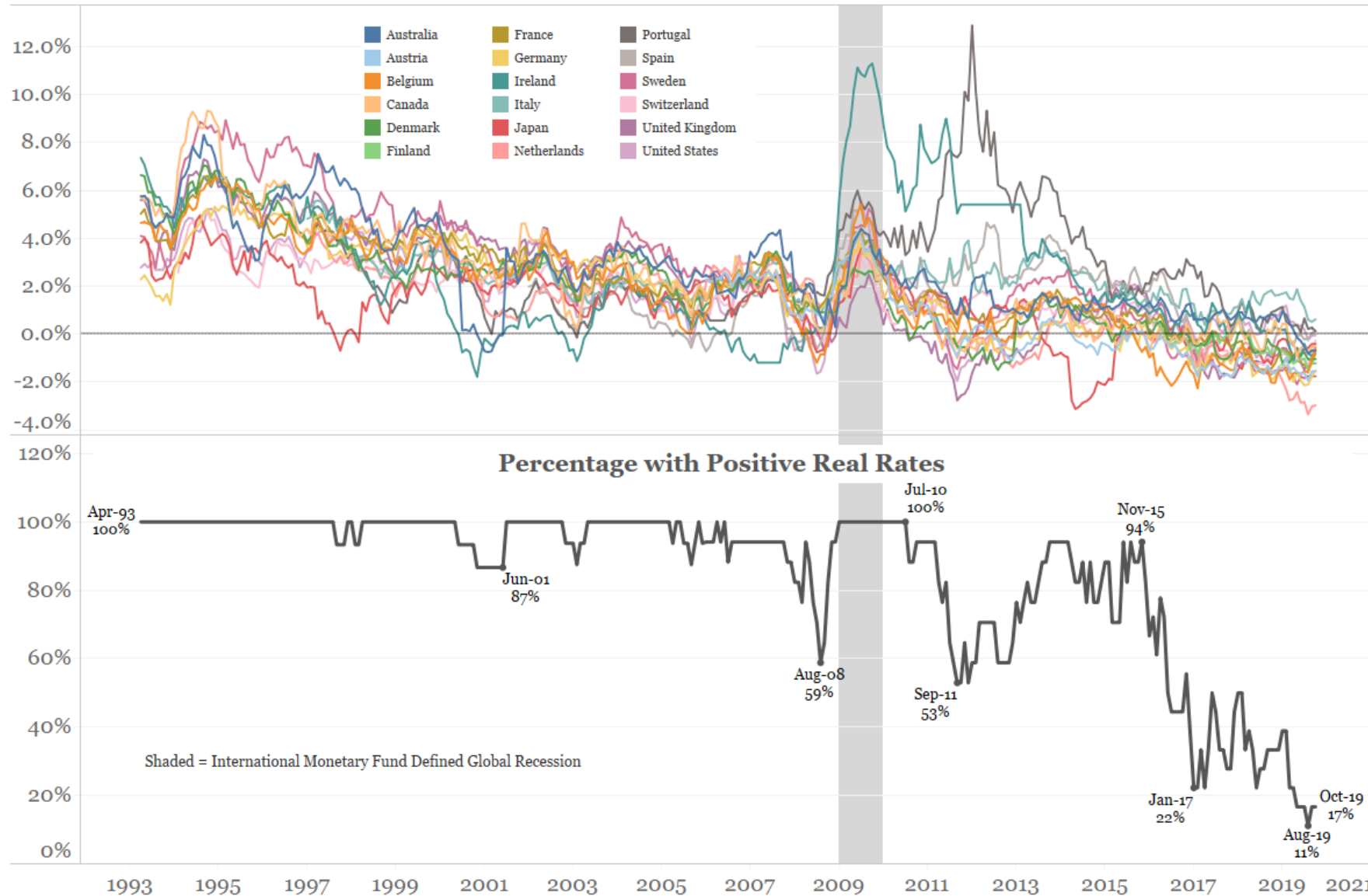
As of 11/12/2019

Country	Inflation Rate	Policy Rate	6-Month	1-Year	2-Year	3-Year	4-Year	5-Year	6-Year	7-Year	8-Year	9-Year	10-Year	15-Year	30-Year
Switzerland	-0.30	-0.45	-0.49	-0.56	-0.45	-0.44	-0.38	-0.33	-0.29	-0.26	-0.20	-0.17	-0.12	0.10	0.30
Germany	1.10	-1.60	-1.71	-1.73	-1.73	-1.74	-1.70	-1.63	-1.61	-1.56	-1.50	-1.43	-1.35	-1.22	-0.83
Netherlands	2.70	-3.20	-3.30		-3.33	-3.33	-3.28	-3.18	-3.11	-3.04	-2.96	-2.91	-2.83	-2.69	-2.42
Sweden	1.50	-1.75	-1.95		-1.85		-1.89	-1.82	-1.74		-1.64	-1.55	-1.44	-1.30	
Denmark	0.60	-1.35	-1.38		-1.27			-1.09			-0.98		-0.83		
Finland	0.90	-1.40		-1.51	-1.52	-1.47	-1.39	-1.34	-1.21	-1.16	-1.06	-1.00	-0.92	-0.69	-0.42
Austria	1.20	-1.70		-1.80	-1.78	-1.76	-1.70	-1.59	-1.52	-1.43	-1.38	-1.32	-1.24	-0.98	-0.65
Japan	0.20	-0.30	-0.39	-0.37	-0.37	-0.36	-0.36	-0.36	-0.36	-0.35	-0.33	-0.29	-0.23	-0.04	0.28
France	0.70	-1.20	-1.29	-1.29	-1.29	-1.26	-1.16	-1.04	-1.00	-0.91	-0.87	-0.75	-0.65	-0.39	0.14
Belgium	0.48	-0.98	-1.09	-1.08	-1.09	-1.04	-0.94	-0.83	-0.77	-0.69	-0.60	-0.52	-0.45	-0.18	0.38
Ireland	0.70	-1.20		-1.22		-1.13	-1.09	-1.01	-0.87	-0.77		-0.65	-0.56	-0.27	0.29
Spain	0.10	-0.60	-0.60	-0.57	-0.49	-0.46	-0.28	-0.19	-0.04	0.06	0.16	0.25	0.34	0.74	1.22
Portugal	0.04	-0.54	-0.48	-0.47	-0.54	-0.38	-0.21	-0.15	-0.01	0.06	0.14	0.26	0.32	0.70	1.22
Italy	0.30	-0.80	-0.53	-0.46	-0.40	-0.17	-0.01	0.25	0.29	0.58	0.67	0.71	0.92	1.47	2.02
United Kingdom	1.70	-0.95	-0.93	-1.02	-1.15	-1.18	-1.15	-1.14	-1.18	-1.14	-1.07	-0.99	-0.90	-0.66	-0.39
Australia	1.70	-0.95	-0.76	-0.82	-0.85	-0.86	-0.84	-0.79	-0.71	-0.63	-0.49	-0.43	-0.42	-0.19	0.18
New Zealand	1.50	-0.50		0.23	-0.64			-0.45		-0.28			-0.14	0.21	
Canada	1.90	-0.15	-0.22	-0.20	-0.30	-0.30	-0.31	-0.32		-0.30			-0.29		-0.14
United States	1.70	-0.08	-0.13	-0.12	-0.04	-0.01		0.03		0.14			0.23		0.71

<https://www.biancoresearch.com>

Falling 10-Year Headline Real Rates

10-Year Yields Deflated by Headline CPI

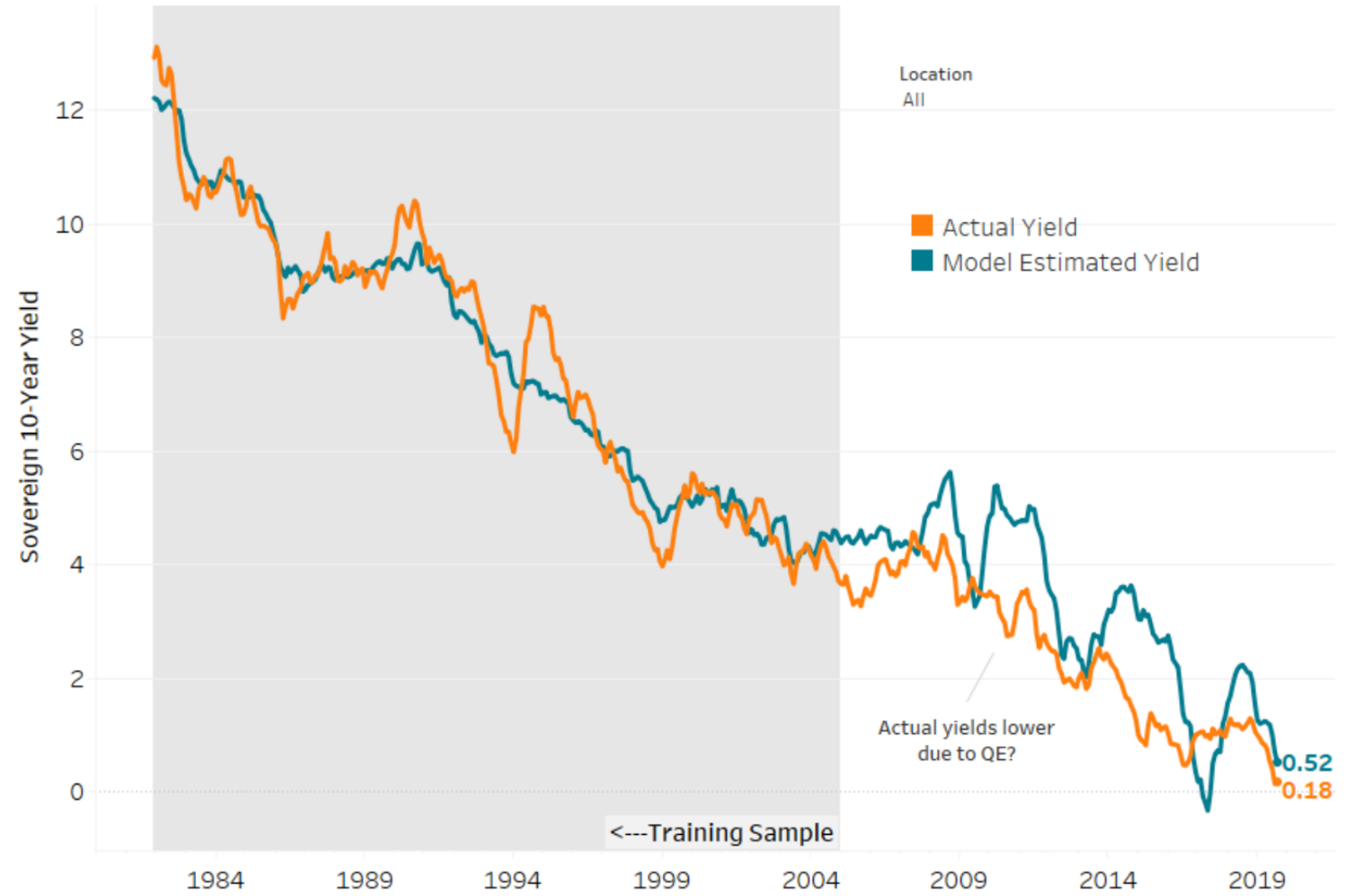


Source: Bloomberg, International Monetary Fund

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

All 10-Year Yields Estimated From 2005 - Current

Ensemble of models using 12 variables covering growth, inflation, demographics, and policy uncertainty



© 2019 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

We purposely exclude central bank target rates and balance sheets to demonstrate yields are explainable with structural factors and traditional growth measures during and after the financial crisis.

The chart shows the **average estimate** and **actual yield** for all developed 10-year yields.

Out-of-sample estimates (2005-current) have moved higher than actual yields during obvious periods of quantitative easing. In other words, central banks efficiently dampened volatility.

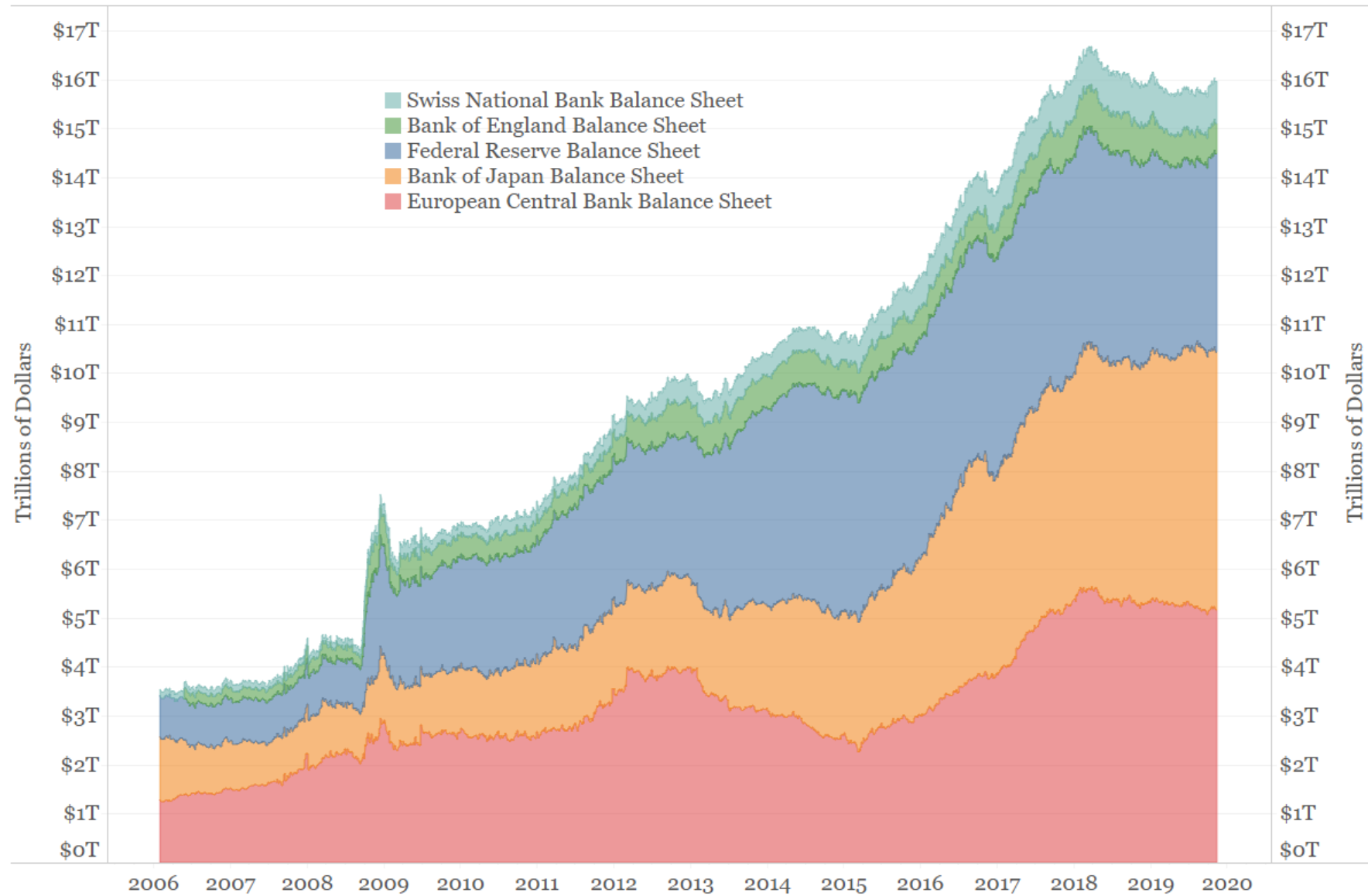
Technology/Globalization

Demographics

Central Banks

Cumulative Central Bank Balance Sheets

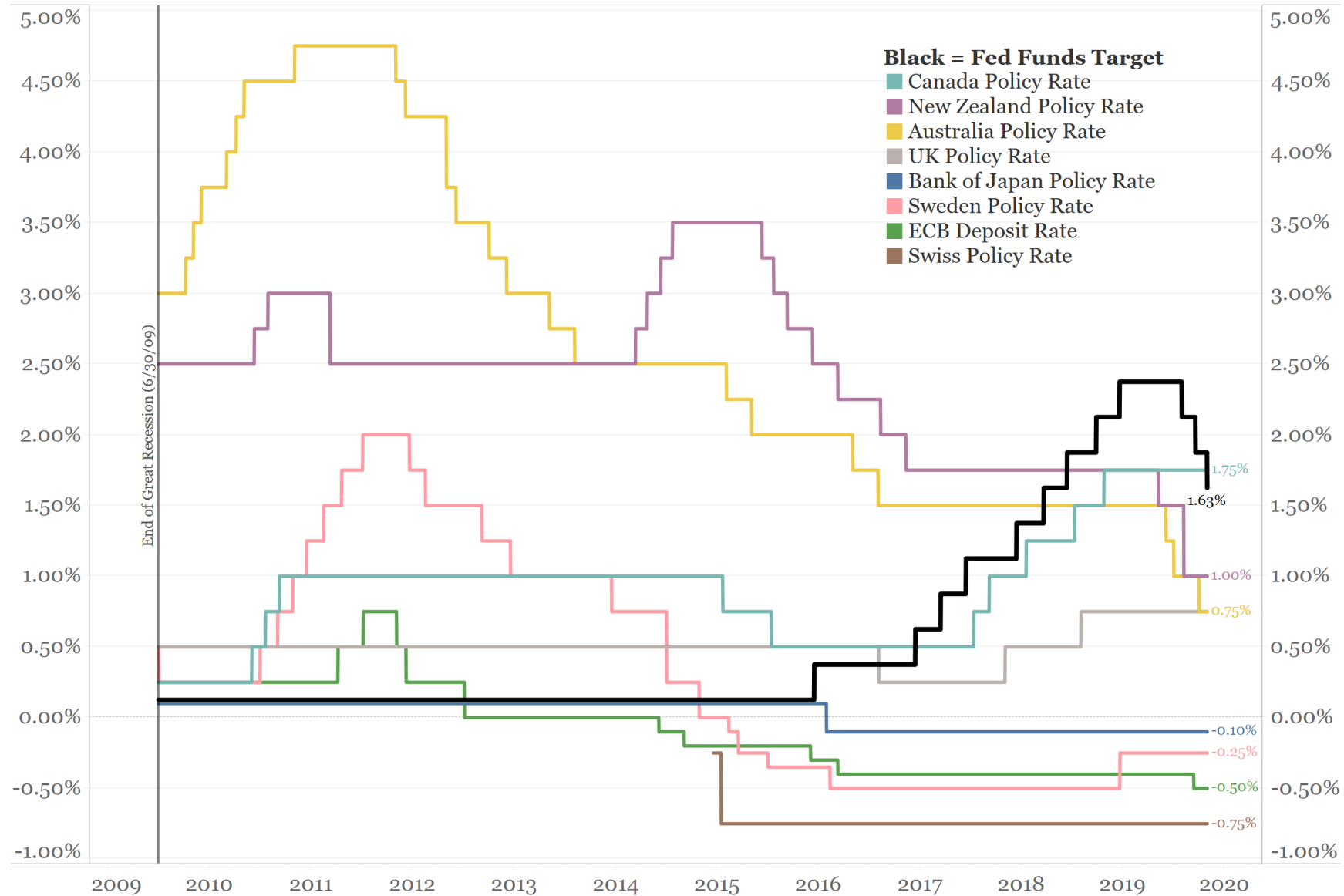
(In Dollars)



Data Source: Fed, ECB, BoJ, BoE, SNB, Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Policy Rates



Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Breakout

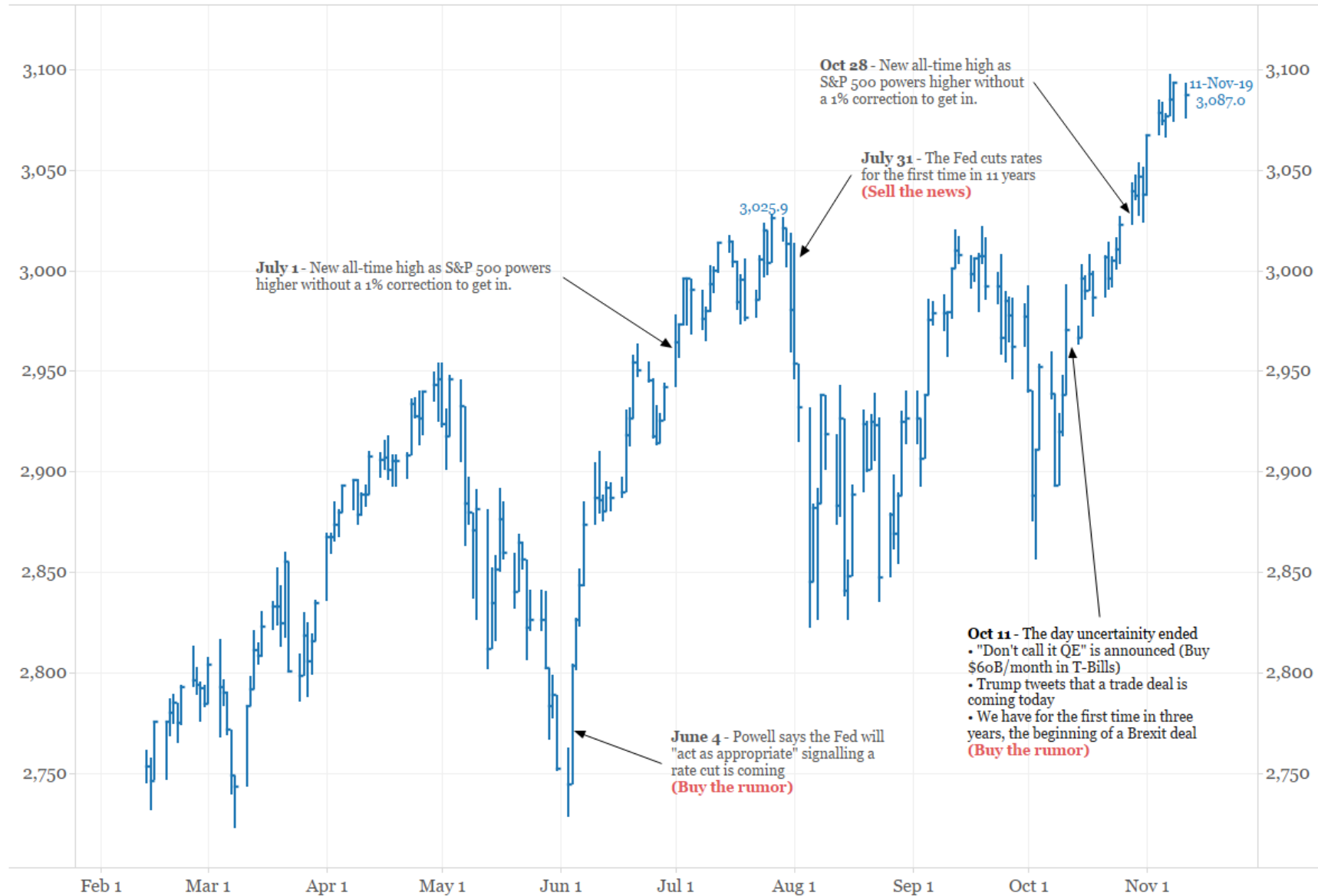
The Yield of the 10-Year US Treasury



Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

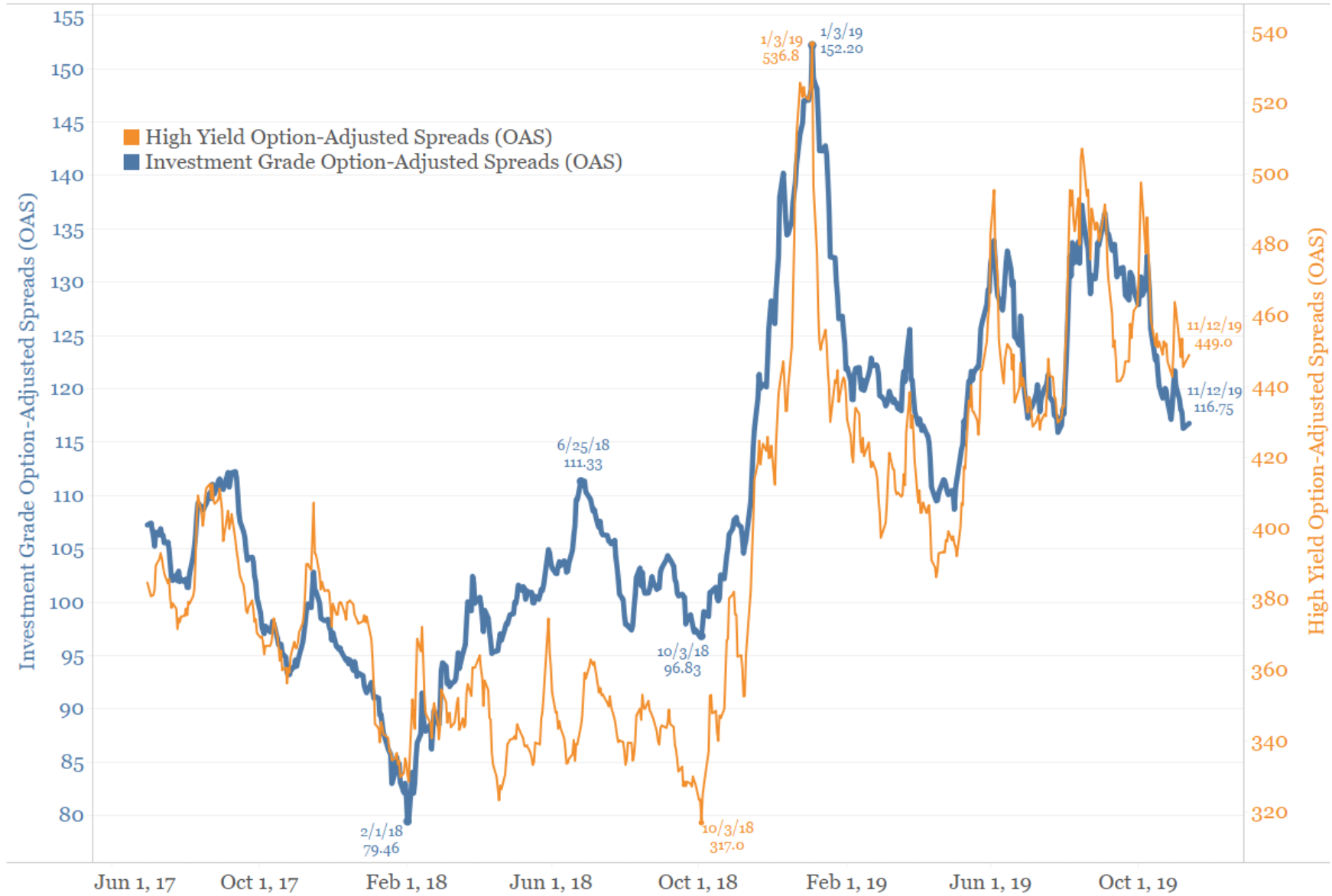
The S&P 500 Index - Will Signing A Trade Deal be "Sell the News"



Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Credit Spreads



Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

S&P/LSTA Leveraged Loan Index

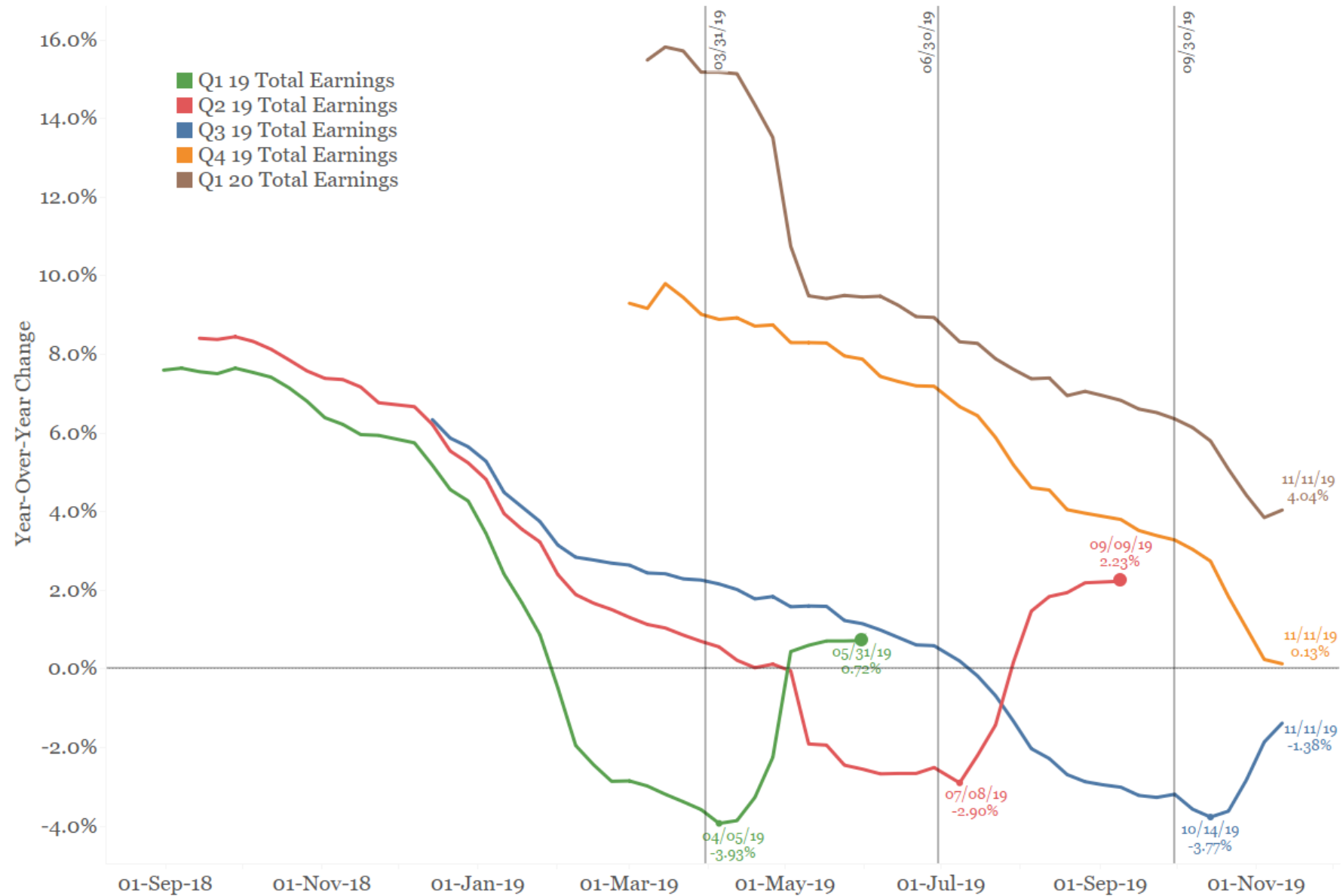


Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

What Rebound?

2019 S&P 500 Operating Earnings Expectations



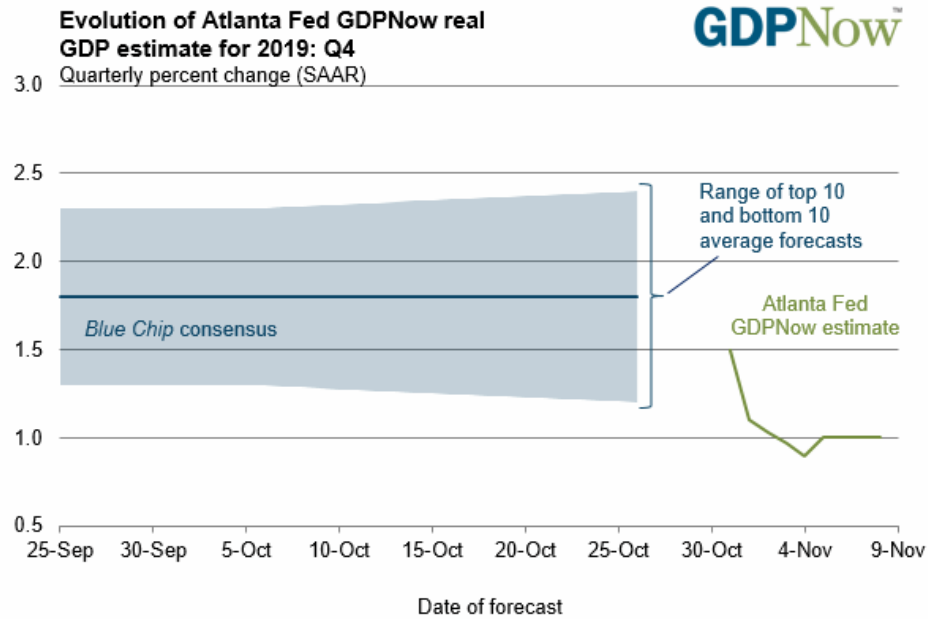
Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Latest forecast: 1.0 percent — November 8, 2019

The GDPNow model estimate for real GDP growth (seasonally adjusted annual rate) in the fourth quarter of 2019 is **1.0 percent** on November 8, unchanged from November 5 after rounding. Following this morning's wholesale trade report from the U.S. Census Bureau, the nowcast of the contribution of inventory investment to fourth-quarter real GDP growth increased from -0.59 percentage points to -0.53 percentage points.

The next GDPNow update is **Friday, November 15**. Please see the "Release Dates" tab below for a list of upcoming releases.



Sources: *Blue Chip Economic Indicators* and *Blue Chip Financial Forecasts*

Note: The top (bottom) 10 average forecast is an average of the highest (lowest) 10 forecasts in the *Blue Chip* survey.

Nov 08, 2019: New York Fed Staff Nowcast

- The New York Fed Staff Nowcast stands at 0.7% for 2019:Q4.
- News from this week's data releases decreased the nowcast for 2019:Q4 by 0.1 percentage point.
- Negative surprises from lower than expected exports and imports data accounted for most of the decrease.

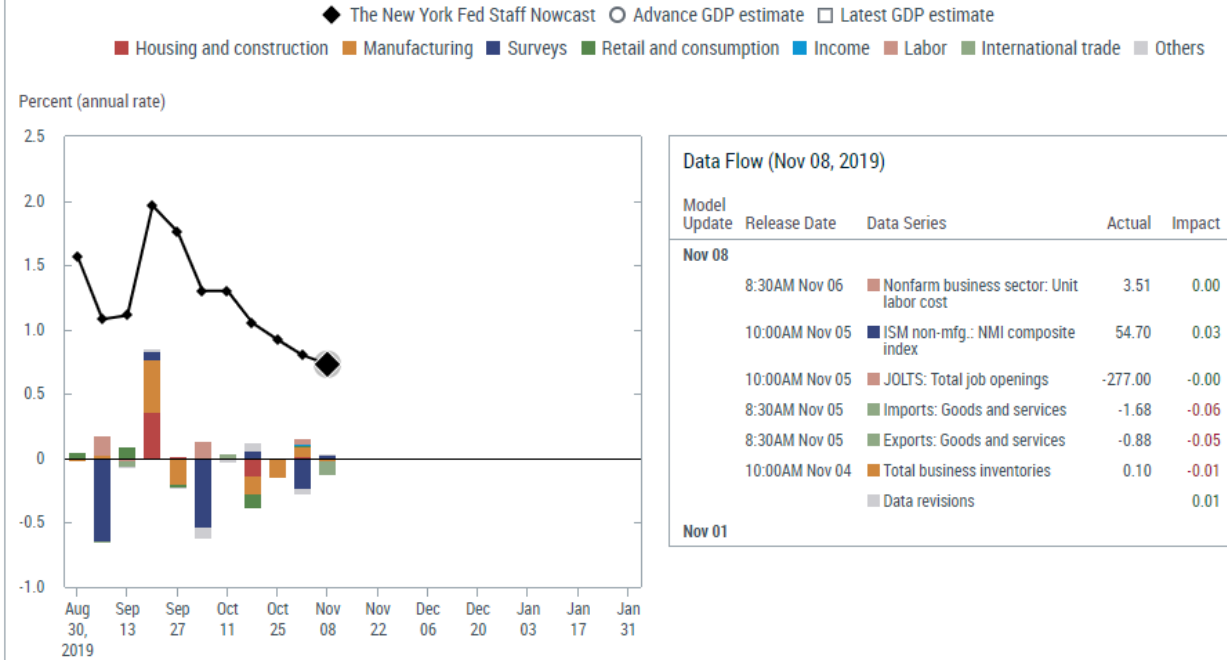
2019:Q4 | 2019:Q3 | 2019:Q2 | 2019:Q1

Last Release 11:15am EST Nov 08, 2019

ARCHIVE

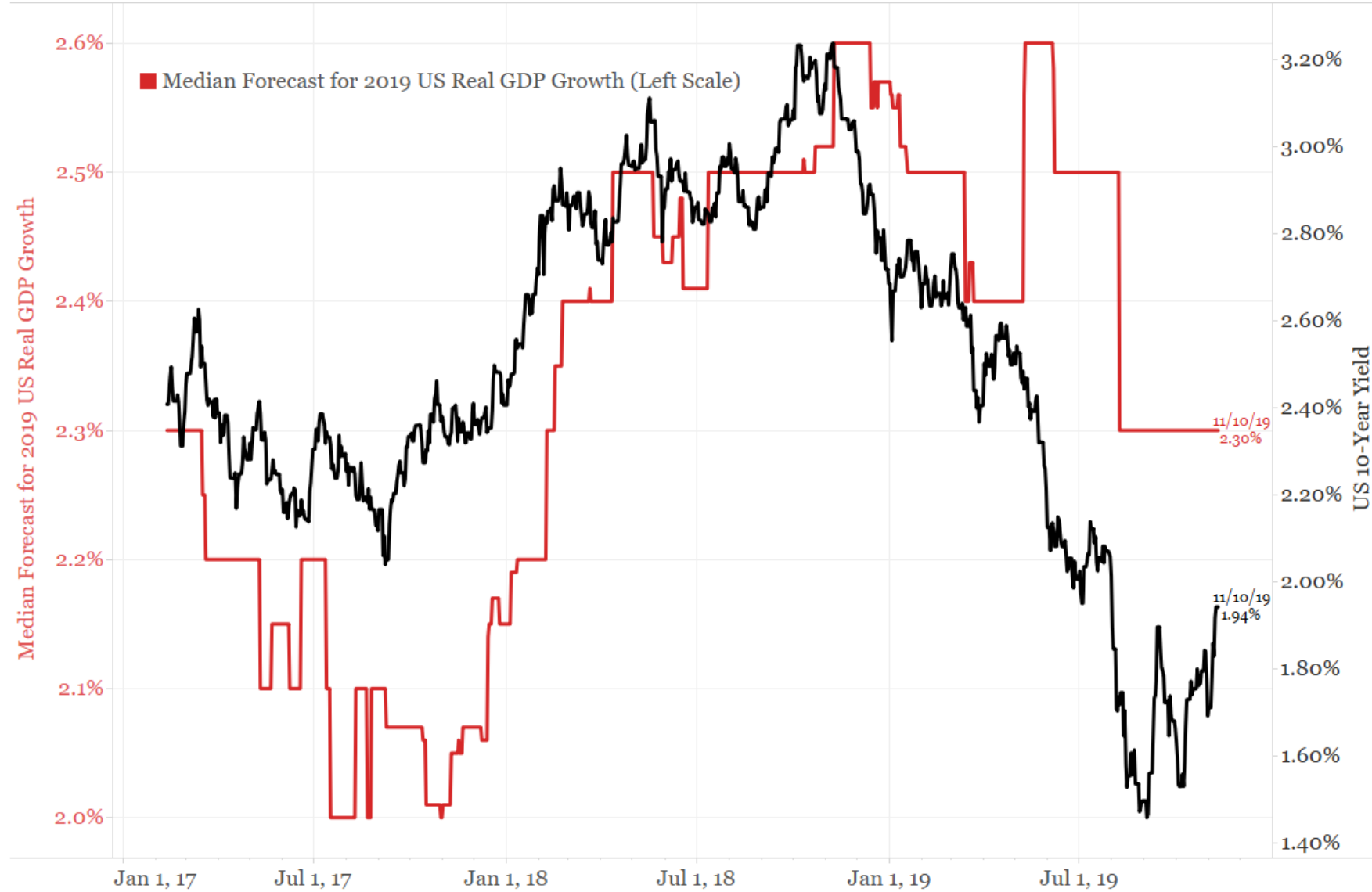
DOWNLOADS

LAYOUT



2019 US GDP Forecast and the 10-Year Yield

From a Regular Survey of Economists by Bloomberg



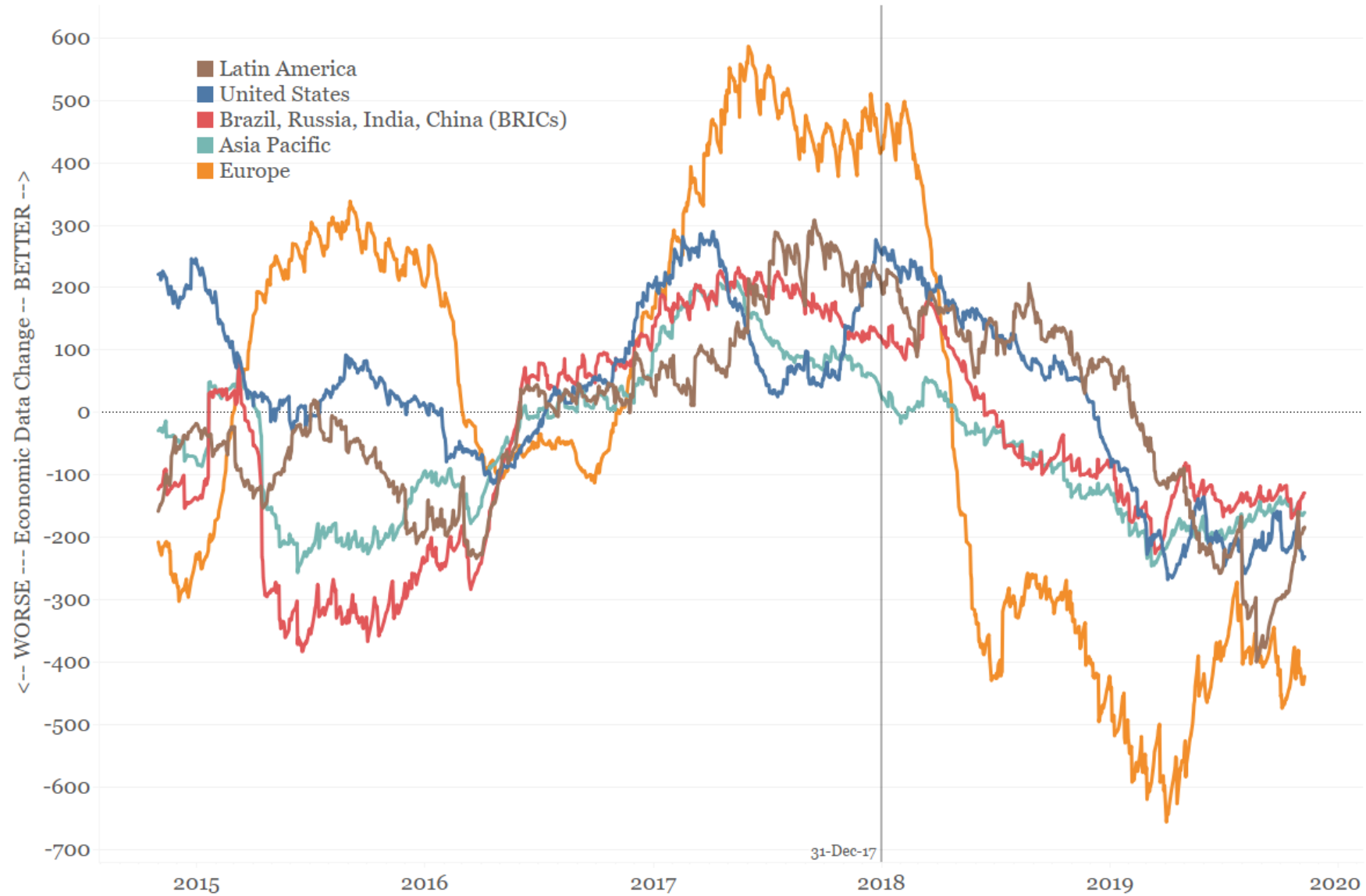
Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Global, Not Domestic

Economic Data Changes Have Lost Momentum Across The Globe

Citigroup Economic Data Change Indices



Data Source: Citigroup and Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Percentage of Citi Data Change Measures Above Zero Worldwide

Citigroup tracks over 40 worldwide measures of economic Growth

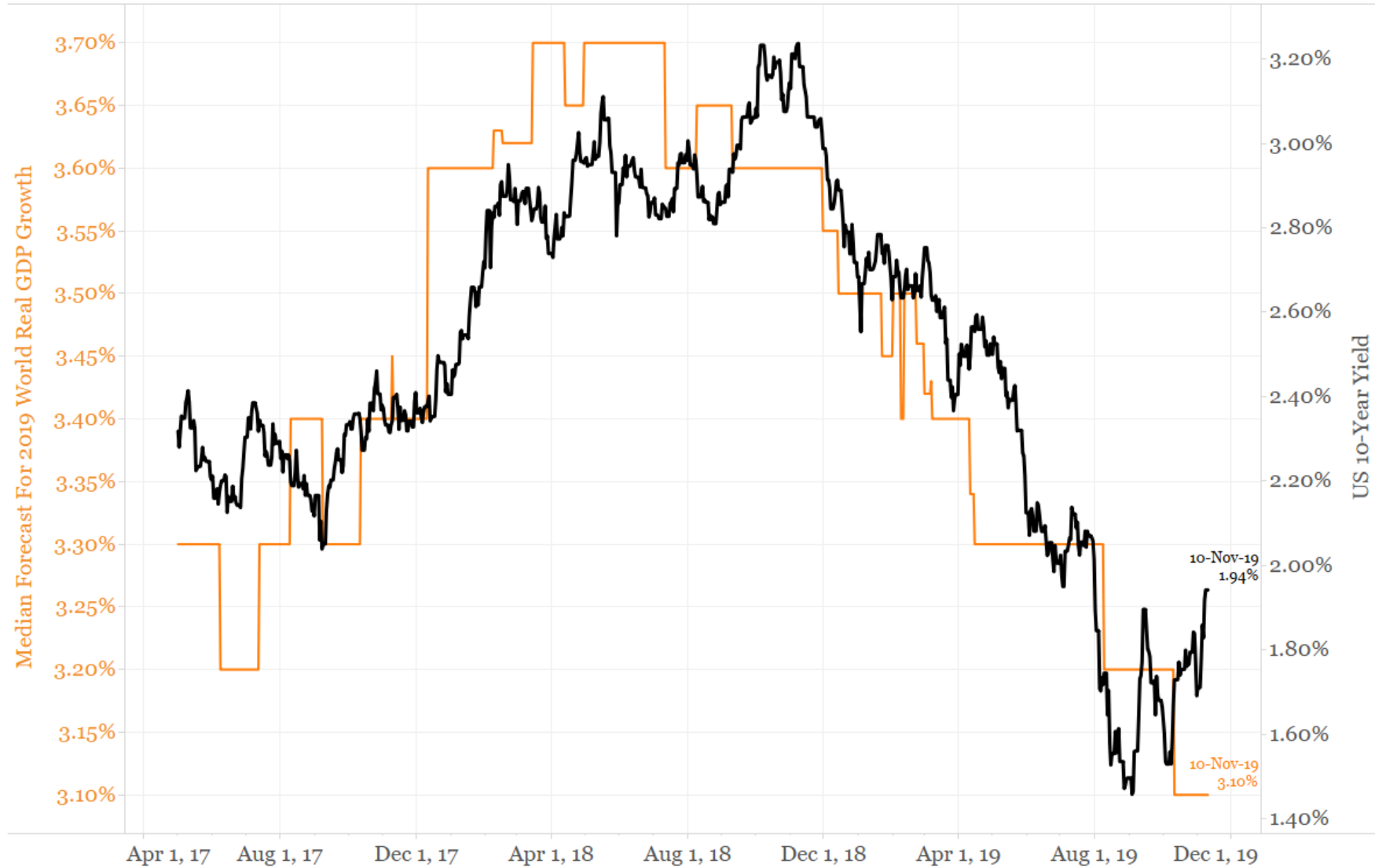


Data Source: Citigroup and Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

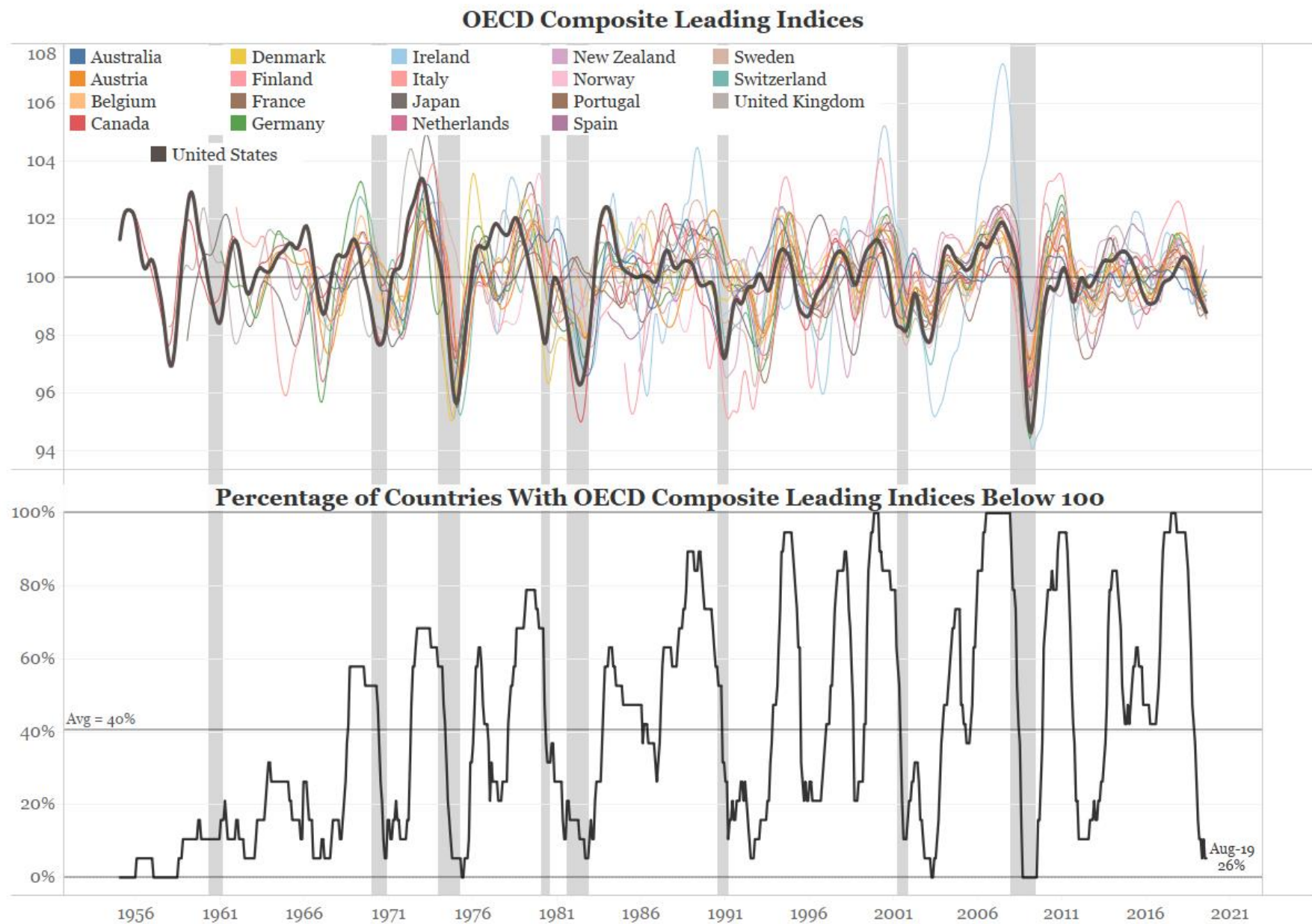
2019 World GDP Forecast and the 10-Year Yield

From a Regular Survey of Economists by Bloomberg
(Country and Regional Forecasts are Aggregated into a World Forecast)



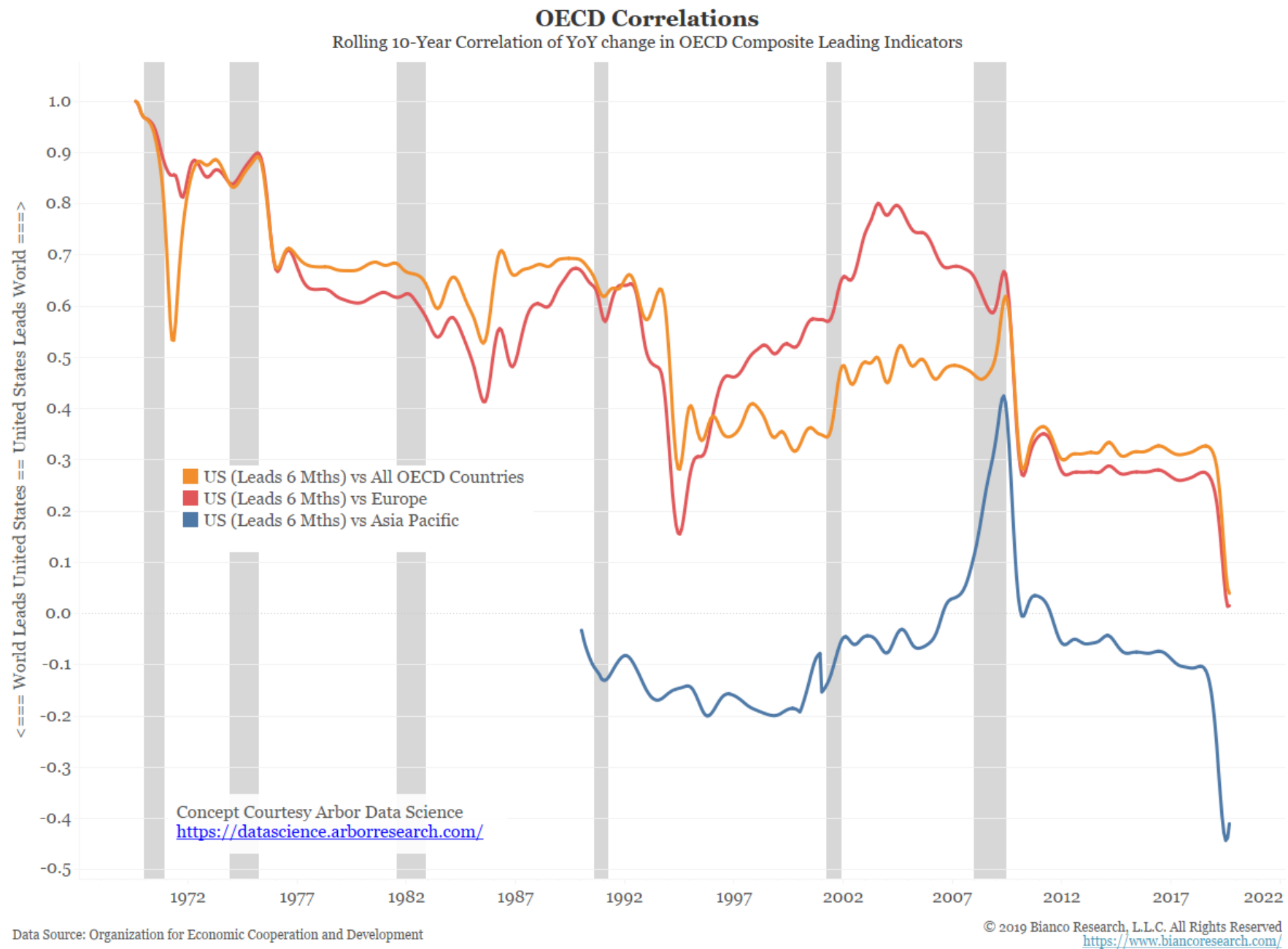
Data Source: Bloomberg

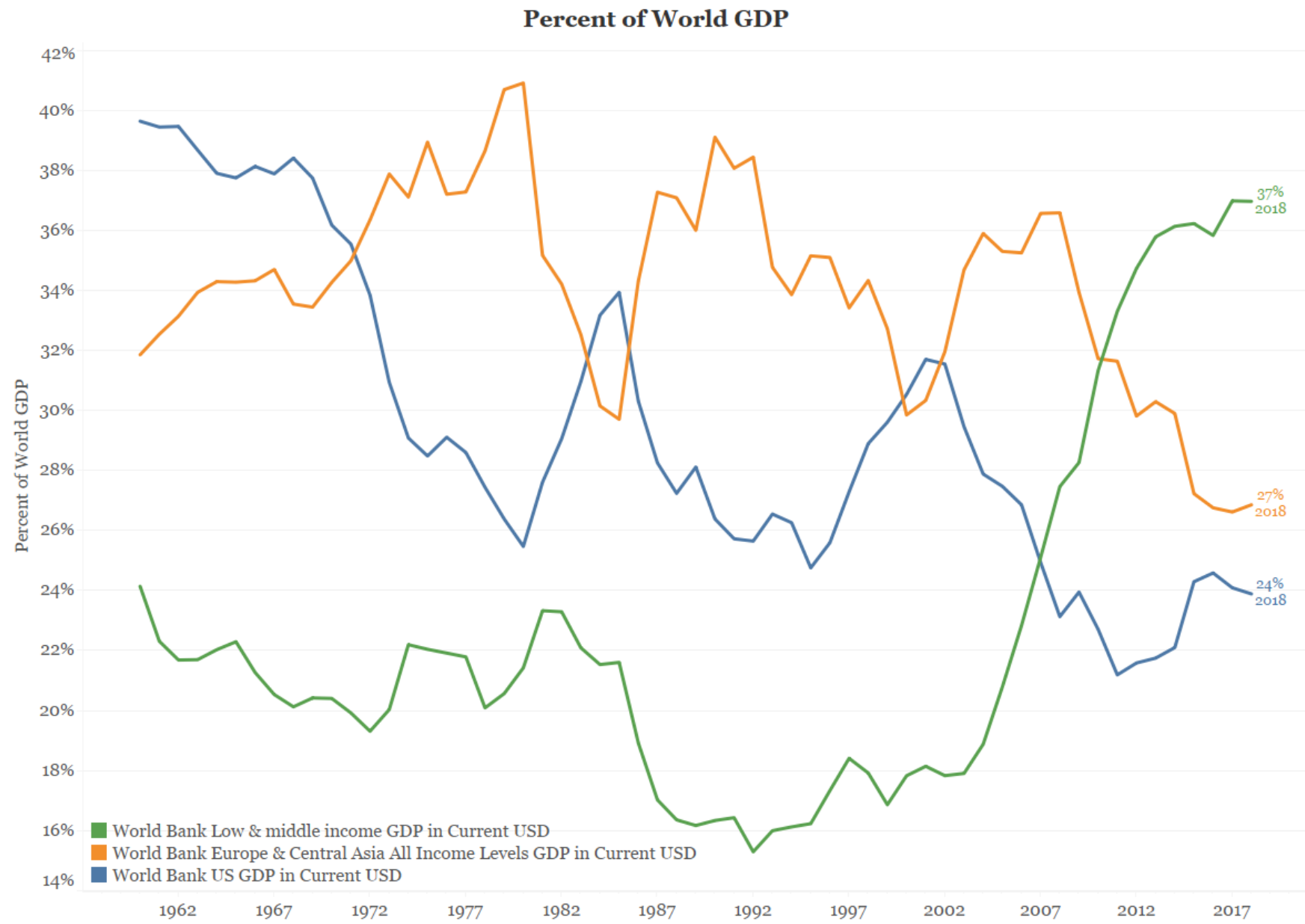
© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>



Data Source: Organization for Economic Cooperation and Development

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>



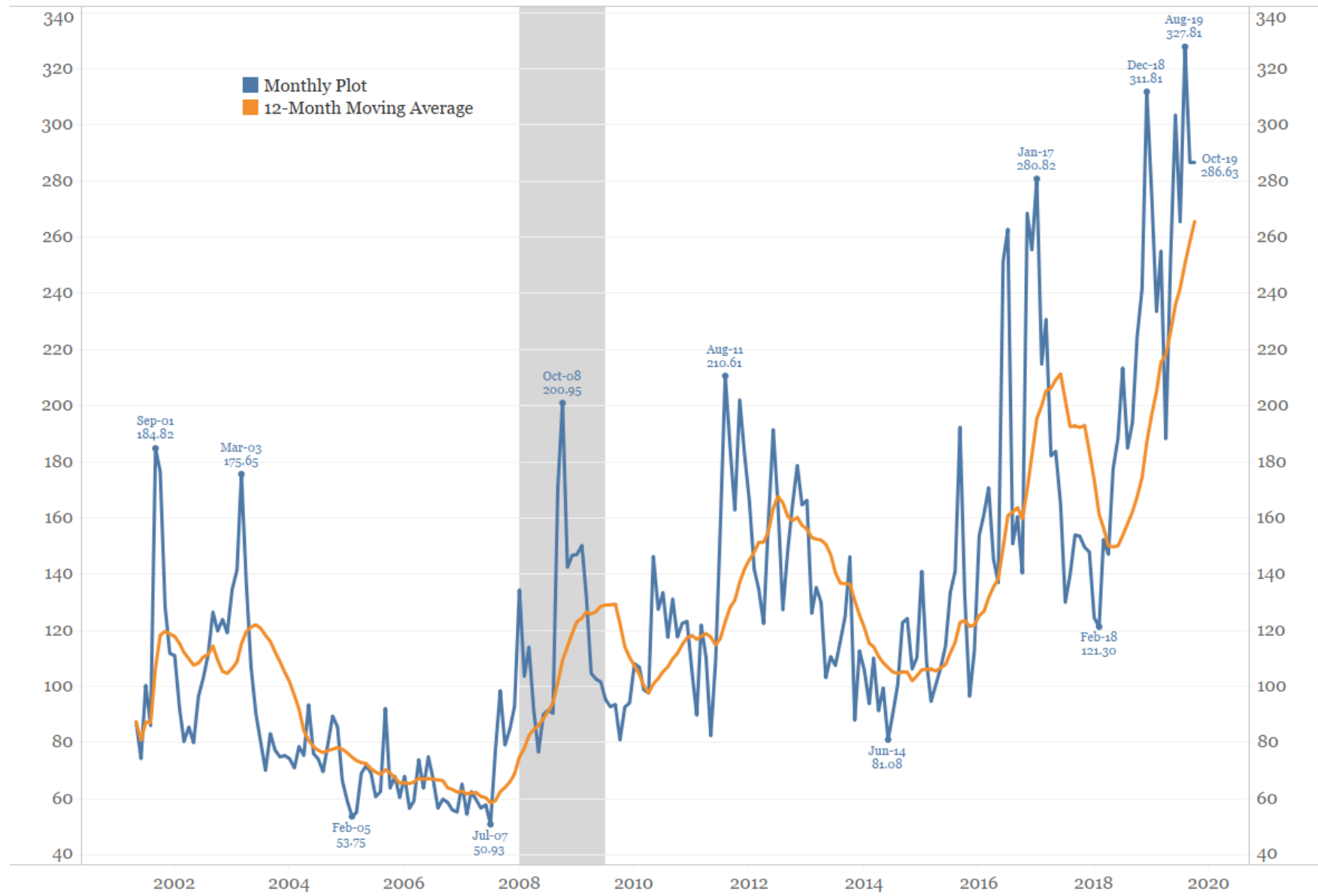


Data Source: Bloomberg, World Bank

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Uncertainty

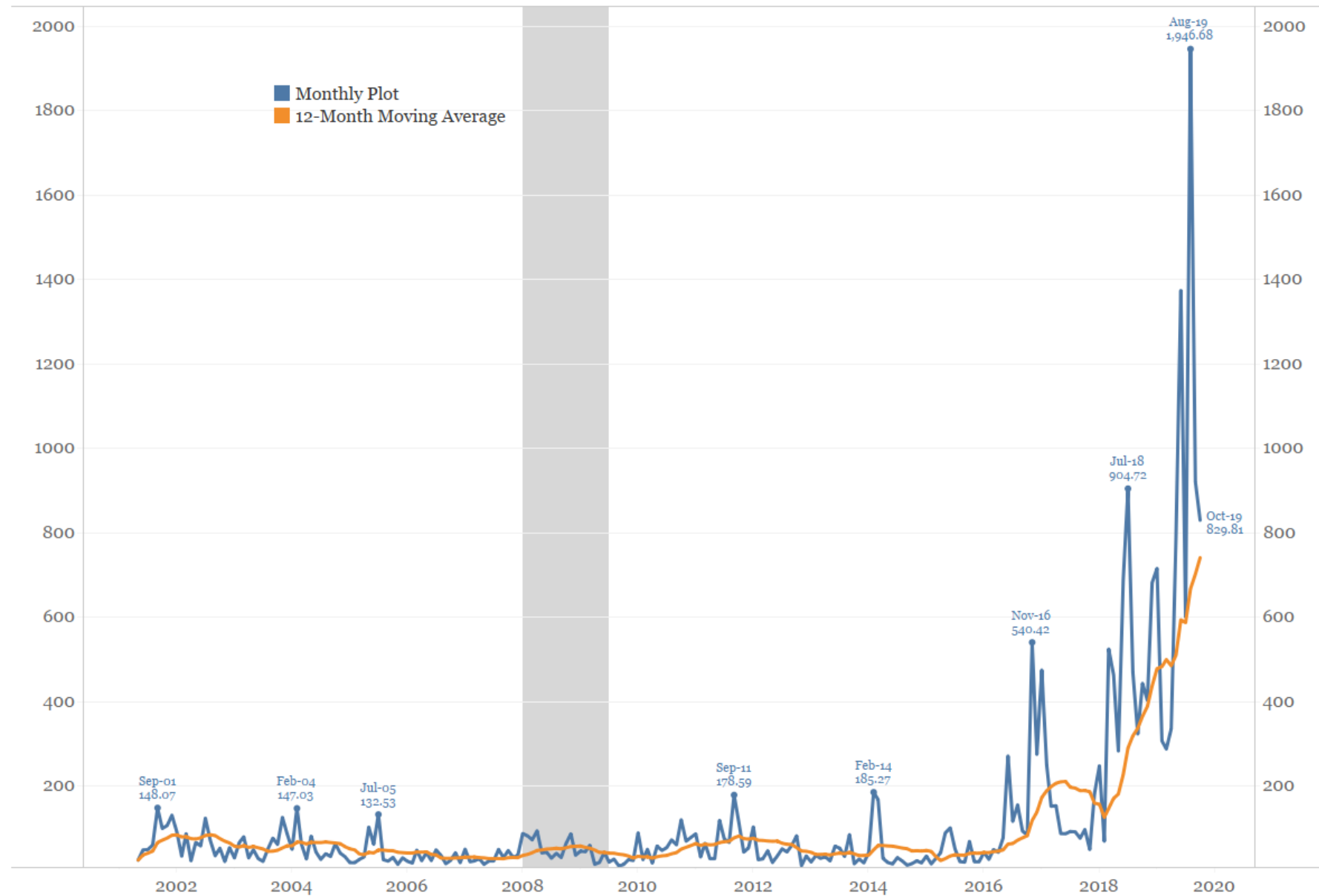
Global Economic Policy Uncertainty Index With Current Price GDP Weights



Data Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

US Categorical Economic Policy Uncertainty Trade Policy

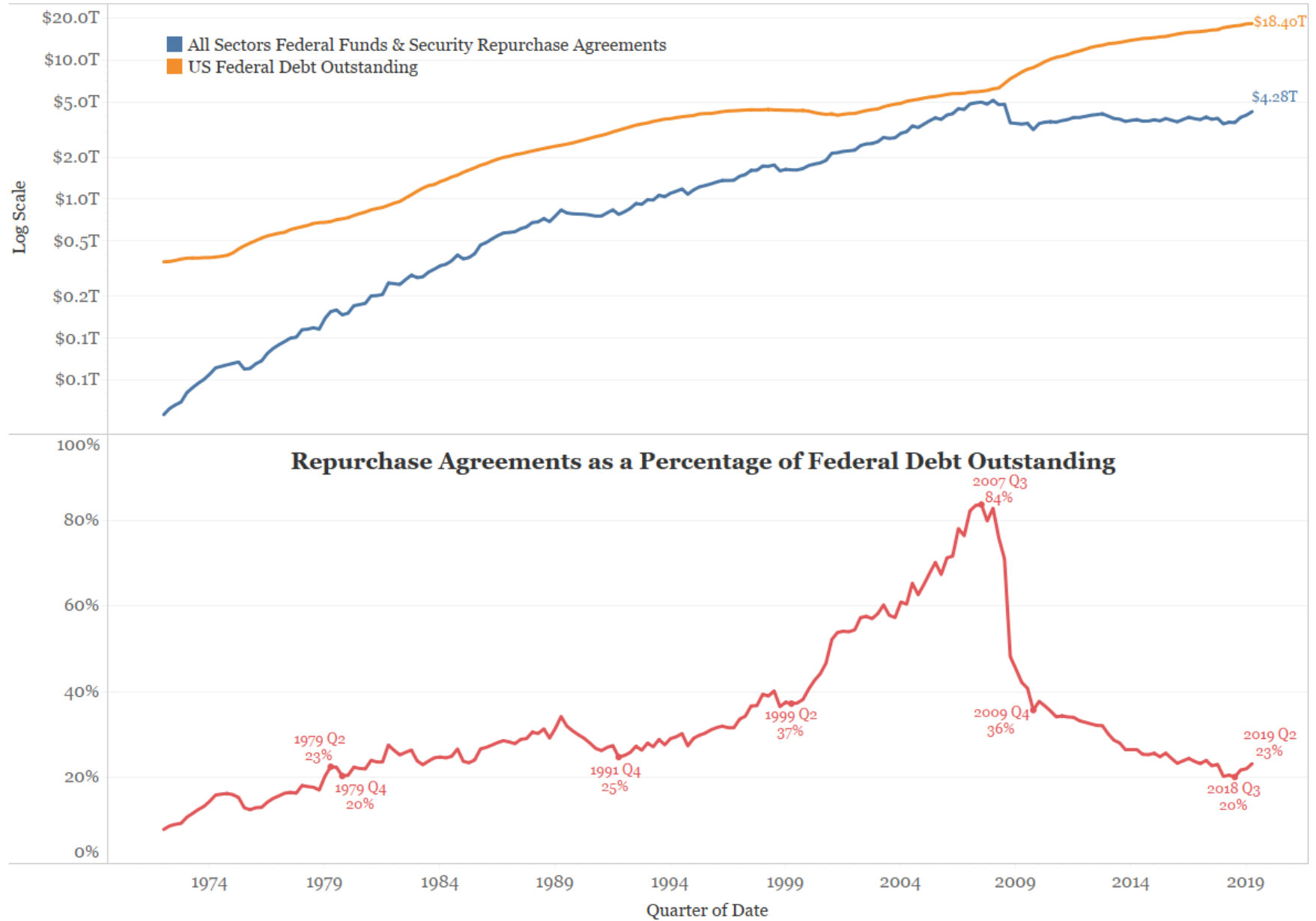


Data Source: Bloomberg

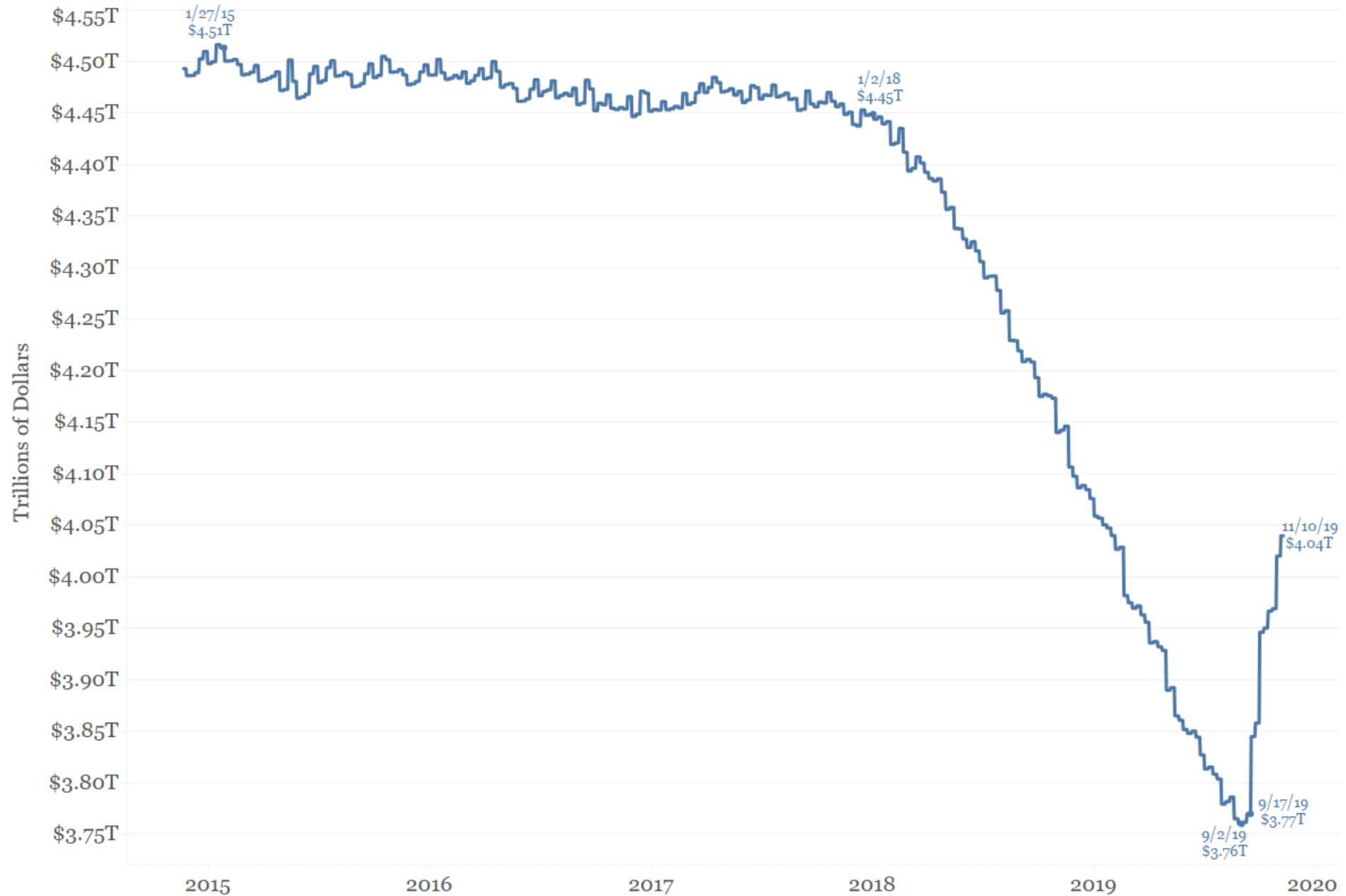
© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

Repo/Not QE

The Shrinking Repo Market



The Federal Reserve's Balance Sheet

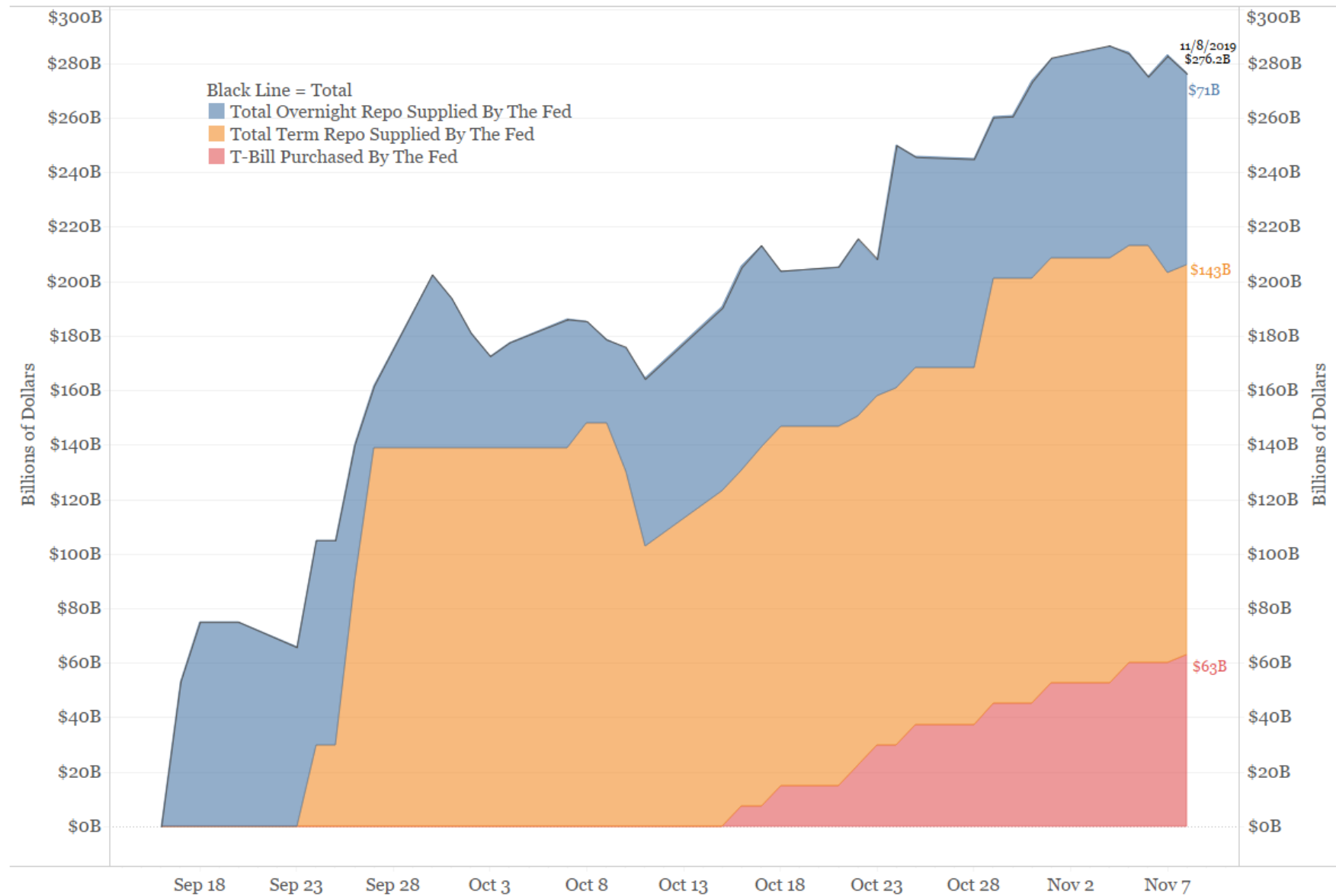


November

Data Source: Fed, Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

How Much Is the Fed Spending to Calm the Repo Market



Source: NY Federal Reserve

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

How Long Until the Recession?

When the 3-month to 10-year yield curve inverts for **10 consecutive trading days**

Date of Inversion	Consecutive Trading Days Inverted	Date of Next Recession	Calendar Days to Next Recession
1/10/1969	24	Dec-69	325
6/14/1973	177	Nov-73	140
12/8/1978	91	Jan-80	389
11/7/1980	102	Jul-81	236
6/6/1989	30	Jul-90	390
7/31/2000	135	Mar-01	213
8/1/2006	217	Dec-07	487
6/6/2019	41	????	????
Average	111		311

1/10/1969 = inverted for 24 calendar days, went positive for 33 days, then inverted again for 53 days

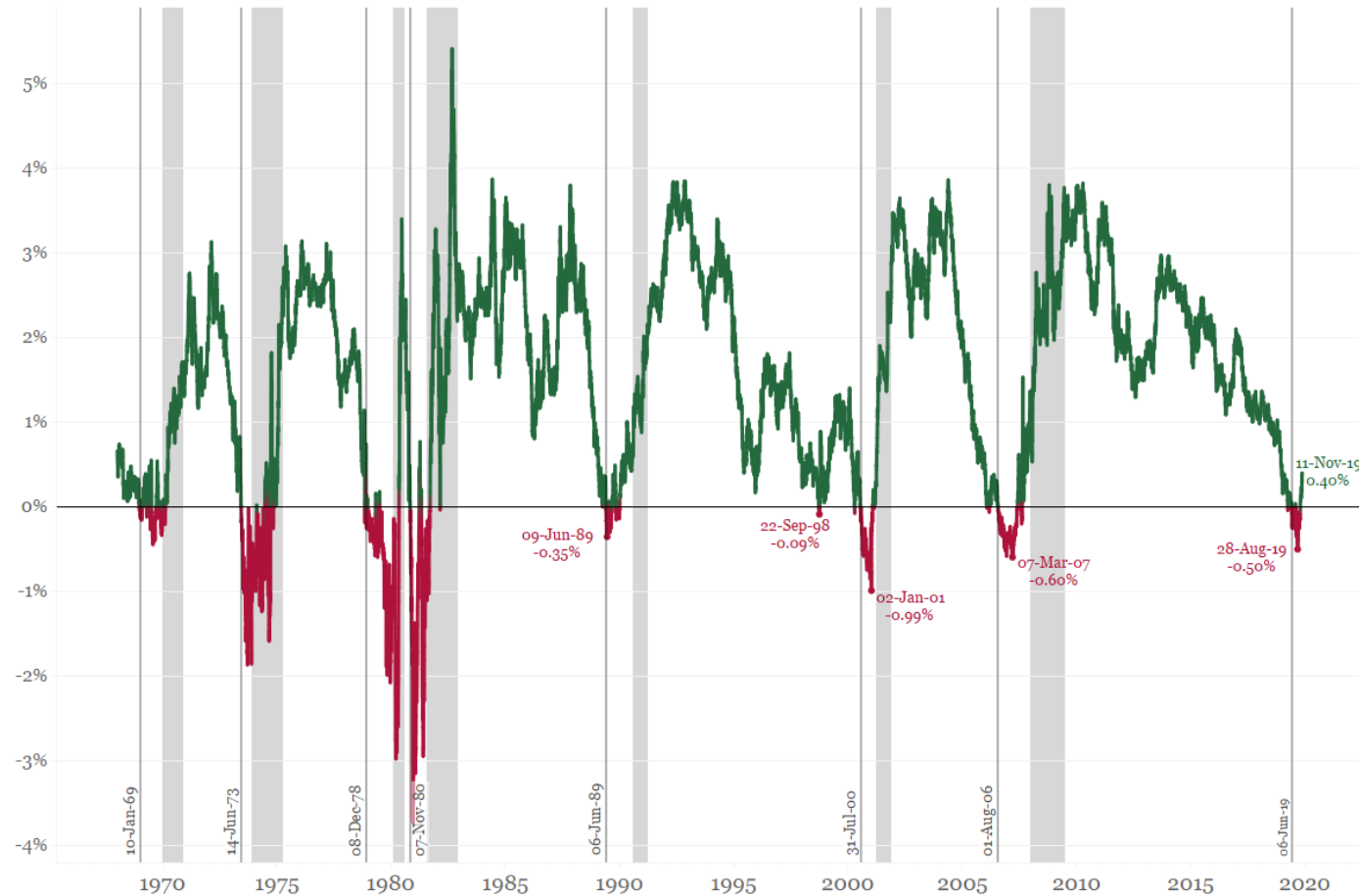
6/6/1989 = inverted for 30 calendar days, went positive for 9 days, inverted again for 26 days

6/6/2019 = As of July 31 the inversion has been 41 consecutive trading days.

Positive for 1 day, inverted since (67 days through October 10)

Yield Curve Inversions Lead Recessions

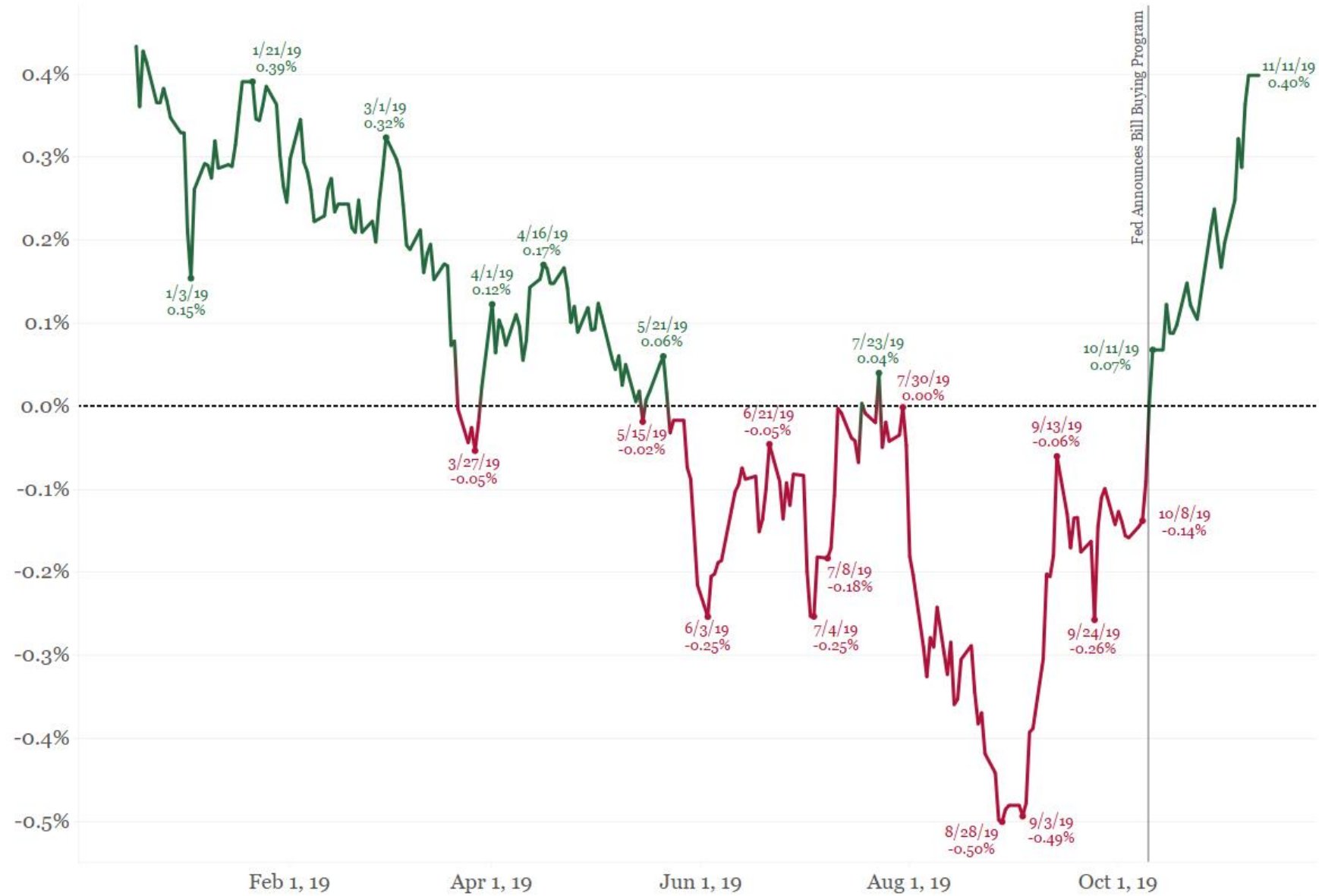
10-Year less 3-Month Yield Curve



Data Source: Federal Reserve and Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com/>

The 10-Year less 3-Month Yield Curve



Source: Bloomberg

© 2019 Bianco Research, L.L.C. All Rights Reserved
<https://www.biancoresearch.com>

Bianco Research L.L.C.

550 W Washington Blvd
Suite 201
Chicago, IL 60661

Phone: (847) 304-1511
Fax: (847) 304-1749
e-mail: research@biancoresearch.com
<http://www.biancoresearch.com>

For more information about the contents/ opinions contained in these reports:

President (847) 756-3599
James A. Bianco jbianco@biancoresearch.com

Analyst (847) 304-1511
Greg Blaha gblaha@biancoresearch.com

For subscription/service Information:

Arbor Research & Trading, Inc.
Director of Sales & Marketing (800) 606-1872
Max Konzelman Max.Konzelman@arborresearch.com

Arbor Research & Trading, L.L.C

1000 Hart Road, Suite 260
Barrington IL 60010

Phone: (847) 304-1550 Fax: (847) 304-1595
e-mail: inforequest@arborresearch.com
<http://www.arborresearch.com>

Domestic - For more information about Arbor Research & Trading and its services:

New York Sales Office

10 East 40th Street 13th Floor
New York, NY 10174
Edward T. McElwreath ed.mcelwreath@arborresearch.com
Phone (212) 867-5326 Fax (212) 370-1218

International - For more information about Arbor Research & Trading and its services:

London Sales Office

2nd Floor
1-2 Broadgate
London
EC2M 2QS
Phone 44-207-100-1051
Neil Tritton neil.tritton@arborresearch.com
Ben Gibson ben.gibson@arborresearch.com

Chicago Sales Office

James L. Perry james.perry@arborresearch.com
Phone (847) 304-1560 Fax (847) 304-1595

Geneva Sales Office

Rich Kleinbauer rich.kleinbauer@arborresearch.com
Phone (41) 22 565-2480

Copyright © 2019 Bianco Research, L.L.C.

This message is intended only for the personal and confidential use of the designated recipients named above. If you are not the intended recipient of this message you are hereby notified that any review, dissemination, distribution or copying of this message is strictly prohibited. This communication is for information purposes only and should not be regarded as an offer to sell or as a solicitation of an offer to buy any financial product, an official confirmation of any transaction, or as an official statement of Bianco Research LLC. Email transmission cannot be guaranteed to be secure or error-free. Therefore, we do not represent that this information is complete or accurate and it should not be relied upon as such. All information is subject to change without notice.