CHARTBOOK

DECEMBER 2017

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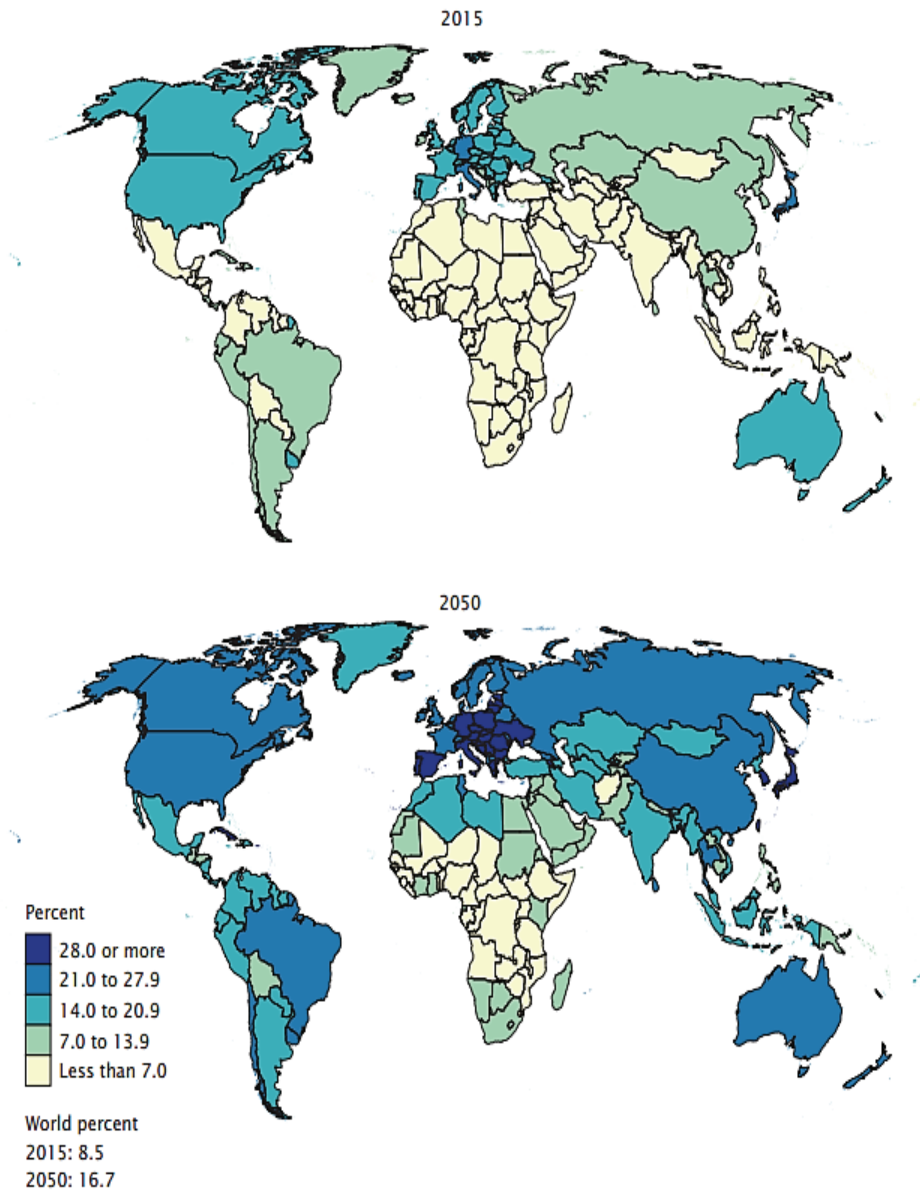
DEMOGRAPHICS CONTINUE TO IMPACT GROWTH

The aging of the developed world will continue to moderate global growth.

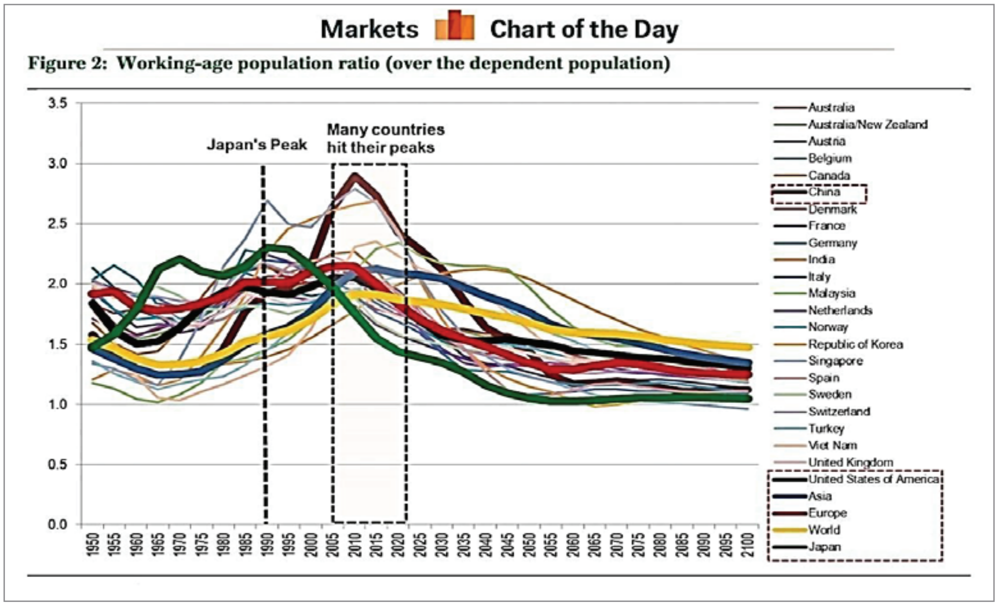
Figure 2-1.
Percentage of Population Aged 65 and Over: 2015 and 2050



[Source: An Aging World: 2015 International Population, March 2016]

ELDERLY WILL NOT BE WELL SUPPORTED

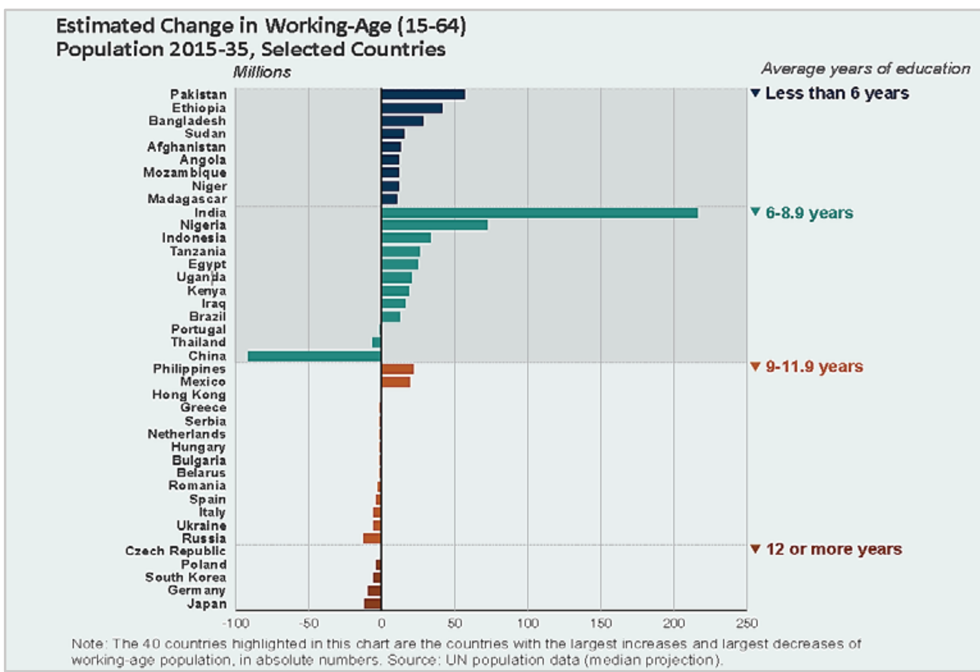
The ratio of working age people to dependent (older) people is peaking – jeopardizes the ability to support the elderly as they live longer.



[Source: United Nations, UBS, May 2017]

PLETHORA OF WORKERS IN POORER COUNTRIES

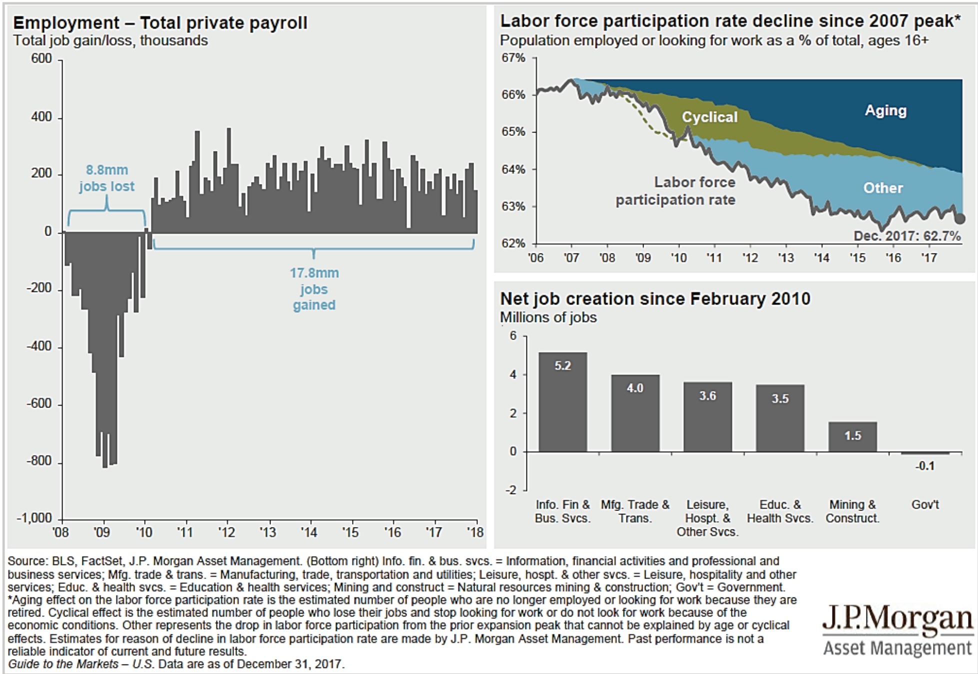
Idea! We could woo young workers from countries with a growing working population. They would earn more money in the U.S. than in their home country, pay taxes and help support the elderly in the developed world.



[Source: National Intelligence Council, *Global Trends, Paradox of Progress,* January 2017]

U.S. LABOR FORCE PARTICIPATION – FALLING

Components of the shrinking U.S. workforce.



[Source: J.P. Morgan Guide to the Markets, U.S., 1Q 2018]

MODERATE BUT SYNCHRONIZED GLOBAL GROWTH

All regions are growing which is very good and lessens dependence on any one region. The developed world is growing slowly but look at India and China!

Real GDP growth

Year-on-year, %

	2016	2017 November Projections	2017 Difference from September interim	2018 November Projections	2018 Difference from September interim	2019 November Projections
World	3.1	3.6	0.1	3.7	0.0	3.6
United States	1.5	2.2	0.1	2.5	0.1	2.1
Euro area[1]	1.8	2.4	0.3	2.1	0.2	1.9
Germany	1.9	2.5	0.3	2.3	0.2	1.9
France	1.1	1.8	0.1	1.8	0.2	1.7
Italy	1.1	1.6	0.2	1.5	0.3	1.3
Japan	1.0	1.5	-0.1	1.2	0.0	1.0
Canada	1.5	3.0	-0.2	2.1	-0.2	1.9
United Kingdom	1.8	1.5	-0.1	1.2	0.2	1.1
China	6.7	6.8	0.0	6.6	0.0	6.4
India[2]	7.1	6.7	0.0	7.0	-0.2	7.4
Brazil	-3.6	0.7	0.1	1.9	0.3	2.3
Russia	-0.2	1.9	-0.1	1.9	-0.2	1.5

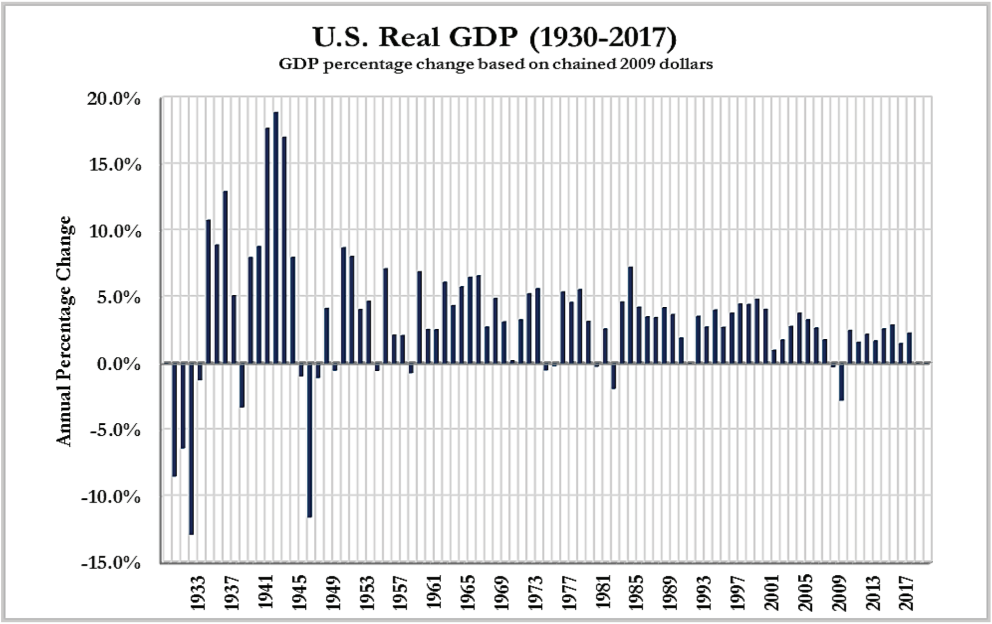
Note: Difference in percentage points based on rounded figures.

1. With growth in Ireland in 2015 computed using gross value added at constant prices excluding foreign-owned multinational enterprise dominated sectors.
2. Fiscal years starting in April.

[Source: OECD November 2017 Interim Economic Outlook]

THE TREND REMAINS DOWN

This is GDP growth in our country since the Depression. The trend is not up. However, we'd rather live on the positive, predictable right side of chart than through two Depressions and two World Wars, Perspective matters!



[Source: Bureau of Economic Analysis]

INFLATION IS ATTEMPTING TO NORMALIZE

Easing Central Bank's fears of global deflation & perhaps setting the stage for rising prices and interest rates.

Year-over-year headline inflation by country and region

		2015	2016												2017										
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
	Global	1.6%	1.8%	1.7%	1.6%	1.6%	1.5%	1.6%	1.5%	1.5%	1.7%	1.7%	1.8%	1.9%	2.3%	2.1%	1.9%	2.0%	1.8%	1.7%	1.7%	1.9%	2.0%	2.1%	2.2%
	Developed Markets	0.5%	0.8%	0.5%	0.5%	0.5%	0.5%	0.6%	0.5%	0.6%	0.9%	1.1%	1.2%	1.5%	2.0%	2.1%	1.8%	1.9%	1.6%	1.4%	1.5%	1.7%	1.8%	1.6%	1.8%
	Emerging Markets	3.5%	3.5%	3.7%	3.4%	3.4%	3.2%	3.2%	3.2%	2.9%	3.0%	3.1%	3.1%	3.0%	3.2%	2.4%	2.5%	2.6%	2.6%	2.5%	2.4%	2.7%	2.6%	2.8%	2.8%
Developed	U.S.	0.7%	1.4%	1.0%	0.9%	1.1%	1.0%	1.0%	0.8%	1.1%	1.5%	1.6%	1.7%	2.1%	2.5%	2.7%	2.4%	2.2%	1.9%	1.6%	1.7%	1.9%	2.2%	2.0%	2.2%
	Canada	1.6%	2.0%	1.4%	1.3%	1.7%	1.5%	1.5%	1.3%	1.1%	1.3%	1.5%	1.2%	1.5%	2.1%	2.0%	1.6%	1.6%	1.3%	1.0%	1.2%	1.4%	1.6%	1.4%	2.1%
	Japan	0.1%	-0.1%	0.2%	0.0%	-0.3%	-0.4%	-0.3%	-0.5%	-0.5%	-0.5%	0.2%	0.5%	0.3%	0.5%	0.2%	0.2%	0.4%	0.4%	0.3%	0.5%	0.6%	0.7%	0.2%	0.5%
	UK	0.2%	0.3%	0.3%	0.5%	0.3%	0.3%	0.5%	0.6%	0.6%	1.0%	0.9%	1.2%	1.6%	1.8%	2.3%	2.3%	2.7%	2.9%	2.6%	2.6%	2.9%	3.0%	3.0%	3.1%
	Euro Area	0.2%	0.3%	-0.2%	0.0%	-0.2%	-0.1%	0.1%	0.2%	0.2%	0.4%	0.5%	0.6%	1.1%	1.8%	2.0%	1.5%	1.9%	1.4%	1.3%	1.3%	1.5%	1.5%	1.4%	1.5%
	Germany	0.2%	0.4%	-0.2%	0.1%	-0.3%	0.0%	0.2%	0.4%	0.3%	0.5%	0.7%	0.7%	1.7%	1.9%	2.2%	1.5%	2.0%	1.4%	1.5%	1.5%	1.8%	1.8%	1.5%	1.8%
	France	0.3%	0.3%	-0.1%	-0.1%	-0.1%	0.1%	0.3%	0.4%	0.4%	0.5%	0.5%	0.7%	0.8%	1.6%	1.4%	1.4%	1.4%	0.9%	0.8%	0.8%	1.0%	1.1%	1.2%	1.3%
	Italy	0.1%	0.4%	-0.2%	-0.2%	-0.4%	-0.3%	-0.3%	-0.2%	-0.2%	0.1%	-0.2%	0.1%	0.5%	1.0%	1.6%	1.4%	2.0%	1.6%	1.2%	1.2%	1.4%	1.3%	1.1%	1.1%
	Spain	-0.1%	-0.4%	-1.0%	-1.0%	-1.2%	-1.1%	-0.9%	-0.7%	-0.3%	0.0%	0.5%	0.5%	1.4%	2.9%	3.0%	2.1%	2.6%	2.0%	1.6%	1.7%	2.0%	1.8%	1.7%	1.8%
	Greece	0.4%	-0.1%	0.1%	-0.7%	-0.4%	-0.2%	0.2%	0.2%	0.4%	-0.1%	0.6%	-0.2%	0.3%	1.5%	1.4%	1.7%	1.6%	1.5%	0.9%	0.9%	0.6%	1.0%	0.5%	1.1%
Emerging	China	1.6%	1.8%	2.3%	2.3%	2.3%	2.0%	1.9%	1.8%	1.3%	1.9%	2.1%	2.3%	2.1%	2.5%	0.8%	0.9%	1.2%	1.5%	1.5%	1.4%	1.8%	1.6%	1.9%	1.7%
	Indonesia	3.4%	4.1%	4.4%	4.4%	3.6%	3.3%	3.5%	3.2%	2.8%	3.1%	3.3%	3.6%	3.0%	3.5%	3.8%	3.6%	4.2%	4.3%	4.4%	3.9%	3.8%	3.7%	3.6%	3.3%
	Korea	1.1%	0.6%	1.1%	0.8%	1.0%	0.8%	0.7%	0.4%	0.5%	1.3%	1.5%	1.5%	1.3%	2.0%	1.9%	2.2%	1.9%	2.0%	1.9%	2.2%	2.6%	2.1%	1.8%	1.3%
	Taiwan	0.1%	0.8%	2.4%	2.0%	1.9%	1.2%	0.9%	1.2%	0.6%	0.3%	1.7%	2.0%	1.7%	2.2%	-0.1%	0.2%	0.1%	0.6%	1.0%	0.8%	1.0%	0.5%	-0.3%	0.3%
	India	5.6%	5.7%	5.3%	4.8%	5.5%	5.8%	5.8%	6.1%	5.0%	4.4%	4.2%	3.6%	3.4%	3.2%	3.7%	3.9%	3.0%	2.2%	1.5%	2.4%	3.3%	3.3%	3.6%	4.9%
	Brazil	10.7%	10.7%	10.4%	9.4%	9.3%	9.3%	8.8%	8.7%	9.0%	8.5%	7.9%	7.0%	6.3%	5.4%	4.8%	4.6%	4.1%	3.6%	3.0%	2.7%	2.5%	2.5%	2.7%	2.8%
	Mexico	2.1%	2.6%	2.9%	2.6%	2.5%	2.6%	2.5%	2.7%	2.7%	3.0%	3.1%	3.3%	3.4%	4.7%	4.9%	5.4%	5.8%	6.2%	6.3%	6.4%	6.7%	6.3%	6.4%	6.6%
	Russia	12.9%	9.8%	8.1%	7.3%	7.3%	7.3%	7.5%	7.2%	6.8%	6.4%	6.1%	5.8%	5.4%	5.0%	4.6%	4.3%	4.1%	4.1%	4.3%	3.9%	3.3%	3.0%	2.7%	2.5%

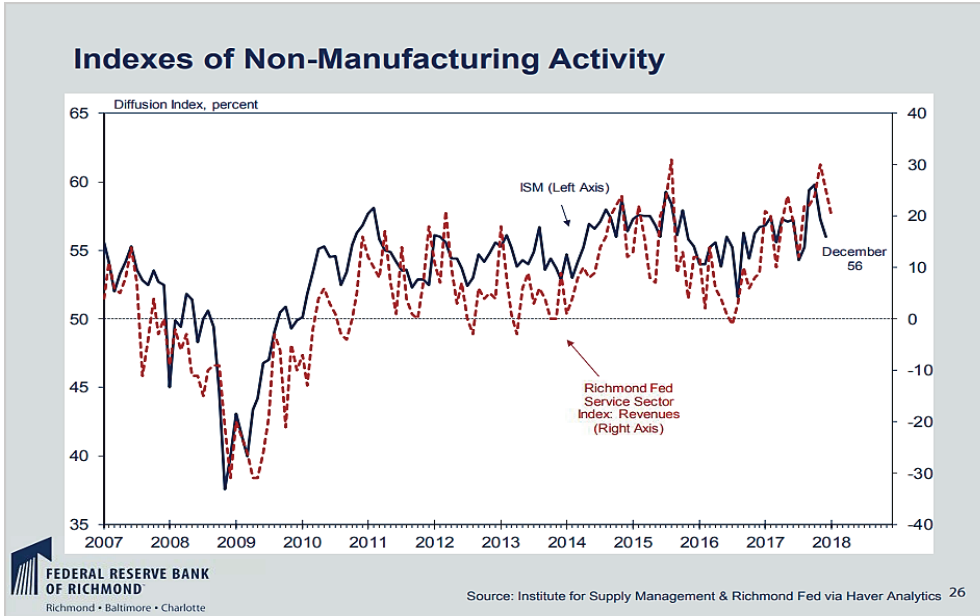
Source: Federal Reserve, Statistics Canada, UK Office for National Statistics (ONS), Eurostat, Melbourne Institute, Japan Ministry of Internal Affairs & Communication, National Bureau of Statistics China, Statistics Indonesia, Korean National Statistical Office, DGBAS, India Ministry of Statistics & Programme Implementation, Bank of Mexico, Goskomstat of Russia, IBGE, FactSet, J.P. Morgan Asset Management.
Heatmap colors are based on z-score of year-over-year inflation rate relative to five year history, for the time period shown. Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of December 31, 2017.

J.P.Morgan Asset Management

[Source: J.P. Morgan Guide to the Markets, U.S., 1Q 2018]

GROWTH RATE GOOD – SERVICE ECONOMY

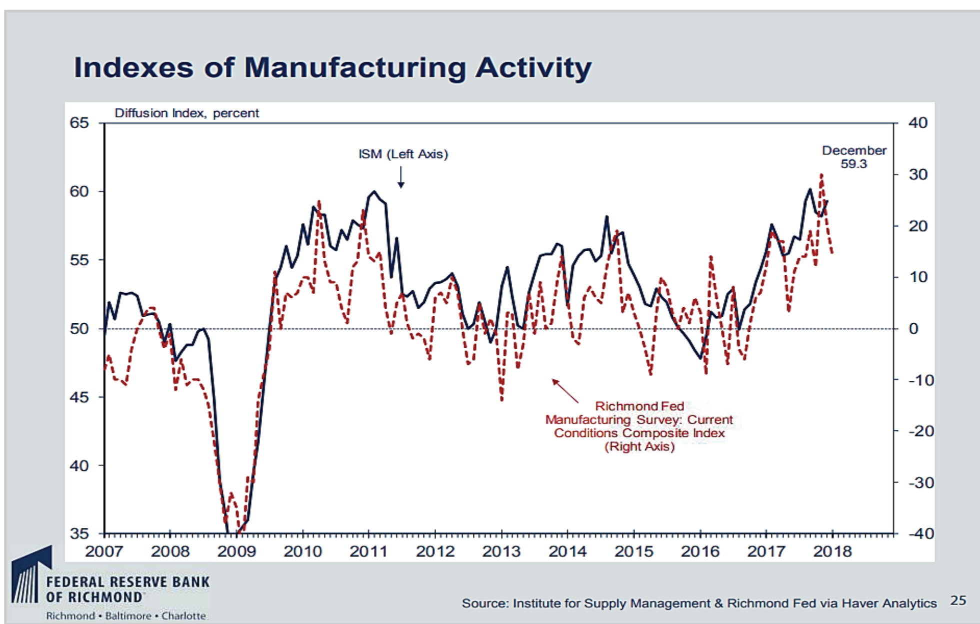
The service economy accounts for about 2/3's of our total economy. Includes professionals, waitresses, lawn care, household renovation. It has been growing strongly.



[Source: Federal Reserve Bank of Richmond] Through December 2017

MANUFACTURING STRONG

U.S. manufacturing is on fire! While manufacturing is a smaller part of the economic fabric, it accounts for a significant piece of our exports and is vibrant right now!

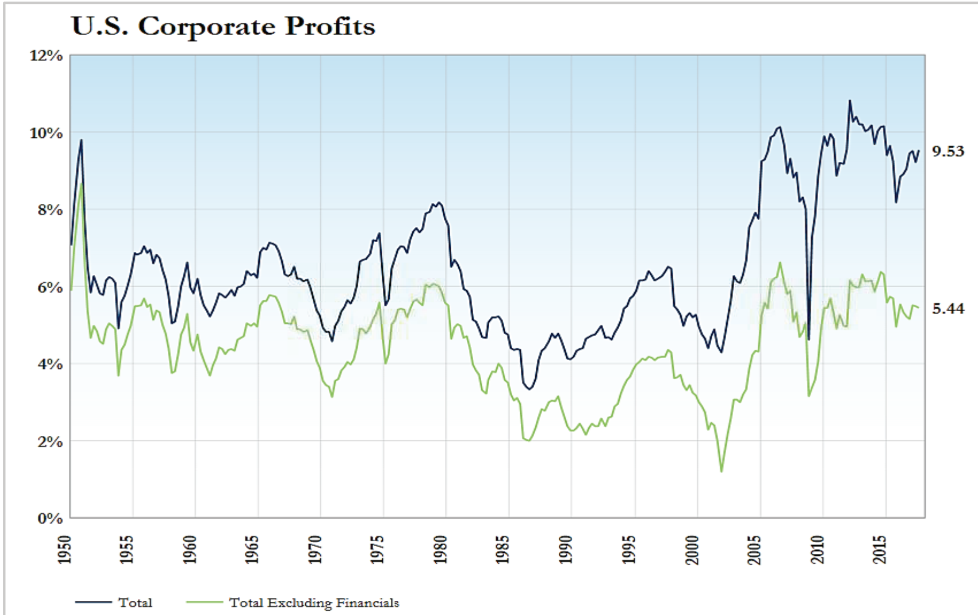


[Source: Federal Reserve Bank of Richmond] Through December 2017

HIGH BUT GROWTH RATE WILL SLOW

Corporate profits are at historically high levels.

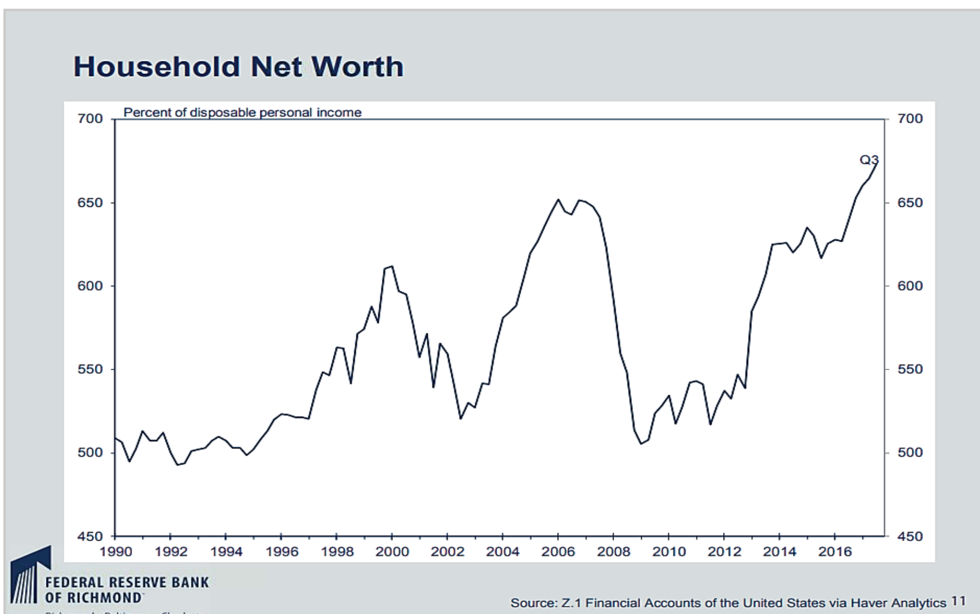
- Partially justifies high valuations.
- Unusually long time spent elevated. Unsustainable?



[Source: Thomson Reuters Datastream] Through September 2017

NET WORTH HAS EXCEEDED 2007 HIGH

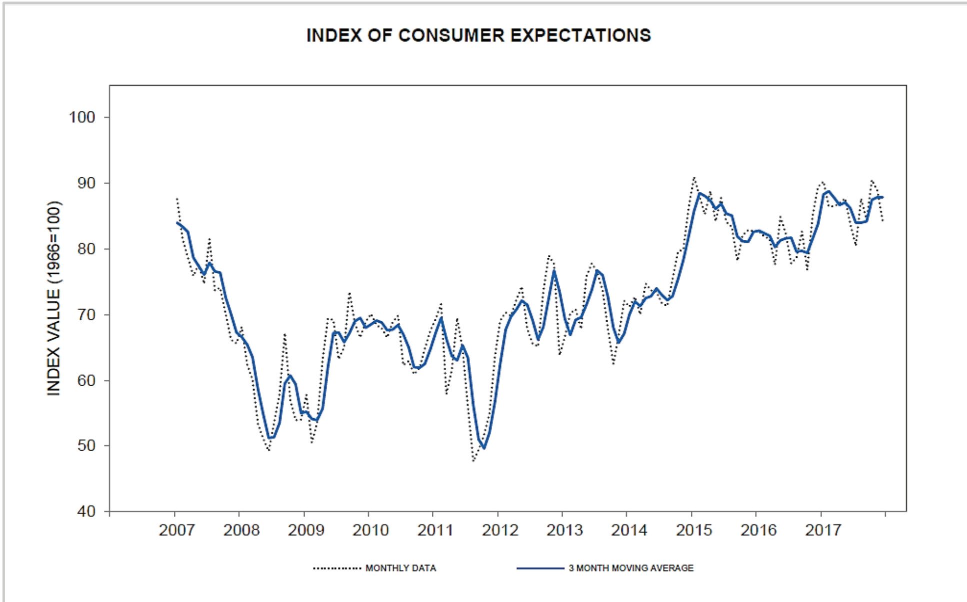
Great that household net worth is at new highs but wealth held by fewer people. Demonstrated by the fact that median level household net worth is 30% lower than 90's inflation adjusted.



[Source: Thomson Reuters Datastream] Through September 2017

CONSUMERS HAVE BRIGHT EXPECTATIONS

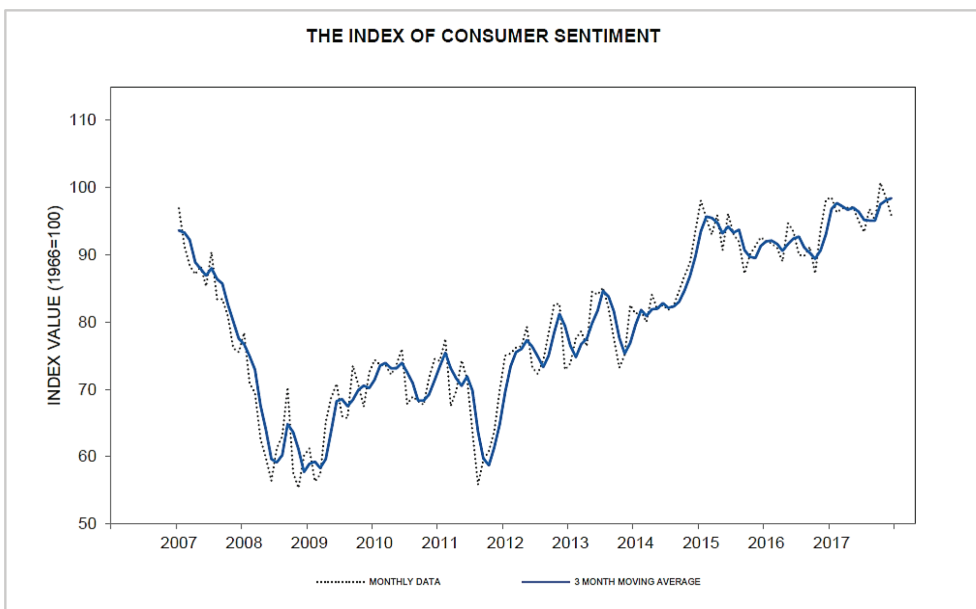
Consumers' expectations for the next 6 months are, and have remained, high.



[Source: Surveys of Consumers, University of Michigan] Through December 2017

CONSUMERS ARE HAPPY

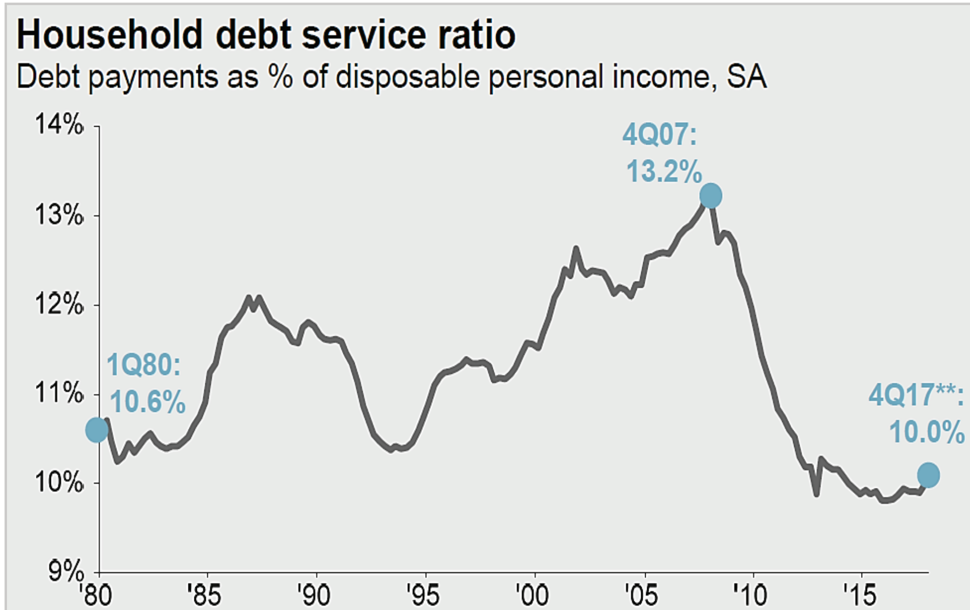
Ditto for sentiment.



[Source: Surveys of Consumers, University of Michigan] Through December 2017

DEBT IS LOW

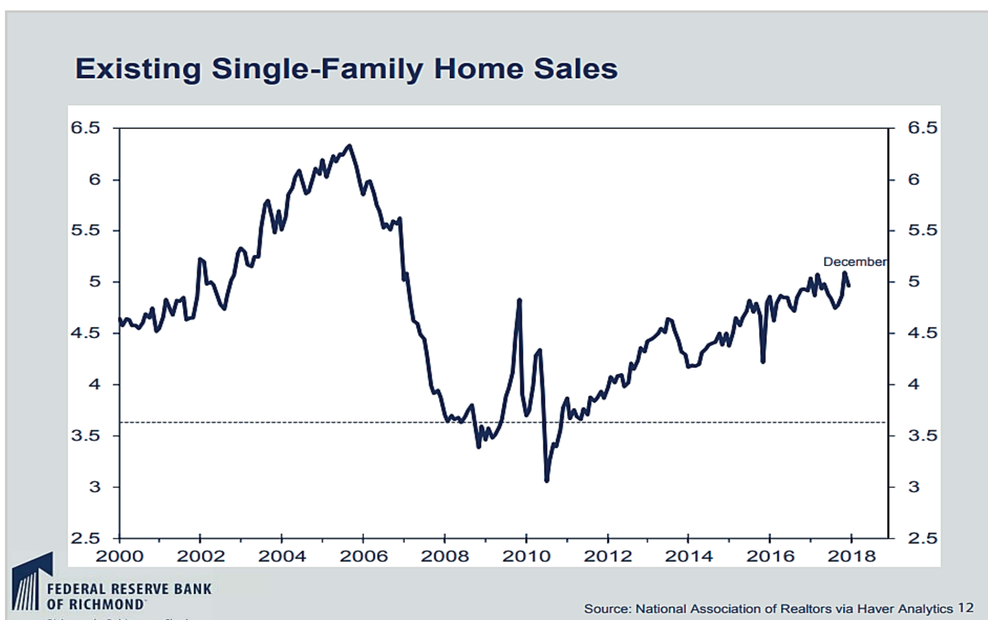
Debt as a percent of ‘spendable’ income has dropped significantly. However, should interest rates rise this dynamic would reverse.



[Source: J.P. Morgan Guide to the Markets U.S. 1Q 2018]

HOUSING – STEADY RECOVERY

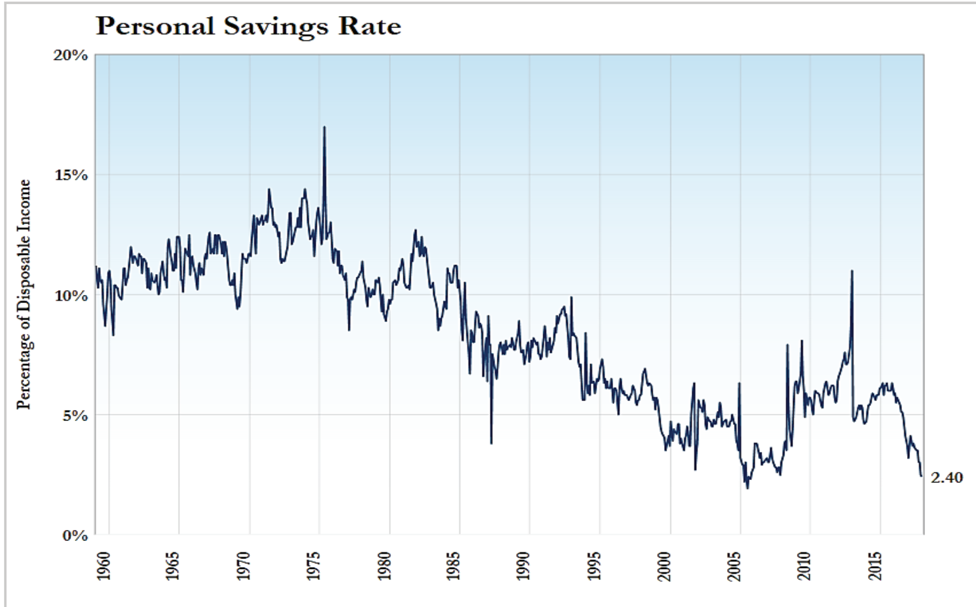
Home sales are rising steadily and at a sustainable pace, from their lows.



[Source: Federal Reserve Bank of Richmond] Through December 2017

WARNING – SAVINGS RATE BACK UNDER 3%

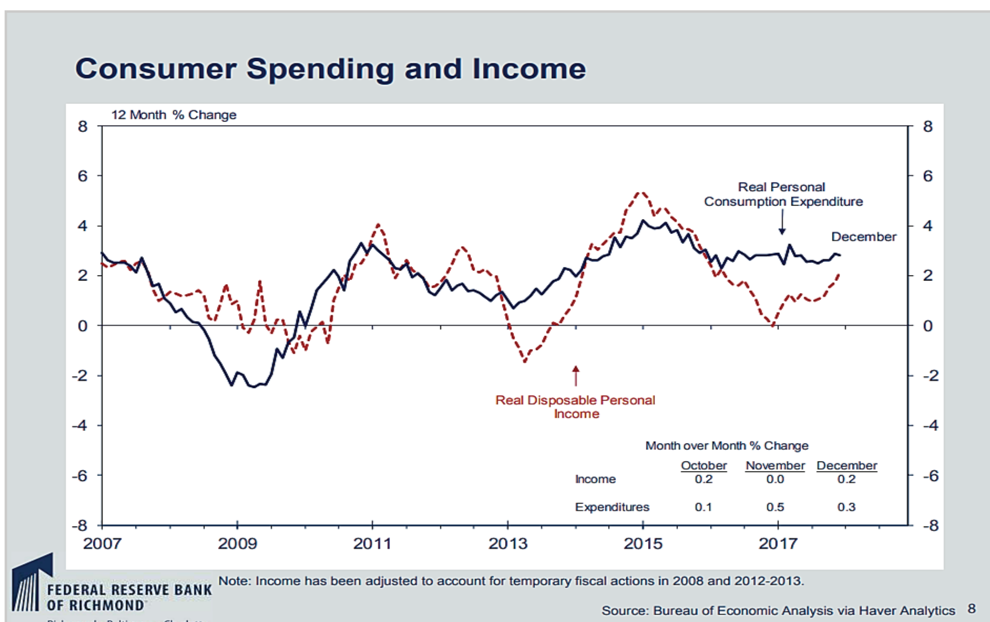
A low and falling savings rate reflects optimism about the future but also has preceded most large market declines as consumers & investors became giddy with too much optimism. Our saving rate is unsustainably low anyway.



[Source: Thomson Reuters Datastream] Through December 2017

WARNING – CONSUMERS SPENDING MORE THAN MAKING

Spending more than is coming in is also indicative of optimism becoming recklessness as investors' assets 'do the saving' for them; for a bit. Also sometimes precursor to market declines.



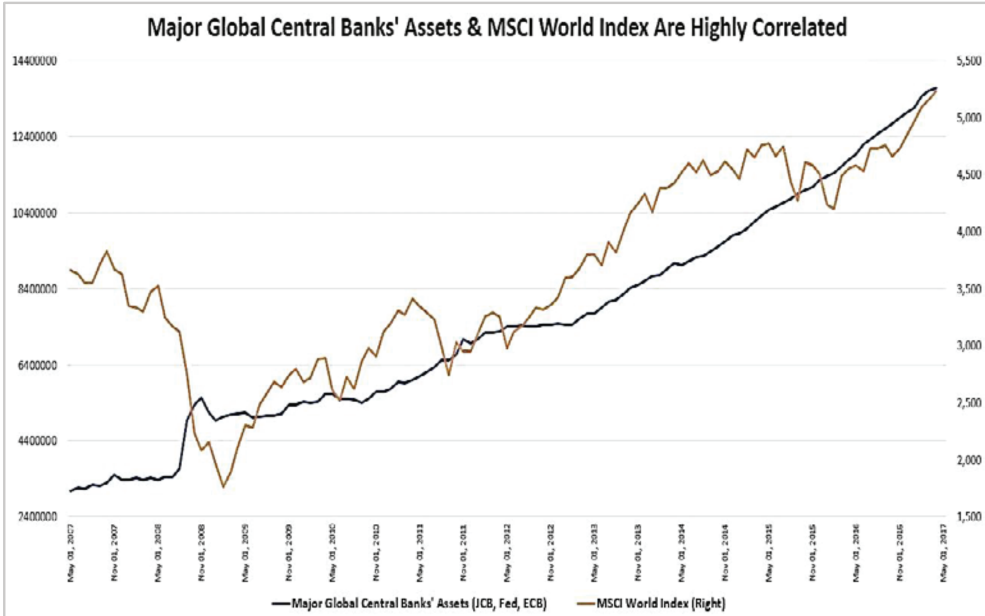
[Source: Federal Reserve Bank of Richmond] Through December 2017

CENTRAL BANKS HAVE SUPPORTED MARKETS

We believe that there is a high correlation between Cen Bank money-printing and stock (& other asset) prices.

Note – lack of correlation before most QE (2008).

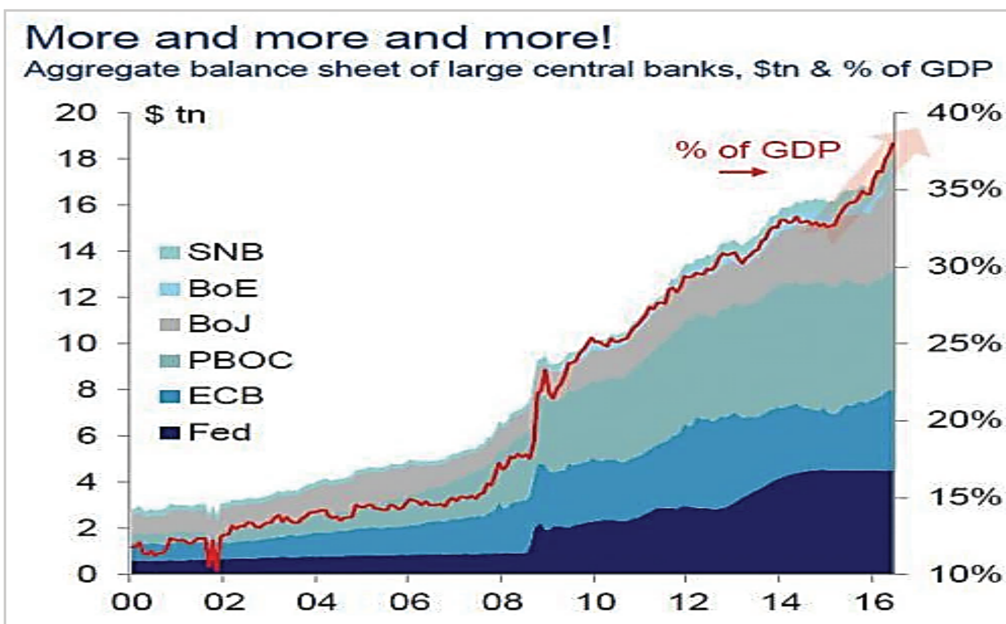
A corollary, as the rate of printing slows markets will become more volatile and more prone to decline.



[Source: Time Money, Bull Market Ending with Balance Sheet Unwinding?, July 6, 2017.]

STIMULUS WITHDRAWAL COULD HURT

Largest 6 Cen Bank's printing from 3 trillion to approximately 18 trillion. Rate of growth in printing is slowing but not negative. See the current trajectory (flat or upward sloping) near the right side of the chart. U.S. has stopped.



[Source: Citi Research, Haver, July 2017.]

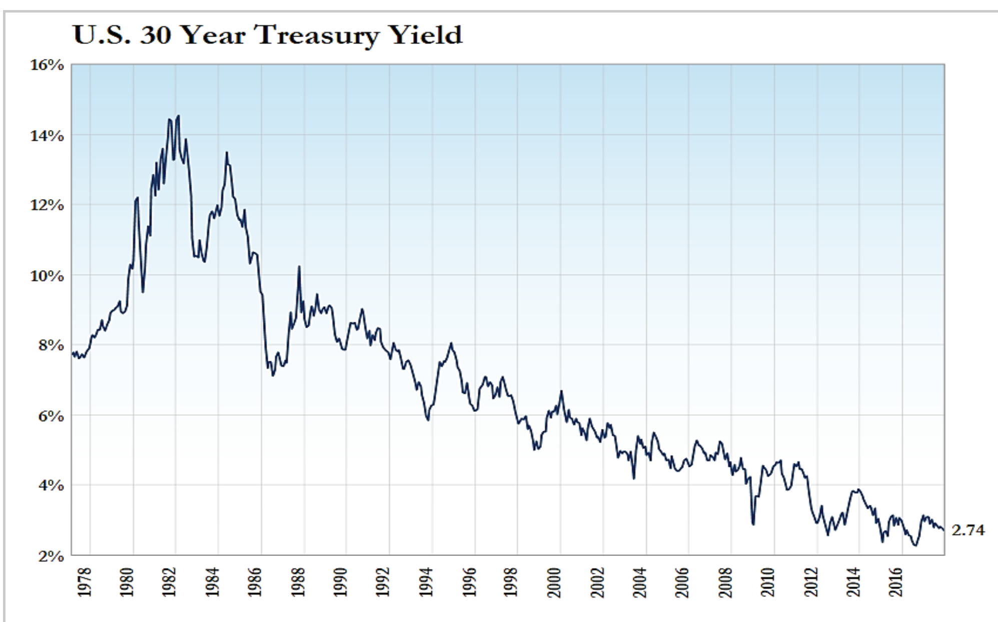
IS A BREAKOUT COMING?

The 30 year yield is testing its recent highs. A more substantial, longer breakout is now possible.

[Source: Thomson Reuters Datastream] Data Through 01/26/2018

HAS BEEN DECLINING FOR YEARS

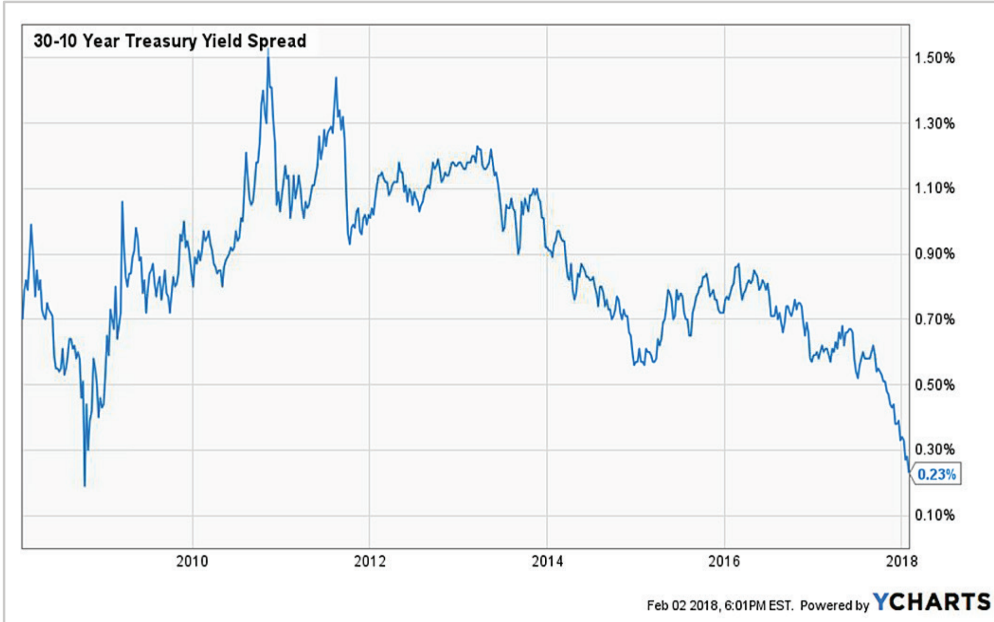
Rates however, have been mostly falling for almost 40 years despite 'rising rate' scares, most recently, before now, in 2013; after which rates fell further. While the stars are aligned for a more sustained rise, now it will have to be strong, long & decisive to alter this long down trend.



[Source: Thomson Reuters Datastream] Data Through 01/26/2018

TREASURY YIELD SPREAD IS SINKING

The spread between the 10-year and 30-year Treasury yield now stands at 23 basis points, reflecting a flattening of the yield curve, which has historically portended difficult economic times, if not recessions.



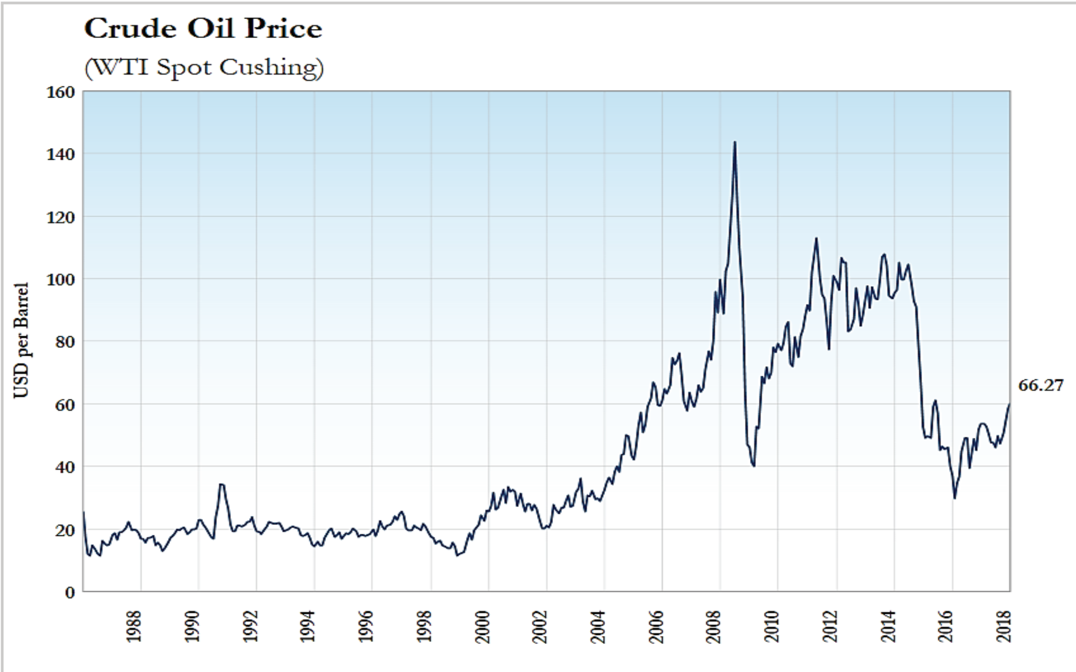
[Source: YCharts]

10 YEAR YIELD CLIMBING

While 30-year Treasury yields remain below the 3.2% level in March 2016, 10-year Treasury yields have broken through the 2.63% level of last March, closing on February 2nd at 2.85%.

[Source: Macrotrends] Data Through 02/05/2018

OIL PRICE APPEARS TO HAVE BASED

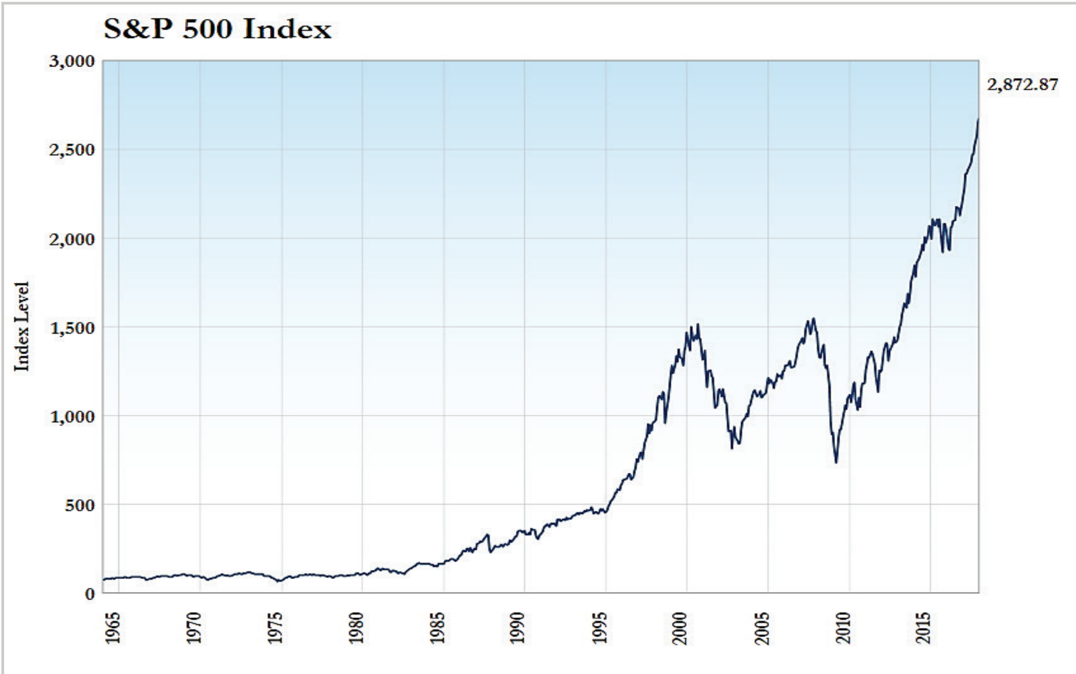


[Source: Thomson Reuters Datastream] Data Through 01/26/2018

MAY MOVE OPPOSITE TO THE DOLLAR

[Source: Thomson Reuters Datastream] Data Through 01/26/2018

A VERY LONG BULL RUN. WHAT NOW?



[Source: Thomson Reuters Datastream] Data Through 01/26/2018

THE DOLLAR MAY BE BASING

[Source: Thomson Reuters Datastream] Data Through 01/26/2018

TWENTY YEAR VIEW OF ASSET CLASS RETURNS

Annual Returns of Key Indices (1998-2017) Ranked in Order of Performance (Best to Worst)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Large Cap Growth 42.15%	Small Cap Growth 43.09%	Real Estate 31.04%	Small Cap Value 14.03%	Cmdty 23.86%	Small Cap Growth 48.53%	Real Estate 33.16%	Cmdty 17.54%	Real Estate 43.72%	Large Cap Growth 11.81%	Fixed Income 5.24%	Real Estate 41.25%	Small Cap Growth 29.09%	Fixed Income 7.84%	Real Estate 29.85%	Small Cap Growth 43.30%	Real Estate 14.73%	Large Cap Growth 5.67%	Small Cap Value 31.74%	Large Cap Growth 30.21%
Large Cap Core 28.58%	Large Cap Growth 28.25%	Cmdty 24.21%	Real Estate 12.35%	Fixed Income 10.26%	Small Cap Value 46.02%	Small Cap Value 22.25%	Real Estate 13.82%	Small Cap Value 23.48%	Cmdty 11.09%	Small Cap Value -28.92%	Large Cap Growth 37.21%	Small Cap Value 24.50%	Large Cap Growth 2.64%	Small Cap Value 18.05%	Small Cap Value 34.52%	Large Cap Core 13.69%	Large Cap Core 1.38%	Large Cap Value 17.34%	Int'l 25.03%
Int'l 20.00%	Int'l 26.96%	Small Cap Value 22.83%	Fixed Income 8.44%	Real Estate 3.58%	Int'l 39.17%	Int'l 20.69%	Int'l 13.50%	Int'l 23.47%	Int'l 8.62%	Cmdty -36.61%	Small Cap Growth 24.47%	Real Estate 20.03%	Large Cap Core 2.11%	Large Cap Value 17.51%	Large Cap Growth 33.48%	Large Cap Value 13.45%	Fixed Income 0.55%	Large Cap Core 11.96%	Small Cap Growth 22.17%
Large Cap Value 14.68%	Large Cap Core 21.04%	Fixed Income 11.63%	Small Cap Growth -9.23%	Small Cap Value -11.43%	Real Estate 36.18%	Large Cap Value 15.71%	Large Cap Value 7.10%	Large Cap Value 22.24%	Small Cap Growth 7.05%	Large Cap Value -36.85%	Int'l 27.75%	Large Cap Growth 16.71%	Large Cap Value 0.39%	Large Cap Core 16.00%	Large Cap Value 32.53%	Large Cap Growth 13.05%	Real Estate -0.41%	Cmdty 11.77%	Large Cap Core 21.83%
Fixed Income 8.69%	Cmdty 18.60%	Large Cap Value 6.08%	Large Cap Value -11.71%	Int'l -15.94%	Large Cap Value 31.77%	Small Cap Growth 14.31%	Large Cap Growth 5.26%	Large Cap Core 15.77%	Fixed Income 6.97%	Large Cap Core -37.03%	Large Cap Core 26.50%	Cmdty 16.67%	Small Cap Growth -2.91%	Large Cap Growth 15.26%	Large Cap Core 32.39%	Fixed Income 5.97%	Int'l -0.81%	Small Cap Growth 11.31%	Real Estate 15.01%
Small Cap Growth 1.23%	Large Cap Value 12.72%	Large Cap Core -9.11%	Large Cap Core -11.88%	Large Cap Value -20.85%	Large Cap Core 28.67%	Large Cap Core 10.88%	Large Cap Core 4.88%	Small Cap Growth 13.35%	Large Cap Core 5.48%	Large Cap Growth -38.44%	Small Cap Value 20.58%	Large Cap Value 15.51%	Small Cap Value -5.50%	Small Cap Growth 14.59%	Int'l 22.78%	Small Cap Growth 5.60%	Small Cap Growth -1.38%	Large Cap Growth 7.07%	Large Cap Value 13.66%
Small Cap Value -6.45%	Fixed Income -0.82%	Int'l -14.17%	Large Cap Growth -12.73%	Large Cap Core -22.10%	Large Cap Growth 25.65%	Cmdty 7.64%	Small Cap Value 4.71%	Large Cap Growth 9.07%	Large Cap Value -0.17%	Small Cap Growth -38.54%	Large Cap Value 19.69%	Large Cap Core 15.06%	Real Estate -8.14%	Int'l 13.55%	Real Estate 2.23%	Small Cap Value 4.22%	Large Cap Value -3.83%	Real Estate 4.62%	Small Cap Value 7.84%
Real Estate -17.01%	Small Cap Value -1.49%	Large Cap Growth -22.08%	Int'l -21.44%	Large Cap Growth -23.59%	Cmdty 22.66%	Large Cap Growth 6.13%	Small Cap Growth 4.15%	Fixed Income 4.33%	Real Estate -4.65%	Int'l -43.38%	Cmdty 18.72%	Fixed Income 6.54%	Cmdty -13.37%	Fixed Income 4.22%	Fixed Income -2.03%	Int'l -4.90%	Small Cap Value -7.48%	Fixed Income 2.65%	Fixed Income 3.54%
Cmdty -30.52%	Real Estate -2.58%	Small Cap Growth -22.43%	Cmdty -22.32%	Small Cap Growth -30.26%	Fixed Income 4.11%	Fixed Income 4.33%	Fixed Income 2.43%	Cmdty -2.71%	Small Cap Value -9.78%	Real Estate -48.90%	Fixed Income 5.93%	Int'l 4.90%	Int'l -14.82%	Cmdty -1.14%	Cmdty -9.58%	Cmdty -17.04%	Cmdty -24.70%	Int'l 1.00%	Cmdty 1.70%

The Barclays US Aggregate Bond Index is an unmanaged market-weighted index that consists of U.S. Government and agency securities, mortgage-backed securities issued by the Government National Mortgage Association, the Federal Home Loan Mortgage Corporation, or the Federal National Mortgage Association, and investment-grade (rated BBB or better) corporate bonds, all of which will mature within 30 years.

The Russell 2000 Growth Index consists of small-cap companies that have higher price-to-book ratios and higher forecasted growth values.

The Russell 1000 Growth Index consists of large-cap companies that have higher price-to-book ratios and higher forecasted growth values.*

The Russell 2000 Value Index consists of small-cap companies that have lower price-to-book ratios and lower forecasted growth values.

The Russell 1000 Value Index consists of large-cap companies that have lower price-to-book ratios and lower forecasted growth values.*

The Morgan Stanley Capital International (MSCI) EAFE Index is an unmortgaged index that measures the total returns of developed foreign stock markets in Europe, Asia, and the Far East.

The S&P 500 Index is an unmanaged index that consists of the common stocks of 500 large-capitalization companies, within various industrial sectors, most of which are listed on the New York Stock Exchange.

The Bloomberg Commodity Index reflects the return of underlying futures prices of 22 physical commodities. (Cmdty)

The FTSE EPRA/NAREIT Global Real Estate Index is designed to represent general trends in eligible real estate equities worldwide.*

*As of 1/1/05, the Russell 1000 Growth and the Russell 1000 Value replaced the S&P/Barra Growth and the S&P/Barra Value, respectively. As of 1/1/06, the FTSE EPRA/NAREIT Index replaced the Wilshire U.S. REIT Index. Through 2004 on this chart, the S&P/Barra indices were used for Large Cap Growth and Large Cap Value. Through 2005 on this chart, the Wilshire U.S. REIT Index was used for Real Estate.

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