MERK® | RESEARCH

Fed Chart Book

January 2019

Nick Reece, CFA
Senior Financial Analyst, Merk Investments LLC

Fed's Dual Mandate

Established Objectives of Federal Reserve Monetary Policy:

Stable Prices ("Price Stability"): 2 percent inflation rate as measured by the annual change in the price index for personal consumption expenditures (Headline PCE YoY). The Powell Fed views the core (excluding food and energy) PCE as a better indication of future inflation. It is worth noting that the Fed interprets the inflation objective as symmetric, meaning they are trying to prevent persistent deviations, either above or below, from their 2 percent inflation target.

Maximum Employment: The highest utilization of labor resources that is sustainable over time, i.e., the unemployment rate that is consistent with low and stable inflation over the longer term- often estimated as the "natural rate of unemployment." The natural rate of unemployment comprises both the "frictional" unemployment of people who are temporarily between jobs or searching as they have reentered the labor force and the more "structural" unemployment of people whose skills or physical location are not a good match for the jobs available. In other words, the Fed aims to reduce "cyclical" unemployment. As Powell likes to point out, the unemployment rate that is consistent with maximum employment is largely determined by nonmonetary factors (i.e., not heavily influenced by Fed policy). The Fed has no fixed goal for this rate, the current longer run estimate for unemployment is 4.4%, from Fed's Summary of Economic Projections.

Fed Policy Tools

Federal Funds Rate: the primary policy tool of the Fed, it is the overnight benchmark interest rate. The Powell Fed aims for this rate to be at the estimated normal longer-run level when the policy objectives are met (i.e., when inflation is running at the target rate of 2% and the economy is operating at maximum employment).

Fed Balance Sheet: Quantitative Easing ("QE") is Fed balance sheet expansion via bond purchases using "printed money," Quantitative Tightening ("QT") is essentially the opposite, i.e., Fed balance sheet contraction via allowing bonds to mature without reinvesting the proceeds.

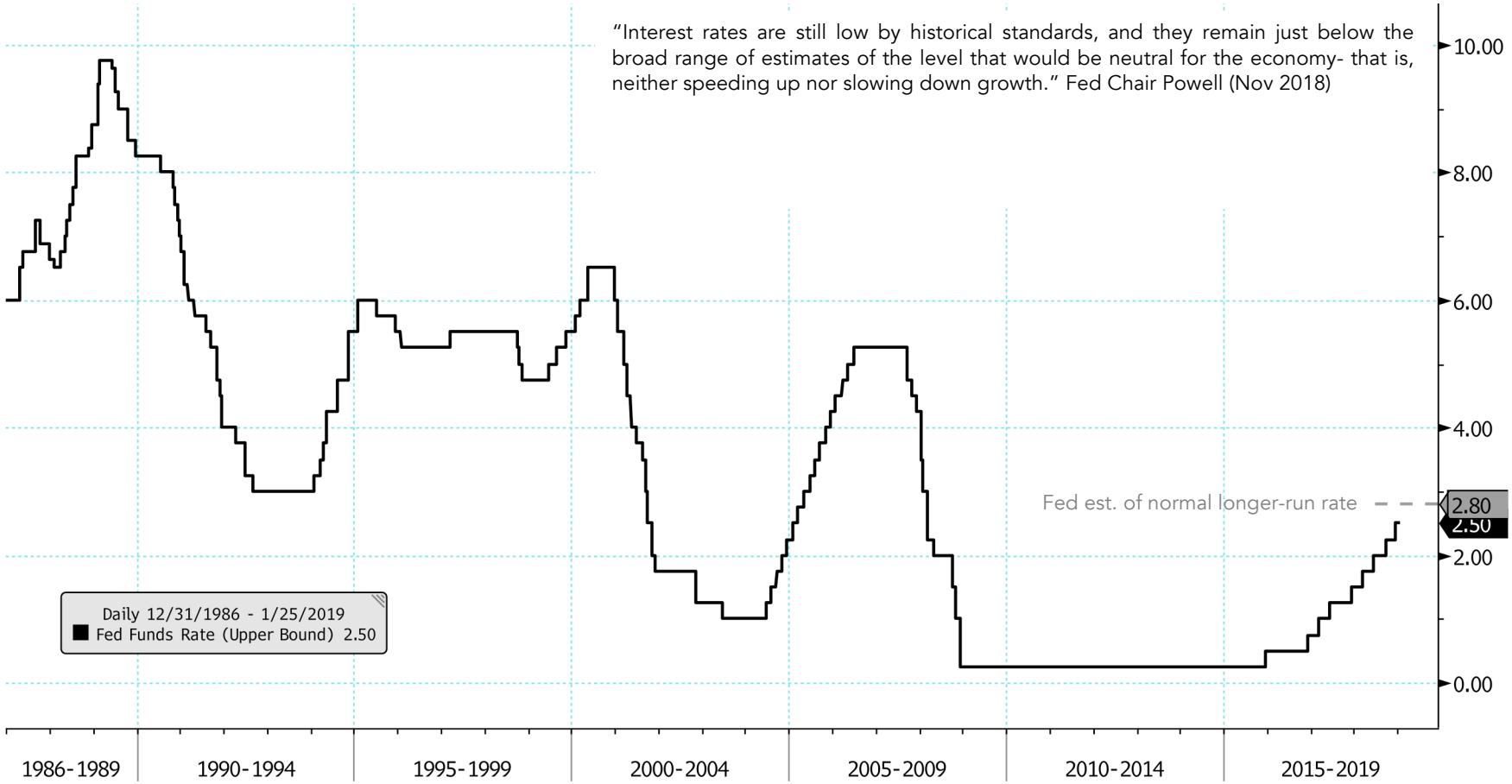
Forward Guidance: a commitment to hold rates at a certain level (e.g., zero) over a certain period of time.

Fed Key Concepts

Data Dependency: The Fed describes its policy making process as data dependent, which might be best summarized by Chair Powell's words: "Our views about appropriate monetary policy in the months and years ahead will be informed by incoming economic data and the evolving outlook. If the outlook changes, so too will monetary policy." Many of the following charts represent the relevant data followed by the Fed, and specifically by Chair Powell.

Fed Estimate of Normal Longer-run Rate

The summary of economic projections from the Sep 2018 Fed meeting show a median longer-run projection of 3.00%

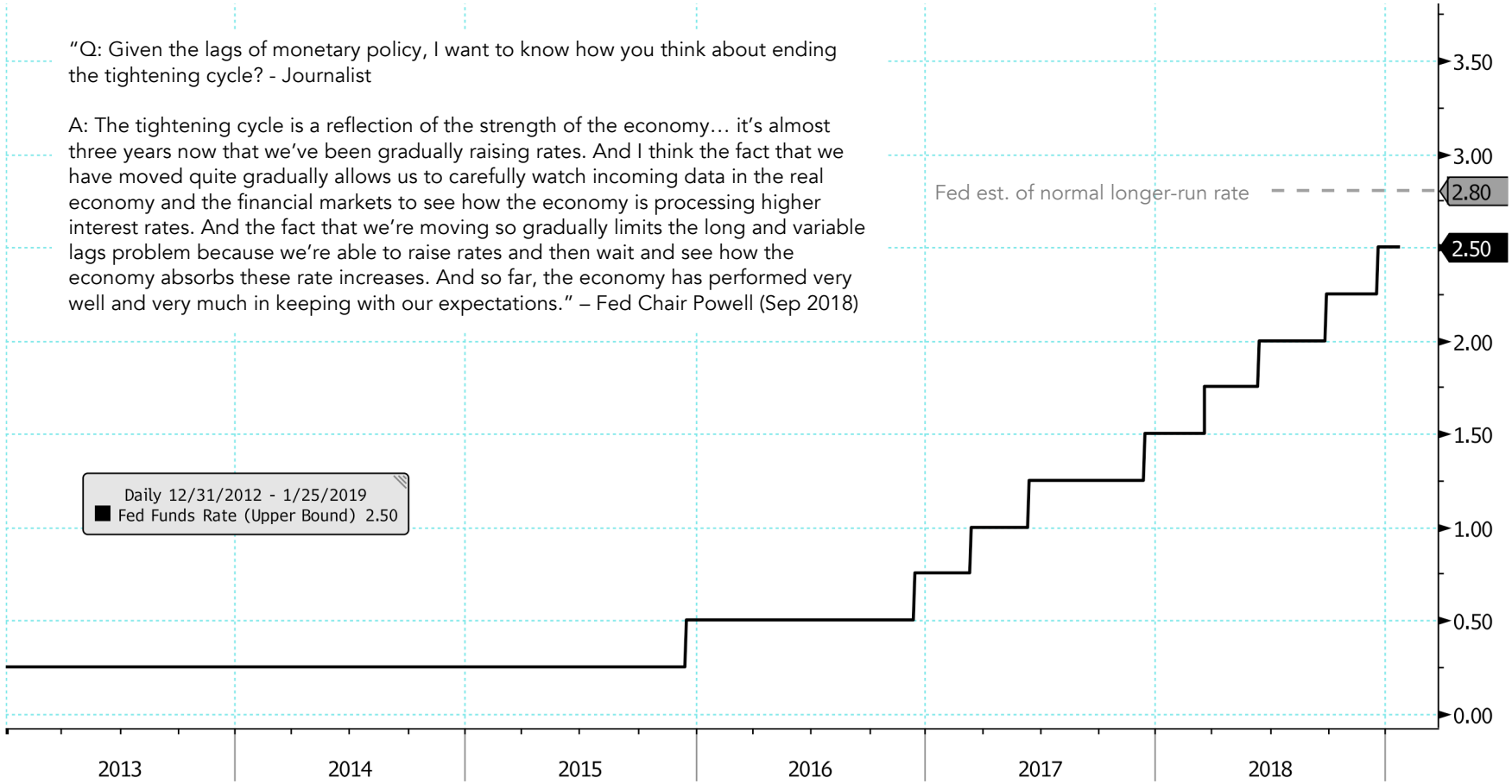


Source: Bloomberg, © Merk Investments LLC

Analysis: Powell views the current gradual rate hikes as a process of removing accommodation, not as tightening per se. If the Fed were to hike rates to what they determine to be the normal longer run rate (currently estimated at 2.80%), that would represent a neutral monetary policy, and anything above the normal longer-run rate estimate would represent restrictive monetary policy. Powell's view is that gradually reducing monetary policy accommodation will sustain a strong labor market (consistent with the maximum employment mandate) while fostering a return of inflation to 2 percent on a sustained basis (consistent with the price stability mandate). Gradual seems to mean about two 25 basis point rate hikes per year, dependent on the incoming data continuing to suggest that inflation is trending up and the labor market remains strong.

Fed Rate Hiking Cycle

The summary of economic projections from the Sep 2018 Fed meeting show a median longer-run projection of 3.00%



Source: Bloomberg, © Merk Investments LLC

Analysis: Powell seems committed to a gradual and data dependent approach to the hiking cycle. With the current setting very close to the estimate of neutral, and softer than expected data in the U.S. and globally, Powell seems willing to patiently watch data come in over the coming months, and is likely going to be on hold with respect to rates for the first half of the year.

Fed Estimate of the Natural Real Rate of Interest

"R-star" is the natural real rate of interest

"The starred variables, [e.g.,] the neutral rate of interest,… don't move quickly. They move very gradually. They're pinned down by longer-run forces, like demographics, in the case of the funds rate." – Fed Chair Powell (Sep 2018)

Source: Bloomberg, © Merk Investments LLC

Analysis: If the natural real rate of interest is about 1% and inflation is about 2%, the neutral nominal rate should be about 3% (1% + 2%), which is roughly consistent with the Fed's longer run normal rate estimate shown on the previous slide.

Market Expectations of Fed Funds Rate in 1 year

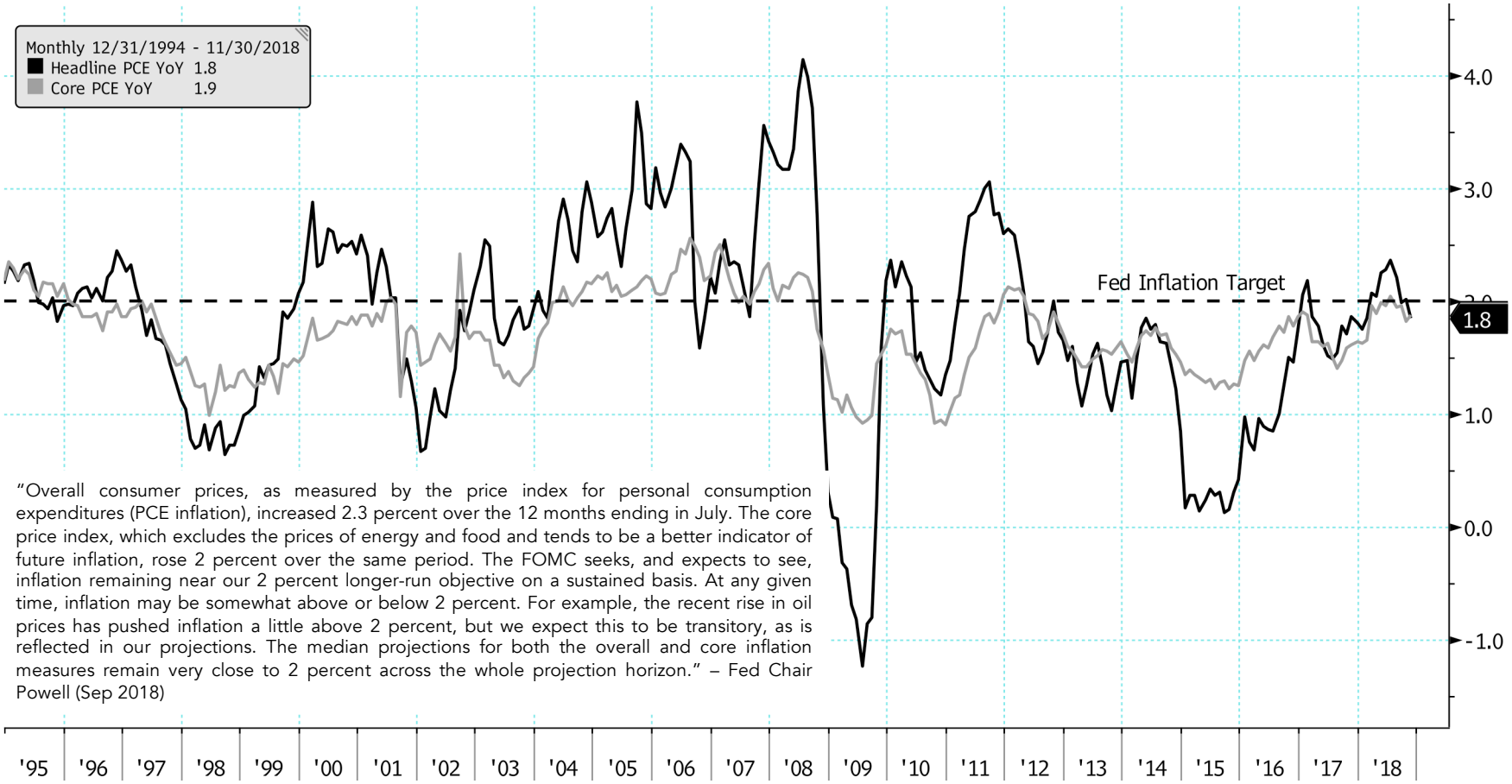
What's Priced-in based on the +1-year Fed Funds Futures contract

Source: Bloomberg, © Merk Investments LLC

Analysis: The market is pricing the Federal Funds rate in 1 years time at 2.45%.
(Fed funds futures are priced on the effective rate which is between the upper and lower bounds of the target range, the current Fed funds target midpoint is at 2.375% (between 2.25 and 2.50)

Inflation Readings

The Headline and Core (excluding volatile food and energy prices) Personal Consumption Expenditures (PCE) Index YoY Seasonally Adjusted



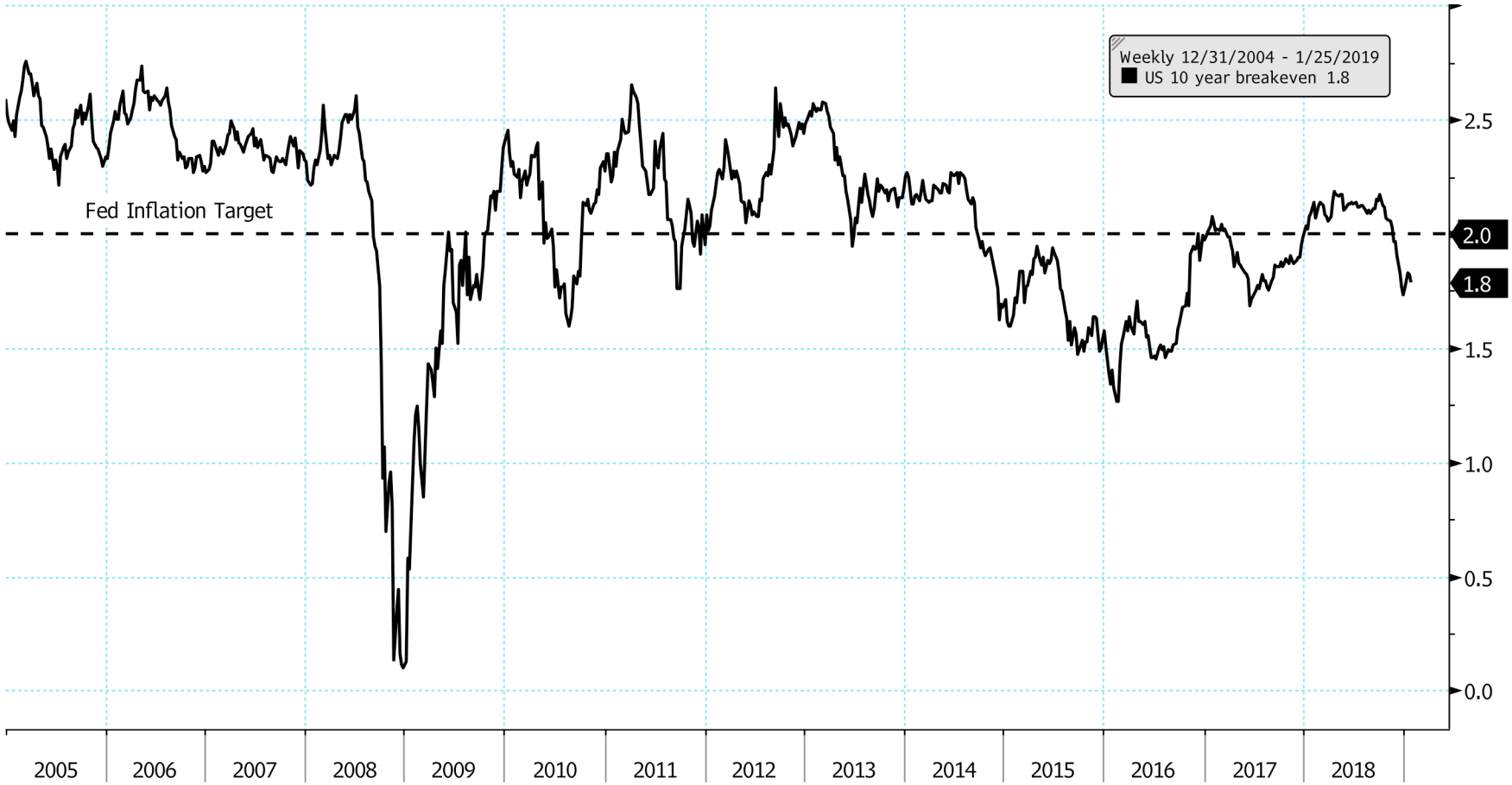
"Overall consumer prices, as measured by the price index for personal consumption expenditures (PCE inflation), increased 2.3 percent over the 12 months ending in July. The core price index, which excludes the prices of energy and food and tends to be a better indicator of future inflation, rose 2 percent over the same period. The FOMC seeks, and expects to see, inflation remaining near our 2 percent longer-run objective on a sustained basis. At any given time, inflation may be somewhat above or below 2 percent. For example, the recent rise in oil prices has pushed inflation a little above 2 percent, but we expect this to be transitory, as is reflected in our projections. The median projections for both the overall and core inflation measures remain very close to 2 percent across the whole projection horizon." – Fed Chair Powell (Sep 2018)

Source: Bloomberg, © Merk Investments LLC

*Analysis: The November PCE data shows the headline inflation rate at 1.8%, just below the target of 2.0%. The Core PCE YoY, Chair Powell's preferred measure, is at 1.9%. The Fed expects PCE YoY to run at 1.9% and 2.1% in 2019 and 2020 respectively according to the Fed's latest Summary of Economic Projections. *This chart relates to the price stability mandate**

Market-based Inflation Expectations

10-year "breakeven" basically means the inflation rate that is implied by 10 year Treasury Inflation Protected Securities (TIPS)



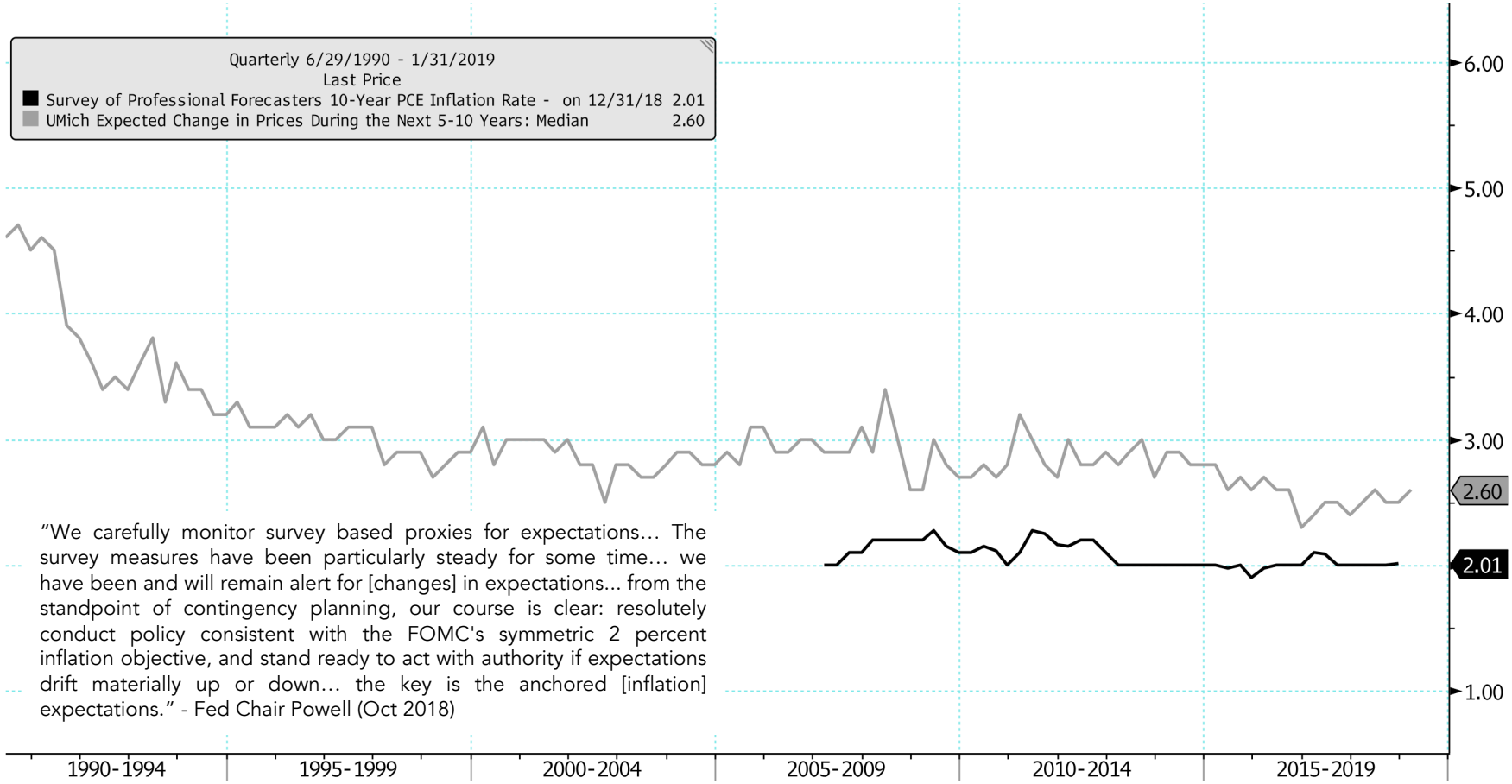
Source: Bloomberg, © Merk Investments LLC

Analysis: The market is suggesting average annual inflation over the next 10 years might be around 1.8%, based on the TIPS. This inflation expectation is calculated by subtracting the 10yr TIPS yield (real rate) from the 10yr US Treasury yield (nominal rate). This is considered a market-based measure, the Fed also looks at other market-based measures as well as survey-based measures. Market based inflation expectations have fallen recently, in my view in large part due to the recent decline in oil prices.

This chart relates to the price stability mandate

Survey-based Inflation Expectations

University of Michigan Consumer Inflation Expectations and Survey of Professional Forecasters Expectations



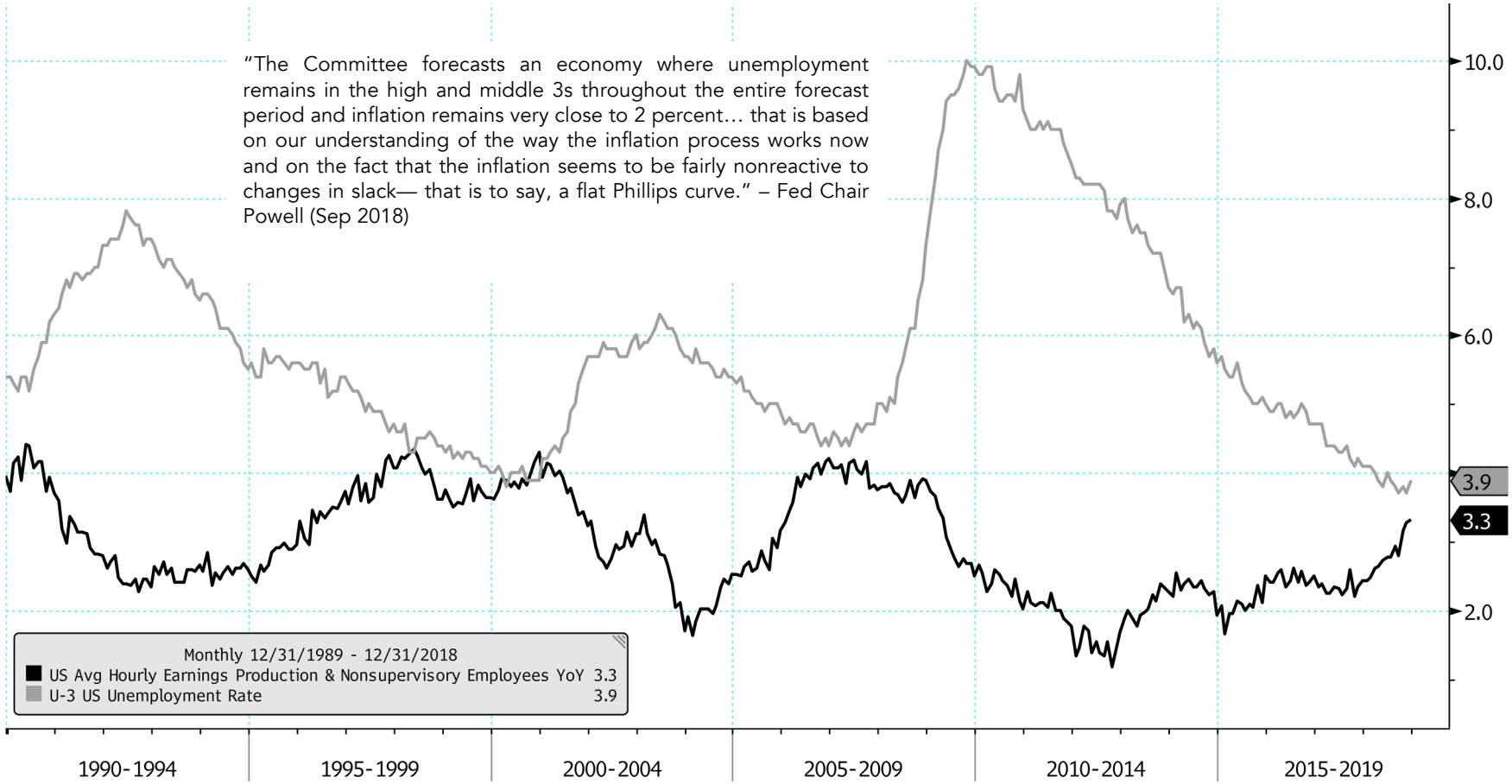
"We carefully monitor survey based proxies for expectations… The survey measures have been particularly steady for some time… we have been and will remain alert for [changes] in expectations... from the standpoint of contingency planning, our course is clear: resolutely conduct policy consistent with the FOMC's symmetric 2 percent inflation objective, and stand ready to act with authority if expectations drift materially up or down… the key is the anchored [inflation] expectations." - Fed Chair Powell (Oct 2018)

Source: Bloomberg, © Merk Investments LLC

Analysis: Powell is particularly focused on the role of anchored inflation expectations in terms of meeting the Fed's price stability mandate over the medium term. Based on a speech and presentation given in October 2018, it appears he watches the above survey based indicators to monitor for material changes.
This chart relates to the price stability mandate

Unemployment Rate and Wages

The relationship between the unemployment rate and wages is referred to as the "Phillips Curve"



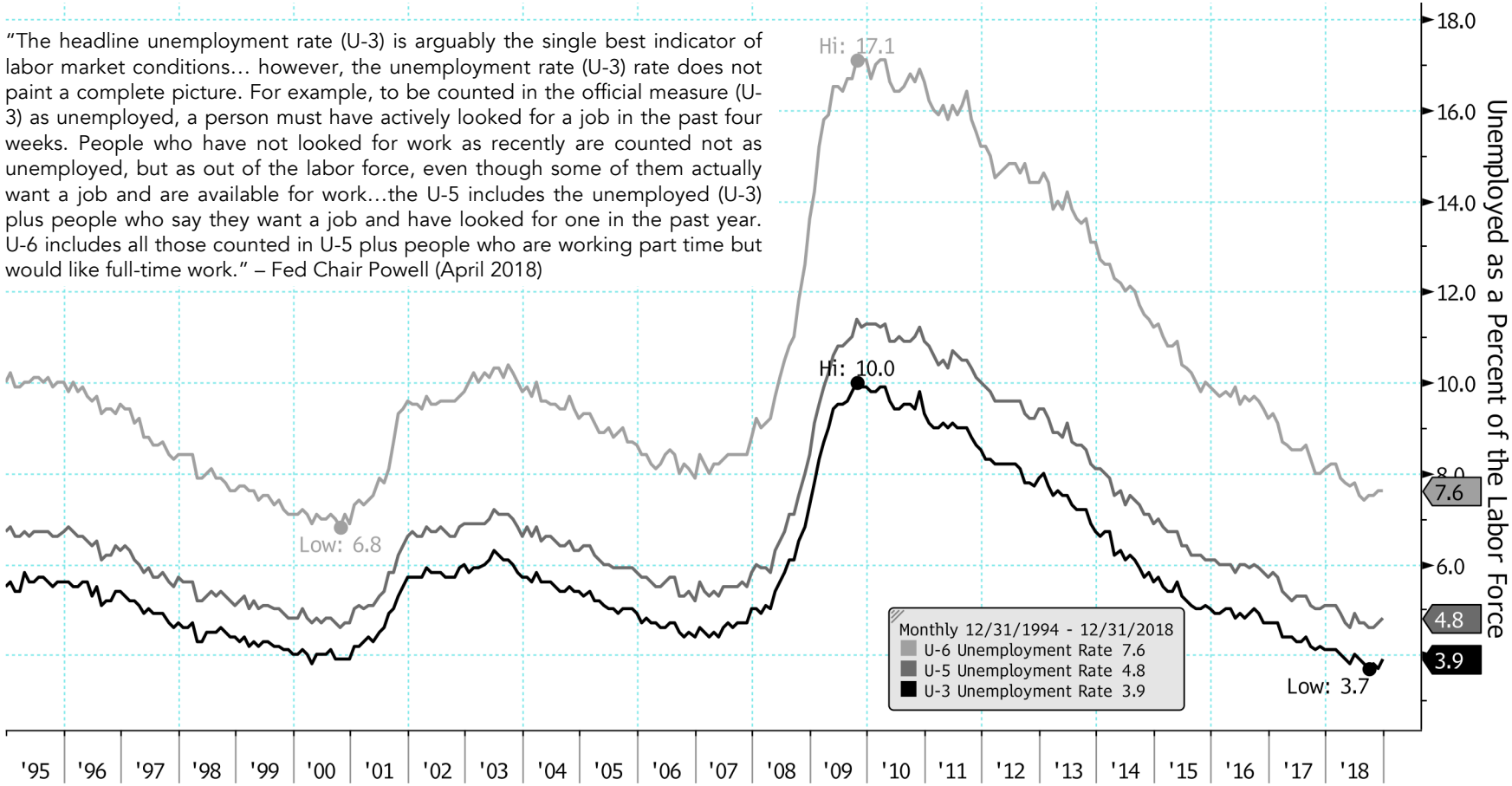
Source: Bloomberg, © Merk Investments LLC

Analysis: Fed policy makers have been surprised by the lack of wage inflation (and general inflation) in recent years I think in Powell's mind that suggests the labor market might not be at maximum employment yet. Having said that, the wage inflation rate seems to have started to pick up in recent months.

This chart relates to both the price stability mandate and the maximum employment mandate

Unemployment Rate Measures

U-3, U-5, U-6 Unemployment Rates

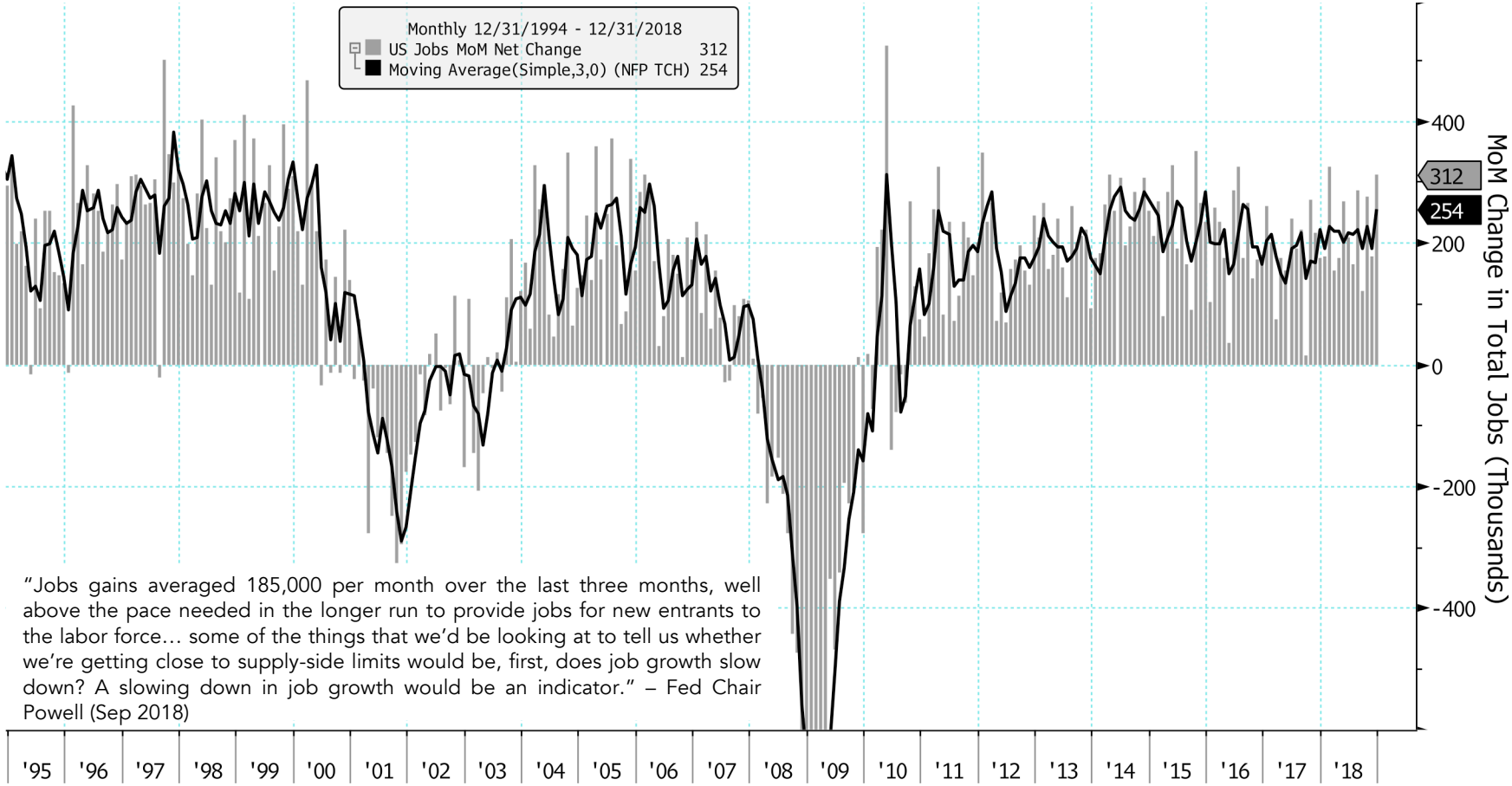


Source: Bloomberg, © Merk Investments LLC

Analysis: The U-3 rate ticked up to 3.9% in the latest jobs report, above the recent cycle low of 3.7%. It is worth noting that the recent rise was likely in part driven by the increase in the labor force participation rate.
This chart relates to the maximum employment mandate

Job Gains

The Net Monthly Change in Non-farm Payrolls (grey) with 3-month Moving Average (black)



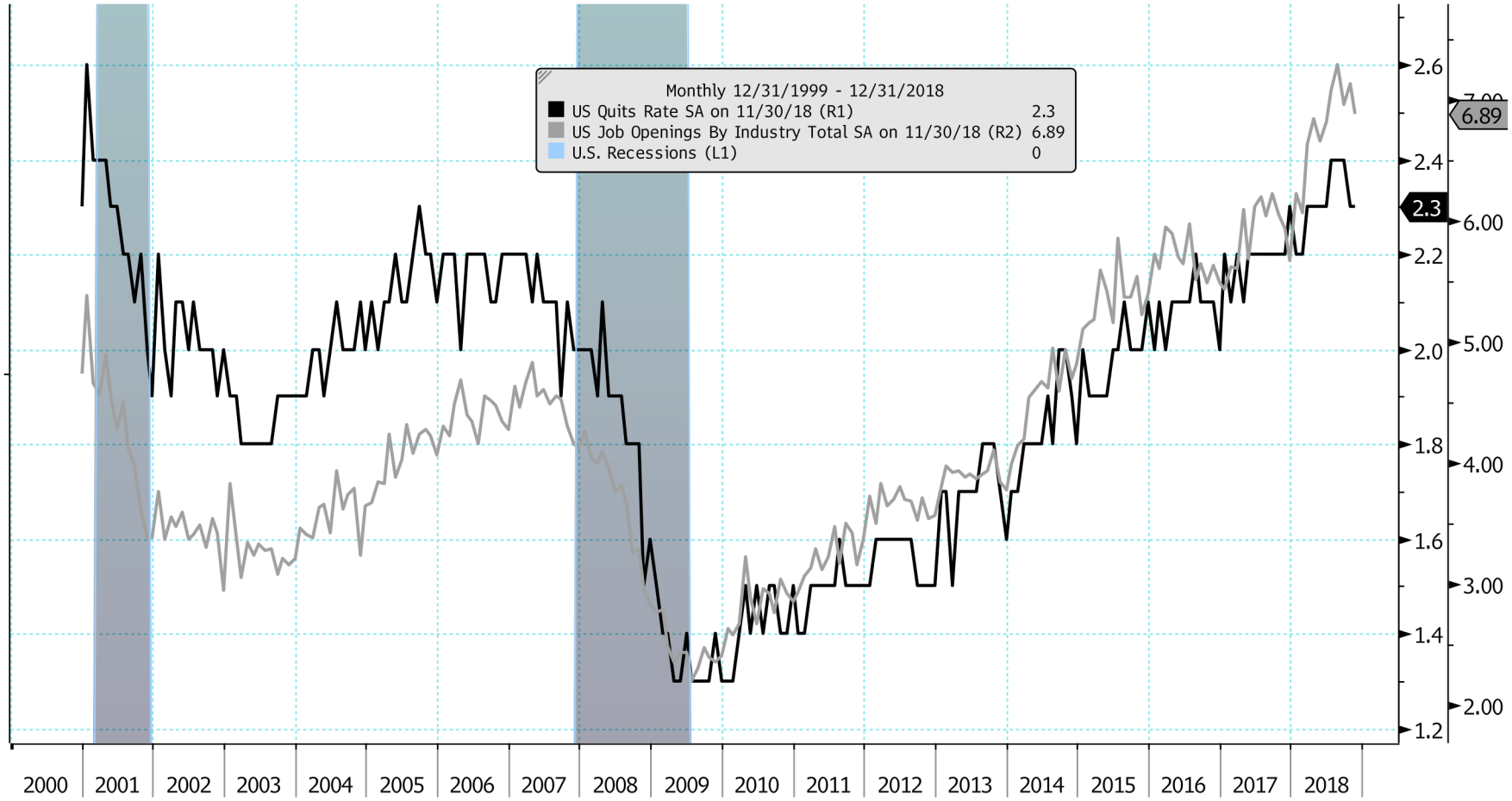
"Jobs gains averaged 185,000 per month over the last three months, well above the pace needed in the longer run to provide jobs for new entrants to the labor force… some of the things that we'd be looking at to tell us whether we're getting close to supply-side limits would be, first, does job growth slow down? A slowing down in job growth would be an indicator." – Fed Chair Powell (Sep 2018)

Source: Bloomberg, © Merk Investments LLC

Analysis: The 3-month moving average of the change in non-farm payrolls is 254k, likely above the pace needed to provide jobs to new entrants into the labor force. This picture currently suggests strength in the U.S. labor market.
This chart relates to the maximum employment mandate

Jobs Openings and Labor Turnover Survey (JOLTS)

Jobs Openings (millions) and Quits Rate (percent)



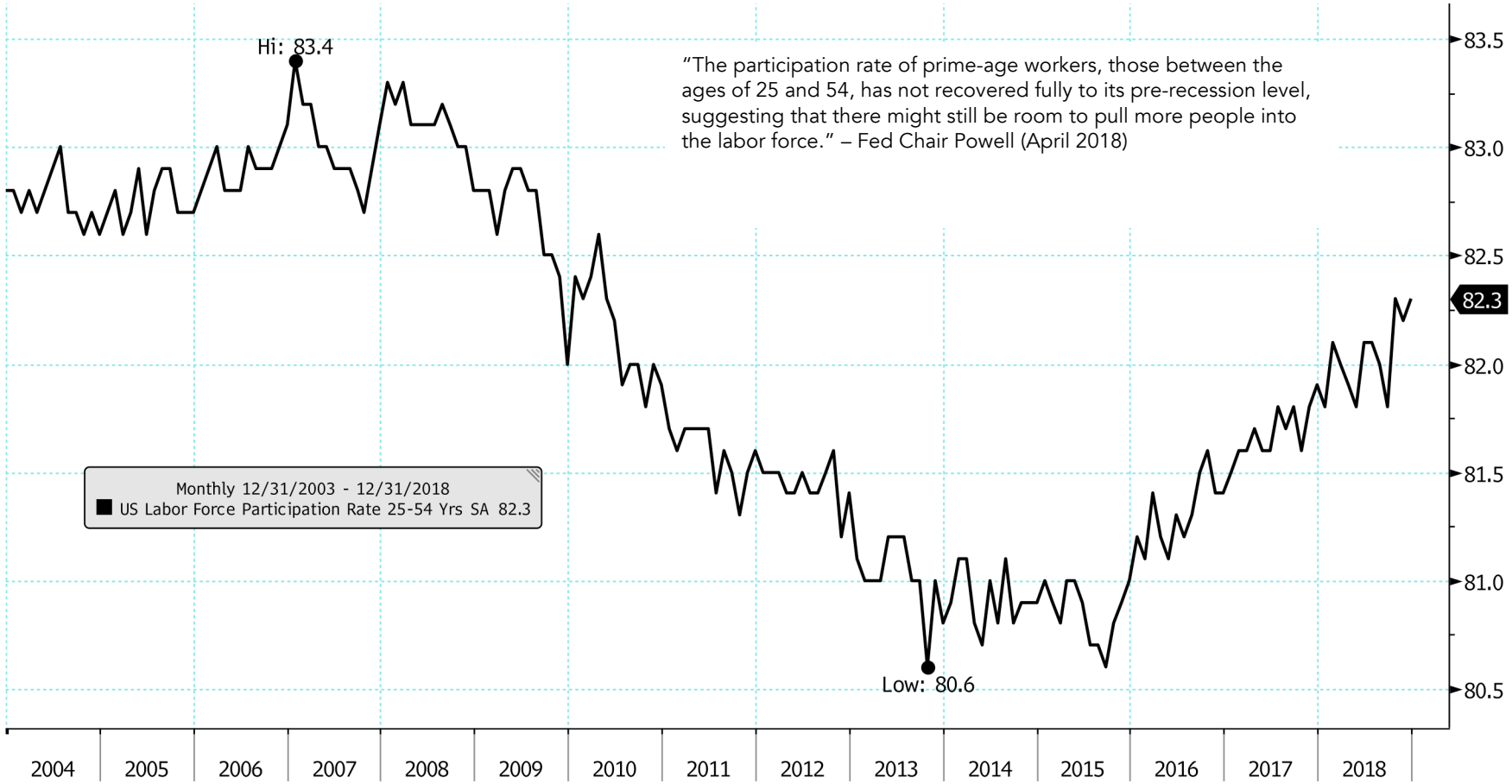
Source: Bloomberg, © Merk Investments LLC

Analysis: Former Fed Chair Yellen was an advocate of looking at the JOLTS report for guidance on the labor market. For the time being the JOLTS report continues to look positive as the Job Openings and Quits Rate are high and trending higher still- generally a strong sign for the labor market.

This chart relates to the maximum employment mandate

Prime-age (25-54) Labor Force Participation Rate

The labor force is the percent of the population that is either working or actively looking for work, in this case between the ages of 25-54

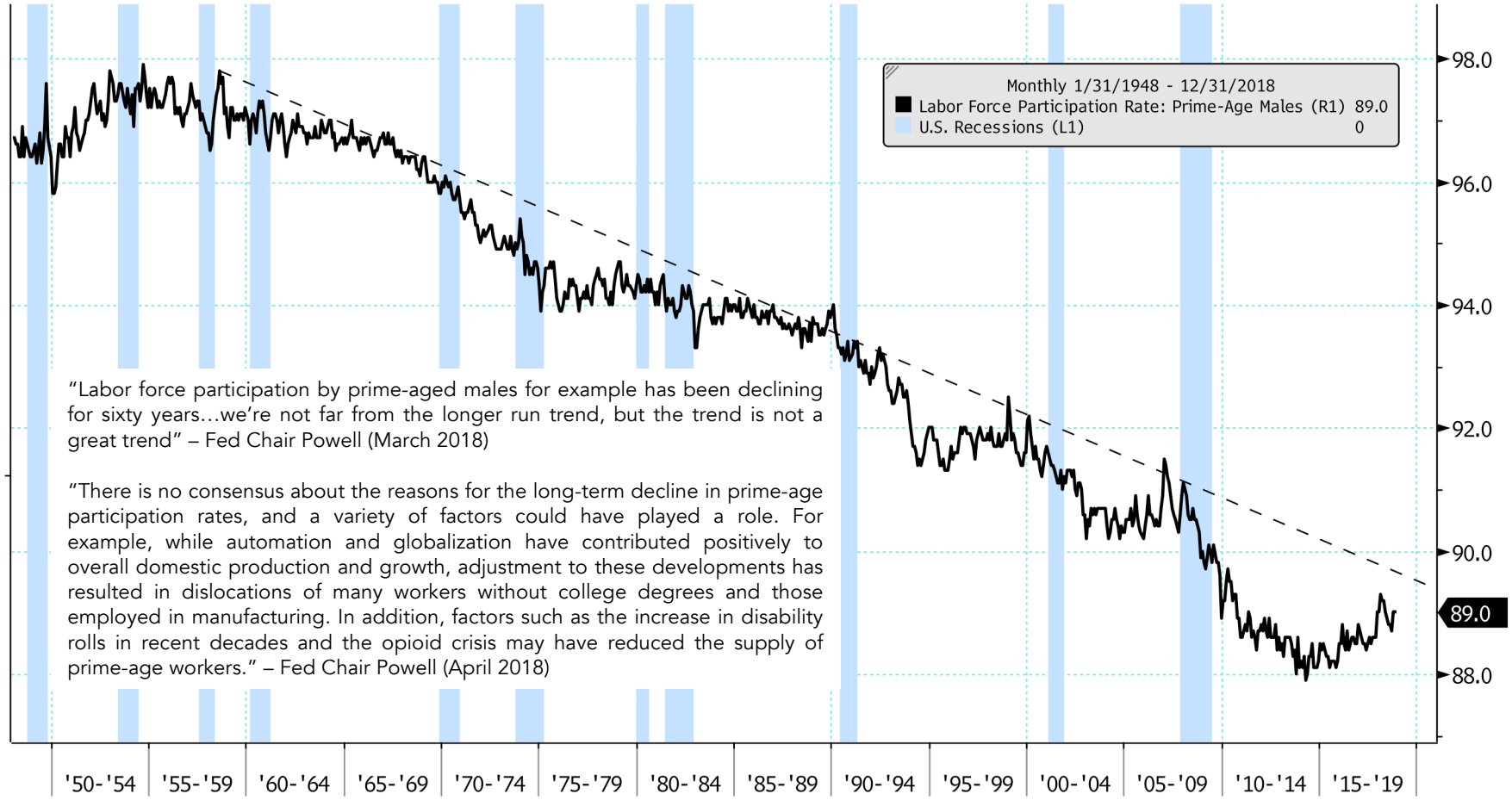


Source: Bloomberg, © Merk Investments LLC

Analysis: The prime-age participation rate is below the previous cycle high (although trending higher).
I think in Powell's mind this picture suggests the labor market might not be at maximum employment yet.
This chart relates to the maximum employment mandate

Prime-age (25-54) Male Labor Force Participation Rate

The labor force is the percent of the population that is either working or actively looking for work, in this case males between the ages of 25-54



"Labor force participation by prime-aged males for example has been declining for sixty years…we're not far from the longer run trend, but the trend is not a great trend" – Fed Chair Powell (March 2018)

"There is no consensus about the reasons for the long-term decline in prime-age participation rates, and a variety of factors could have played a role. For example, while automation and globalization have contributed positively to overall domestic production and growth, adjustment to these developments has resulted in dislocations of many workers without college degrees and those employed in manufacturing. In addition, factors such as the increase in disability rolls in recent decades and the opioid crisis may have reduced the supply of prime-age workers." – Fed Chair Powell (April 2018)

Source: Bloomberg, © Merk Investments LLC

Analysis: A prime-age male labor force participation rate above the dotted line might represent a labor market that is close to maximum employment in Powell's framework. The latest data point shows an uptick.
This chart relates to the maximum employment mandate

Fed Funds Rate and Financial Conditions

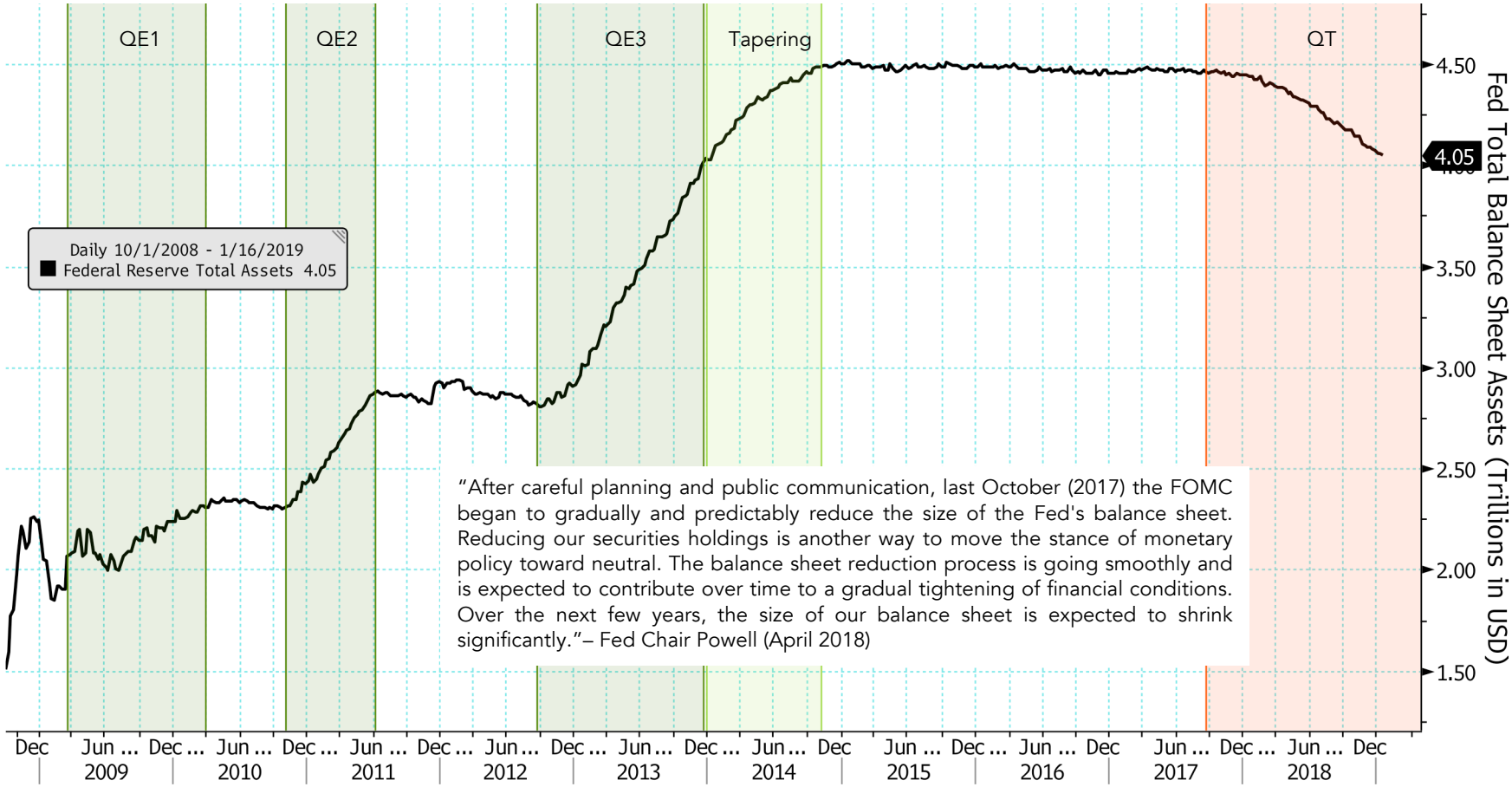
Chicago Fed National Financial Conditions Index and the Fed Funds Rate

Source: Bloomberg, © Merk Investments LLC

Analysis: Financial stability, which can be measured by financial conditions, is sometimes thought of as an implicit third mandate of the Fed. Fed hikes so far have had little impact on financial conditions, although Fed officials have historically commented that monetary policy acts with a lag (some estimates suggest an 18 month lag). The financial conditions index has recently started to show an uptrend, meaning tighter financial conditions.

Fed Balance Sheet

Federal Reserve Balance Sheet Total Assets and QE/QT Operation Phases

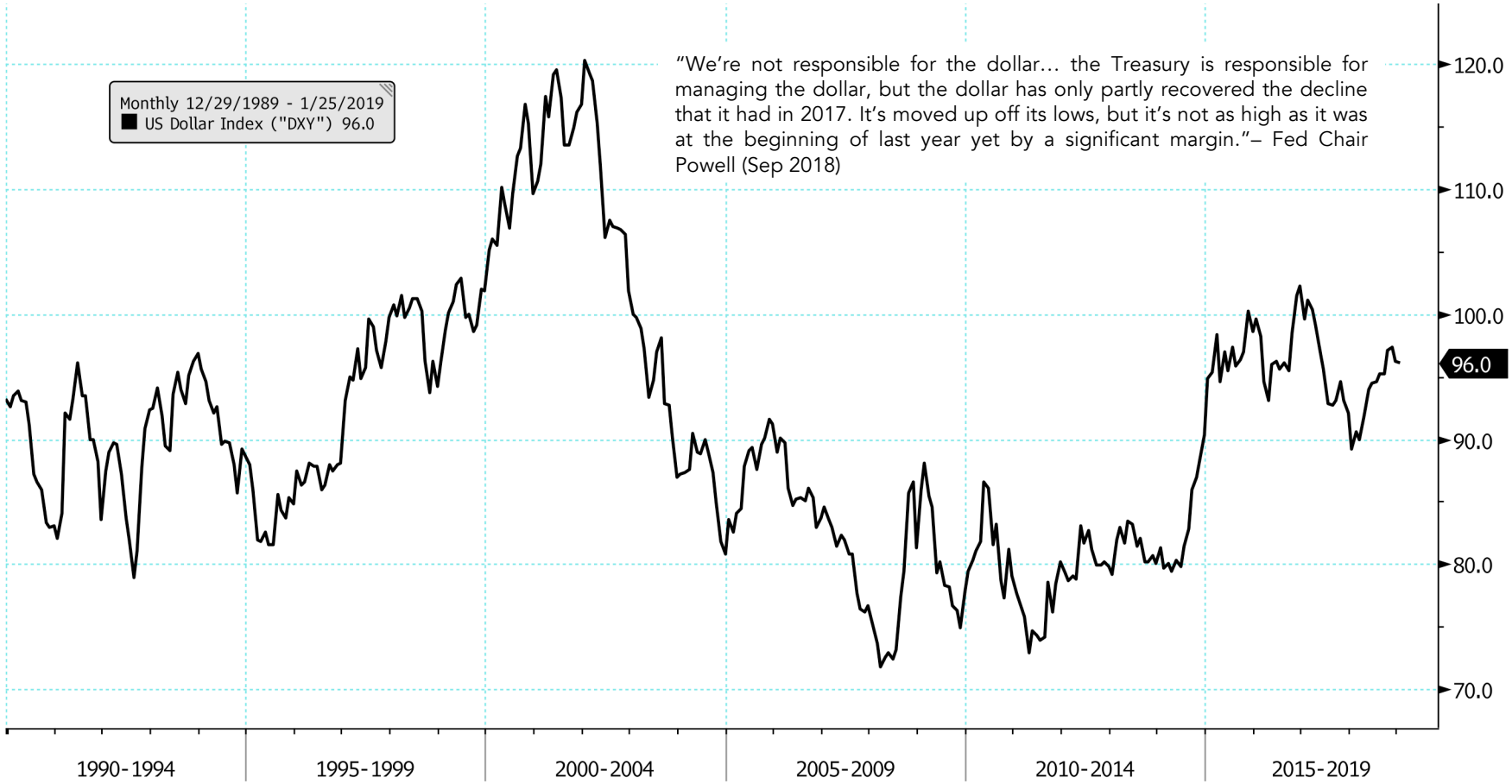


Source: Bloomberg, © Merk Investments LLC

Analysis: Fed balance sheet contraction might get financial conditions to tighten more than the rate hikes have, and balance sheet normalization is set on "auto-pilot" whereas the rate hike decisions are made on a meeting by meeting basis and are data dependent. As mentioned on the previous slide, monetary policy can act with a lag, the rate hikes and Fed balance sheet action from 2017 might not be fully felt until mid-2019. As of October 2018 normalization is now running at full pace after a gradual ramp up from October 2017 to October 2018.

U.S. Dollar

Dollar Index ("DXY")

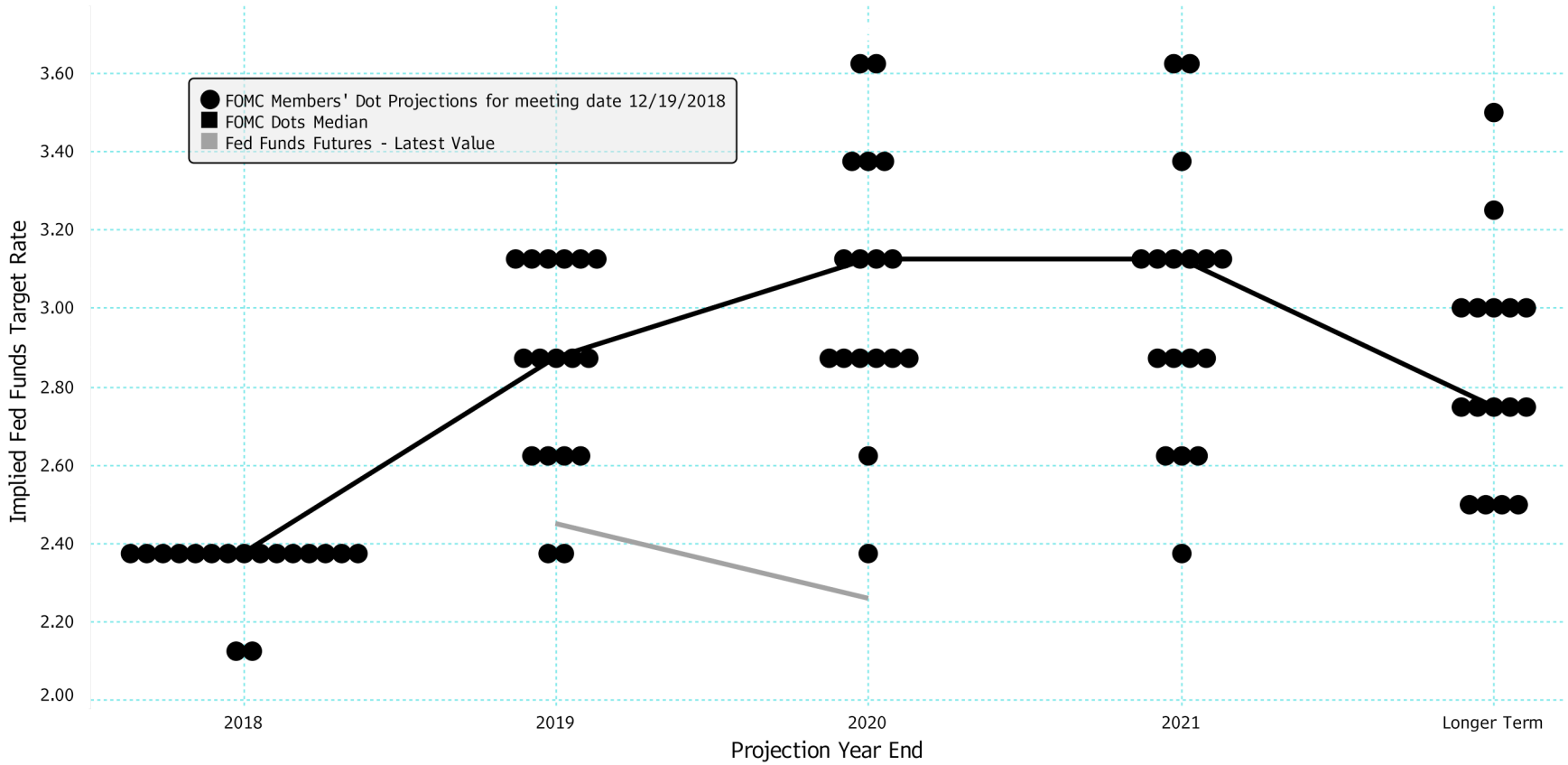


Source: Bloomberg, © Merk Investments LLC

Analysis: The Powell Fed does not seem to be concerned about the value of the dollar currently.

Fed "Dot Plot"

FOMC participants' assessments of appropriate monetary policy from September 2018 Meeting, and Fed Funds Futures from 12/17/18



Source: Bloomberg, © Merk Investments LLC

Analysis: The dots represent FOMC participants' assessments of appropriate monetary policy. The market pricing, represented by the Fed Funds Futures (grey line) is substantially below the median dots for year end 2019 and 2020. The Fed shifted their dots a little lower at the December meeting, now suggesting only two rate hikes in 2019, as opposed to the three hikes for 2019 suggested in the September dot plot.

Fed Median Economic Projections: December 2018

FOMC participants' economic projections are under their individual assessments of projected appropriate monetary policy

Variable	2018	2019	2020	Longer run
Change in Real GDP	3.0%	2.3%	2.0%	1.9%
Unemployment Rate	3.7%	3.5%	3.6%	4.4%
PCE Inflation	1.9%	1.9%	2.1%	2.0%
Core PCE Inflation	1.9%	2.0%	2.0%	N/A
Fed Funds Rate	2.4%	2.9%	3.1%	2.8%

Source: Federal Reserve, © Merk Investments LLC

Analysis: The above economic projections of Federal Reserve Board members and Federal Reserve Bank presidents are made under their individual assessments of projected appropriate monetary policy, which are represented in the previous dot chart.

The longer run inflation expectation is 2.0%, the longer run Fed Funds rate projection is 2.8% (3.0% in terms of the upper range of the Fed funds target rate), which represents the Fed's best guess of the natural rate of interest. The natural rate can be disaggregated into a natural real rate (i.e., net of inflation) and an inflation rate. The Fed's longer run inflation projection is 2.0% which suggests they view the natural real rate of interest around 1.0%, which is roughly consistent with NY Fed President Williams' academic work on estimating the natural real rate of interest.

The longer run unemployment rate projection is 4.5%, which is the Fed's best guess of the natural unemployment rate. At the current rate of 3.9% there is some chance that the economy is operating above capacity.

Who's Who at the Fed

Category	Name	Role	Status	Dove-Hawk Scale*
Board of Governors	Jerome Powell	Chair	Voter	Neutral
Board of Governors	Richard Clarida	Vice Chair	Voter	Neutral
Board of Governors	Lael Brainard	Governor	Voter	Neutral/Dovish
Board of Governors	Randal Quarles	Governor	Voter	Neutral
Board of Governors	Michelle Bowman	Governor	Voter	Neutral/Hawkish
Board of Governors	[vacant]	Governor	[Voter]	
Board of Governors	[vacant]	Governor	[Voter]	
Regional President	John Williams	New York Fed President	Voter	Neutral/Hawkish
Regional President	Eric Rosengren	Boston Fed President	Voter	Neutral/Hawkish
Regional President	Patrick Harker	Philadelphia Fed President		Neutral
Regional President	Loretta Mester	Cleveland Fed President		Neutral/Hawkish
Regional President	Thomas Barkin	Richmond Fed President		Neutral/Hawkish
Regional President	Raphael Bostic	Atlanta Fed President		Neutral/Dovish
Regional President	Charles Evans	Chicago Fed President	Voter	Neutral/Dovish
Regional President	James Bullard	St. Louis Fed President	Voter	Dovish
Regional President	Neel Kashkari	Minneapolis Fed President		Dovish
Regional President	Esther George	Kansas City Fed President	Voter	Hawkish
Regional President	Robert Kaplan	Dallas Fed President		Neutral/Hawkish
Regional President	Mary Daly	San Francisco Fed President		Neutral/Dovish

Source: Bloomberg, © Merk Investments LLC

Analysis: All board members vote. The NY Fed President always votes, and then four rotating regional presidents vote. There are two vacancies on the board. Nellie Liang, who had been nominated to fill one of the open spots on the Board of Governors, withdrew from consideration.

**The dove-hawk scale relates to the views on appropriate monetary policy: with hawks likely representing the upper end of the spectrum on the dot plot and the doves likely representing the lower end of the spectrum.*

Conclusion/Thoughts

The Fed's monetary policy has important implications for the bond, stock, and currency markets, and the economic cycle generally. In this chart series my goal is to track the data that I think Fed officials, and Chair Powell specifically, are most focused on based on ongoing public communications.

The current soft patch for the global economy, and reduced expectations around Fed rate increases is somewhat reminiscent of the 1998 and 2016 periods. As Powell said earlier this month: "There is no preset path for policy… with the muted inflation readings that we've seen coming in, we will be patient as we wait to see how the economy evolves… we are always prepared to shift the stance of policy and to shift it significantly if necessary… I'd like to point to a recent example when the committee did just that: in December 2015 when we lifted off from the zero-lower- bound, the median FOMC participant forecast was for four rate increases in 2016, but very early in the year financial conditions tightened and the committee adjusted the expected rate path, we did eventually raise rates a year later in December 2016, meanwhile the economy weathered a soft patch and got back on track." In my view, 2019 may well be somewhat similar to 2016, with growth and inflation re-accelerating in the second half of the year.

The futures market, as of writing, is pricing a federal funds rate peak in October 2019 at 2.48%, just slightly above the current effective federal funds rate of 2.40%. The median Fed dot for the end of 2019 suggests a Fed funds rate of 2.90%.

In general, Powell has emphasized a gradual approach to raising the federal funds rate. He views the current monetary policy stance as very close to the normal longer-run rate (currently estimated at 2.80%). The normal longer-run rate is the rate thought to be consistent with inflation remaining near the 2 percent target on a sustainable basis and the labor remaining near a state of maximum employment on a sustainable basis. In Powell's framework a federal funds rate at the normal longer-run rate would represent a neutral monetary policy stance, neither accommodative nor restrictive.

Powell's approach is probably best summarized in this quote from the June Fed Meeting press conference statement: "We are aware that raising rates too slowly might raise the risk that monetary policy would need to tighten abruptly down the road in response to an unexpectedly sharp increase in inflation or financial excesses, jeopardizing the economic expansion. Conversely, if we raise interest rates too rapidly, the economy could weaken, and inflation could continue to run persistently below our objective."

-Nick Reece, CFA

Disclosure

This report was prepared by Merk Investments LLC, and reflects the current opinion of the authors. It is based upon sources and data believed to be accurate and reliable. Merk Investments LLC makes no representation regarding the advisability of investing in the products herein. Opinions and forward-looking statements expressed are subject to change without notice. This information does not constitute investment advice and is not intended as an endorsement of any specific investment. The information contained herein is general in nature and is provided solely for educational and informational purposes. The information provided does not constitute legal, financial or tax advice. You should obtain advice specific to your circumstances from your own legal, financial and tax advisors. Past performance is no guarantee of future results.

* * *

Published by Merk Investments LLC