# Janet L Yellen: The outlook, uncertainty and monetary policy

Speech by Ms Janet L Yellen, Chair of the Board of Governors of the Federal Reserve System, at the Economic Club of New York, New York City, 29 March 2016.

*   *   *

For more than a century, the Economic Club of New York has served as one of the nation's leading nonpartisan forums for discussion of economic policy issues. It is an honor to appear before you today to speak about the Federal Reserve's pursuit of maximum employment and price stability.

In December, the Federal Open Market Committee (FOMC) raised the target range for the federal funds rate, the Federal Reserve's main policy rate, by 1/4 percentage point. This small step marked the end of an extraordinary seven-year period during which the federal funds rate was held near zero to support the recovery from the worst financial crisis and recession since the Great Depression. The Committee's action recognized the considerable progress that the U.S. economy had made in restoring the jobs and incomes of millions of Americans hurt by this downturn. It also reflected an expectation that the economy would continue to strengthen and that inflation, while low, would move up to the FOMC's 2 percent objective as the transitory influences of lower oil prices and a stronger dollar gradually dissipate and as the labor market improves further. In light of this expectation, the Committee stated in December, and reiterated at the two subsequent meetings, that it "expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate."[1]

In my remarks today, I will explain why the Committee anticipates that only gradual increases in the federal funds rate are likely to be warranted in coming years, emphasizing that this guidance should be understood as a *forecast* for the trajectory of policy rates that the Committee anticipates will prove to be appropriate to achieve its objectives, conditional on the outlook for real economic activity and inflation. Importantly, this forecast is not a *plan* set in stone that will be carried out regardless of economic developments. Instead, monetary policy will, as always, respond to the economy's twists and turns so as to promote, as best as we can in an uncertain economic environment, the employment and inflation goals assigned to us by the Congress.

The proviso that policy will evolve as needed is especially pertinent today in light of global economic and financial developments since December, which at times have included significant changes in oil prices, interest rates, and stock values. So far, these developments have not materially altered the Committee's baseline – or most likely – outlook for economic activity and inflation over the medium term. Specifically, we continue to expect further labor market improvement and a return of inflation to our 2 percent objective over the next two or three years, consistent with data over recent months. But this is not to say that global developments since the turn of the year have been inconsequential. In part, the baseline outlook for real activity and inflation is little changed because investors responded to those developments by marking down their expectations for the future path of the federal funds rate, thereby putting downward pressure on longer-term interest rates and cushioning the adverse effects on economic activity. In addition, global developments have increased the risks associated with that outlook. In light of these considerations, the Committee decided to leave the stance of policy unchanged in both January and March.

---

1 Board of Governors (2015), paragraph 4.

I will next describe the Committee's baseline economic outlook and the risks that cloud that outlook, emphasizing the FOMC's commitment to adjust monetary policy as needed to achieve our employment and inflation objectives.

**Recent developments and the baseline outlook**

Readings on the U.S. economy since the turn of the year have been somewhat mixed. On the one hand, many indicators have been quite favorable. The labor market has added an average of almost 230,000 jobs a month over the past three months. In addition, the unemployment rate has edged down further, more people are joining the workforce as the prospects for finding jobs have improved, and the employment-to-population ratio has increased by almost 1/2 percentage point. Consumer spending appears to be expanding at a moderate pace, driven by solid income gains, improved household balance sheets, and the ongoing effects of the increases in wealth and declines in oil prices over the past few years. The housing market continues its gradual recovery, and fiscal policy at all levels of government is now modestly boosting economic activity after exerting a considerable drag in recent years.

On the other hand, manufacturing and net exports have continued to be hard hit by slow global growth and the significant appreciation of the dollar since 2014. These same global developments have also weighed on business investment by limiting firms' expected sales, thereby reducing their demand for capital goods; partly as a result, recent indicators of capital spending and business sentiment have been lackluster. In addition, business investment has been held down by the collapse in oil prices since late 2014, which is driving an ongoing steep decline in drilling activity. Low oil prices have also resulted in large-scale layoffs in the energy sector and adverse spillovers to output and employment in industries that support energy production.

On balance, overall employment has continued to grow at a solid pace so far this year, in part because domestic household spending has been sufficiently strong to offset the drag coming from abroad. Looking forward however, we have to take into account the potential fallout from recent global economic and financial developments, which have been marked by bouts of turbulence since the turn of the year. For a time, equity prices were down sharply, oil traded at less than $30 per barrel, and many currencies were depreciating against the dollar. Although prices in these markets have since largely returned to where they stood at the start of the year, in other respects economic and financial conditions remain less favorable than they did back at the time of the December FOMC meeting. In particular, foreign economic growth now seems likely to be weaker this year than previously expected, and earnings expectations have declined. By themselves, these developments would tend to restrain U.S. economic activity. But those effects have been at least partially offset by downward revisions to market expectations for the federal funds rate that in turn have put downward pressure on longer-term interest rates, including mortgage rates, thereby helping to support spending. For these reasons, I anticipate that the overall fallout for the U.S. economy from global market developments since the start of the year will most likely be limited, although this assessment is subject to considerable uncertainty.

All told, the Committee continues to expect moderate economic growth over the medium term accompanied by further labor market improvement. Consistent with this assessment, the medians of the individual projections for economic growth, unemployment, and inflation made by all of the FOMC participants for our March meeting are little changed from December.[2] A key factor underlying such modest revisions is a judgment that monetary

[2] Specifically, the median projections of real GDP growth in 2016 and 2017 revised down 0.2 percentage point and 0.1 percentage point, respectively; the median projections of real GDP growth in 2018 and the longer run were unrevised. The median projection for the unemployment rate in late 2016 was unrevised, while the projections for late 2017, late 2018, and the longer run were revised down slightly. Finally, although the

policy remains accommodative and will be adjusted at an appropriately gradual pace to achieve and maintain our dual objectives of maximum employment and 2 percent inflation. Reflecting global economic and financial developments since December, however, the pace of rate increases is now expected to be somewhat slower. For example, the median of FOMC participants' projections for the federal funds rate is now only 0.9 percent for the end of 2016 and 1.9 percent for the end of 2017, both 1/2 percentage point below the December medians.

As has been widely discussed, the level of inflation-adjusted or real interest rates needed to keep the economy near full employment appears to have fallen to a low level in recent years. Although estimates vary both quantitatively and conceptually, the evidence on balance indicates that the economy's "neutral" real rate – that is, the level of the real federal funds rate that would be neither expansionary nor contractionary if the economy was operating near its potential – is likely now close to zero.[3] However, the current real federal funds rate is even lower, at roughly minus 1-1/4 percentage point, when measured using the 12-month change in the core price index for personal consumption expenditures (PCE), which excludes food and energy. Thus, the current stance of monetary policy appears to be consistent with actual economic growth modestly outpacing potential growth and further improvements in the labor market.[4]

Looking beyond the near term, I anticipate that growth will also be supported by a lessening of some of the headwinds that continue to restrain the U.S. economy, which include weak foreign activity, dollar appreciation, a pace of household formation that has not kept up with population and income growth and so has depressed homebuilding, and productivity growth that has been running at a slow pace by historical standards since the end of the recession. If these headwinds gradually fade as I expect, the neutral federal funds rate will also rise, in which case it will, all else equal, be appropriate to gradually increase the federal funds rate more or less in tandem to achieve our dual objectives. Otherwise, monetary policy would eventually become overly accommodative as the economy strengthened.[5]

Implicitly, this expectation of fading headwinds and a rising neutral rate is a key reason for the FOMC's assessment that gradual increases in the federal funds rate over time will likely

---

median projection for overall inflation in 2016 was revised down 0.4 percentage point, median projections for subsequent years were unrevised; in addition, median projections for core inflation were almost unrevised for all years. For additional information on the Summary of Economic Projections to be released with the March 2016 FOMC minutes, see www.federalreserve.gov/monetarypolicy/fomcprojtabl20160316.htm.

3 The neutral rate is not directly observable. However, we intuitively know that it must have run well below its historical norm in recent years because otherwise the economy would have expanded at a much more rapid pace with the nominal federal funds rate near zero. As discussed in my December 2, 2015, speech to the Economic Club of Washington (Yellen, 2015), empirical evidence supports this intuition. I showed that model-based estimates of the "natural rate," when the natural rate is defined as the real short-term interest rate that would prevail in the absence of frictions that slow the adjustment of wages and prices to changes in the economy, are currently close to zero in four macroeconomic models used by Federal Reserve staff. Time series estimates of a different concept of the natural rate that is more similar to the neutral rate definition used in this speech, such as Laubach and Williams (2016) and Lubik and Matthes (2015), are near historical lows. See also Johannsen and Mertens (2016) for empirical evidence of a decline in the longer-run level of the natural rate, along with measures of the uncertainty attached to estimates of its current value.

4 Assuming that the current gap between the actual federal funds rate and its neutral value is about 125 basis points, simulations of the FRB/US model under vector-autoregression-based expectations suggest that maintaining this interest rate gap for the next couple of years would lower the unemployment rate ½ percentage point or so below what it otherwise would be if the gap were instead immediately closed. Under rational expectations, the predicted effect would be smaller. For further information, see Brayton, Laubach, and Reifschneider (2014).

5 Of course, any gap between the real federal funds rate and the neutral rate will eventually need to be closed in order to stabilize inflation at 2 percent, keep employment at its maximum level, and the economy growing in line with its potential rate.

be appropriate. That said, this assessment is only a forecast. The future path of the federal funds rate is necessarily uncertain because economic activity and inflation will likely evolve in unexpected ways. For example, no one can be certain about the pace at which economic headwinds will fade. More generally, the economy will inevitably be buffeted by shocks that cannot be foreseen. What is certain, however, is that the Committee will respond to changes in the outlook as needed to achieve its dual mandate.

Turning to inflation, here too the baseline outlook is little changed. In December, the FOMC anticipated that inflation would remain low in the near term due to the drag from lower prices for energy and imports. But as those transitory effects faded, the Committee expected inflation to move up to 2 percent over the medium term, provided the labor market improves further and inflation expectations are stable. This assessment still seems to me to be broadly correct. PCE prices were up only 1 percent in February relative to a year earlier, held down by earlier declines in the price of oil. In contrast, core PCE inflation, which strips out volatile food and energy components, was up 1.7 percent in February on a 12 month basis, somewhat more than my expectation in December. But it is too early to tell if this recent faster pace will prove durable. Even when measured on a 12-month basis, core inflation can vary substantially from quarter to quarter and earlier dollar appreciation is still expected to weigh on consumer prices in the coming months. For these reasons, I continue to expect that overall PCE inflation for 2016 as a whole will come in well below 2 percent but will then move back to 2 percent over the course of 2017 and 2018, assuming no further swings in energy prices or the dollar. This projection, however, depends critically on expectations for future inflation remaining reasonably well anchored. It is still my judgment that inflation expectations are well anchored, but as I will shortly discuss, continued low readings for some indicators of expected inflation do concern me.

## Risks to the outlook for real economic activity

Although the baseline outlook has changed little on balance since December, global developments pose ongoing risks. These risks appear to have contributed to the financial market volatility witnessed both last summer and in recent months.

One concern pertains to the pace of global growth, which is importantly influenced by developments in China. There is a consensus that China's economy will slow in the coming years as it transitions away from investment toward consumption and from exports toward domestic sources of growth. There is much uncertainty, however, about how smoothly this transition will proceed and about the policy framework in place to manage any financial disruptions that might accompany it. These uncertainties were heightened by market confusion earlier this year over China's exchange rate policy.

A second concern relates to the prospects for commodity prices, particularly oil. For the United States, low oil prices, on net, likely will boost spending and economic activity over the next few years because we are still a major oil importer. But the apparent negative reaction of financial markets to recent declines in oil prices may in part reflect market concern that the price of oil was nearing a financial tipping point for some countries and energy firms. In the case of countries reliant on oil exports, the result might be a sharp cutback in government spending; for energy-related firms, it could entail significant financial strains and increased layoffs. In the event oil prices were to fall again, either development could have adverse spillover effects to the rest of the global economy.

If such downside risks to the outlook were to materialize, they would likely slow U.S. economic activity, at least to some extent, both directly and through financial market channels as investors respond by demanding higher returns to hold risky assets, causing financial conditions to tighten. But at the same time, we should not ignore the welcome possibility that economic conditions could turn out to be more favorable than we now expect. The improvement in the labor market in 2014 and 2015 was considerably faster than expected by either FOMC participants or private forecasters, and that experience could be repeated if, for example, the economic headwinds we face were to abate more quickly than anticipated. For these reasons, the FOMC must watch carefully for signs that the economy may be evolving in unexpected ways, good or bad.

**Risks to the inflation outlook**

The inflation outlook has also become somewhat more uncertain since the turn of the year, in part for reasons related to risks to the outlook for economic growth. To the extent that recent financial market turbulence signals an increased chance of a further slowing of growth abroad, oil prices could resume falling, and the dollar could start rising again. And if foreign developments were to adversely affect the U.S. economy by more than I expect, then the pace of labor market improvement would probably be slower, which would also tend to restrain growth in both wages and prices. But even if such developments were to occur, they would, in my view, only delay the return of inflation to 2 percent, provided that inflation expectations remain anchored.

Unfortunately, the stability of longer-run inflation expectations cannot be taken for granted. During the 1970s, inflation expectations rose markedly because the Federal Reserve allowed actual inflation to ratchet up persistently in response to economic disruptions – a development that made it more difficult to stabilize both inflation and employment. With considerable effort, however, the FOMC gradually succeeded in bringing inflation back down to a low and stable level over the course of the 1980s and early 1990s. Since this time, measures of longer-run inflation expectations derived from both surveys and financial markets have been remarkably stable, making it easier to keep actual inflation relatively close to 2 percent despite large movements in oil prices and pronounced swings in the unemployment rate.

Lately, however, there have been signs that inflation expectations may have drifted down. Market-based measures of longer-run inflation compensation have fallen markedly over the past year and half, although they have recently moved up modestly from their all-time lows. Similarly, the measure of longer-run inflation expectations reported in the University of Michigan Survey of Consumers has drifted down somewhat over the past few years and now stands at the lower end of the narrow range in which it has fluctuated since the late 1990s.

The shifts in these measures notwithstanding, the argument that inflation expectations have actually fallen is far from conclusive. Analysis carried out at the Fed and elsewhere suggests that the decline in market-based measures of inflation compensation has largely been driven by movements in inflation risk premiums and liquidity concerns rather than by shifts in inflation expectations.[6] In addition, the longer-run measure of inflation expectations from the Michigan Survey has historically exhibited some sensitivity to fluctuations in current gasoline prices, which suggests that this measure may be an unreliable guide to movements in trend inflation under current circumstances.[7] Moreover, measures of longer-run expected inflation gleaned from surveys of business and financial economists, such as those reported in the Survey of Professional Forecasters, the Blue Chip survey, and the Survey of Primary Dealers, have largely moved sideways in the past year or two. Taken together, these results suggest that my baseline assumption of stable expectations is still justified. Nevertheless, the decline in some indicators has heightened the risk that this judgment could be wrong. If so,

---

6 For related background discussions, see Bauer and Rudebusch (2015), Abrahams and others (2012 [rev. 2015), and D'Amico, Kim, and Wei (2014).

7 Similarly, a monthly survey conducted by the Federal Reserve Bank of New York shows a noticeable decline over the past two years in household expectations for inflation three years ahead. However, these readings on shorter-term expectations may also be influenced by current gasoline prices. Moreover, readings from this survey are only available since 2013, making it difficult to determine the significance of these results.

the return to 2 percent inflation could take longer than expected and might require a more accommodative stance of monetary policy than would otherwise be appropriate.[8]

Despite the declines in some indicators of expected inflation, we also need to consider the opposite risk that we are underestimating the speed at which inflation will return to our 2 percent objective. Economic growth here and abroad could turn out to be stronger than expected, and, as the past few weeks have demonstrated, oil prices can rise as well as fall. More generally, economists' understanding of inflation is far from perfect, and it would not be all that surprising if inflation was to rise more quickly than expected over the next several years. For these reasons, we must continue to monitor incoming wage and price data carefully.

## Monetary policy implications

Let me now turn to the implications for monetary policy of this assessment of the baseline outlook and associated risks.

The FOMC left the target range for the federal funds rate unchanged in January and March, in large part reflecting the changes in baseline conditions that I noted earlier. In particular, developments abroad imply that meeting our objectives for employment and inflation will likely require a somewhat lower path for the federal funds rate than was anticipated in December.

Given the risks to the outlook, I consider it appropriate for the Committee to proceed cautiously in adjusting policy. This caution is especially warranted because, with the federal funds rate so low, the FOMC's ability to use conventional monetary policy to respond to economic disturbances is asymmetric. If economic conditions were to strengthen considerably more than currently expected, the FOMC could readily raise its target range for the federal funds rate to stabilize the economy. By contrast, if the expansion was to falter or if inflation was to remain stubbornly low, the FOMC would be able to provide only a modest degree of additional stimulus by cutting the federal funds rate back to near zero.[9]

One must be careful, however, not to overstate the asymmetries affecting monetary policy at the moment. Even if the federal funds rate were to return to near zero, the FOMC would still have considerable scope to provide additional accommodation. In particular, we could use the approaches that we and other central banks successfully employed in the wake of the financial crisis to put additional downward pressure on long-term interest rates and so support the economy – specifically, forward guidance about the future path of the federal funds rate and increases in the size or duration of our holdings of long-term securities.[10]

---

8 Another risk to the inflation forecast, although one that has not changed appreciably since the turn of the year, is that the Committee may have overestimated the longer-run rate of unemployment consistent with inflation stabilizing at 2 percent. Currently, the median of FOMC participants' estimates of this rate is 4.8 percent. However, this longer-run rate cannot be estimated precisely, and so it could be appreciably higher or lower – although given low readings on wages in recent years, I think the latter possibility is more likely than the former. If so, a lower level of unemployment might be needed to fully eliminate slack in the labor market, drive faster wage growth, and return inflation to our 2 percent objective.

9 Research suggests that, all else being equal, increased uncertainty and greater downside risk in the vicinity of the effective lower bound on nominal interest rates call for greater gradualism under optimal policy than would be the case if short-term nominal interest rates were appreciably above zero. This phenomenon is known as "policy attenuation" in the economic literature. For a discussion, see, for example, Adam and Billi (2007), Nakata (2012), Evans and others (2015), and Gust, Johannsen, and Lopez-Salido (2015).

10 With regard to the Federal Reserve's balance sheet, the FOMC could increase its size by resuming large-scale purchases of longer-term Treasury securities and agency mortgage-backed securities. Alternatively, the FOMC could increase the duration of the Federal Reserve's holdings without expanding the size of its portfolio by selling assets with relatively short residual maturities and buying equal amounts of assets with relatively long residual maturities. Studies suggest that either action would reduce the term premiums embedded in longer-term interest rates considerably.

While these tools may entail some risks and costs that do not apply to the federal funds rate, we used them effectively to strengthen the recovery from the Great Recession, and we would do so again if needed.[11]

Of course, economic conditions may evolve quite differently than anticipated in the baseline outlook, both in the near term and over the longer run. If so, as I emphasized earlier, the FOMC will adjust monetary policy as warranted. As our March decision and the latest revisions to the Summary of Economic Projections demonstrate, the Committee has not embarked on a preset course of tightening. Rather, our actions are data dependent, and the FOMC will adjust policy as needed to achieve its dual objectives.

Financial market participants appear to recognize the FOMC's data-dependent approach because incoming data surprises typically induce changes in market expectations about the likely future path of policy, resulting in movements in bond yields that act to buffer the economy from shocks. This mechanism serves as an important "automatic stabilizer" for the economy. As I have already noted, the decline in market expectations since December for the future path of the federal funds rate and accompanying downward pressure on long-term interest rates have helped to offset the contractionary effects of somewhat less favorable financial conditions and slower foreign growth. In addition, the public's expectation that the Fed will respond to economic disturbances in a predictable manner to reduce or offset their potential harmful effects means that the public is apt to react less adversely to such shocks – a response which serves to stabilize the expectations underpinning hiring and spending decisions.[12]

Such a stabilizing effect is one consequence of effective communication by the FOMC about its outlook for the economy and how, based on that outlook, policy is expected to evolve to achieve our economic objectives. I continue to strongly believe that monetary policy is most effective when the FOMC is forthcoming in addressing economic and financial developments such as those I have discussed in these remarks, and when we speak clearly about how such developments may affect the outlook and the expected path of policy. I have done my best to do so today, in the time you have kindly granted me.

**References**

Abrahams, Michael, Tobias Adrian, Richard K. Crump, and Emanuel Moench (2012). "Decomposing Real and Nominal Yield Curves (PDF)," Federal Reserve Bank of New York, Staff Reports No. 570. New York: FRBNY, September; revised February 2015.

Adam, Klaus, and Roberto M. Billi (2007). "Discretionary Monetary Policy and the Zero Lower Bound on Nominal Interest Rates (PDF)," *Journal of Monetary Economics,* vol. 54 (April), pp. 728–52. An earlier version of this article is available on the Federal Reserve Bank of Kansas City's website at http://www.kansascityfed.org/publicat/reswkpap/pdf/rwp05–08.pdf.

Bauer, Michael D., and Glenn D. Rudebusch (2015). "Optimal Policy and Market-Based Expectations," Federal Reserve Bank of San Francisco, FRBSF Economic Letter 2015–12, San Francisco: FRBSF, April 13.

Board of Governors of the Federal Reserve System (2015), "Federal Reserve Issues FOMC Statement," press release, December 16.

[11] For an overview of the macroeconomic effects of the Federal Reserve's unconventional policies after the financial crisis, see Engen, Laubach, and Reifschneider (2015) and the references therein. For a discussion of the costs and benefits of these tools, see English, Lopez-Salido, and Tetlow (2015).

[12] That said, market expectations are not always well aligned with the Committee's baseline outlook for the federal funds rate. Market participants may hold different views about the economic outlook and the associated risks and at times may be confused about the FOMC's strategy. In such situations, the Committee must do what it believes is appropriate while clearly explaining the rationale for its actions.

Brayton, Flint, Thomas Laubach, and David Reifschneider (2014). "The FRB/US Model: A Tool for Macroeconomic Policy Analysis," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, April.

D'Amico, Stefania, Don H. Kim, and Min Wei (2014). "Tips from TIPS: The Informational Content of Treasury Inflation-Protected Security Prices (PDF)," Finance and Economics Discussion Series 2014–24. Washington: Board of Governors of the Federal Reserve System, January.

Engen, Eric M., Thomas T. Laubach, and David Reifschneider (2015). "The Macroeconomic Effects of the Federal Reserve's Unconventional Monetary Policies (PDF)," Finance and Economics Discussion Series 2015–005. Washington: Board of Governors of the Federal Reserve System, February.

English, William B., J. David Lopez-Salido, and Robert J. Tetlow (2015). "The Federal Reserve's Framework for Monetary Policy: Recent Changes and New Questions (PDF)," *IMF Economic Review,* vol. 63 (April), pp. 22–70. An earlier version of this article is available on the Federal Reserve Board's website at http://www.federalreserve.gov/pubs/feds/2013/201376/201376pap.pdf.

Evans, Charles, Jonas Fisher, François Gourio, and Spencer Krane (2015). "Risk Management for Monetary Policy Near the Zero Lower Bound (PDF)," Brookings Papers on Economic Activity, BPEA Conference Draft. Washington: Brookings Institution, March.

Gust, Christopher J., Benjamin K. Johannsen, and David Lopez-Salido (2015). "Monetary Policy, Incomplete Information, and the Zero Lower Bound (PDF)," Finance and Economics Discussion Series 2015–099. Washington: Board of Governors of the Federal Reserve System, February.

Johannsen, Benjamin K., and Elmar Mertens (2016). "The Expected Real Interest Rate in the Long Run: Time Series Evidence with the Effective Lower Bound," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, February 9.

Laubach, Thomas, and John C. Williams (2016). "Measuring the Natural Rate of Interest Redux (PDF)," Finance and Economics Discussion Series 2016–011. Washington: Board of Governors of the Federal Reserve System, February.

Lubik, Thomas A., and Christian Matthes (2015). "Calculating the Natural Rate of Interest: A Comparison of Two Alternative Approaches (PDF)," Economic Brief 15–10. Richmond: Federal Reserve Bank of Richmond, October.

Nakata, Taisuke (2012). "Uncertainty at the Zero Lower Bound (PDF)," Finance and Economics Discussion Series 2013–09. Washington: Board of Governors of the Federal Reserve System, December.

Yellen, Janet L. (2015). "The Economic Outlook and Monetary Policy," speech delivered at the Economic Club of Washington, Washington, December 2.