Normalization: A New Approach

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Introduction

A new approach

- The St. Louis Fed recently changed its approach to near-term U.S. macroeconomic and monetary policy projections.
  - Wharton Business Radio interview, Aug. 12, 2016.
  - J. Bullard, "A Tale of Two Narratives," remarks delivered at the Gateway Chapter of NABE, St. Louis, July 12, 2016.
  - J. Bullard, "A New Characterization of the U.S. Macroeconomic and Monetary Policy Outlook," remarks delivered at the Society of Business Economists Annual Dinner, London, U.K., June 30, 2016.
  - J. Bullard, "The St. Louis Fed's New Characterization of the Outlook for the U.S. Economy," St. Louis Fed commentary, June 17, 2016.
  - All available on my webpage under "Key Policy Papers."

Two narratives

- An older narrative used by the St. Louis Fed over the last five years or so has likely outlived its usefulness.
- A new narrative is replacing the old narrative.
- In this talk, I will describe in more detail the differences between the two narratives.

Overview of the Previous Narrative

Gaps tending to zero

- The old narrative held that, as inflation and unemployment gaps narrowed to zero, the policy rate would have to rise.
    - For one example, see J. Bullard, "Fed Goals and the Policy Stance," remarks delivered at the Owensboro in 2065 Summit, Owensboro, Ky., July 17, 2014.
- Today, inflation and unemployment gaps are indeed near zero—business cycle dynamics have completely played out seven years after the end of the recession.
- This suggests that—since inflation and unemployment are at normal levels—the policy rate should also be near its normal level.
- This is standard macroeconomics.

Nature of the old narrative

- What is driving this conclusion?
- In the old narrative, there is, axiomatically, a unique long-run steady state which is essentially an average of the past.
- The economy is viewed as converging—all values for key macroeconomic variables are tending toward steady-state values.
- Implication: The policy rate would likely rise over the forecast horizon to be consistent with its steady-state value.
- Under the old narrative, the St. Louis Fed therefore projected a rising policy rate over the forecast horizon.

Overview of the New Narrative

Nature of the new narrative

- In the new narrative, the concept of a single, long-run steady state is abandoned.
- Instead, there is a set of possible "regimes" that the economy may visit.
  - J.D. Hamilton, "A New Approach to the Economic Analysis of Nonstationary Time Series and the Business Cycle," *Econometrica*, March 1989, 57(2), 357-384.
  - C.-J. Kim and C.R. Nelson, *State-Space Models with Regime Switching*, MIT Press, 1999.
- The "regime" language comes from this and subsequent nonlinear econometrics literature on this topic.

More on the nature of the new narrative

- Regimes are viewed as persistent, and switches between regimes are viewed as not forecastable.
- Optimal monetary policy is regime-dependent.
- The current regime appears to be characterized by slow growth and low real rates of return on safe assets.
- Implication: The policy rate will likely remain essentially flat over the forecast horizon to remain consistent with the current regime.
  - This implication is very different from the previous narrative.

The forecast based on the new narrative

- A simple forecast over the next two and a half years:
  - Real GDP growth 2 percent
  - Unemployment 4.7 percent
  - Trimmed-mean PCE inflation 2 percent
  - Policy rate 63 basis points

- Risks associated with this projected policy rate are likely to the upside.

The Previous Narrative and the End of Its Usefulness

Forecasts under the St. Louis Fed's previous narrative

- The typical medium-term forecast during the past several years under the old narrative:
  - Output growth above trend.
  - Unemployment declining.
  - Inflation (net of commodity-price effects) overshoots 2 percent.
  - Policy rate increases to be consistent with the unique steady state.

The old narrative: Did it work?

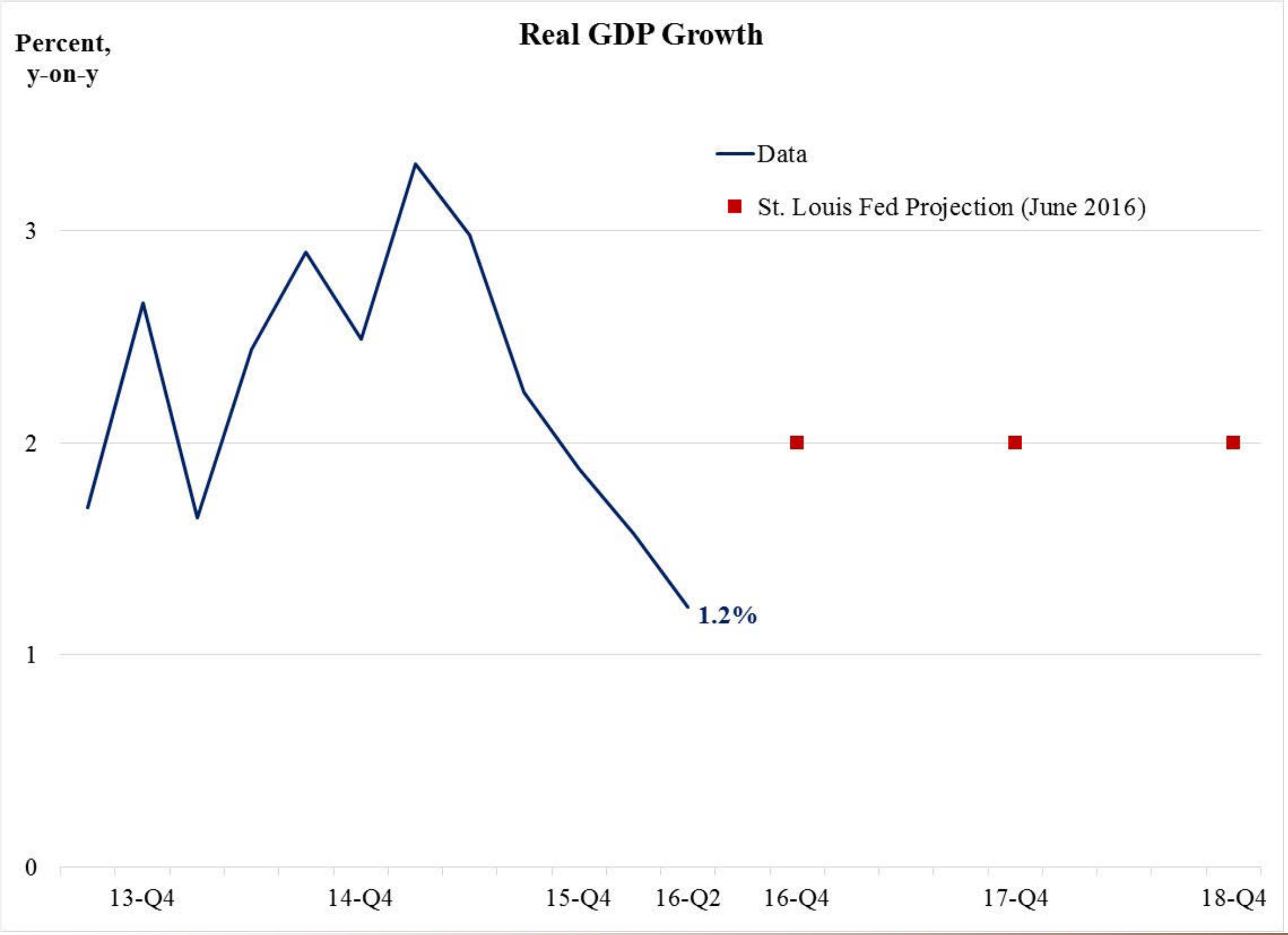
- Some aspects of the previous narrative worked well from second half of 2013 through the first half of 2015:
  - The average quarterly real GDP growth rate was about 2.7 percent versus a trend rate of about 2 percent.
    - So, economic growth was arguably above trend as we predicted.
  - Unemployment declined by 2 percentage points.
    - We were relatively accurate on this.
  - But, Dallas Fed trimmed-mean PCE inflation measured from one year earlier was 1.50 percent in July 2013 and increased to only 1.60 percent in July 2015.
    - We did not see the overshooting of the 2 percent inflation target we expected.

The end of the usefulness of the old narrative

- The usefulness of our previous narrative may have now come to an end:
  - Output growth has arguably slowed to a rate below a 2 percent trend.
  - Unemployment may not fall much below its current values.
  - Trimmed-mean inflation is close to target but not rising rapidly.
- If there are no major shocks to the economy, this situation could be sustained over a forecasting horizon of two and a half years.
- These facts suggest that it may be time to quit using the old narrative.

Previous Narrative and the End of Its Usefulness in Charts

Real output growth has slowed

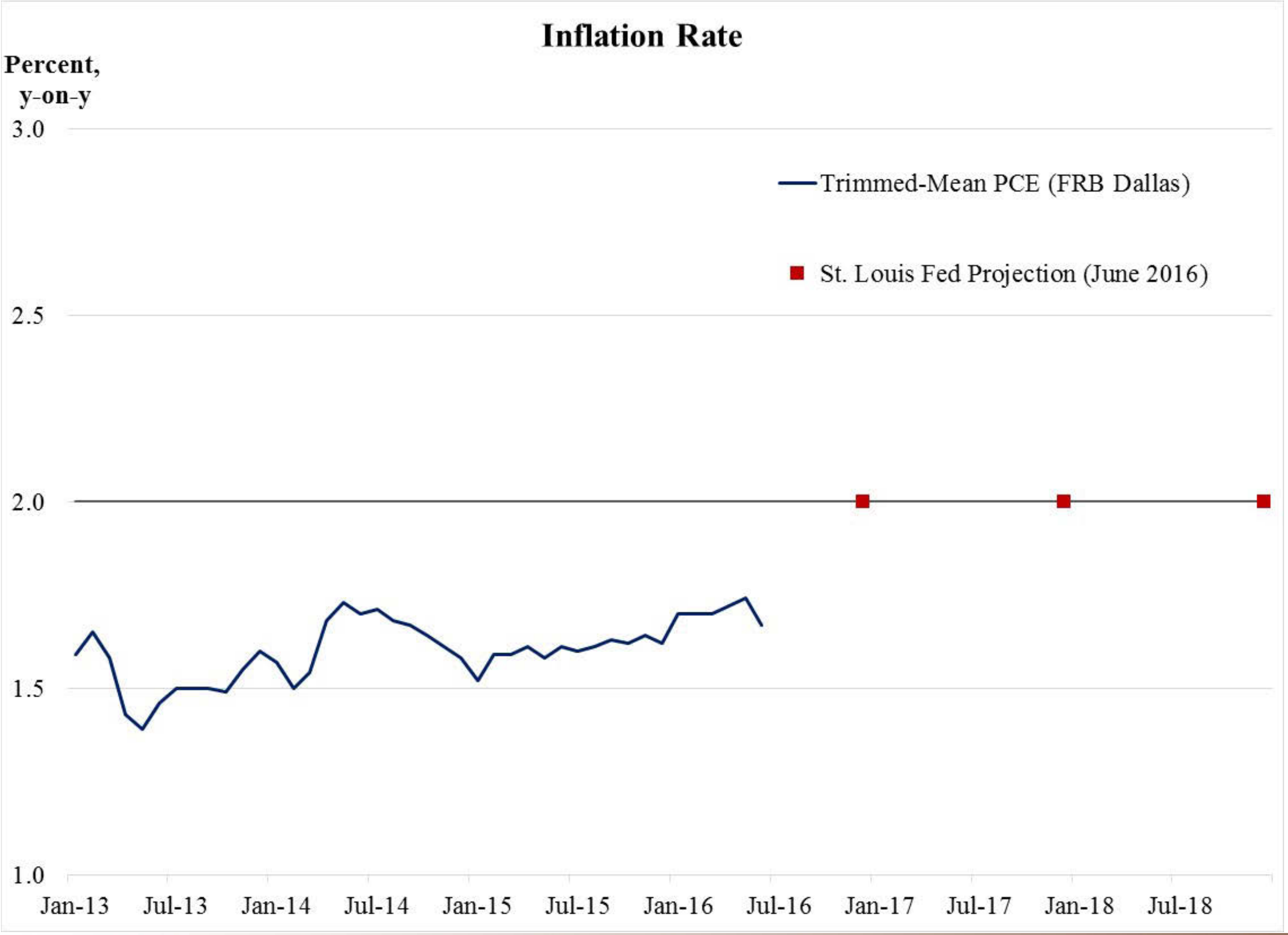


Source: Bureau of Economic Analysis and author's calculations.
Last observation: 2016-Q2.

Unemployment has fallen to a low level

Source: Bureau of Labor Statistics and author's calculations.
Last observation: July 2016.

Inflation is closer to target



Source: FRB of Dallas and author's calculations. Last observation: June 2016.

A New Narrative Based on Regimes

A new narrative based on regime-switching ideas

- An unsatisfactory aspect of the old narrative:
  - The policymaker is completely certain that the economy is converging to a long-run steady state, which is itself an average of past outcomes.
  - How to fix this?
- The new narrative: We want a manageable expression of the uncertainty surrounding medium- and longer-term outcomes.
  - One way to do this is to abandon the idea of a long-run steady state and instead think in terms of regimes that the economy may visit.
  - What are these regimes?

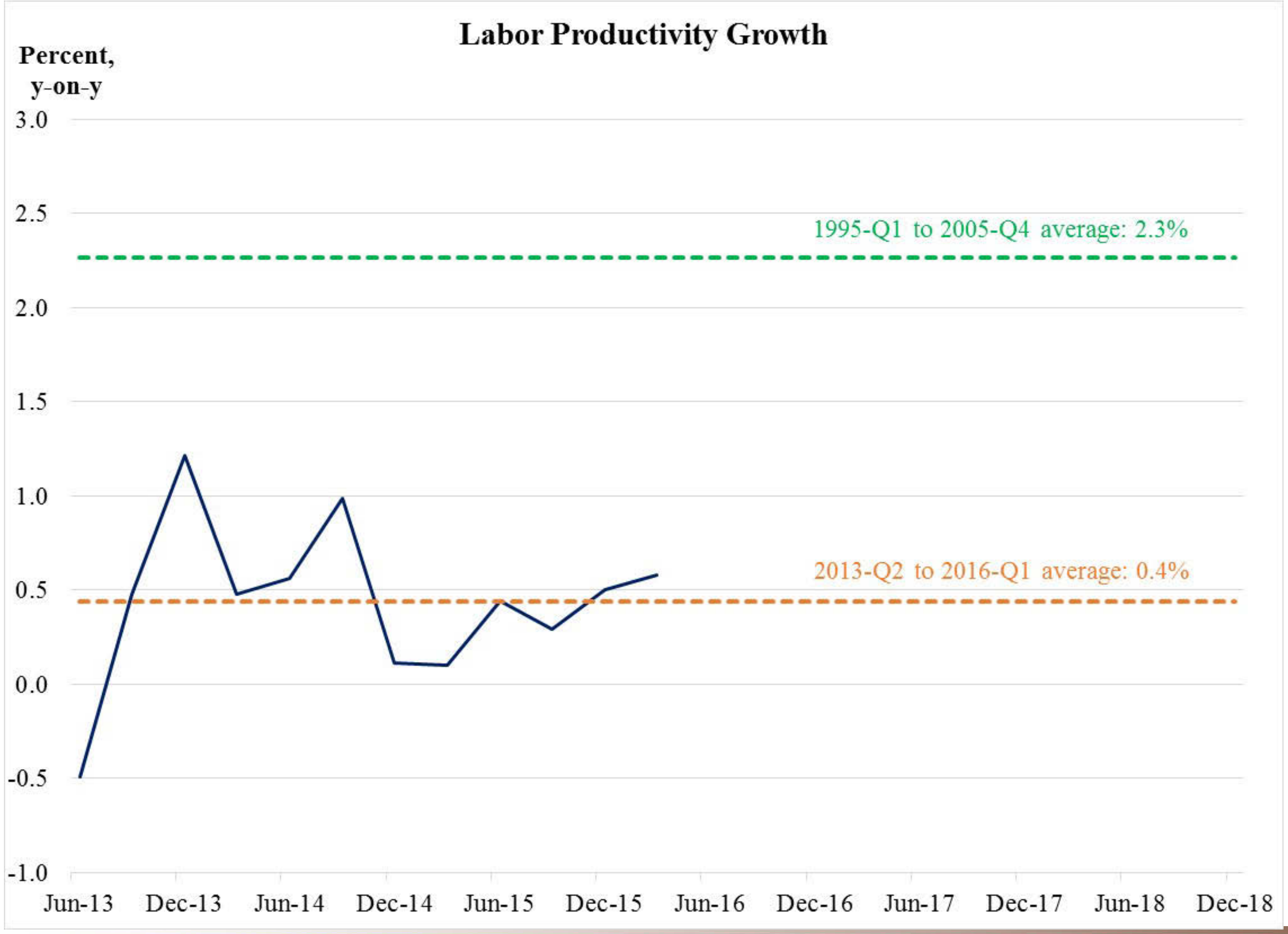
The nature of the regimes

- Fundamental factors determine the nature of the regimes:
    1. Productivity growth—high or low.
    2. Real interest rate on short-term government debt—high or low.
    3. State of the business cycle—expansion or recession.
- The "regime" can refer to any of these states or to the combination of all three.
- Optimal monetary policy is regime-dependent.
- Regime switches are not forecastable—viewed as "risks."
- Forecast limited to a horizon of two and a half years—no long-run projections.

Productivity regimes

- One important fundamental is productivity growth.
- Average labor productivity growth has been low at least since 2011, which we view as a "low-productivity-growth regime."
- We assume that we will remain in the low-productivity (and hence low-real-GDP growth) regime through the forecasting horizon because regimes are persistent.
- Higher productivity growth was observed in the recent past.
- A switch back to a high-productivity-growth regime is an upside risk.

The high- and low-productivity-growth regimes



Source: Bureau of Labor Statistics, Bureau of Economic Analysis and author's calculations.
Last observation: 2016-Q1.

Real-interest-rate regimes

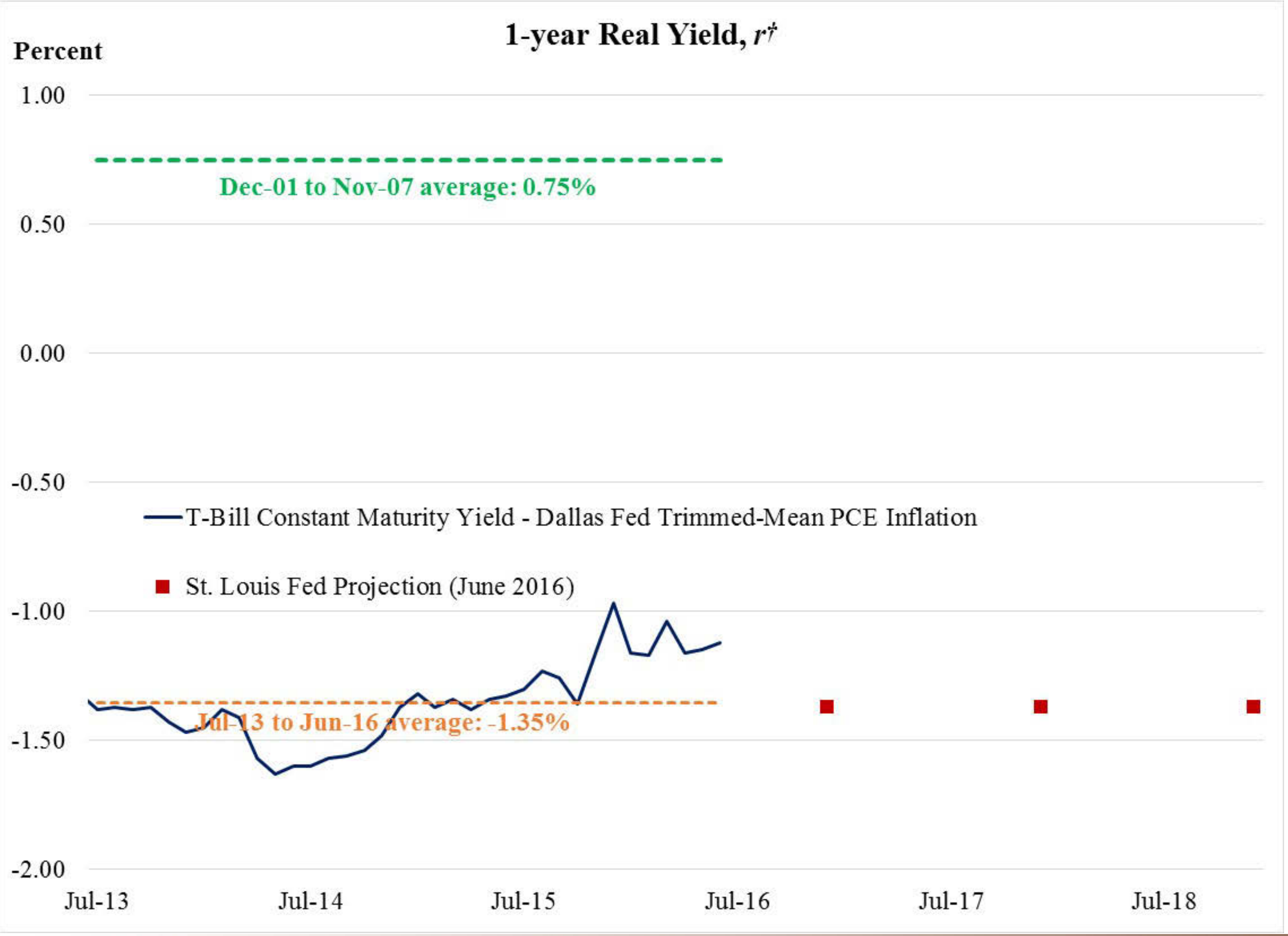
- The real rate of return on short-term government debt, $r^{\dagger}$, has been exceptionally low, which we view as a "low-real-rate regime."
  - Appears to be highly persistent.
  - For forecasting purposes, we assume that we will remain in the low-real-rate regime through the forecasting horizon.
- The alternative regime has a relatively high real rate.
  - A switch to a high-real-rate regime is viewed as a risk.

Real-interest-rate regimes

- Interpretation:
  - We think of low real rates of return on government paper (safe assets) as reflecting an unusually high liquidity premium on government debt.
  - Real returns on capital as calculated from GDP accounts are not particularly low.*
  - Therefore, not all real returns in the economy are unusually low.
  - Nevertheless, the real returns on safe assets are the ones most closely linked to monetary policy.

** See P. Gomme, B. Ravikumar and P. Rupert, "Secular Stagnation and Returns on Capital," St. Louis Fed* Economic Synopses, *August 2015, No. 19.*

Real rate of return on short-term government debt, $r^{\dagger}$

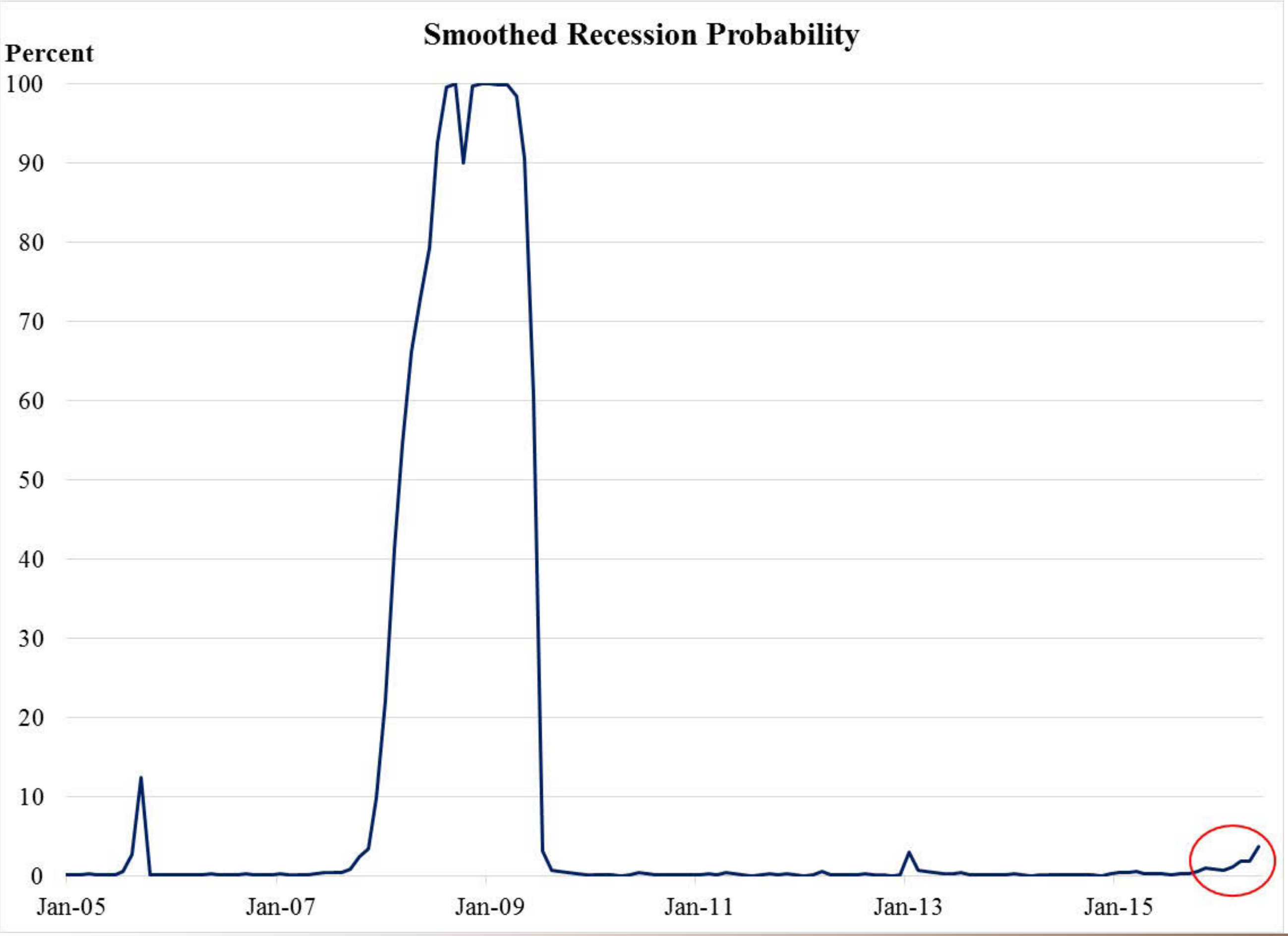


Source: Federal Reserve Board, FRB of Dallas and author's calculations. Last observation: June 2016.

The state of the business cycle

- Another important fundamental is the possibility of recession.
- Currently we are in a "no-recession regime," but it is possible that we could switch to a recession state.
- All variables would be affected, but most notably, the unemployment rate would rise significantly.
- We have no reason to forecast a recession given the current state of the U.S. economy.
- The possibility of a recession is a risk to the forecast.

Recession probability is low



Source: FRED, based on M. Chauvet and J. Piger, "A Comparison of the Real-Time Performance of Business Cycle Dating Methods," Journal of Business and Economic Statistics, *January 2008, 26(1), 42-49. Last observation: May 2016.*

Summary: The current regime

- In summary, we think the current regime is characterized by:
  - Relatively low probability of recession in the near term.
  - Low real interest rate on short-term government debt.
  - Low productivity growth.
- In addition, business cycle dynamics have played out, and current unemployment and inflation gaps are near zero.
- Given the current regime, what is the optimal path for the policy rate?

The Policy Rate Path Based on the New Narrative

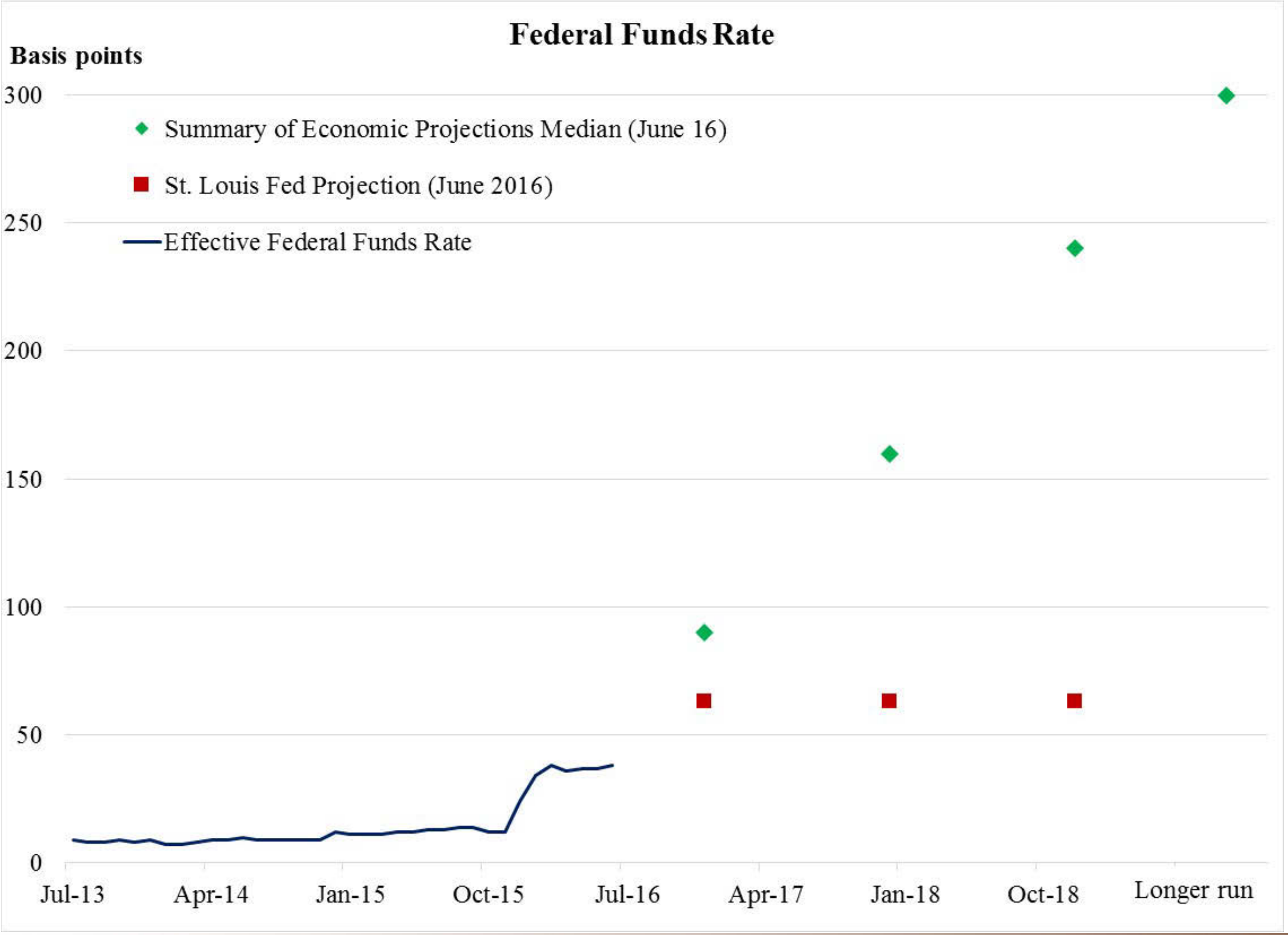
The policy rate path

- The policy rate path (63 basis points) supporting our output, unemployment and inflation forecasts is regime-dependent.
- Unemployment and inflation gaps ≈ 0.
- A Taylor-type rule collapses to a Fisher equation

$$i = r^{\dagger} + \pi^{e} + \phi_{\pi} \pi^{GAP} + \phi_{u} u^{GAP} = r^{\dagger} + \pi^{e}$$

- $i = 0.63\%$ and $\pi^{e} = 2\%$ imply $(i - \pi^{e}) = -1.37\%$
- Very close to $r^{\dagger} = -1.35\%$, the one-year ex post real interest rate on government debt.

The policy rate path



Source: Federal Reserve Board and author's calculations. Last observation: July 2016.

Risks to the forecast

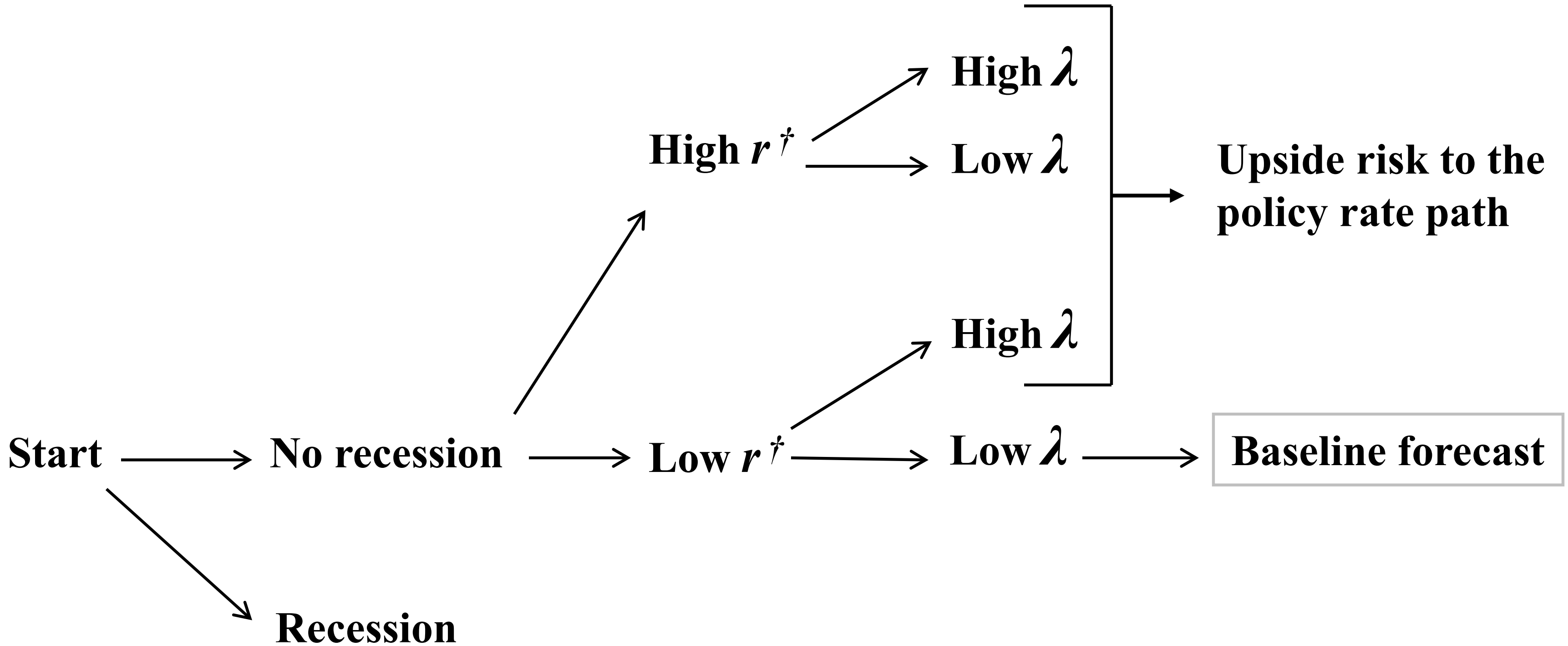
- Fundamental factors could switch into new regimes, in which case monetary policy would have to react.
- Phillips curve effects:
  - In our narrative, a strong labor market (low unemployment) does not put significant upward pressure on inflation.
  - A risk is that Phillips curve effects could reassert themselves and drive inflation higher.
- Inflation expectations:
  - Low market-based measures are at odds with our forecast.
- Asset price bubbles are not addressed in this framework.

Conclusion

St. Louis Fed's characterization of the macro outlook

$r^{\dagger}$ = real rate of return on short-term government debt

λ = productivity growth



Conclusion

- The projected policy rate path is the main difference in the new approach.
  - For other variables, the St. Louis Fed's forecast under the new approach is similar to private-sector forecasts.
- Old narrative:
  - Relatively steep policy rate path, dictated by convergence to the single, long-run steady state.
- New narrative:
  - Flat policy rate path, conditional on the current regime.
  - If a regime switch does occur, the policy rate path would have to change appropriately—it remains data-dependent.

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