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# Estimating Key Economic Variables: The Policy Implications

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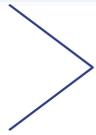
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## Economic Recovery Puzzle – Inflation

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- ▶ Why has it been so difficult for central banks in many developed economies to achieve their inflation objectives, even as employment has rebounded?
    - ▶ Substantial improvement in labor markets, yet inflation remains subdued
    - ▶ Natural rate of unemployment may have fallen, which could help explain the puzzle
  - ▶ Fed policymakers have lowered their estimates of the natural rate of unemployment
    - ▶ However some caution is in order; natural rate estimates can be too responsive to current conditions
    - ▶ Improvement in human capital and demographic changes could lower the natural rate
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## Economic Recovery Puzzle – Low Interest Rates

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- ▶ Relatively slow rate of economic growth despite unusually low interest rates
    - ▶ Real short-term interest rates still negative
    - ▶ One common explanation: Equilibrium interest rate has fallen
  - ▶ Fed policymakers have lowered their estimates of the equilibrium interest rate
    - ▶ Potential GDP growth slowdown makes this more credible
    - ▶ However, the rapid decline in estimates of the equilibrium interest rate should also be viewed cautiously
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## Rapid Change in Key Economic Variables

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- ▶ Need to be responsive to changes in underlying economic relationships
  - ▶ In my view, there is a need to be cautious when explaining developments in “high frequency” information with changes in relatively “low frequency” concepts
  - ▶ One can make significant policy mistakes if one assumes incorrectly that significant changes in long-run variables have occurred when in fact no change has occurred



## Policy Implications

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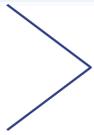
- ▶ In my own view, maintaining negative real short-term rates once we have achieved full employment risks the potential of an eventual overheating of the economy
    - ▶ Higher wages and prices
    - ▶ Higher asset prices
  - ▶ Prudent risk management would argue for
    - ▶ Continued gradual removal of monetary policy accommodation in order to minimize the risk of outcomes that might prematurely shorten the current economic recovery
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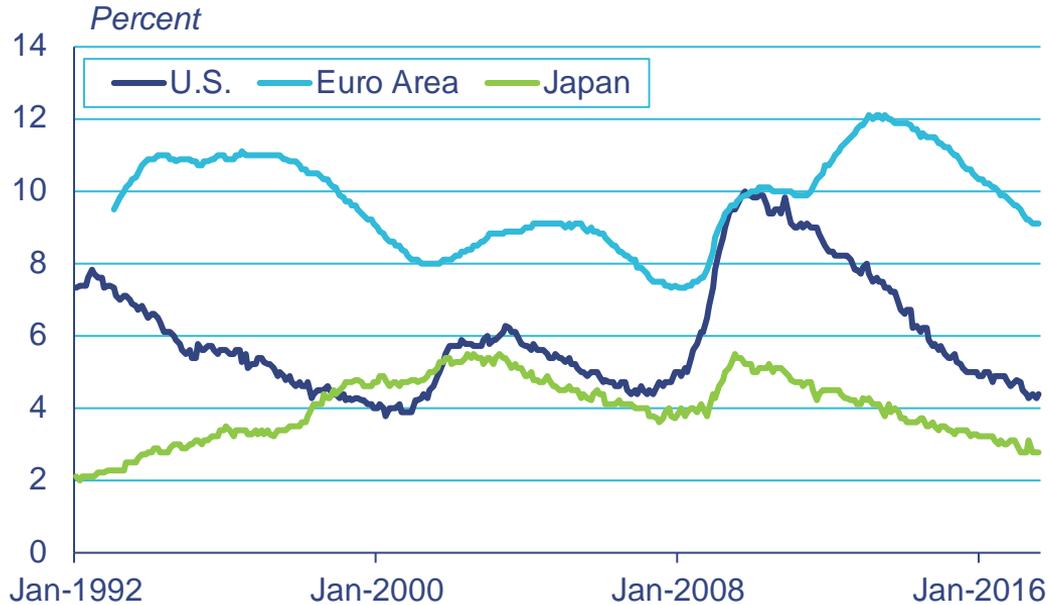
## Recovery after Financial Crisis

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- ▶ Recovery in the wake of a financial crisis has been quite slow
  - ▶ Consistent with earlier episodes
    - ▶ Firms and households are understandably more risk averse
    - ▶ Collateral values that are essential for obtaining financing are slow to rebound
  - ▶ However, it is a surprise how slowly wages and prices are growing a decade after the onset of the Great Recession
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# Figure 1: Unemployment Rates in the United States, the Euro Area and Japan January 1992 - August 2017

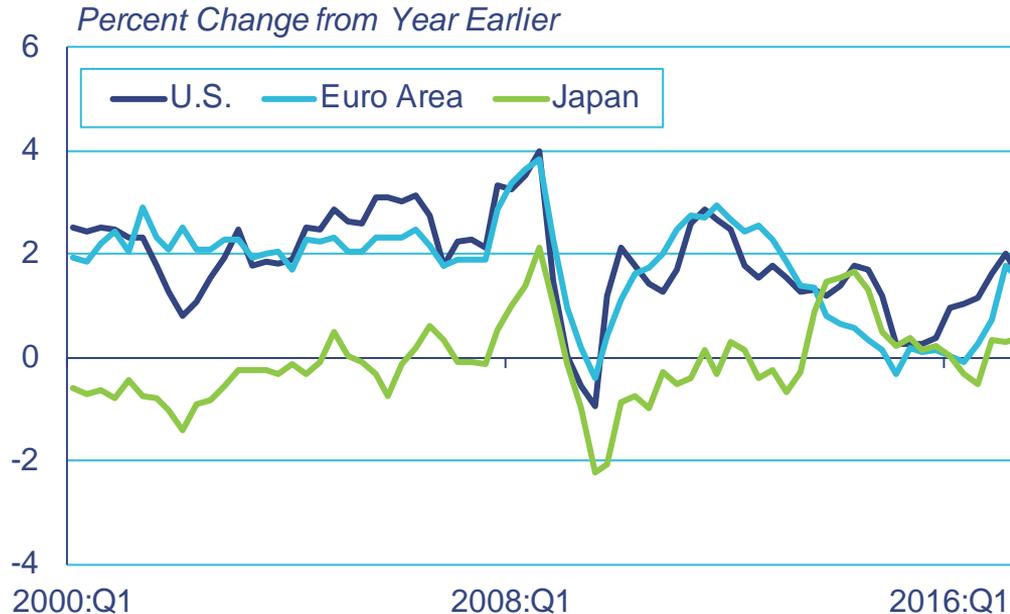


Note: For consistency across countries, we have not included the recently-released U.S. unemployment rate for September.

Source: BLS, Eurostat, Japan's Ministry of Internal Affairs and Communications, Haver Analytics



## Figure 2: Inflation Rates in the United States, the Euro Area and Japan 2000:Q1 - 2017:Q2



Note: Japan's inflation series is adjusted for an April 2014 consumption tax increase. For Japan and the Euro Area, the inflation measure is the change in the consumer price index. For the U.S., the measure is the change in the personal consumption expenditures price index.

Source: BEA, Eurostat, Japan's Ministry of Internal Affairs and Communications, Bank of Japan, Haver Analytics



## Slow Growth in Wages and Prices

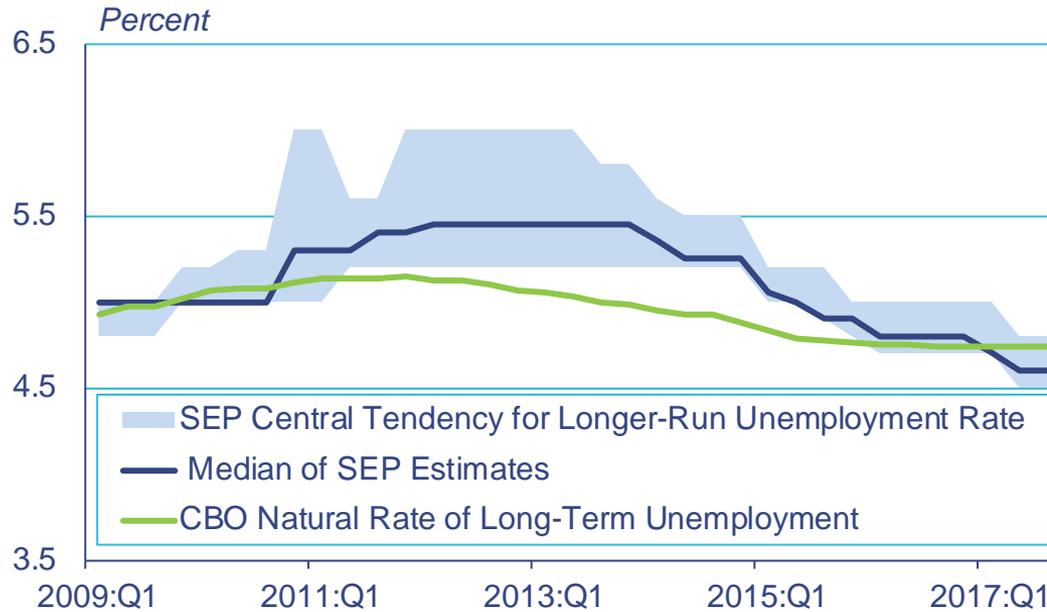
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- ▶ During periods of substantial slack in the economy, it is not surprising that wage and price inflation are modest
- ▶ As we exceed most economists' estimates of full employment, one might expect that wage and price pressures would gradually increase
- ▶ Phillips Curve – involves capturing slack in the economy



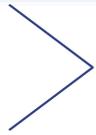
# Figure 3: Estimates of the Natural Rate of Unemployment

2009:Q1 - 2017:Q3



Note: Prior to the June 2015 median, SEP median unemployment rates are publicly available only with a five-year lag. Proxies for the medians for 2012 - March 2015 are calculated from the distribution of participants' projections reported in ranges of tenths in the meeting minutes.

Source: FOMC, Summary of Economic Projections (SEP); BLS; CBO; Haver Analytics



## Changes in the Natural Rate of Unemployment

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- ▶ Gradual changes in the natural rate reflect gradual but significant changes in the labor force
  - ▶ Demographic characteristics
    - ▷ Typically younger workers first entering the workforce are more likely to be unemployed, as they have not yet developed marketable skills and are more likely to return to school
    - ▷ Older workers have developed job-specific capital and are therefore more attached to their work and less likely to become unemployed or leave the labor force
  - ▶ Improvements in human capital



Figure 4: Share of the Civilian Labor Force  
Age 16 to 24  
1960:Q1 - 2017:Q3

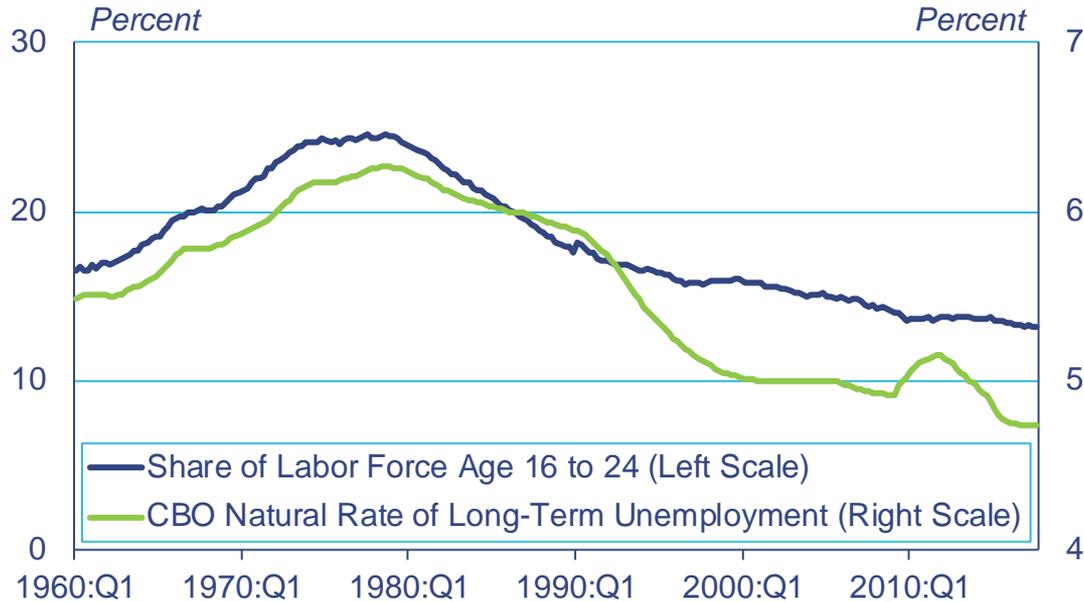
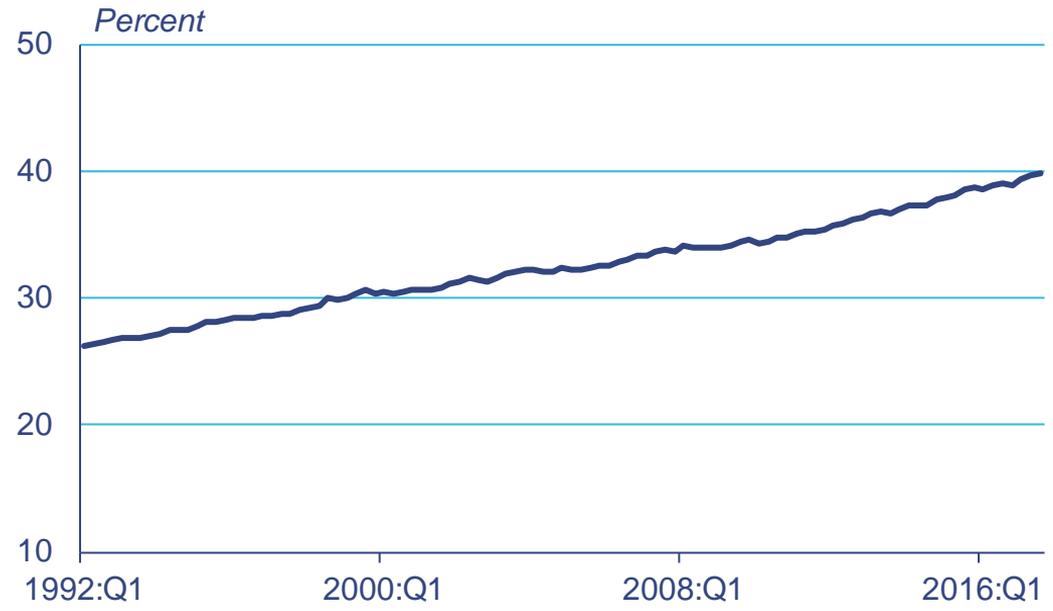




Figure 5: Share of the Civilian Labor Force, Age 25 Years and Older, with a College Degree or Higher  
1992:Q1 - 2017:Q3





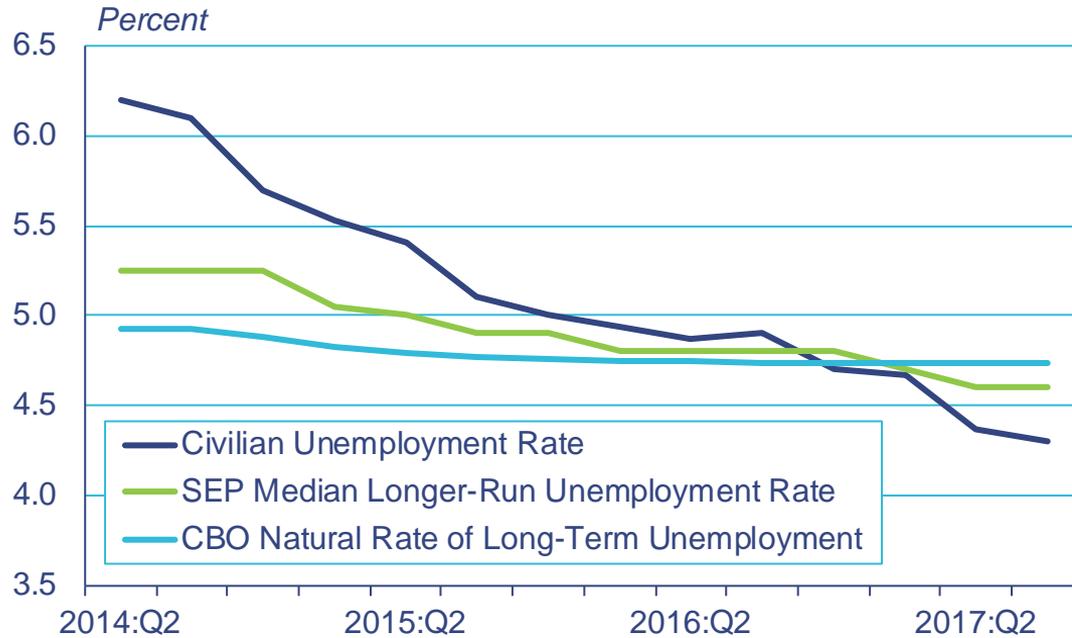
## Does this Explain Movements in Estimates of the Natural Rate?

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- ▶ Broad demographic trends
  - ▶ Generally slow moving
  - ▶ Generally well-known in advance
  - ▶ and thus straightforward to predict
- ▶ Alternative hypothesis – forecasters may be overly sensitive to current economic conditions when estimating the current natural rate



# Figure 6: Actual Civilian Unemployment Rate and Estimates of the Longer-Run Unemployment Rate 2014:Q2 - 2017:Q3



Note: Prior to the June 2015 median, SEP median unemployment rates are publicly available only with a five-year lag. Proxies for the medians are calculated from the distribution of participants' projections reported in ranges of tenths in the meeting minutes.

Source: FOMC, Summary of Economic Projections (SEP); BLS; CBO; Haver Analytics



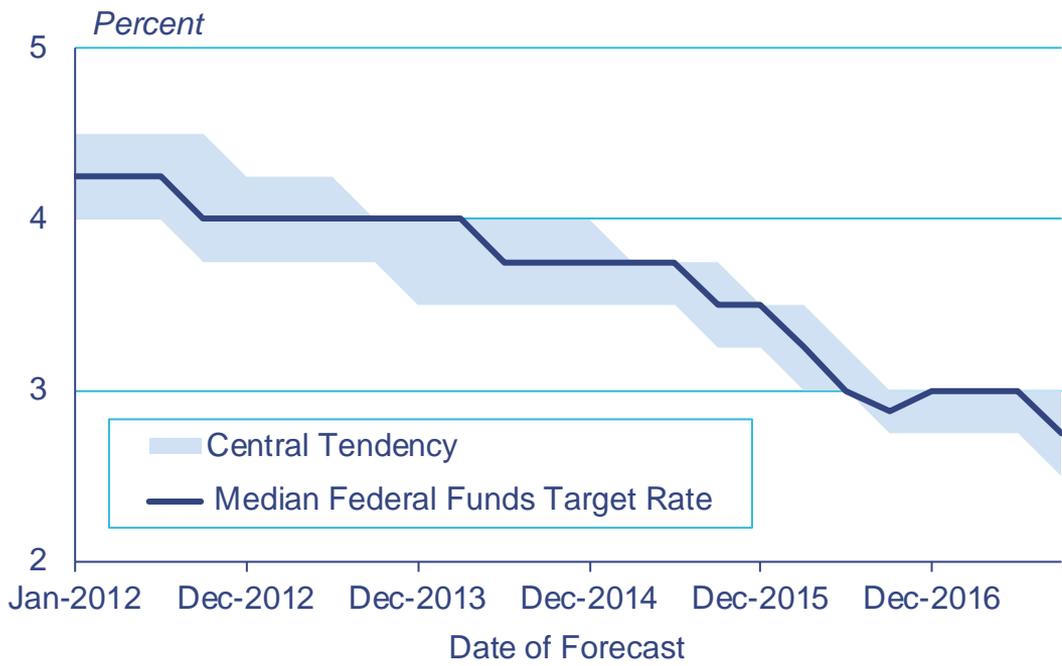
## The Low Equilibrium Rate of Interest

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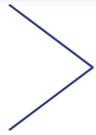
- ▶ The equilibrium nominal interest rate is a concept that cannot be directly observed, but must be estimated
- ▶ A good proxy for estimates by FOMC members of the equilibrium funds rate is their SEP estimates for the nominal federal funds rate “in the longer run”



# Figure 7: Forecasts for the Longer-Run Federal Funds Rate from the Summary of Economic Projections January 2012 - September 2017



Note: The central tendency excludes the three highest and three lowest observations.  
Source: FOMC, Summary of Economic Projections (SEP)



## The Equilibrium Interest Rate Should Change Over Time

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- ▶ Changes will occur when the key factors determining aggregate saving and investment decisions change
  - ▶ Demographics – generally younger workers save less, older workers save more
  - ▶ Productivity – higher productivity generally spurs investment, as it implies higher returns per dollar spent on invested goods



## Significant Changes Can Occur

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- ▶ Variables that impact aggregate savings and investment can change
    - ▶ SEP participants' estimates of the equilibrium interest rate have fallen significantly over a relatively short period of time
    - ▶ There may be more responsiveness to incoming economic data, and changes like much lower current estimates of productivity should impact this calculation
  - ▶ We should be cautious given the inherent difficulty in inferring where the equilibrium interest rate will be in the long run
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## Concluding Observations

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- ▶ It is important that monetary policy be “data dependent”
  - ▶ In my view, it is equally important that it not be too sensitive to incoming data – especially when estimating important underlying economic concepts like the natural rate of unemployment and the equilibrium interest rate
  - ▶ While underlying economic relationships can and do change, one should not be too quick to assume that relationships are unhinged as a result of expectation errors for “high frequency” data
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## Concluding Observations (Continued)

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- ▶ A gradual approach has many benefits, including the possibility of a long sustained recovery without risking a significant over-reaction by monetary policymakers
    - ▶ However, estimates of the natural rate of unemployment and the equilibrium interest rate can be too low as well as too high
    - ▶ In my own view, failing to respond to very tight labor markets with rates remaining negative in real terms could potentially risk unnecessarily shortening the economic recovery, as rising inflation or an episode of financial instability eventually causes monetary policymakers to have to act more forcefully
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