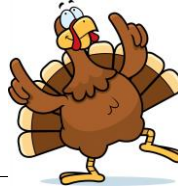
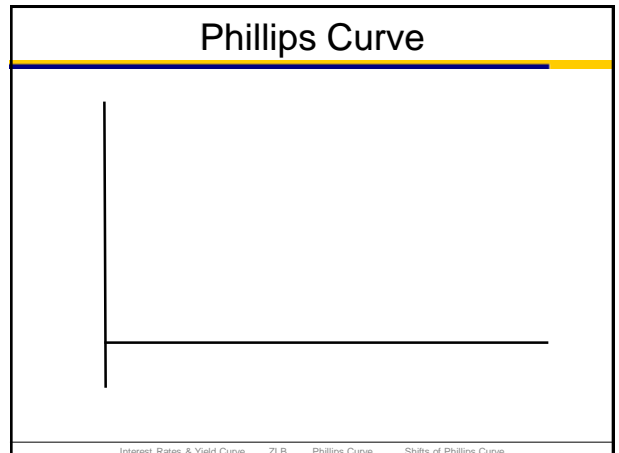
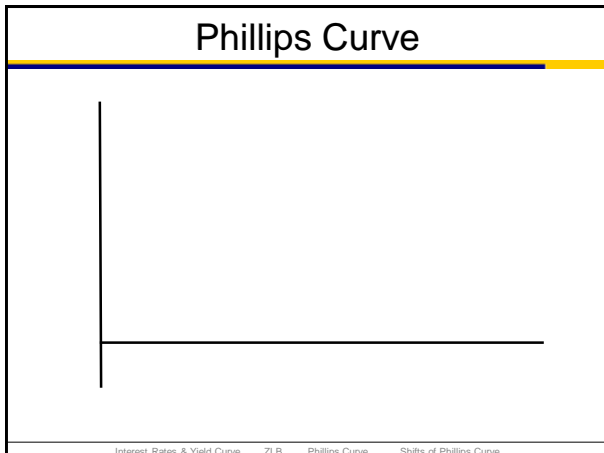
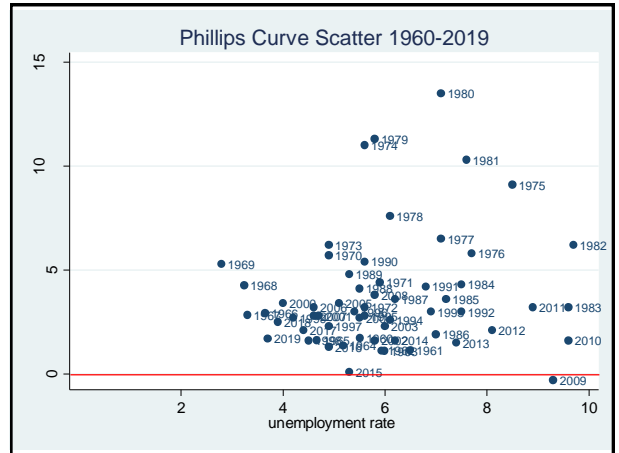


OUTLINE — November 25, 2019

- Phillips Curve: shifts & puzzle
- The Fed & Monetary Policy
 - Monetary Policy: Adjusting interest rates
 - Taylor rule
 - Inflation hawks and doves



PS4 due Tuesday November 26, 8 pm
Midterm 3 is Thurs Dec. 5, 7-8:30 pm
Comprehensive Essay due via bCourses
Wed December 11, 8 am



Interest Rates & Yield Curve ZLB Phillips Curve Shifts of Phillips Curve

Interest Rates & Yield Curve ZLB Phillips Curve Shifts of Phillips Curve

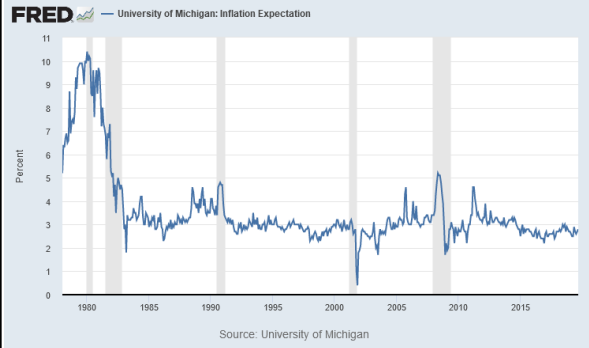
What makes Phillips Curve shift?

1. Change in inflationary expectations
2. Cost shocks (also called "supply shocks")
3. Change in labor productivity growth rate

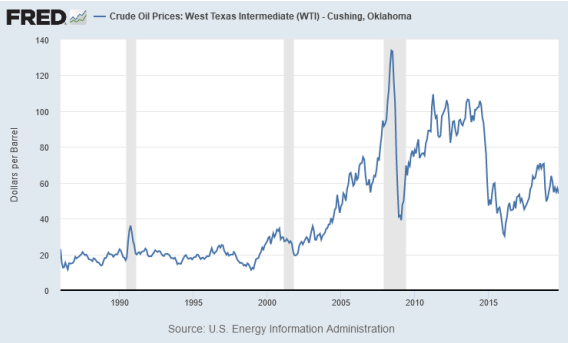


Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges

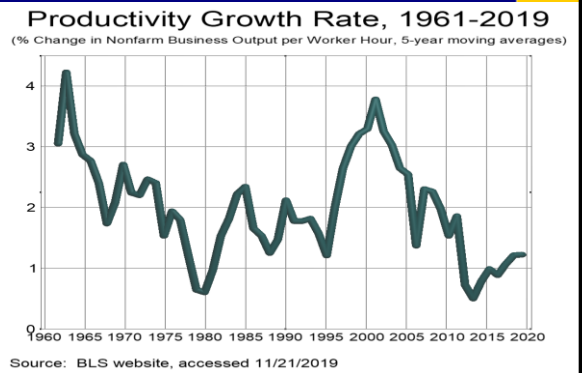
Stable Inflationary Expectations



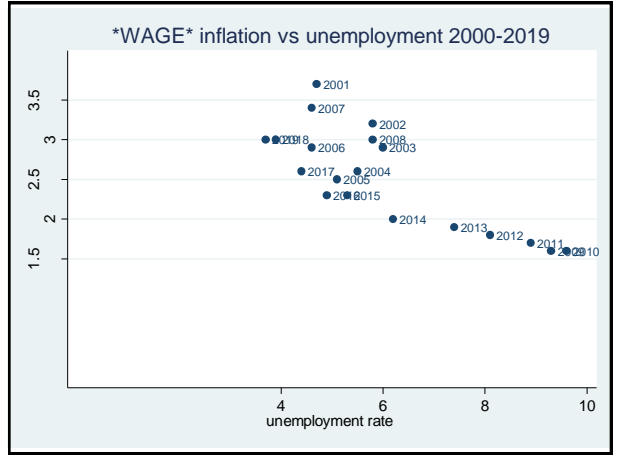
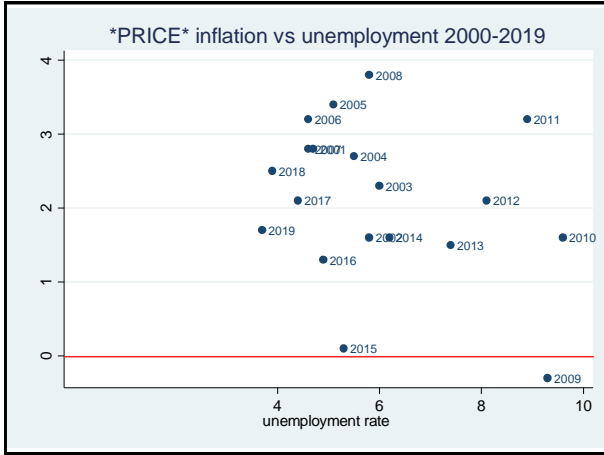
Oil price spikes (& drops, too)



Productivity Growth Fluctuates



Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges



Interpreting Fed-speak

Question: Interpret the Fed statement from Sept 2009:
 "With substantial resource slack likely to continue to dampen cost pressures and with longer-term inflation expectations stable, the Committee expects that inflation will remain subdued for some time."

Interest Rates & Yield Curve ZLB Phillips Curve Shifts of Phillips Curve

Interpreting Fed-speak

Question: Interpret the Fed statement from Oct 2015:
 "Inflation is anticipated to remain near its recent low level in the near term but the Committee expects inflation to rise gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of declines in energy and import prices dissipate."

Interest Rates & Yield Curve ZLB Phillips Curve Shifts of Phillips Curve

| Side by side | |
|--|---|
| Nov 2018 | Oct 2019 |
| <p>Information received since the Federal Open Market Committee met in September indicates that the labor market has continued to strengthen and that economic activity has been rising at a strong rate.</p> <p>Job gains have been strong, on average, in recent months, and the unemployment rate has declined.</p> <p>Household spending has continued to grow strongly, while growth of business fixed investment has moderated from its rapid pace earlier in the year.</p> <p>On a 12-month basis, both overall inflation and inflation for items other than food and energy remain near 2 percent.</p> <p>Indicators of longer-term inflation expectations are little changed, on balance.</p> | <p>Information received since the Federal Open Market Committee met in September indicates that the labor market remains strong and that economic activity has been rising at a moderate rate.</p> <p>Job gains have been solid, on average, in recent months, and the unemployment rate has remained low.</p> <p>Although household spending has been rising at a strong pace, business fixed investment and exports remain weak.</p> <p>On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent.</p> <p>Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.</p> |
| Money, Reserves, Lending | Interest Rates & Yield Curve |
| ZLB | Phillips Curve |
| Shifts of Phillips Curve | Shifts of Phillips Curve |

Monetary Policy & Dual Mandate

- Fed (usually) has one tool: interest rates
 - Why do I say "usually"? Because once FFR hit the ZLB, Fed did turn to Quantitative Easing. But that was unusual.
- Dual mandate: employment & inflation
- Fight Inflation?
 - Fed raises interest rates
- Fight unemployment?
 - Fed lowers interest rates

Shifts of Phillips Curve | Interest Rate Policy | Taylor Rule | Challenges

Fighting unemployment & inflation

When the fight is over . . .

- Inflation & GDP growth ok now? Then Fed gradually returns interest rates to "neutral" level
 - Called "normalization" . . . & that's what Fed started in Dec. 2015
- Important to keep *counterfactual* in mind!!!
 - Higher interest rates do not necessarily cause recession
 - But higher interest rates *ceteris paribus* do cause slower growth

Shifts of Phillips Curve | Interest Rate Policy | Taylor Rule | Challenges

Some fights are straightforward

- Inflation up?
 - Fed undertakes *contractionary* monetary policy
 - Raises interest rates
- Net effect?
 - unemployment
 - inflation

Shifts of Phillips Curve | Interest Rate Policy | Taylor Rule | Challenges

Other fights also straightforward

- **Unemployment up?**
 - Fed undertakes *expansionary* monetary policy
 - Lowers interest rates

- Net effect?
 - unemployment
 - inflation



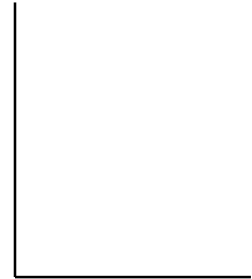
Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges

Some fights are unpleasant (at best)

- **↑ inflationary expectations due to increase in inflationary expectations**

- Fed fights back:
 - ↑ interest rates

- Net effects?
 - Unemployment
 - Inflation
 - Fed typically does not "slay" inflation; just fights it



Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges

The Fed's Dual Mandate

- Fed reacts to inflation and unemployment

- Inflation hawk

- Inflation dove

Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges

"Taylor Rule"

- Taylor Rule
 - An equation for FFR target that seems to fit the data reasonably well (except when we hit ZLB) is the "Taylor Rule" equation
 - Estimated separately for different central banks
 - The equation says: The central bank sets its interest rate target in reaction to inflation and unemployment (or growth rate of GDP)

FFR Target

= *neutral FFR*

+A * (*actual* – Fed's goal for inflation rate)

+B * (*actual* – Fed's goal for % Δ GDP)

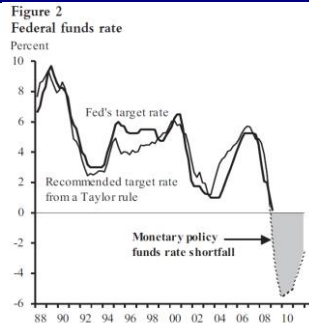
= *neutral FFR*

+A * (*actual* – Fed's goal for inflation rate)

– β * (*actual* – Fed's goal for *unemployment rate*)

Taylor Rule Subprime & More Challenges What's Next?

Taylor Rule & Actual FFR, pre-2008



Taylor Rule Subprime & More Challenges What's Next?

Inflation Hawks And Doves

■ Taylor Rule

- Fed reacts to inflation and unemployment

FFR Target

= *neutral FFR*

+ $A * (\text{actual} - \text{Fed's goal for inflation rate})$

- $\beta * (\text{actual} - \text{Fed's goal for unemployment rate})$

Taylor Rule Subprime & More Challenges What's Next?

Using the Taylor Rule

Question: Suppose the Taylor Rule is estimated as

$$\text{FFR target} = 4 + 1.5 * (\text{actual inflation} - \text{inflation goal}) - 1 * (\text{actual unemployment} - \text{unempl't goal})$$

And suppose further

inflation goal = 2 percent (use 2, not 0.02)

unemployment goal = 4 percent (use 4, not 0.04)

actual inflation = 1 percent

actual unemployment = 6 percent

Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges

How it's **supposed** to work

Fed goal: inflation rate 2%, unemployment rate ~4%

- Fed targets federal funds rate and sets IOER
- Substitution between assets changes other interest rates
- Exchange rates change
- Investment & net export spending respond
- Through multiplier, GDP changes
- Employment & unemployment change
- Impacting wages
- And changing inflation
- What could possibly go wrong? Tune in Monday. . .

Shifts of Phillips Curve Interest Rate Policy Taylor Rule Challenges