

Phillips Curve

Intermediate Macroeconomics - UCLA - Econ 102

François Geerolf

UCLA

November 25, 2020

Section 1

Introduction

Links

There are several versions of these slides:

- Handouts. [html](#) / [pdf](#)
- Slides. [html](#) / [pdf](#)

If you want to know more, there also exists a more advanced version of these slides (Ph.D. Level), as well as some related research of mine - this is absolutely not exam material:

- Handouts. [html](#) / [pdf](#)
- Slides. [html](#) / [pdf](#)
- Own Research. Phillips curve. Dynamic inefficiency.

What is it?

- In 1958, A.W. Phillips uncovered a negative association between the rate of **nominal wage inflation and unemployment**, in the U.K., from 1861 to 1957.
- 2 years later, two American economists, Paul Samuelson and Robert Solow replicated the analysis for the U.S., using data from 1900 to 1960. Apart from the late 1930s, they found a similar association. This relation was soon labeled the “Phillips curve,” and became central to macroeconomic thinking and policy.
- This is a core of “traditional” undergraduate macroeconomics.

Plan of the lecture

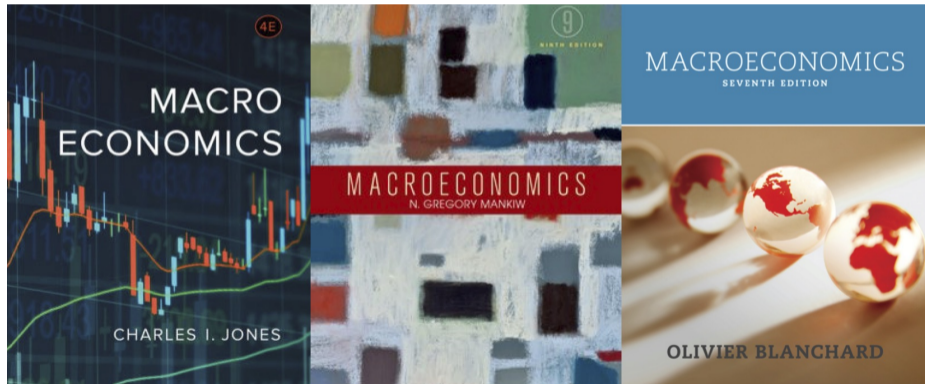
- First I shall review what I am supposed to teach you from two references:
 - ▶ Greg Mankiw's *Principles of Economics's* textbook.
 - ▶ Olivier Blanchard's *Macroeconomics'* textbook.
- I am first going to teach you what they teach, and what they research: Greg Mankiw's at Harvard University, and Olivier Blanchard's at MIT and was present of the American Economic Association, so what they teach is considered to be the orthodoxy.
- I'll then tell you why I am very skeptical about the Phillips curve, and about the neoclassical synthesis more broadly that's based on the Phillips curve.
- Finally, I'll give you my own views on the Phillips curve.

Section 2

Traditional View in Textbooks

Three textbooks

- I used to teach from from these textbooks in 2014-2016, until I decided to teach in line with my own thinking.
- Consequence: Do not use old material from 2014-2016 !



Mankiw (from Google Books) - Introduction

498 PART VIII SHORT-RUN ECONOMIC FLUCTUATIONS

demand and move the economy up along the short-run aggregate-supply curve, they can expand output and lower unemployment for a while, but only at the cost of a more rapidly rising price level. If policymakers contract aggregate demand and move the economy down the short-run aggregate-supply curve, they can lower inflation, but only at the cost of temporarily lower output and higher unemployment.

In this chapter, we examine the inflation–unemployment trade-off more closely. The relationship between inflation and unemployment has attracted the attention of some of the most important economists of the last half century. The best way to understand this relationship is to see how thinking about it has evolved. As we will see, the history of thought regarding inflation and unemployment since the 1950s is inextricably connected to the history of the U.S. economy. These two histories will show why the trade-off between inflation and unemployment holds in the short run, why it does not hold in the long run, and what issues the trade-off raises for economic policymakers.

THE PHILLIPS CURVE

Phillips curve
a curve that shows
the short-run trade-off
between inflation and
unemployment

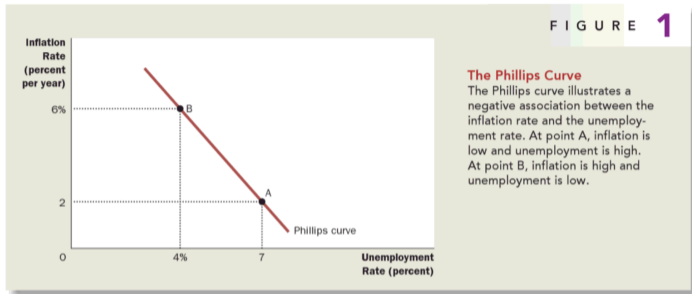
“Probably the single most important macroeconomic relationship is the Phillips curve.” These are the words of economist George Akerlof from the lecture he gave when he received the Nobel Prize in 2001. The **Phillips curve** is the short-run relationship between inflation and unemployment. We begin our story with the discovery of the Phillips curve and its migration to America.

ORIGINS OF THE PHILLIPS CURVE

In 1958, economist A. W. Phillips published an article in the British journal *Economica* that would make him famous. The article was titled “The Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom, 1861–1957.” In it, Phillips showed a negative correlation between the rate of unemployment and the rate of inflation. That is, Phillips showed that years with low unemployment tend to have high inflation, and years with high unemployment tend to have low inflation. (Phillips examined inflation in nominal wages rather than inflation in prices, but for our purposes, that distinction is not important. These two measures of inflation usually move together.) Phillips concluded that two important macroeconomic variables—inflation and unemployment—were linked in a way that economists had not previously appreciated.

Although Phillips’s discovery was based on data for the United Kingdom, researchers quickly extended his finding to other countries. Two years after Phillips published his article, economists Paul Samuelson and Robert Solow published an article in the *American Economic Review* called “Analytics of Anti-Inflation Policy” in which they showed a similar negative correlation between inflation and unemployment in data for the United States. They reasoned that this correlation arose because low unemployment was associated with high aggregate demand, which in turn puts upward pressure on wages and prices throughout the economy. Samuelson and Solow dubbed the negative association between inflation and unemployment the *Phillips curve*. Figure 1 shows an example of a Phillips curve like the one found by Samuelson and Solow.

Phillips curve in traditional textbooks



As the title of their paper suggests, Samuelson and Solow were interested in the Phillips curve because they believed it held important lessons for policymakers. In particular, they suggested that the Phillips curve offers policymakers a menu of possible economic outcomes. By altering monetary and fiscal policy to influence aggregate demand, policymakers could choose any point on this curve. Point A offers high unemployment and low inflation. Point B offers low unemployment and high inflation. Policymakers might prefer both low inflation and low unemployment, but the historical data as summarized by the Phillips curve indicate that this combination is impossible. According to Samuelson and Solow, policymakers face a trade-off between inflation and unemployment, and the Phillips curve illustrates that trade-off.

Phillips curve = AS curve

AGGREGATE DEMAND, AGGREGATE SUPPLY, AND THE PHILLIPS CURVE

The model of aggregate demand and aggregate supply provides an easy explanation for the menu of possible outcomes described by the Phillips curve. *The Phillips curve shows the combinations of inflation and unemployment that arise in the short run as shifts in the aggregate-demand curve move the economy along the short-run aggregate-supply curve.* As we saw in the preceding two chapters, an increase in the aggregate demand for goods and services leads, in the short run, to a larger output of goods and services and a higher price level. Larger output means greater employment and, thus, a lower rate of unemployment. In addition, a higher price level translates into a higher rate of inflation. Thus, shifts in aggregate demand push inflation and unemployment in opposite directions in the short run—a relationship illustrated by the Phillips curve.

To see more fully how this works, let's consider an example. To keep the numbers simple, imagine that the price level (as measured, for instance, by the consumer price index) equals 100 in the year 2020. Figure 2 shows two possible outcomes that might occur in the year 2021 depending of the strength of aggregate

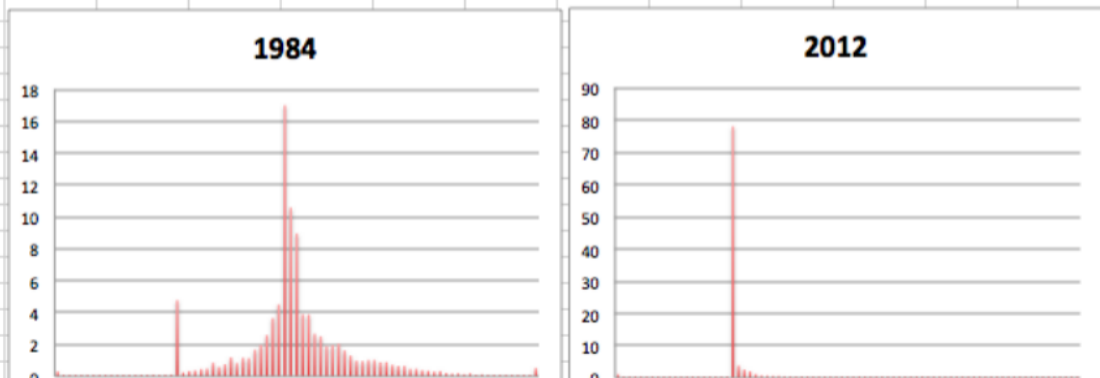
Section 3

Blanchard's Macroeconomics

Nominal wage rigidity

Strong evidence of downward nominal wage rigidity (courtesy Olivier Blanchard)

Figure 1. Distribution of nominal wage changes in Portugal, in 1984 and in 2012



Blanchard's textbook (1970s Stagflation)

Theory ahead of Facts: Milton Friedman and Edmund Phelps

Economists are usually not good at predicting major changes before they happen, and most of their insights are derived *after* the fact. Here is an exception.

In the late 1960s—precisely as the original Phillips curve relation was working like a charm—two economists, Milton Friedman and Edmund Phelps, argued that the appearance of a trade-off between inflation and unemployment was an illusion.

Here are a few quotes from Milton Friedman about the Phillips curve:

“Implicitly, Phillips wrote his article for a world in which everyone anticipated that nominal prices would be stable and in which this anticipation remained unshaken and immutable whatever happened to actual prices and wages. Suppose, by contrast, that everyone anticipates that prices will rise at a rate of more than 75% a year—as, for example, Brazilians did a few years ago. Then, wages must rise at that rate simply to keep real wages unchanged. An excess supply of labor [by this, Friedman means high unemployment] will be reflected in a less rapid rise in nominal wages than in anticipated prices, not in an absolute decline in wages.”

He went on:

“To state [my] conclusion differently, there is always a temporary trade-off between inflation and

unemployment; there is no permanent trade-off. The temporary trade-off comes not from inflation per se, but from a rising rate of inflation.”

He then tried to guess how much longer the apparent trade-off between inflation and unemployment would last in the United States:

“But how long, you will say, is ‘temporary’? . . . I can at most venture a personal judgment, based on some examination of the historical evidence, that the initial effect of a higher and unanticipated rate of inflation lasts for something like two to five years; that this initial effect then begins to be reversed; and that a full adjustment to the new rate of inflation takes as long for employment as for interest rates, say, a couple of decades.”

Friedman could not have been more right. A few years later, the original Phillips curve started to disappear, in exactly the way Friedman had predicted.

Source: Milton Friedman, “The Role of Monetary Policy,” *American Economic Review* 1968 58(1): pp. 1–17. (The article by Phelps, “Money-Wage Dynamics and Labor-Market Equilibrium,” *Journal of Political Economy* 1968 76(4-part 2): pp. 678–711, made many of the same points more formally.)

33-39 Missing Deflation (Blanchard's textbook)

Deflation in the Great Depression

After the collapse of the stock market in 1929, the U.S. economy plunged into an economic depression. As the first two columns of Table 1 show, the unemployment rate increased from 3.2% in 1929 to 24.9% in 1933, and output growth was strongly negative for four years in a row. From 1933 on, the economy recovered slowly, but by 1940, the unemployment rate was still a high 14.6%.

The Great Depression has many elements in common with the recent crisis. A large increase in asset prices before the crash—housing prices in the recent crisis, stock market prices in the Great Depression, and the amplification of the shock through the banking system. There are also important differences. As you can see by comparing the output growth and unemployment numbers in Table 1 to the numbers for the recent crisis in Chapter 1, the decrease in output and the increase in unemployment were much larger than they have been in the recent crisis. In this box, we shall focus on just one aspect of the Great Depression: the evolution of the nominal and the real interest rates and the dangers of deflation.

As you can see in the third column of the table, monetary policy decreased the nominal rate, measured in the table by the one-year T-bill rate, although it did this slowly and did not quite go all the way to zero. The nominal rate decreased from 5.3% in 1929 to 2.6% in 1933. At the same time, as shown in the fourth column, the decline in output and the increase in unemployment led to a sharp decrease in inflation. Inflation, equal to zero 1929, turned negative in 1930, reaching -9.2% in 1931, and -10.8% in 1932. If we make the assumption that expected deflation was equal to actual deflation in each year, we can construct a series for the real rate. This is done in the last column of the table and gives a

hint for why output continued to decline until 1933. The real rate reached 12.3% in 1931, 14.8% in 1932, and still a high 7.8% in 1933! It is no great surprise that, at those interest rates, both consumption and investment demand remained very low, and the depression worsened.

In 1933, the economy seemed to be in a deflation trap, with low activity leading to more deflation, a higher real interest rate, lower spending, and so on. Starting in 1934, however, deflation gave way to inflation, leading to a large decrease in the real interest rate, and the economy began to recover. Why, despite a high unemployment rate, the U.S. economy was able to avoid further deflation remains a hotly debated issue in economics. Some point to a change in monetary policy, a large increase in the money supply, leading to a change in inflation expectations. Others point to the policies of the New Deal, in particular the establishment of a minimum wage, thus limiting further wage decreases. Whatever the reason, this was the end of the deflation trap and the beginning of a long recovery.

For more on the Great Depression:

Lester Chandler, *America's Greatest Depression* (1970), gives the basic facts. So does the book by John A. Garraty, *The Great Depression* (1986).

Did Monetary Forces Cause the Great Depression? (1976), by Peter Temin, looks more specifically at the macroeconomic issues. So do the articles in a symposium on the Great Depression in the *Journal of Economic Perspectives*, Spring 1993.

For a look at the Great Depression in countries other than the United States, read Peter Temin's *Lessons from the Great Depression* (1989).

Section 4

Neoclassical “Synthesis”

Samuelson (1955)'s *Economics* - Definition

In recent years 90 per cent of American Economists have stopped being 'Keynesian economists' or 'anti-Keynesian economists'. Instead they have worked toward a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neo-classical economics and is accepted in its broad outlines by all but about 5 per cent of extreme left wing and right wing writers.

The indicated 'Phillips Curve' shows by its downward slope that increasing the level of unemployment can moderate or wipe out the upward price creep. There is, so to speak, a choice for society between reasonably high employment with maximal growth and a price creep, or reasonably stable prices with considerable unemployment; and it is a difficult social dilemma to decide what compromises to make. (S5-1961, 383)

Stagflation in the 1970s

- Reading: “Where does the buck stop?” *The Economist*, August 11, 2016.
- First time the Keynesian consensus fractured was in the 1970s.
- Accommodative fiscal and monetary policies were attempted in the 1970s to remedy high unemployment, and only led to more inflation, as unemployment remained high.
- Appeared to be inconsistent with the “Phillips curve” view = no trade-off between inflation and unemployment?
- Monetarism convinced many economists that the business cycle was caused by fluctuations in the money supply, so that monetary policy was enough to stabilize the economy (fiscal policy was not needed). e.g. Milton Friedman.

Freshwater VS Saltwater school

- Freshwater: fiscal stimulus in the form of tax cuts was ineffective, as it was entirely offset by increased private saving.
- Because of “Ricardian equivalence.”
- In general, “freshwater” economists were very skeptical of Keynesian principles. For them, everything should be explained by supply, and technological forces.
- In contrast, “saltwater” economists borrowed insights from Keynesianism, as well as from the freshwater school, trying to build a more “balanced” view of Keynesianism.
- According to them, central banks should do most of the job of macroeconomic management. This belief was however contradicted by the crisis in Japan in the 1990s, or the 2007-09 U.S. financial crisis, where fiscal policy was used very heavily.

Natural rate of unemployment

- Response to the Phillips curve failure in the 1970s.
- Attempt to save the Phillips curve: it is a relation between *accelerating* inflation and unemployment.
- NAIRU: level of unemployment such that inflation would not accelerate (“Non Accelerating Inflation Rate of Unemployment”), also known as the natural rate of unemployment.
- Whenever policymakers tried to have less unemployment than that, there would be rising inflation.
- Whenever there would be more unemployment, there would be a deceleration in inflation.

Section 5

2010-2020 Doubts

 **TheUpshot**

MONETARY POLICY

The 57-Year-Old Chart That Is Dividing the Fed



Neil Irwin's 2015 article

By **Neil Irwin**

Oct. 24, 2015

Next week, when Federal Reserve officials meet to decide whether to raise interest rates for the first time in nine years, one question will be front and center: **How much faith should be placed in a line on a graph first drawn by a New Zealand economist nearly six decades ago, based on data on wages and employment in Britain dating to the 1860s?**

Neil Irwin's 2015 article

That is why a longstanding academic debate is now at the core of the Fed's policy debate. Ms. Yellen and many of her Fed colleagues have indicated that they think they should raise interest rates this year, in part because the Phillips curve suggests there will be excessive inflation if they don't. The unemployment rate was 5.1 percent in September, just a smidgen above the 4.9 percent that Fed leaders believe is the appropriate jobless rate in the longer run.

In other words, if you believe in the traditional Phillips curve, inflation should be taking off any day now.

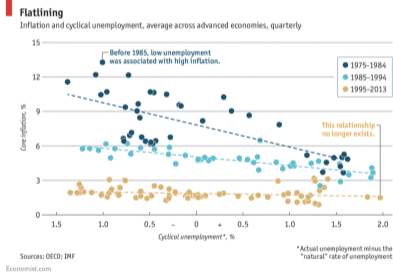
The Economist - Phillips Curve Broken for good?

Graphic detail

Daily chart

The Phillips curve may be broken for good

Central bankers insist that the underlying theory remains valid



Nov 1st 2017

IT HAS long been assumed that economic policymakers face a trade-off between unemployment and inflation. Let unemployment fall below its

FEDERAL RESERVE

The Fed chairman says the relationship between inflation and unemployment is gone

PUBLISHED THU, JUL 11 2019•10:45 AM EDT | UPDATED THU, JUL 11 2019•3:17 PM EDT



Yun Li
@YUNLI626

SHARE    

Minutes of the Federal Open Market Committee

July 25-26, 2017

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, July 25, 2017, at 1:00 p.m. and continued on Wednesday, July 26, 2017, at 9:00 a.m.¹

PRESENT:

Janet L. Yellen, Chair

William C. Dudley, Vice Chairman

Lael Brainard

Charles L. Evans

Stanley Fischer

Patrick Harker

Robert S. Kaplan

Neel Kashkari

Jerome H. Powell

Fed Members have doubts

A number of participants noted that much of the analysis of inflation used in policymaking rested on a framework in which, for a given rate of expected inflation, the degree of upward pressures on prices and wages rose as aggregate demand for goods and services and employment of resources increased above long-run sustainable levels. A few participants cited evidence suggesting that this framework was not particularly useful in forecasting inflation. However, most participants thought that the framework remained valid, notwithstanding the recent absence of a pickup in inflation in the face of a tightening labor market and real GDP growth in excess of their estimates of its potential rate. Participants discussed possible reasons for the coexistence of low inflation and low unemployment. These included a diminished responsiveness of prices to resource pressures, a lower natural rate of unemployment, the possibility that slack may be better measured by labor market indicators other than unemployment, lags in the reaction of nominal wage growth and inflation to labor market tightening, and restraints on pricing power from global developments and from innovations to business models spurred by advances in technology. A couple of participants argued that the response of inflation to resource utilization could become stronger if output and employment appreciably overshoot their full employment levels, although other participants pointed out that this hypothesized nonlinear response had little empirical support.

Section 6

Summer 2019 - Phillips Curve “Wars”

Many discussions in 2019

- However, even this does not really work.
- Read: “The world economy’s strange new rules.” *The Economist*, October 10, 2019.

AOC and Jay Powell are talking about this

```
# [1] "Link to the video:"  
# [1] "https://fgeerolf.com/econ102/handouts/phillips.html"
```


- [Link. pdf / video](#)

Chairwoman WATERS. Ms. Ocasio-Cortez, the gentlewoman from New York, is recognized for 5 minutes.

Ms. OCASIO-CORTEZ. Thank you, Madam Chairwoman. And thank you so much, Mr. Powell, for coming in today.

The Federal Reserve's mandate, one of their mandates is to maintain price stability and maximum employment. Is that fair to say?

Mr. POWELL. Yes.

Ms. OCASIO-CORTEZ. And a lot of folks would interpret that as meaning to aim for the lowest unemployment rate possible without runaway inflation, correct?

Mr. POWELL. Yes. Generally.

Ms. OCASIO-CORTEZ. So I kind of wanted to dig in today with you a little bit about this relationship between unemployment rates and inflation.

In early 2014, the Federal Reserve believed that the long-run unemployment rate was around 5.4 percent. In early 2018, it was estimated this was now lower, around 4.5 percent. Now the estimate is around 4.2 percent.

What is the current unemployment rate today?

Mr. POWELL. 3.7 percent.

Ms. OCASIO-CORTEZ. 3.7 percent.

So what we had previously thought of, perhaps as far back as 2014 as the long-run unemployment rate, is around 5.4 percent. What we are currently experiencing is 3.7, lower than that estimate. But unemployment has fallen about three full points since 2014, but inflation is no higher today than it was 5 years ago.

Given these facts, do you think it is possible that the Fed's esti-

Ms. OCASIO-CORTEZ. So we overshot in what our long-run employment rate is?

Mr. POWELL. I think we have learned,—as you pointed out, I think we have learned that you can't identify—this is something you can't identify directly. I think we have learned that it is lower than we thought—substantially lower than we thought in the past.

Ms. OCASIO-CORTEZ. And I have been seeing lately that economists are increasingly worried that the idea of a Phillips curve that links unemployment and inflation is no longer describing what is happening in today's economy.

Have you been considering on that? What are your thoughts on that?

Mr. POWELL. Yes. Very much so. We spend a great deal of time on that. The connection between slack in the economy or the level of unemployment and inflation was very strong if you go back 50

years. And it has gotten weaker and weaker and weaker to the point where it is a faint heartbeat that you can hear now. It is still there. You can see it at the State level data and things like that.

But I think we really have learned, though, that the economy can sustain much lower unemployment than we thought without troubling levels of inflation. I would look at today's level of unemployment as well within the range of potential estimates, of plausible estimates, of what the natural rate of unemployment is.

Ms. OCASIO-CORTEZ. So why do we think that we are seeing this decoupling in a relationship that we had seen in the economy decades ago?

Mr. POWELL. So one reason is just that inflation expectations are so settled that—and that is what we think drives inflation that—for example, when unemployment went way up, you didn't see inflation go down. And so you don't see inflation reacting to unemployment the way it has, because inflation just seems to be very

Ms. OCASIO-CORTEZ. Do you think that that could have implications in terms of policymaking? That there is perhaps room for increased tolerance of policies that have historically been thought to drive inflation or increase inflation?

One of the arguments about minimum wage or other policies that directly target middle class Americans is that can they can drive inflation. Do you think that that decoupling is something that we should consider in modern policy considerations?

Mr. POWELL. Yes. Again, I wouldn't want to get into the minimum wage discussion directly. But I think we have learned that inflation—that really downward pressure on inflation around the globe and here is stronger than we had thought. You see countries all over the world not getting—being below their inflation targets whereas, when I was young, they were always above, and now they are always below. And the United States has done better than other countries, but we are still below our target.

Ms. OCASIO-CORTEZ. And thank you. I have one last question.

Earlier you had suggested that, in the event of a recession or a contraction, we like to see more fiscal policy that supports monetary policy.

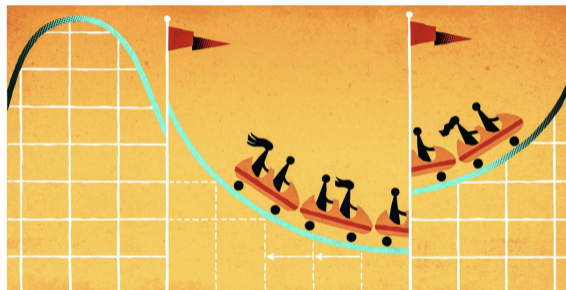
Can you further articulate what some of those fiscal options and considerations should be, in terms of specific options that we should consider?

Mr. POWELL. I was referring, really, to a severe or significant downturn. And if that were to happen, then I think it would be important that fiscal policy come into play. So there are automatic stabilizers that happen. But in addition, things were done at the beginning of the financial crisis in terms of spending increases and tax cuts that help to replace the demand that had been lost in the private sector and get us through a really rough patch, something like that. But those are things I would reserve for pretty severe downturns.

“Established tenet of the mainstream middle”

ECONOMIC VIEW

Yes, There Is a Trade-Off Between Inflation and Unemployment



Tim Cook

By N. Gregory Mankiw

Aug. 9, 2019



Did you hear the one about a top Trump administration official praising Representative Alexandria Ocasio-Cortez, the liberal firebrand from the Bronx?

You may be waiting for a punch line. But this is not a joke.

Lawrence Kudlow, director of President Trump’s National Economic Council, [singled out Ms. Ocasio-Cortez for praise recently](#) — an unusual and illuminating example of people on the right and the left ganging up on an **established tenet of the mainstream middle.**

What led to this meeting of the minds is a concept called the **“Phillips curve.”** The economist George Akerlof, a Nobel laureate and the husband of the former Federal Reserve chair Janet Yellen, [once called the Phillips curve](#) “probably the single most important macroeconomic relationship.” So it is worth recalling what the Phillips curve is, why it plays a central role in mainstream economics and why it has so many critics.

The story begins in 1958, when the economist A. W. Phillips published an [article](#) reporting an inverse relationship between unemployment and inflation in Britain. He reasoned that when

Enter Representative Ocasio-Cortez. While questioning Jerome Powell, the Fed chair, during a congressional hearing in July, she suggested that the central bank's understanding of inflation and unemployment was flawed. "Do you think it is possible that the Fed's estimates of the lowest sustainable estimates for the unemployment rate may have been too high?" Ms. Ocasio-Cortez asked.

"Absolutely," Mr. Powell replied. The sustainable unemployment rate now appears to be "substantially lower than we thought."

The next day, Mr. Kudlow applauded the congresswoman's questioning. "Ms. AOC kind of nailed that," he said. The motives of these unlikely allies are easy to surmise. Ms. Ocasio-Cortez is presumably more concerned about unemployment than about inflation. Mr. Kudlow, who serves a president running for re-election, is undoubtedly praying for a strong economy. Both interests would be served by dovish monetary policy.

To some extent, Ms. Ocasio-Cortez and Mr. Kudlow are both right. The unemployment rate, now at 3.7 percent, is lower than the level most economists thought was possible without igniting inflation. This period is providing yet more evidence —though we didn't really need it —that the Phillips curve is unstable and, therefore, an imperfect guide for policy.

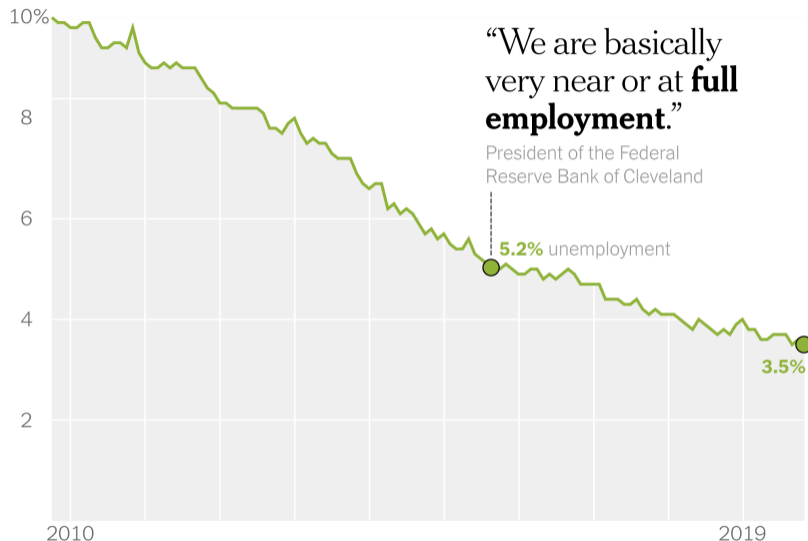
But unstable does not mean nonexistent, and imperfect does not mean useless. As long as the tools of monetary policy influence both inflation and unemployment, monetary policymakers must be cognizant of the trade-off.

Mr. Powell was smart to acknowledge during his congressional hearing that the Fed's track record is flawed. But the uncertainty inherent in monetary policymaking does not mean that "the single most important macroeconomic relationship" can now be ignored.

The Fed's job is to balance the competing risks of rising unemployment and rising inflation. Striking just the right balance is never easy. The first step, however, is to recognize that the Phillips curve is always out there lurking.

N. Gregory Mankiw is the Robert M. Beren Professor of Economics at Harvard University.

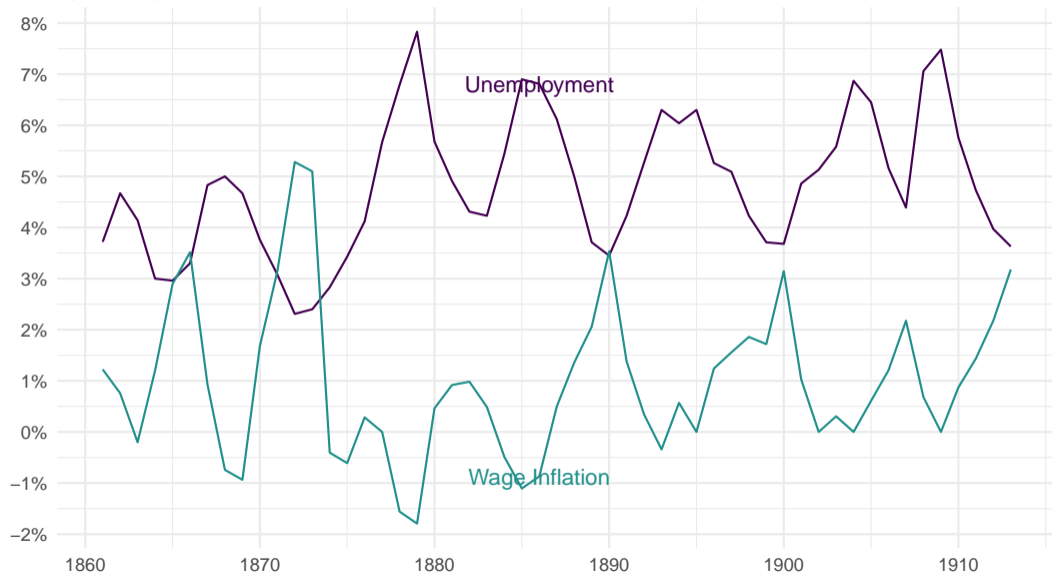
Is there a “natural rate of unemployment?”



Section 7

My own thoughts

Phillips (1958)'s evidence



Phillips Curve: Sticky Prices or Wages?

- Neoclassical synthesis = negative correlation is a **trade-off**:
 - ▶ High aggregate demand \Rightarrow Low unemployment.
 - ▶ High aggregate demand \Rightarrow High inflation (or Accelerating inflation, in the Rational Expectations version).
- Then, the Phillips curve came to be relation between **price inflation** and unemployment.
- Phillips curve = Aggregate Supply curve:
 - ▶ Central bank's mandate and policy.
 - ▶ Undergraduate textbooks: Blanchard's, Mankiw's, etc.
 - ▶ Macroeconomic research.

Neoclassical Synthesis

- *Neoclassical Synthesis*: Since Paul Samuelson and Robert Solow, the long-run is assumed to be the domain of neoclassical forces, while only the short-run is Keynesian (because of sticky prices).
- Defined by Paul Samuelson in the 3rd edition of his Economics textbook (1955, p. 212): *In recent years 90 percent of American economists have stopped being 'Keynesian economists' or 'anti-Keynesian economists.' Instead they have worked towards a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neo-classical synthesis and is accepted in its broad outlines by all but about 5 per cent of extreme left wing and right wing writers.*
- According to the neoclassical synthesis, the reason why output is determined by aggregate demand in the long run is **not overaccumulation of capital**, or oversaving but **sticky prices**.

Issues with the Phillips curve

The Phillips Curve is subject to repeating controversies:

- 1970s: high inflation and high unemployment in the U.S. (“stagflation.”) ⇒ “accelerationist” Phillips curve.
- Late 1990s: missing inflation, despite low unemployment.
- 2007-2009: missing deflation, despite worst crisis since the Great Depression.
 - ▶ Krugman (2018): “a big failure in our understanding of price dynamics.”
- 2013-2019: missing inflation, despite unprecedented stimulus since 2016.
 - ▶ Yellen (2017): “the biggest surprise in the U.S. economy.”

Problems with the Phillips Curve

- Because of these empirical problems with the Phillips curve, I do not believe in the sticky-price view of Keynesian economics / the Phillips curve.
- I am not alone: for example, Larry H. Summers, former Treasury secretary, winner of the John Bates Clark medal (the most prestigious award for economists below 40), also does not believe in the Phillips curve, and said so in 1991. See Summers (1991): “Should Keynesian Economics Dispense with the Phillips Curve?”
- *Note:* I have done research suggesting the Phillips curve is actually only present in fixed exchange rate regimes, not flexible. To me, it’s a correlation between real exchange rates and unemployment.
- In this class, we took a more agnostic view on the “Aggregate Supply curve.”

Section 8

Conclusion

Taking Stock

- It is important to recognize that most mainstream Keynesian economics is based on the Phillips curve.
- At least all teaching at the undergraduate level is based on that.
- Usually, people who criticize the Phillips curve think that all business cycle movements are driven by supply.
- In contrast, I believe that most business cycles are actually driven by aggregate demand.

Why do I teach it if I don't believe it ?

- It is extremely important for the history of economic thought, and even for the history of economic policies. 1960s - 1970s: Attacks on Keynesianism were largely based on the failure of the Phillips Curve.
- **Interpretation of stagflation.** The so-called **stagflation** was seen as a blow to Keynesianism, and aggregate demand policies. Led to all sorts of theoretical attacks against Keynesianism. It took a lot of time for mainstream Keynesian economists to come up with a response, and some would argue it never was fully convincing.
- **Hugely influential for policy.** Idea of a “natural rate of unemployment”: some unemployment could actually be tolerated. It is extremely influential in policy circles, central banks, and Treasury departments around the world.
- If you want to know a bit more about the Phillips curve - or at least what my thoughts are on the Phillips curve, see my 2nd year Ph.D. class here:
<https://fgeerolf.com/econ221/handouts/phillips.html>. Note: this is **absolutely not** exam material.

Section 9

Bibliography

- Phillips, A. W. 1958. "The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957." *Economica* 25 (100): 283–99.
<https://doi.org/10.1111/j.1468-0335.1958.tb00003.x>.
- Summers, Lawrence H. 1991. "Should Keynesian Economics Dispense with the Phillips Curve?" In *Issues in Contemporary Economics*, 3–20. International Economic Association Series. Palgrave Macmillan, London.