Phillips Curve M.B.A.(B.E.)

The Phillips curve shows the relationship between unemployment and inflation in an economy. Since its 'discovery' by New Zealand economist AW Phillips, it has become an essential tool to analyse macro-economic policy.

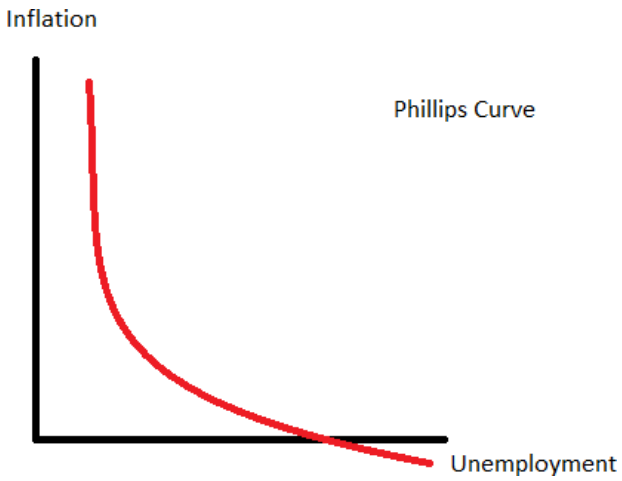
The Phillips curve and fiscal policy

Background

After 1945, fiscal demand management became the general tool for managing the trade cycle. The consensus was that policy makers should stimulate aggregate demand (AD) when faced with recession and unemployment, and constrain it when experiencing inflation. It was also generally believed that economies faced *either* inflation or unemployment, but not together – and whichever existed would dictate which macro-economic policy objective to pursue at any given time. In addition, the accepted wisdom was that it was possible to target one objective, without having a negative effect on the other. However, following publication of Phillips' research in 1958, both of these assumptions were called into question.

Phillips analyzed annual *wage inflation* and *unemployment* rates in the UK for the period 1860 – 1957, and then plotted them on a scatter diagram. The data appeared to demonstrate an *inverse* and *stable* relationship between wage inflation and unemployment. Later economists substituted *price inflation* for *wage inflation* and the Phillips curve was born. When economists from other countries undertook similar research, they also found very similar curves for their own economies.

Phillips analyzed annual *wage inflation* and *unemployment* rates in the UK for the period 1860 – 1957, and then plotted them on a scatter diagram.



Explaining the Phillips curve

The curve suggested that changes in the level of unemployment have a direct and predictable effect on the level of price inflation. The accepted explanation during the 1960's was that a fiscal stimulus, and increase in AD, would trigger the following sequence of responses:

1. An increase in the demand for labour as government spending generates growth.
2. The pool of unemployed will fall.
3. Firms must compete for fewer workers by raising nominal wages.
4. Workers have greater bargaining power to seek out increases in nominal wages.
5. Wage costs will rise.
6. Faced with rising wage costs, firms pass on these cost increases in higher prices.

Exploiting the Phillips curve

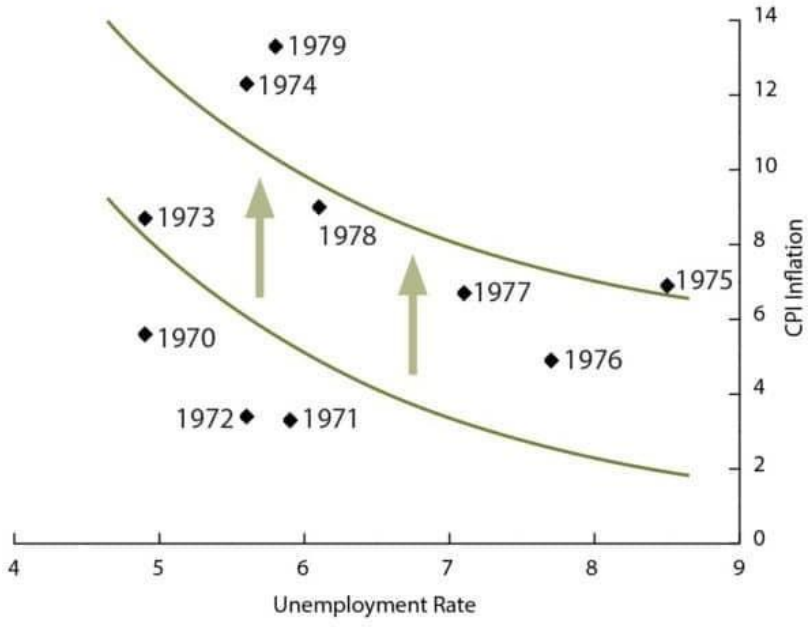
It quickly became accepted that policy-makers could exploit the *trade off* between unemployment and inflation – a little more unemployment meant a little less inflation.

During the 1960s and 70s, it was common practice for governments around the world to select a rate of inflation they wished to achieve, and then expand or contract the economy to obtain this target rate. This policy became known as *stop-go*, and relied strongly on fiscal policy to create the expansions and contractions required.

The breakdown(failure) of the Phillips curve

By the mid 1970s, it appeared that the Phillips Curve trade off no longer existed – there no longer seemed a stable pattern. The stable relationship between unemployment and inflation appeared to have broken down. It was possible to have a number of inflation rates for any given unemployment rate.

Chart 5: **The Phillips Curve Shifts, 1970-79**



Source: U.S. Bureau of Labor Statistics

American economists Friedman and Phelps offered one explanation – namely that there is not one Phillips curve, but a series of *short run Phillips Curves* and a *long run Phillips Curve*, which exists at the *natural rate of unemployment* (NRU). Indeed, in the long-run, there is no trade-off between unemployment and inflation.

[NOTE- The **natural rate of unemployment** is the unemployment rate that would exist in a growing and healthy economy. In other words, the natural rate of unemployment includes only frictional and structural unemployment, and not cyclical unemployment. The natural rate of unemployment is related to two other important concepts: full employment and potential real GDP. The economy is considered to be at full employment when the actual unemployment rate is equal to the natural rate. When the economy is at full employment, real GDP is equal to potential real GDP. By contrast, when the economy is below full employment, the unemployment rate is greater than the natural unemployment rate and real GDP is less than potential. Finally, when the economy is above full employment, then the unemployment rate is less than the natural unemployment rate and real GDP is greater than potential. Operating above potential is only possible for a short while, since it is analogous to workers working overtime.]

The new-Classical explanation – the importance of expectations

Phillips curve - long-run

The breakdown of the Phillips curve since the mid 1960s (i.e. higher inflation and higher unemployment) was explained by monetarists using the Phillips curve as a theoretical concept, rather than a statistical correlation.

According to monetarists, any attempt to reduce the level of unemployment below the natural rate by, for example, increasing government spending, leads to higher inflation in the long run.

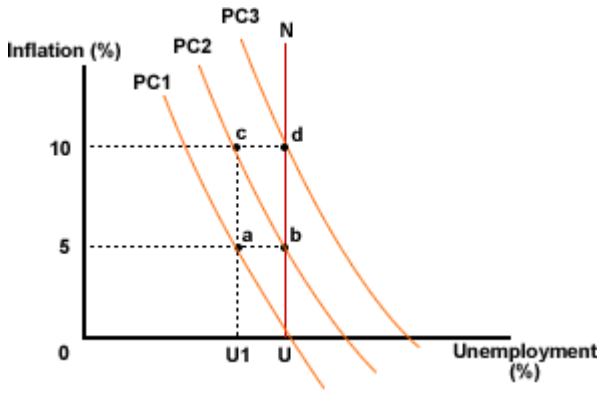


Figure - Expectations-augmented Phillips curve

In Figure above, assume that the actual and expected rate of inflation are zero, that unemployment is initially at the natural rate U, that there is no change in productivity and that the three curves indicated represent different expected inflation rates. Also assume that the government believes a rate of unemployment of U to be too high, and attempts to reduce it to

U1 by expansionary monetary and fiscal policies. The following steps will occur:

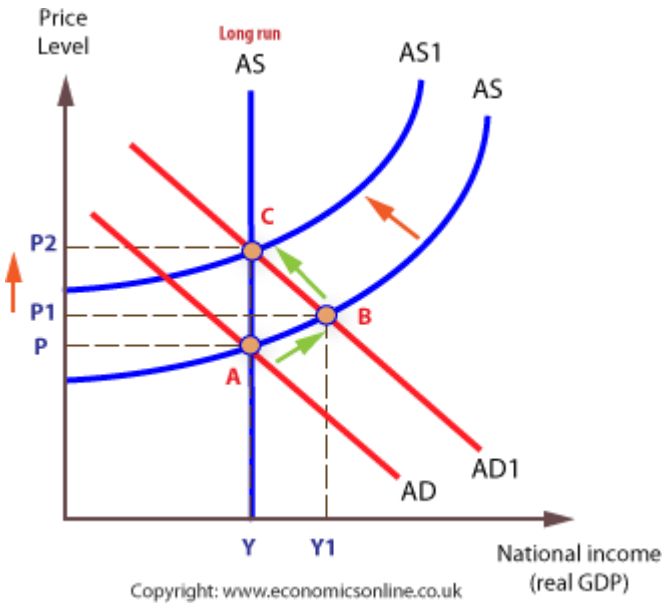
- **Step 1** - the economy now moves to point a, with 5% inflation.
- **Step 2** - the increase in the price level reduces real wages, making labour more attractive so firms expand output and employ additional labour and then pass on the wage increase in the form of higher prices.
- **Step 3** - as workers experience inflation of 5%, they begin to anticipate inflation of 5% and the Phillips curve shifts to the right to PC2, which is consistent with 5% inflation.
- **Step 4** - as workers are assumed to be interested only in the real wage, and this has now fallen to what it originally was due to inflation, unemployment returns to the natural rate at point b. Workers leave those jobs where the real wage has not risen and search for jobs with a higher real wage.
- **Step 5** - at point b, inflation is 5% and unemployment has returned to OU. If the government wishes to reduce unemployment again to U1 by increasing government spending, it will result in a 10% inflation rate at point C and the Phillips curve shifts to PC3 as workers learn to anticipate the inflation rate.
- **Step 6** - again the same process is followed with a return to the natural rate at point d, the same level of unemployment but with an inflation rate of 10%.

So, according to Friedman, the long run Phillips curve is vertical (i.e. UN) at the natural rate of unemployment. There is no long run trade-off between inflation and unemployment, the implication being that governments cannot permanently reduce unemployment below the natural rate by reflationary monetary and fiscal policies.

Using AD/AS to demonstrate the Phillips Curve effect

This process can also be explained through AD-AS analysis.

Assume the economy is at a stable equilibrium, at Y. An increase in government spending will shift AD from AD to AD1, leading to a rise in income to Y1, and a fall in unemployment, in the short term.

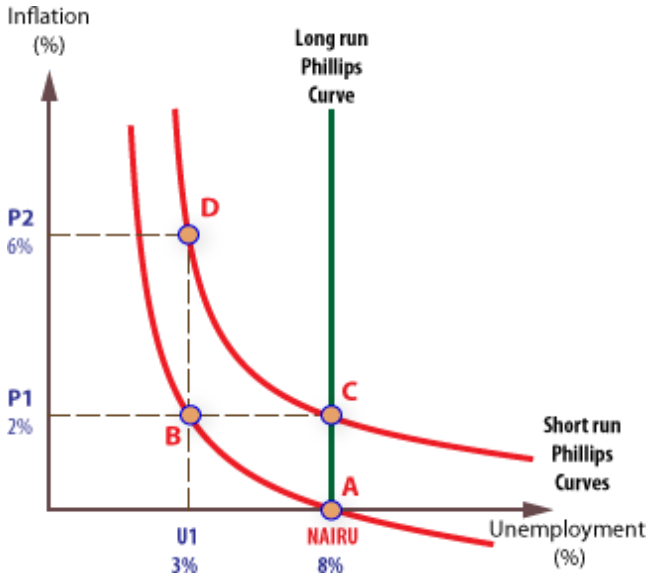


However, households will successfully predict the higher price level, and build these expectations into their wage bargaining.

As a result, wage costs rise and the AS shifts up to AS1 and the economy now moves back to Y, but with a higher price level of P2.

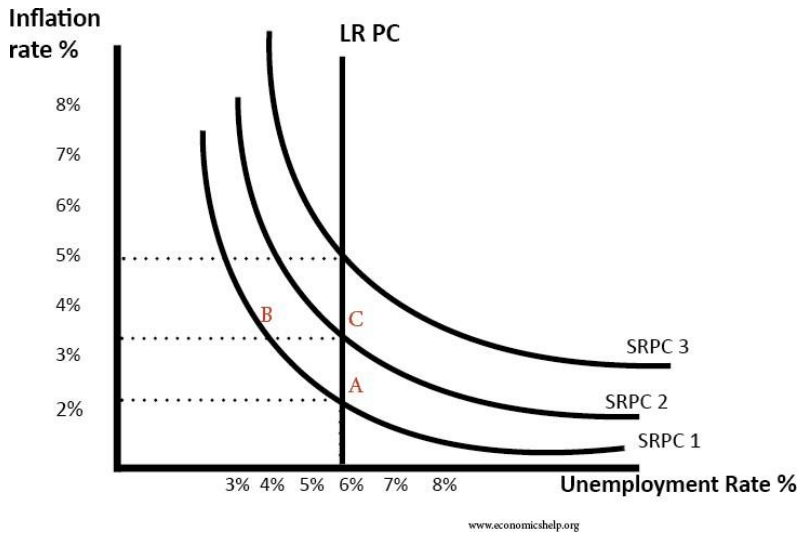
New Keynesian interpretation

New Keynesians explain the breakdown of the simple Phillips curve in terms of the *Non-Accelerating Inflation Rate of Unemployment* (NAIRU)



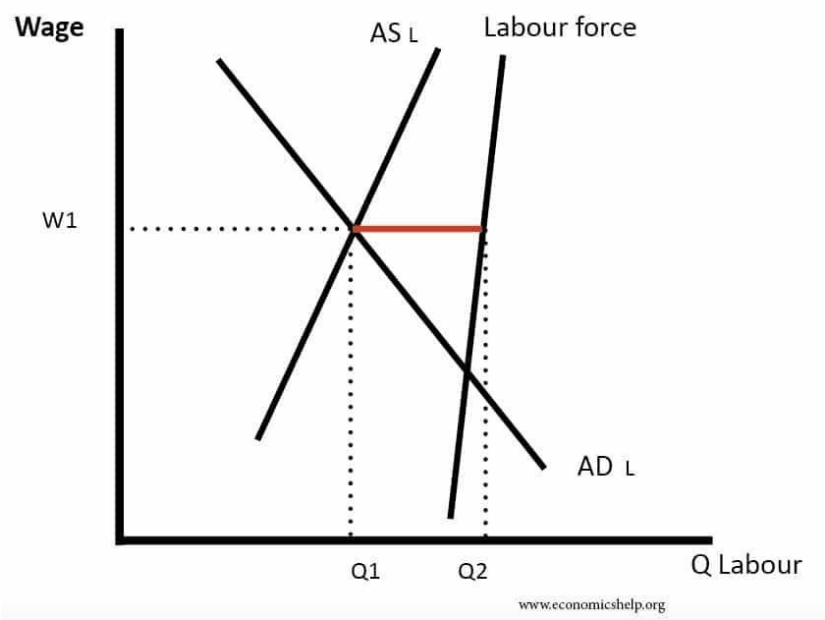
The NAIRU and Natural rate of unemployment are similar concepts – they both reflect the level of structural unemployment when the economy is close to full employment. However, they have different compositions and can vary in the short term.

NAIRU – Non-accelerating Inflation rate of Unemployment. This is the level of unemployment that is consistent with no acceleration in the inflation rate. The NAIRU is related to the short-run Phillips Curve. If unemployment rises, inflation falls. If unemployment falls, there will come a point, where inflation starts to increase.



In this case, the NAIRU is at 6%. If the economy experiences a rise in demand, then we get a movement from A to B. The rise in demand causes unemployment to fall, as it gets close to full capacity. But, this, in turn, causes inflation. Eventually, the economy returns to the NAIRU of 6%.

Natural Rate of Unemployment (NR)



The natural rate of unemployment was developed by Phelps (1967) and Friedman (1968). They stated the natural rate of unemployment is that unemployment consistent with a steady rate of unemployment. The argument of this new monetarist theory is that the natural rate of unemployment is independent of the rate of inflation. The natural rate of unemployment is determined by structural unemployment, e.g. mismatch of skills, frictional unemployment and geographical immobilities.

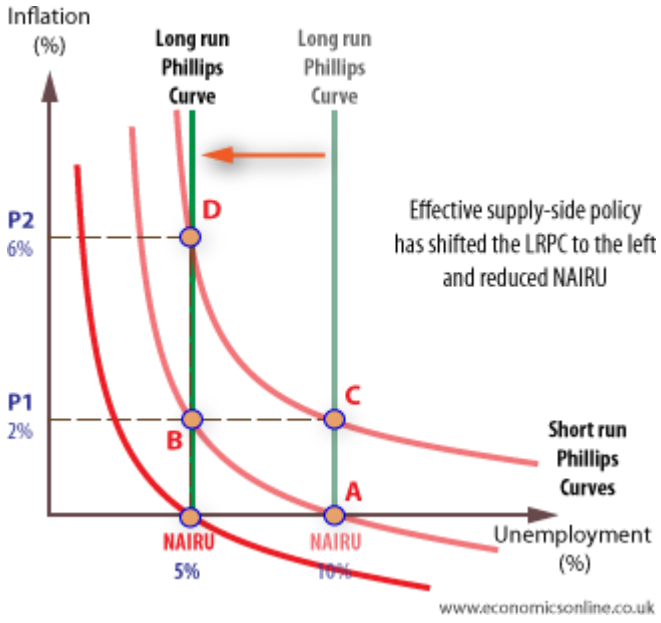
Like the NAIRU, the Natural rate of unemployment is shown by the vertical Phillips Curve.

Does the trade-off still exist?

IN UK Between 1993 and 2008, unemployment fell to record lows, but inflation did not rise, as predicted by the Phillips curve. Many economists explain this by pointing to the successful *supply-side policies* that have been pursued over the last 20 years.

Supply-side policies

It is argued that the effectiveness of supply side policies has meant that the economy can continue to expand without inflation.



Indeed, many argue that the long run Phillips Curve still exists, but that for the UK it has shifted to the left.

UK Inflation and Unemployment – 1993 – 2017

Statistics on inflation and unemployment for the UK support the view that the extreme trade off between unemployment and inflation that occurred in the past no longer exists, with both unemployment and inflation falling between 2011 and 2016.

However, the inverse statistical relationship returned once more with unemployment falling to 4.3% in September 2017, while inflation rose back towards 3% – its highest level for 4 years. However, the cause of the inflationary episode from 2016 is more associated with the cost-push inflation that followed the fall in sterling, post-Brexit, rather than demand-pull pressures.

Up until the most recent inflationary surge, it was clear that long term supply side reforms meant that the UK could expand without experiencing the kind of demand-pull inflation associated with previous upturns in the business cycle. The improvements in labour market flexibility have helped, along with increased labour migration – both of which have eased pressure in the labour market at times of growth.

The independence of the Bank and England also played a role in 'reducing expectations' of inflation and weakening the link between current and future inflation. However, this does not necessarily mean that a Phillips Curve no longer exists. During the period 2007 to 2009 the Phillips Curve relationship appeared to have re-established itself, with unemployment rising and inflation falling, and again, the recent post-Brexit period is characterised by falling unemployment and rising inflation.