The phillips curve on inflation and unemployment

\n[toc title="Table of Contents"]\n

\n \t

\n[/toc]\n \n

One of the most recognized milestones in macroeconomics history was when A. W. H. Phillips presented what is now known as the Phillips Curve. Phillips studied the relationship in the United Kingdom between inflation and rates of unemployment. While doing this study he found a steady inverse relationship between the two. Phillips then concluded that there is a tradeoff between inflation rates and unemployment; that is, when there are higher inflation rates, there is lower unemployment and when there are lower inflation rates, there is higher unemployment. The Phillips Curve stayed true for many years until the early 1970’s when a team of economists, lead by Milton Friedman, attacked the Phillips curve and began to alter it.

Who is William Phillips?

William Phillips is a New Zealand born economist who wrote a paper in 1958 that stated a persistent inverse relationship between wages and rates of employment. His theory was first applied to the population of the United Kingdom from 1861-1957 (Phillips curve, October), and was then used to find

similar patterns in other countries around the world. Soon after Phillips' article was published, many economists used the Phillips Curve to relate towards overall price inflation related to unemployment, not just wage increases.

Who is Milton Friedman?

Milton Friedman was born on July 31st 1912 in Brooklyn, New York. He studied mathematics at Rutgers University, earned a M. A. from the University of Chicago, and did a fellowship at Columbia University where he studied statistics (Theroux, 2006). Friedman then became a professor of economics at the University of Chicago. He was awarded a Noble Prize in economics in 1976 and is best known for his work on the Quantity Theory of Money and the expectations-augmented Phillips Curve.

Phillips Curve Equation

Before we look at Friedman's analysis of the Phillips Curve, it is important to first take a look at the fundamentals of the Phillips Curve. Phillips estimated that the lower the unemployment rate is, the lower the number of eligible employees there would be for a job. Companies would then increase the wages to attract any scarce people that are available. When the unemployment rate was higher the opposite would occur, companies would lower wages because more people were available to work. The model that Phillips represented illustrated that a certain percentage of unemployment would result in a certain percentage of wage inflation.

The equation that is associated with the Phillips Curve is demonstrated in figure 1.

This is the formula associated with the diagram in figure 1.

where:

Ï€t is inflation in year t

is a variable denoting exogenous economic shocks

is a constant

Ut is the unemployment rate in year t (The Phillips Curve, 2009)

Friedman's Opinion on the Phillips Curve

The main issue with the Phillips Curve that Friedman had was that it didn't take into account stagflation. Stagflation is " the simultaneous occurrence of high rates of inflation and unemployment" (Arnold, 2005-2008). Phillips believed stagflation could not occur. In other words, Phillips suggested that there could only be a tradeoff between inflation and unemployment and that both could not be high. Friedman found from his studies that this theory was not true (See Figure 3). As you can see from Figure 3, Phillip's theory holds true from 1961-1969 but from 1970-2003, we can see that stagflation can in fact occur. Why is this? Friedman suggests that " there is always a temporary tradeoff between inflation and unemployment; (however) there is no permanent tradeoff". Thus, he came up with the theory of having not one, but two Phillips Curves: one for the short-run and one for the long-run (See Figure 4). Friedman's theory was based on the premise of expectations; more specifically, expected inflation rates. We can see how this theory works by looking at Figure 4.

If the government unexpectedly increases aggregate demand, the actual inflation rate will increase while the expected inflation rate will remain the same because in the short-run, individuals will not be aware of the actual inflation rate increase. Because of this increase in aggregate demand, prices will increase and therefore suppliers will want to produce more so output will also increase. More output will require more labour therefore, companies will hire employees who will be willing to work for the expected wage rate rather than the actual wage rate. This results in an increase in the actual inflation rate and a decrease in unemployment thus moving along the short-run Phillips Curve. However, Friedman argues that this point on the curve is unstable due to the fact that actual inflation rate and expected inflation rate are not equal. Eventually, the workers will realize the inflation rate increase, due to the increasing prices, and will either quit their jobs or ask for more money. Ultimately, this will cause wage rates to increase resulting in a decrease in short-run aggregate supply which will bring the unemployment rate and inflation back to equilibrium. In summary, Friedman is saying that in the short-run, a tradeoff between inflation and unemployment does occur however it does not in the long-run. This is called the Friedman Natural Rate Theory (or Friedman fooling theory, See Figure 5). It is also called the fooling theory because individuals are actually tricked into thinking the wage inflation rate is lower than it actually is.

Key Takeaways

By examining the Phillips Curve and Friedman’s expectations-augmented Phillips Curve, we discovered that there is an important inverse relationship between unemployment rates and inflation rates. We’ve learned that there is

both a short-run Phillips Curve and a long-run Phillips curve and that equilibrium is achieved at there intersection. But more importantly, we've learned that economics is not solely base on numerical factors. Although inflation rates, interest rates, GDP…etc are important, behavioural economics and the perceptions of individuals is crucial in determining the outlook of an economy.

Appendix

Figure 1

(The Phillips Curve, 2009)

Figure 2

(Hoover, 2008)

Figure 3 – Friedman's Data (Arnold, 2008)

Figure 4 – Long- Run and Short-Run Phillips Curve (Arnold, 2008)

Figure 5 – Friedman Natural Rate Theory (Arnold, 2008)