

Draw A Graph To Illustrate The Following:a. A Phillips Curve Based On The Assumption Of A Vertical Longrun

Draw A Graph To Illustrate The Following: a. A Phillips Curve Based On The Assumption Of A Vertical Long-Run

Understanding the Phillips Curve and its implications in macroeconomics is essential for grasping the relationship between inflation and unemployment. In particular, the assumption of a vertical long-run Phillips Curve (LRPC) offers crucial insights into the natural rate hypothesis and the limits of monetary policy. This article explores how to draw a graph illustrating a Phillips Curve based on the assumption of a vertical long-run, explaining its significance and the economic intuition behind it.

What Is the Phillips Curve?

The Phillips Curve represents the inverse relationship between inflation and unemployment in the short run. It suggests that policymakers face a trade-off: reducing unemployment might lead to higher inflation, while controlling inflation could result in higher unemployment. This relationship was first identified by economist A.W. Phillips in 1958, based on empirical data from the United Kingdom.

Short-Run Phillips Curve (SRPC)

In the short run, the Phillips Curve is typically downward-sloping, indicating that lower unemployment can be associated with higher inflation. This is because when unemployment decreases, the increased demand for labor tends to push wages and prices upward.

Long-Run Phillips Curve (LRPC)

However, the relationship between inflation and unemployment does not hold indefinitely. The long-run Phillips Curve is often depicted as vertical at the natural rate of unemployment (also known as the Non-Accelerating Inflation Rate of Unemployment, NAIRU). This reflects the idea that in the long run, unemployment is determined by structural factors and not by inflation.

Assumption of a Vertical Long-Run Phillips Curve

The core assumption under discussion is that the long-run Phillips Curve is vertical. This implies that, in the long run, there is no trade-off between inflation and unemployment; unemployment tends toward a natural rate regardless of inflation levels.

Economic Intuition Behind a Vertical LRPC

- **Natural Rate Hypothesis:** Economists like Milton Friedman and Edmund Phelps argued that unemployment is determined by real factors such as technology, labor market policies, and demographics, not by inflation.
- **Expectations-Augmented Phillips Curve:** When inflation expectations are taken into account, any attempt to push unemployment below its natural rate through expansionary policies only leads to accelerating inflation in the long run.
- **No Long-Run Trade-Off:** As a result, the long-run Phillips Curve is vertical at the natural rate of unemployment, indicating that inflation does not influence unemployment in the long run.

How to Draw the Graph

Creating a clear, illustrative graph involves plotting both the short-run Phillips Curve and the long-run vertical Phillips Curve.

Steps to Draw the Graph

1. **Set Up the Axes:** Draw two perpendicular axes; the vertical axis represents the rate of inflation (π), and the horizontal axis shows the unemployment rate (u).
2. **Draw the Short-Run Phillips Curve (SRPC):** Begin by sketching a downward-sloping curve from left to right, indicating that lower unemployment is associated with higher inflation in the short run.
3. **Draw the Long-Run Phillips Curve (LRPC):** Draw a vertical line at the natural rate of unemployment (u). This vertical line represents the long-run equilibrium where inflation expectations are fully incorporated, and no trade-off exists.
4. **Label the Curves:** Clearly label the downward-sloping curve as "SRPC" and the vertical line as "LRPC."
5. **Indicate Equilibrium Points:** Mark the point where the SRPC intersects the LRPC as the long-term equilibrium unemployment level (u), with the corresponding inflation rate (π) on the vertical axis.

Interpretation of the Graph

The graph illustrates that in the short run, policymakers might influence unemployment and inflation – moving along the SRPC by changing aggregate demand. For example:

- Expansionary policies shift the economy up and to the left along the SRPC, reducing unemployment but increasing inflation.

- Contractionary policies shift the economy down and to the right along the SRPC, increasing unemployment but reducing inflation.

However, in the long run:

- The economy gravitates toward the natural rate of unemployment, u .
- Any attempt to sustain unemployment below u results in accelerating inflation, as expectations adjust.
- The vertical LRPC indicates that inflation can be high or low, but unemployment remains at the natural rate regardless of inflation levels.

Implications for Economic Policy

The assumption of a vertical long-run Phillips Curve has profound policy implications:

- **Limits of Monetary Policy:** While monetary policy can influence inflation and unemployment in the short run, it cannot reduce unemployment below its natural rate in the long run.
- **Inflation Expectations:** Managing expectations becomes crucial; credible commitment to low inflation helps stabilize inflation without increasing unemployment.
- **Focus on Structural Policies:** To reduce the natural rate of unemployment, policies addressing structural factors are necessary, such as improving labor market flexibility and education.

Conclusion

Drawing a graph to illustrate a Phillips Curve based on the assumption of a vertical long-run involves understanding the short-term trade-offs and the long-term neutrality of inflation concerning unemployment. The key takeaway is that while policymakers can influence inflation and unemployment temporarily, the economy ultimately gravitates toward the natural rate of unemployment, with no long-term trade-off. The vertical long-run Phillips Curve underscores the importance of credible inflation policies and structural reforms for sustainable economic stability.

Understanding this graphical illustration not only clarifies theoretical concepts but also informs practical policy decisions that aim to balance inflation control with employment objectives. Whether for students, economists, or policymakers, mastering the depiction and interpretation of the Phillips Curve is fundamental to macroeconomic analysis.

Frequently Asked Questions

What is a Phillips Curve based on the assumption of a vertical long-run?

It is a graph illustrating that in the long run, the unemployment rate remains at its natural level regardless of inflation, resulting in a vertical Phillips Curve.

How does the Phillips Curve differ in the short run versus the long run under the vertical assumption?

In the short run, the curve is downward sloping, showing an inverse relationship between inflation and unemployment, but in the long run, it is vertical, indicating no trade-off.

What economic theory supports a vertical long-run Phillips Curve?

The natural rate hypothesis supports this, suggesting that unemployment gravitates toward its natural rate in the long run, making inflation and unemployment independent.

How is the vertical long-run Phillips Curve represented graphically?

It is depicted as a vertical line at the natural rate of unemployment on the unemployment axis, with inflation rate on the vertical axis, showing no trade-off.

What does a shift of the short-run Phillips Curve imply in the context of a vertical long-run curve?

Shifts in the short-run curve indicate changes in inflation expectations, but the long-run position remains unchanged due to the vertical nature of the curve.

Why is the long-run Phillips Curve considered vertical?

Because in the long run, unemployment is determined by structural factors and the natural rate, not by inflation, leading to a vertical curve.

What policy implications arise from a vertical long-run Phillips Curve?

It suggests that attempts to reduce unemployment below its natural rate through inflationary policies will only cause higher inflation, with no lasting effect on unemployment.

How does expectations-augmented Phillips Curve relate to the vertical long-run curve?

It incorporates inflation expectations, showing that only unexpected inflation affects unemployment in the short run, while in the long run, expectations adjust and unemployment returns to its natural rate.

Can the Phillips Curve be used to predict long-term inflation and unemployment simultaneously?

No, because the vertical long-run Phillips Curve indicates that only unemployment is stable at its natural rate, while inflation can change without affecting unemployment in the long run.

Additional Resources

Phillips Curve: An In-Depth Analysis of Its Vertical Long-Run Perspective

Introduction

In the realm of macroeconomic theory, the Phillips Curve has historically served as a fundamental tool for understanding the relationship between inflation and unemployment. Its graphical representation provides vital insights into how policymakers might navigate the trade-offs involved in stabilizing an economy. However, the classical interpretation of the Phillips Curve has evolved significantly, especially when considering the long-run behavior of the economy. One of the most pivotal insights in this evolution is the concept of the vertical long-run Phillips Curve, which fundamentally alters how economists interpret the inflation-unemployment relationship over extended periods.

In this article, we will explore drawing a graph to illustrate a Phillips Curve based on the assumption of a vertical long-run, dissecting the theoretical underpinnings, graphical features, and implications for economic policy. Whether you're an economics student, a policymaker, or an enthusiast seeking a comprehensive understanding, this detailed guide aims to shed light on this critical aspect of macroeconomic analysis.

The Evolution of the Phillips Curve: From Short-Run to Long-Run

Historical Context and the Original Phillips Curve

The original Phillips Curve was derived by economist A.W. Phillips in 1958. It depicted an inverse relationship between unemployment and wage inflation, later adapted to price inflation and unemployment, suggesting that:

- Lower unemployment rates tend to coincide with higher inflation.
- Conversely, higher unemployment is associated with lower inflation.

This trade-off appeared evident during the 1950s and 1960s, leading policymakers to believe they could choose between a high-employment, high-inflation environment and a low-employment, low-inflation scenario.

The Short-Run Phillips Curve

In the short run, the Phillips Curve is typically downward-sloping, indicating an inverse relationship. This shape arises because:

- When unemployment is below the natural rate, labor markets are tight, pushing wages and prices upward.
- When unemployment is above the natural rate, wage pressures soften, and inflation slows.

Graphically, the short-run Phillips Curve (SRPC) looks like a downward-sloping curve, illustrating the trade-off between inflation and unemployment within a given period.

The Long-Run Perspective: The Vertical Phillips Curve

The Concept of the Natural Rate of Unemployment

Economists, especially Milton Friedman and Edmund Phelps, challenged the static view of the Phillips Curve. They argued that:

- In the long run, expectations about inflation adjust.
- Attempts to exploit the trade-off can only temporarily reduce unemployment below its natural rate, but not permanently.

The natural rate of unemployment (u) represents the level consistent with stable inflation, where the economy's inflation expectations are fully accounted for.

Expectations-Augmented Phillips Curve

Friedman's expectations-augmented Phillips Curve introduces the role of inflation expectations (π^e):

$$\pi = \pi^e - \beta (u - u^*)$$

where:

- π = actual inflation
- π^e = expected inflation
- u = actual unemployment rate
- u^* = natural rate of unemployment
- β = a positive constant indicating the sensitivity of inflation to unemployment deviations

This formulation implies that:

- In the short run, if actual inflation exceeds expected inflation, unemployment can fall below u^* .
- In the long run, as expectations adjust, the Phillips Curve becomes vertical at u^* .

Drawing the Graph: A Step-by-Step Guide

Step 1: Set Up the Axes

- Horizontal Axis (X-axis): Unemployment rate (u), expressed as a percentage.
- Vertical Axis (Y-axis): Inflation rate (π), expressed as a percentage.

This setup provides a two-dimensional space where the relationship between inflation and unemployment can be visually examined.

Step 2: Plotting the Short-Run Phillips Curve (SRPC)

- Draw a downward-sloping curve starting from a point representing high unemployment and low inflation to a point of low unemployment and high inflation.
- Label this curve SRPC.
- This curve illustrates the short-term inverse relationship where policymakers might temporarily trade-off inflation for lower unemployment or vice versa.

Step 3: Incorporating Inflation Expectations

- Draw a parallel shift of the SRPC to reflect different expected inflation rates.
- For example:
 - Expected inflation (π^e_1): Corresponds to an SRPC1.
 - Higher expected inflation (π^e_2): Corresponds to an SRPC2, shifted upward.
- These shifts demonstrate how inflation expectations influence the short-run trade-off.

Step 4: The Long-Run Phillips Curve (LRPC)

- Draw a vertical line at the natural rate of unemployment (u).
- Label this line LRPC.
- It signifies that in the long run, regardless of inflation, unemployment gravitates toward its natural rate, highlighting the verticality assumption.

Interpreting the Graph: Insights and Policy Implications

The Short-Run Trade-Off

- The downward-sloping SRPC indicates that, in the short run, policymakers might lower unemployment temporarily by accepting higher inflation.
- However, this is only a transient phenomenon, as inflation expectations adjust over time.

The Long-Run Equilibrium

- The vertical LRPC signifies that no trade-off exists in the long run.
- Attempts to reduce unemployment below u through expansionary policies will only lead to accelerating inflation without reducing unemployment.

Policy Implications

- Short-term: Policymakers might exploit the Phillips Curve to reduce unemployment temporarily.
- Long-term: Focus should shift towards structural policies that influence the natural rate rather than inflationary tactics.

The Significance of a Vertical Long-Run Phillips Curve

Theoretical Foundations

- It encapsulates the idea that inflation is always a monetary phenomenon in the long run.
- The economy naturally gravitates towards the natural rate of unemployment, regardless of inflation.

Practical Implications

- Inflation targeting: Central banks should prioritize stable inflation expectations rather than manipulating unemployment.
- Policy limitations: Recognize that persistent attempts to lower unemployment below u can lead to accelerating inflation, undermining economic stability.

Limitations and Criticisms

- The assumption of a vertical long-run Phillips Curve is debated, especially considering:
 - Supply shocks can temporarily shift the natural rate.
 - Expectations formation might be more complex than the simple models suggest.
 - Unemployment measurement issues can affect the interpretation of the natural rate.

Advanced Considerations: Dynamic Aspects and Expectations

Adaptive vs. Rational Expectations

- Adaptive expectations: Economists assume inflation expectations are based on past inflation.
- Rational expectations: Agents anticipate future policies and trends, adjusting expectations optimally.

The shape and position of the Phillips Curve depend heavily on which assumption is adopted, influencing the graphical representation.

Shifts in the Long-Run Phillips Curve

- Factors such as technological advances, labor market policies, or demographic changes can alter the natural rate of unemployment.
- These shifts are represented graphically as horizontal shifts of the vertical LRPC.

Real-World Applications and Case Studies

The 1970s Stagflation

- The phenomenon of simultaneous high inflation and high unemployment challenged the traditional Phillips Curve.
- Economists recognized the importance of supply shocks and expectations, leading to the modern understanding of a non-vertical long-run Phillips Curve under certain conditions.

Modern Central Banking

- Central banks primarily focus on inflation stabilization, acknowledging that the long-run Phillips Curve is vertical.
- Tools like inflation targeting policies emphasize anchoring inflation expectations to prevent unanchored inflation from shifting the LRPC.

Conclusion

Drawing and understanding a Phillips Curve based on the assumption of a vertical long-run provides a nuanced perspective on macroeconomic policy and theory. It underscores the crucial distinction between short-term trade-offs and long-term realities, emphasizing that policymakers cannot sustainably reduce unemployment below its natural rate without incurring accelerating inflation. The graphical representation—a downward-sloping short-run curve and a vertical long-run line—serves as a compelling visual encapsulation of these complex dynamics.

In essence, the vertical long-run Phillips Curve is a testament to the importance of expectations and the limitations of monetary and fiscal policy in managing unemployment. Recognizing this helps in designing more effective, sustainable economic policies that prioritize stability and long-term growth over transient gains.

In summary, mastering the graphical illustration of the Phillips Curve with a vertical long-run assumption is crucial for understanding macroeconomic stability, the role of expectations, and the inherent limitations faced by policymakers. Whether for academic purposes or practical application, this visualization remains a cornerstone of modern macroeconomic analysis.

Draw A Graph To Illustrate The Following A A Phillips Curve Based On The Assumption Of A Vertical Longrun

Draw A Graph To Illustrate The Following A A Phillips Curve Based On The Assumption Of A Vertical Longrun

Related Articles

- [If A Scientist Were Tracking The Birth Rates, Death Rates, And Overall Population Fluctuations Of Mountain](#)
- [Discuss \(with Examoles\) The Most Common Market Entry Barrierswith The Strategies To Overcomethese Barriers](#)
- [Moderating A Neutron In A Nuclear Reactor, Neutrons Released By Nuclear Fission Must Be Slowed Down Before](#)

[Back to Home](#)