The Phillips Curve

Coach Burnett
AP Macroeconomics

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The Phillips Curve

- In 1958 A.W. Phillips published the results of his research on the historical relationship between the unemployment rate (u%) and the rate of inflation (π%) in Great Britain. His research indicated a stable inverse relationship between the u% and the π%. As u% ↓, π% ↑; and as u% ↑, π% ↓.
- The implication of this relationship was that policy makers could exploit the trade-off and reduce u% at the cost of increased π%. The Phillips curve was used as a rationale for the Keynesian aggregate demand policies of the mid-20th century.

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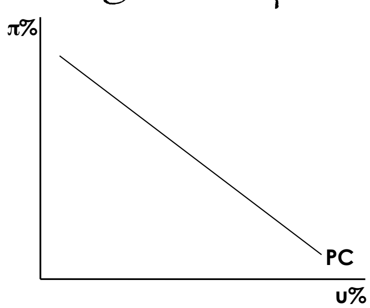
The original Phillips Curve



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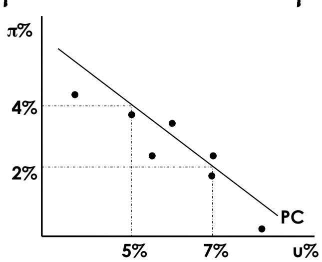
Hypothetical Example



Note: Inflation Expectations are held constant

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Problems with the original Phillips Curve model

- In the 1970's the United States experienced both high u % and π %, a condition known as stagflation. American Nobel Prize economist Milton Friedman saw stagflation as disproof of the stable Phillips Curve. Instead of a trade-off between u% & π %, Friedman and fellow Nobel Prize recipient Edmund Phelps believed that the natural u% (u_n%) was independent of the π %.
- This independent relationship is now referred to as the Long-run Phillips Curve.

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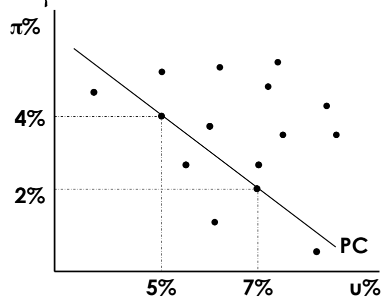
Problems with the original Phillips Curve



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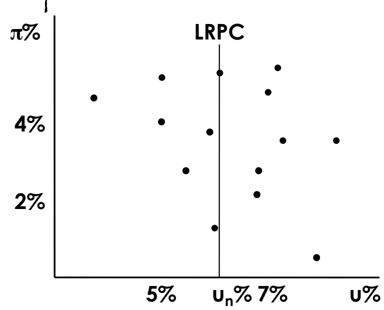
Problems with the original Phillips Curve



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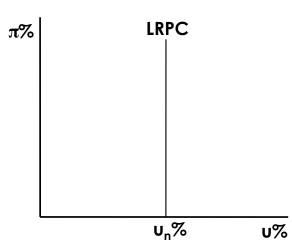
The Long-run Phillips Curve (LRPC)



Note: The Natural rate of unemployment is held constant

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The Long-run Phillips Curve (LRPC)

- Because the Long-Run Phillips Curve exists at the natural rate of unemployment (u_n), structural changes in the economy that affect u_n will also cause the LRPC to shift.
- Increases in u_n will shift LRPC →
- Decreases in u_n will shift LRPC ←

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The Short-run Phillips Curve (SRPC)

- Today many economists reject the concept of a stable Phillips curve, but accept that there may be a short-term trade-off between u% & π % given stable inflation expectations. Most believe that in the long-run u% & π % are independent at the natural rate of unemployment. Modern analysis shows that the SRPC may shift left or right. The key to understanding shifts in the Phillips curve is inflationary expectations!

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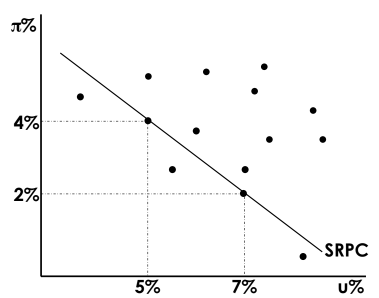
The Short-run Phillips Curve (SRPC)



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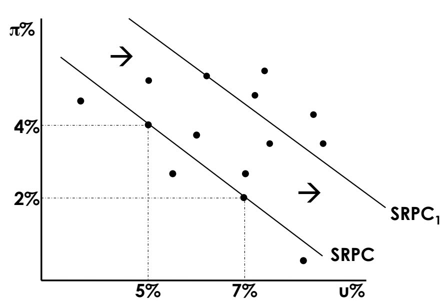
The Short-run Phillips Curve (SRPC)



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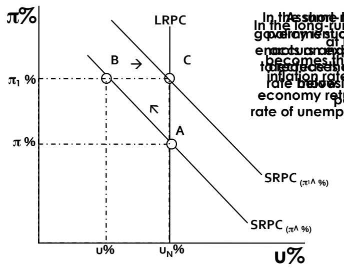
Reconciling the SRPC and LRPC



rate of unemployment (point C).

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Reconciling the SRPC and LRPC (Text from previous slide)

- Assume that either the government or the central bank enacts an expansionary policy to reduce the unemployment rate below its natural rate at point A.
- In the short-run, assuming the policy is successful, inflation occurs and unemployment decreases as the economy moves from A to B.
- In the long-run, the inflation rate at B (π_1 %) becomes the new expected inflation rate (π_1^%), and the economy returns to the natural rate of unemployment (point C).

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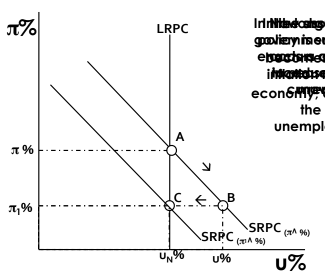
Reconciling the SRPC and LRPC



the natural rate of unemployment (point C).

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Reconciling the SRPC and LRPC (Text from previous slide)

- Now assume that either the government or the central bank enacts a contractionary policy to reduce inflation from it's current rate at point A
- In the short-run, assuming the policy is successful, disinflation occurs and unemployment increases as the economy moves from A to B.
- In the long-run, the inflation rate at B (π_1 %) becomes the new expected inflation rate (π_1^%), and the economy, once again, returns to the natural rate of unemployment (point C).

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AD/AS and the Phillips Curve

- Changes in the AS/AD model can also be seen in the Phillips Curves
- An easy way to understand how changes in the AS/AD model affect the Phillips Curve is to think of the two sets of graphs as mirror images.
- NOTE: The 2 models are not equivalent. The AS/AD model is static, but the Phillips Curve includes change over time. Whereas AS/AD shows one time changes in the price-level as inflation or deflation, The Phillips curve illustrates continuous change in the price-level as either increased inflation or disinflation.

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AP Tips & Tricks

- The natural rate of unemployment (u_n) and Full Employment output (Y_f) will be the same number in the economy.
  - Full employment in the U.S. Is between 4-5% so long as there is no cyclical unemployment present. Similarly, the natural rate or unemployment (or the amount found when no cyclical unemployment is present is 4-5%).
- The mirroring effect is an easy way to remember what is happening in an economy and helps bridge the gap between the AD/AS model and the Phillips Curve.
  - A shift in AD will result in a <u>movement</u> along the SRPC
  - A shift in SRAS will result in a <u>shift</u> along the SRPC

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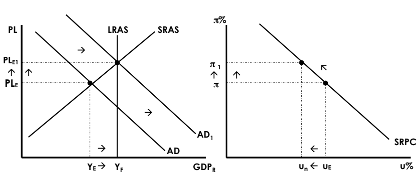
Increase in AD = Up & left along the SRPC



C↑, I_G↑, G↑ and/or X_N↑
.: AD → .: GDP_R↑ & PL↑ .: u%↓ & π%↑ .: up/left along SRPC

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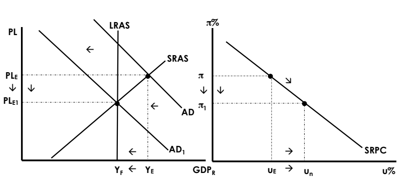
Decrease in AD = Down & Right along the SRPC



C↓, I_G↓, G↓ and/or X_N↓
.: AD ← .: GDP_R↓ & PL↓ .: u%↑ & π%↓ .: down/right along SRPC

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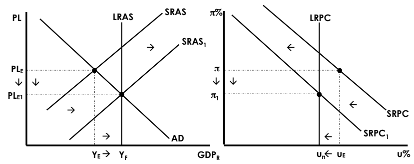
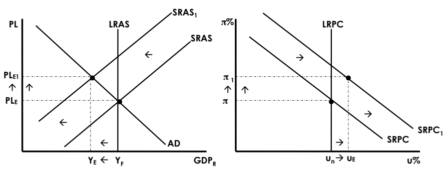
SRAS → ≈ SRPC ←



Inflationary Expectations↓, Input Prices↓, Productivity↑, Business Taxes↓, and/or Deregulation

.: SRAS → .: GDP_R↑ & PL↓ .: u%↓ & π%↓ .: SRPC ← (Disinflation)

SRAS ← ≈ SRPC →



Inflationary Expectations↑, Input Prices↑, Productivity↓, Business Taxes↑, and/or Increased Regulation

.: SRAS ← .: GDP_R↓ & PL↑ .: u%↑ & π%↑ .: SRPC → (Stagflation)

Summary

- There is a short-run trade off between u% & π%. This is referred to as a short-run Phillips Curve (SRPC)
- In the long-run, no trade-off exists between u% & π%. This is referred to as the long-run Phillips Curve (LRPC)
- The LRPC exists at the natural rate of unemployment (u_n).
  - u_n ↑ .: LRPC →
  - u_n ↓ .: LRPC ←

Summary (Cont.)

- A ΔC, ΔI_G, ΔG, and/or ΔX_N = Δ AD = Δ along SRPC
  - AD → .: GDP_R ↑ & PL ↑ .: u% ↓ & π% ↑ .: up/left along SRPC
  - AD ← .: GDP_R ↓ & PL ↓ .: u% ↑ & π% ↓ .: down/right along SRPC
- A Δ Inflationary Expectations, Δ Input Prices, Δ Productivity, Δ Business Taxes and/or Δ Regulation = Δ SRAS = Δ SRPC
  - SRAS → .: GDP_R ↑ & PL ↓ .: u% ↓ & π% ↓ .: SRPC ←
  - SRAS ← .: GDP_R ↓ & PL ↑ .: u% ↑ & π% ↑ .: SRPC →