Module 34
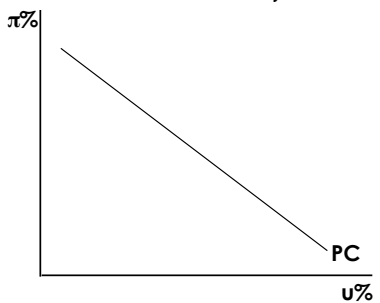## The Phillips Curve

Mr. Hess

AP Macroeconomics

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% $\downarrow$, π% $\uparrow$; and as u% $\uparrow$, π% $\downarrow$.

- 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.
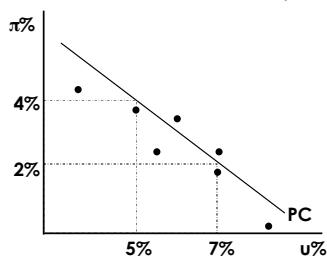

The original Phillips Curve

Hypothetical Example

Note: Inflation Expectations are held constant

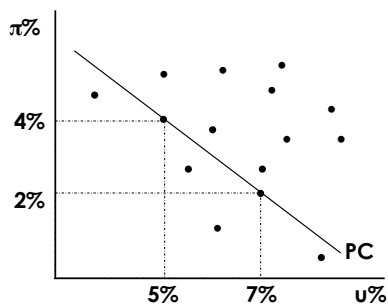## Problems with the original Phillips Curve model

- 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.
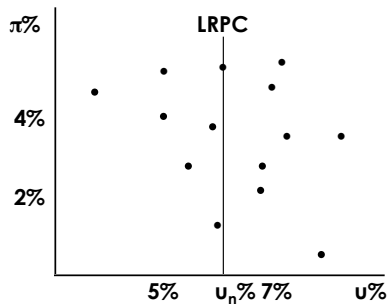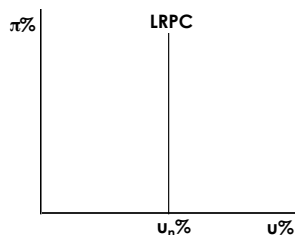
Problems with the original Phillips Curve

Problems with the original Phillips Curve

The Long-run Phillips Curve (LRPC)

Note: The Natural rate of unemployment is held constant

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 ←

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!
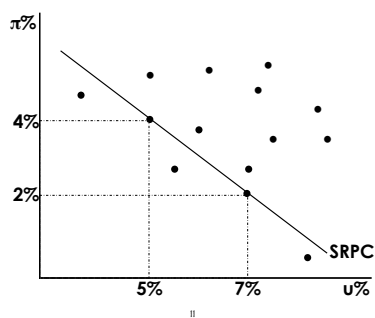
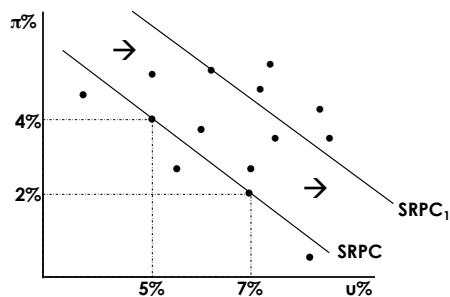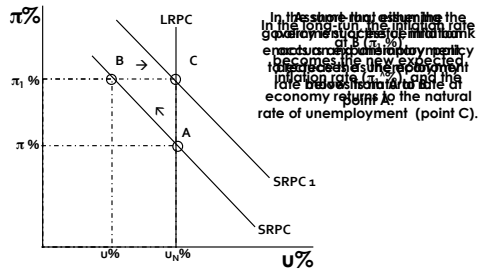## The Short-run Phillips Curve (SRPC)

The Short-run Phillips Curve (SRPC)

Reconciling the SRPC and LRPC

π%

LRPC

B → C

π_1 %

A

π %

SRPC₁

SRPC

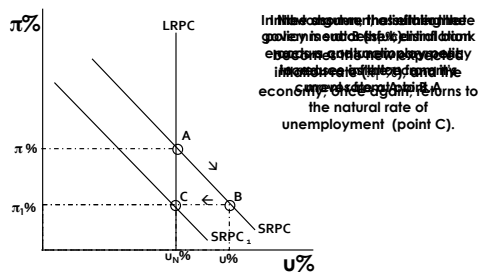u%   u_N%   **u%**

(overlapping text, illegible)

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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 ($\hat\pi_1$ %), and the economy returns to the natural rate of unemployment (point C).

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Reconciling the SRPC and LRPC

π%

LRPC

π %

A

↘

C ← B

π_1%

SRPC₁

SRPC

u_N%   u%   **u%**

(overlapping text, illegible)

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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 ($\hat\pi_1$ %), 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 _movement_ along the SRPC
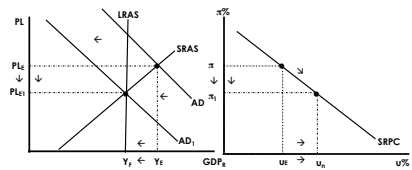 - A shift in SRAS will result in a _shift_ along the SRPC

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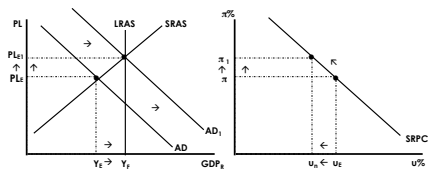
C↑, I_G↑, G↑ and/or X_N↑
.: AD → .: GDP_R↑ & PL↑ .: u%↓ & π%↑ .: up/left along SRPC

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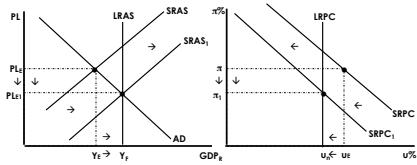
Inflationary Expectations↓, Input Prices↓, Productivity↑, Business Taxes↓, and/or Deregulation

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

SRAS ← ≈ SRPC →
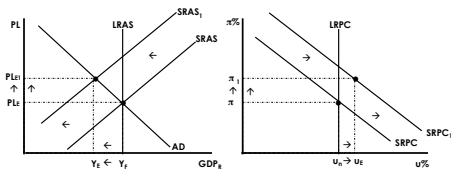
Inflationary Expectations↑, Input Prices↑, Productivity↓, Business Taxes↑, and/or Increased Regulation

.: 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.)

- ΔC, ΔI$_G$, ΔG, and/or ΔX$_N$ = Δ AD = move along SRPC
  - AD → .: GDP$_R$↑ & PL↑ .: u%↓ & π%↑ .: up/left along SRPC
  - AD ← .: GDP$_R$↓ & PL↓ .: u%↑ & π%↓ .: down/right along SRPC
- Δ Inflationary Expectations, Δ Input Prices, Δ Productivity, Δ Business Taxes and/or Δ Regulation = Δ SRAS = Shift SRPC
  - SRAS → .: GDP$_R$↑ & PL↓ .: u%↓ & π%↓ .: SRPC ←
  - SRAS ← .: GDP$_R$↓ & PL↑ .: u%↑ & π%↑ .: SRPC →