

Economics II

Labor Market, Unemployment and the Phillips Curve, Part II



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Unemployment and Phillips Curve – its characteristics and importance

The aim of this lecture is to explain the original Phillips curve, its development, modification and the importance, and to analyse short run and long run dynamic aggregate supply.

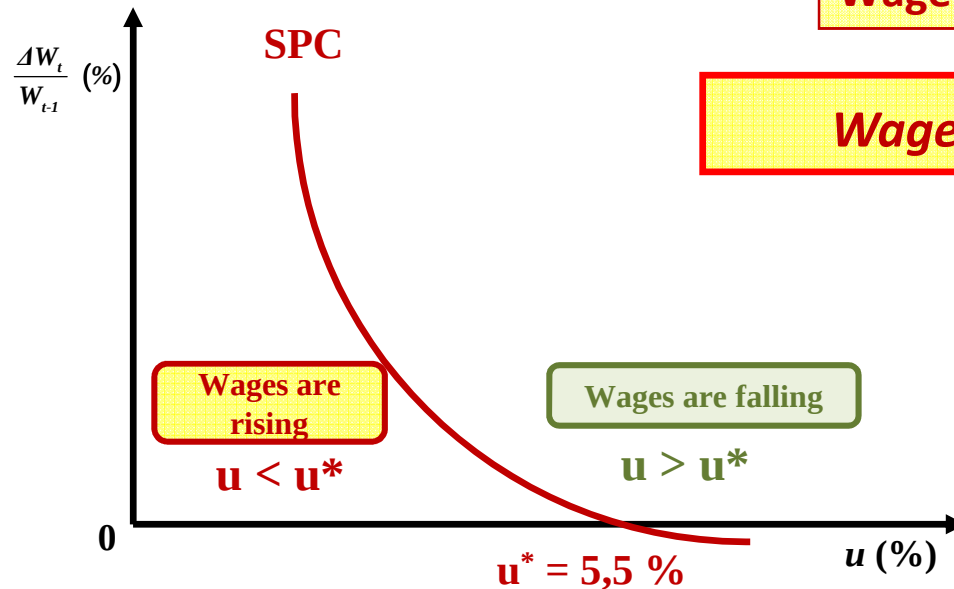


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Original and modified Phillips curves

a) Original Phillips curve (Phillips, A. W.)



$$\text{Wage inflation: } g_W = W_t - W_{t-1} / W_{t-1}$$

$$\text{Wage Phillips curve: } g_W = -\varepsilon (u - u^*)$$

$$W_t = W_{t-1} [1 - \varepsilon (u - u^*)]$$

ε ... coefficient of sensitivity

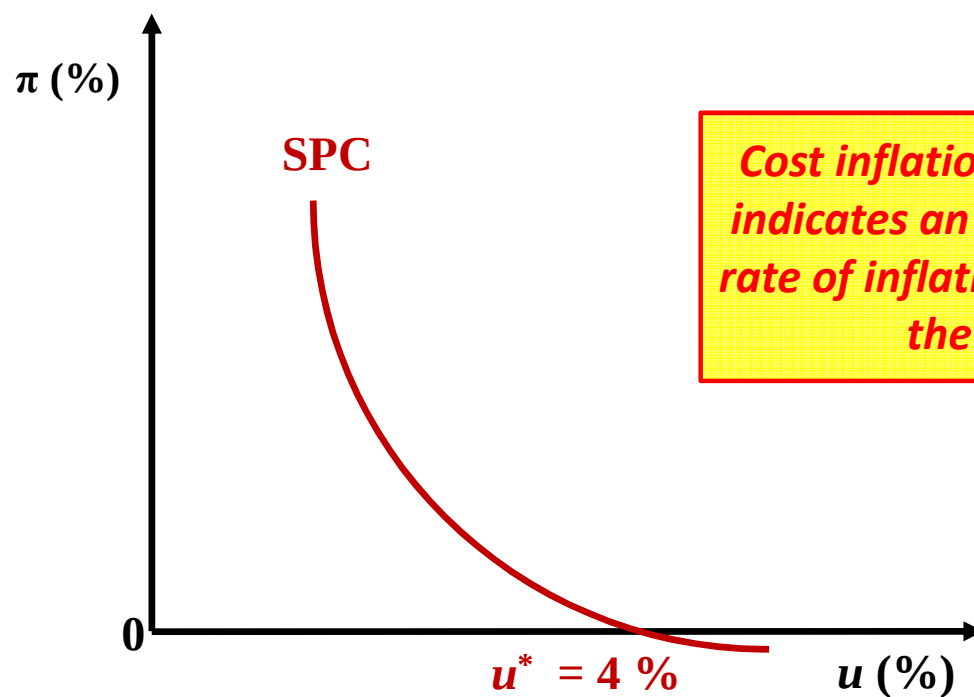
The initial wage Phillips curve expresses mutual inverse relationship between unemployment and the rate of growth of nominal wages.

There is a substitution (tradeoff) between wage inflation and unemployment.

Modified Phillips curve

(Samuelson, P. A. + Solow, R. M.)

$$\text{Inflation rate: } \pi_t = P_t - P_{t-1} / P_{t-1}$$



Cost inflationary version of the Phillips curve indicates an inverse relationship between the rate of inflation growth (π , the price level) and the unemployment rate (u).

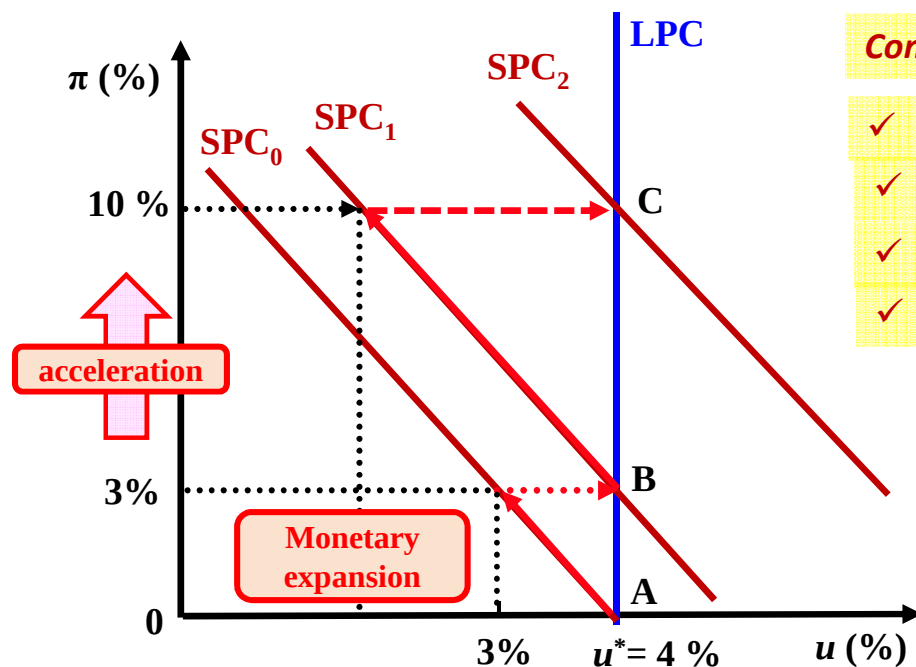
Phillips curve extended by the rate of expected inflation

Rational considerations: original condition SPC means the "money illusion" on the part of workers. This means that they adjust their wage demands to the expected (P^e) inflation rather than the actual price level (P).

P^e is given and it is exogenous!!!

$$NS = NS\left(\frac{W}{P^e}\right) \rightarrow NS = NS(W)$$

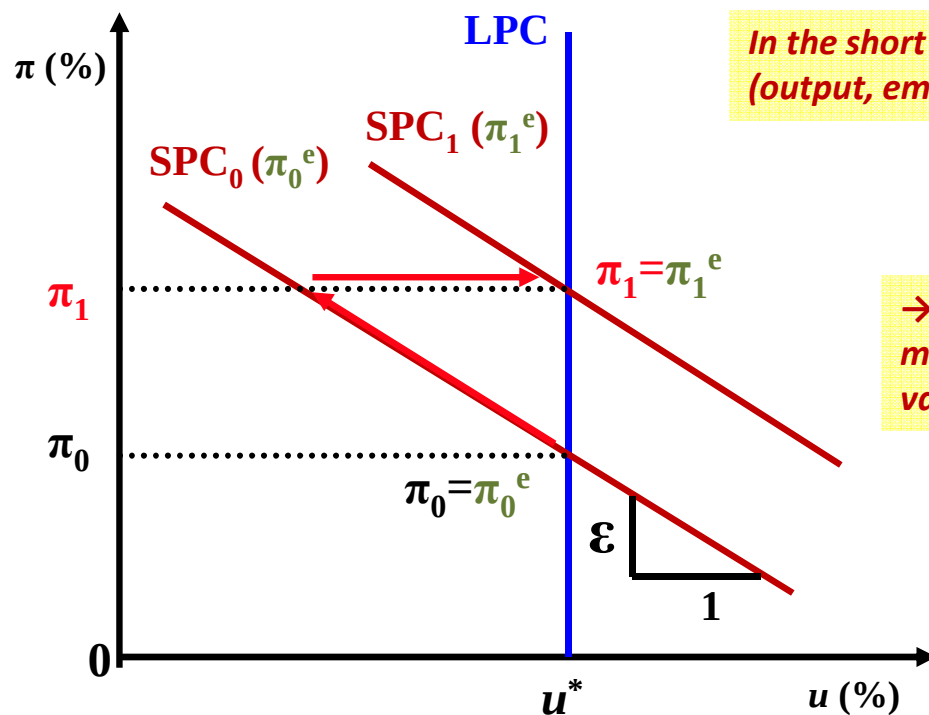
$$ND = ND\left(\frac{W}{P}\right)$$



Conclusion:

- ✓ The „Money illusion“ is valid only in the short run;
- ✓ The tradeoff exists only in the short run;
- ✓ LPC is vertical;
- ✓ Workers form their expectation adaptively;

Short run and long run Phillips curves



In the short term, it is possible to change the real variables (output, employment) using fiscal or monetary policy.

→ there is a connection between the real sector and monetary sector, and thus - monetary variables affect real variables of the economy.

Extended PC with a supply shock: $\pi_t = \pi_t^e - \epsilon(u - u^*) + z_t$ z_t ... supply shock

Determinants of inflation:

1) Rate of expected inflation ... π_t^e

2) Product ... $\epsilon(u - u^*)$

3) Contribution z_t to the actual π_t

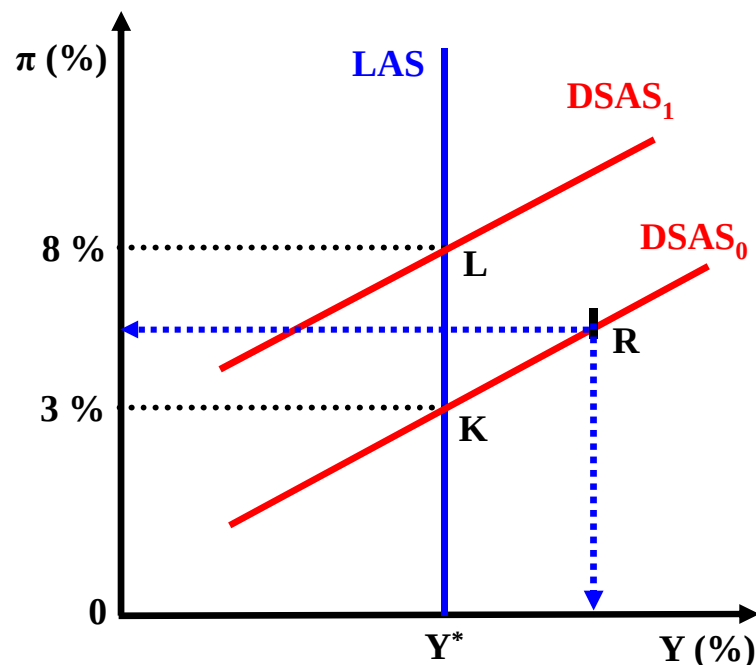
Short run dynamic aggregate supply and long run dynamic AS

a) Dynamic aggregate supply curve (DSAS)

$$P = P^e + 1/\delta \cdot (Y - Y^*) \longrightarrow P_t - P_{t-1} = (P_t^e - P_{t-1}) + 1/\delta \cdot (Y - Y^*) \quad (z_t = 0)$$

DSAS curve:

$$\pi_t = \pi_t^e + 1/\delta(Y - Y^*) \dots \text{DSAS}$$



Conclusion:

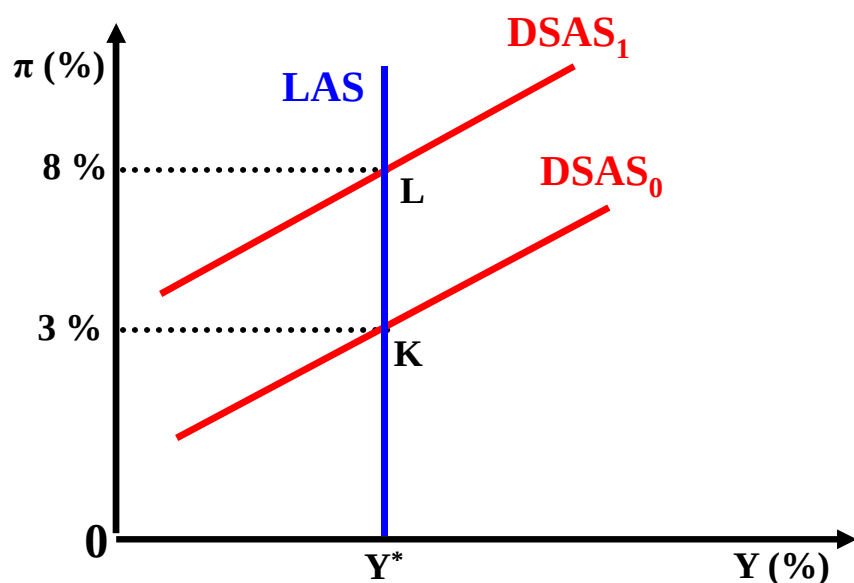
- ✓ If $Y = Y^*$, then $u = u^*$, and $\pi_t = \pi_t^e$;
- ✓ If $Y > Y^*$, then $u < u^*$, and $\pi_t = \pi_t^e + \Delta \pi_t$;
- ✓ If $Y < Y^*$, then $u > u^*$, and $\pi_t = \pi_t^e - \Delta \pi_t$;
- ✓ DSAS curve consists a certain level of expected inflation rate;
- ✓ The rate of expected inflation is constant along the DSAS curve.

DSAS curve expresses relationship between the inflation rate and the level of production, if the rate of expected inflation is constant. Along the curve DSAS there is a substitution between inflation and the growth rate of the product.

LAS curve

Points K, L represent the situation when: $\pi_t = \pi_t^e$ a $Y = Y^*$.

LAS is formed by the plotting points K and L.



Conclusion:

- ✓ *LAS is vertical at the level of Y^* ;*
- ✓ *The level of production is not dependent on the price level in the long run;*
- ✓ *Y^* is compatible with π_t and π_t^e ;*
- ✓ *There is no tradeoff between the rate of unemployment and the rate of inflation;*

References

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List of tasks for students

Exercise "**Phillips curve – its characteristics and importance**"

1. Characterize the original wage Phillips curve and explain its cost inflation version.
2. Analyze the Phillips curve extended by the expected inflation rate and its importance for the analysis of real macroeconomic variables.
3. Explain the mechanism of forming expected inflation (adaptive, static, and rational).
4. Derive and explain the curve of short-term dynamic aggregate supply curve and long-run aggregate supply.



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