

THE AGGREGATE DEMAND AND SUPPLY: MACROECONOMIC EQUILIBRIUM

WEEK 8

VIVALDO MENDES

INSTITUTO UNIVERSITÁRIO DE LISBOA – ISCTE-IUL

vivaldo.mendes@iscte-iul.pt

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1. RECAP: THE AD & AS CURVES

THE AD CURVE

Recall the AD curve

$$Y = m \cdot \bar{A} - m \cdot \phi \cdot (\bar{r} + \lambda\pi) \quad (1)$$

where:

- $\bar{A} = \bar{C} + \bar{I} - d \cdot \bar{f} + \bar{G} + \bar{NX} - c \cdot \bar{T}$ (Autonomous Aggregate Demand)
- $m = \frac{1}{1-c}$ (multiplier)
- $\phi = b + d + x$ (to simplify notation)
- λ (parameter)

AD: MOVEMENTS-ALONG VS SHIFTS

$$Y = m \cdot \bar{A} - m \cdot \phi \cdot (\bar{r} + \lambda\pi)$$

A movement along the AD curve: π changes, *everything else constant*. For example:

$$\pi \uparrow \Rightarrow r \uparrow \Rightarrow \{I \downarrow, C \downarrow, NX \downarrow\} \Rightarrow Y \downarrow$$

A shift in the AD curve: π constant, *everything else changes*. For example:

$$\{\bar{A} \uparrow, \bar{r} \downarrow\} \Rightarrow Y \uparrow$$

THE AS CURVE

Recall the AS curve

$$\pi = \underbrace{\pi^e}_{=\pi_{-1}} + \gamma (Y - Y^P) + \rho \quad (2)$$

- **Short-run:**

$$Y \neq Y^P \text{ and } \pi \neq \pi^e$$

and the AS has a positive slope given by γ .

- **Long-run:**

$$Y = Y^P \text{ and } \pi = \pi^e$$

and the AS is vertical with $Y = Y^P$.

AD: MOVEMENTS-ALONG VS SHIFTS

$$\pi = \underbrace{\pi^e}_{=\pi_{-1}} + \gamma (Y - Y^P) + \rho$$

A movement along the AS: Y changes and *everything else constant*:

$$Y \uparrow \Rightarrow \pi \uparrow$$

$$Y \downarrow \Rightarrow \pi \downarrow$$

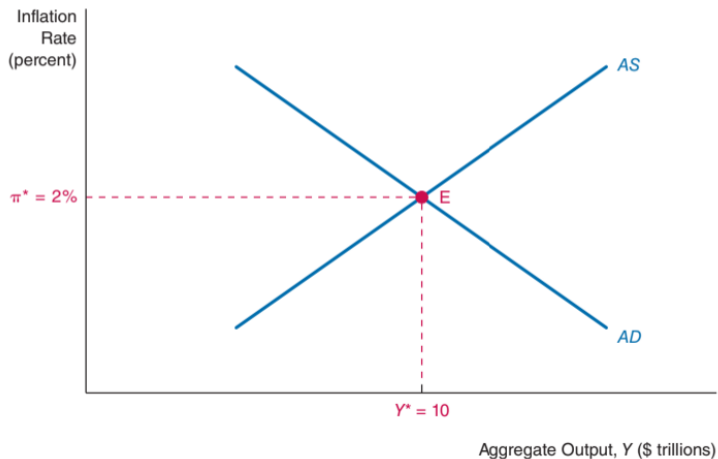
A shift in the AS: Y constant, *everything else changes*. For example:

$$\rho \uparrow \Rightarrow \pi \uparrow \quad , \quad \pi^e \uparrow \Rightarrow \pi \uparrow \quad , \quad Y^P \uparrow \Rightarrow \pi \downarrow$$

2. MACROECONOMIC EQUILIBRIUM: $AD=AS$

THE SHORT RUN EQUILIBRIUM

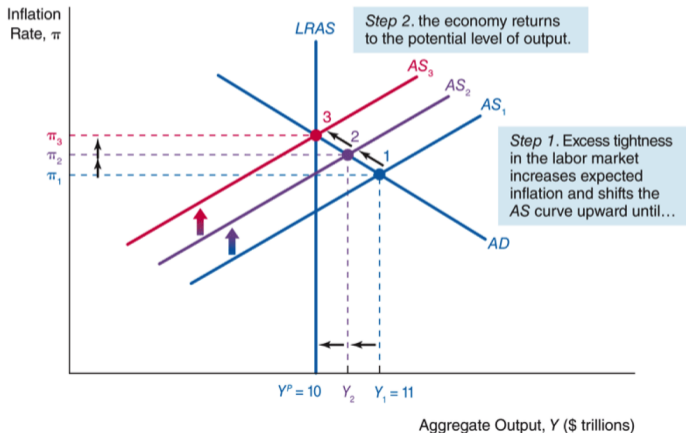
On this equilibrium, we will have: $Y = Y^*$, $\pi = \pi^*$



THE SHORT RUN EQUILIBRIUM ABOVE Y^P

Suppose the economy starts with $Y_1 > Y^P$:

(a) Initial short-run equilibrium above potential output



PREVIOUS SLIDE'S DETAILS: READ AT HOME

Consider that $Y_1 > Y^P$: point 1.

Unemployment is below the natural unemployment rate: $U < U_n$ and wages increase (Phillips curve).

Firms raise their prices.

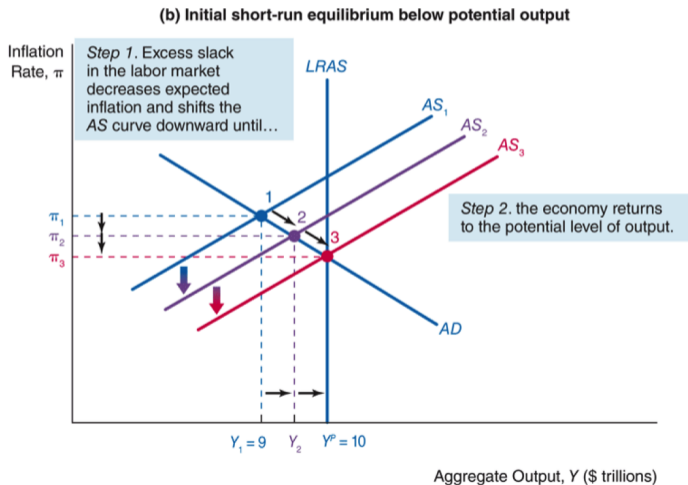
Inflation rises above its initial level: $\pi > \pi_1$. In the next period, expectations of inflation, π^e , are revised upward due to rising inflation and the short-run AS curve shifts upwards from AS1 to AS2.

As long as $Y > Y^P$ wages and prices will continue to increase, causing the AS curve to shift upward: self-correcting supply mechanism.

The process repeats itself until $Y = Y^P$, i.e., the economy reaches its long-run equilibrium.

THE SHORT RUN EQUILIBRIUM BELOW Y^P

Suppose the economy starts with $Y_1 < Y^P$:



PREVIOUS SLIDE'S DETAILS: READ AT HOME

The short-term equilibrium is below potential GDP: $Y_1 < Y^P$: point 1.

Unemployment is above the natural rate of unemployment: $U > U_n$ and inflation falls below its initial level: $\pi < \pi_1$.

Inflation expectations, π^e , are revised downward due to falling inflation, shifting the short-run AS curve downward from AS1 to AS2.

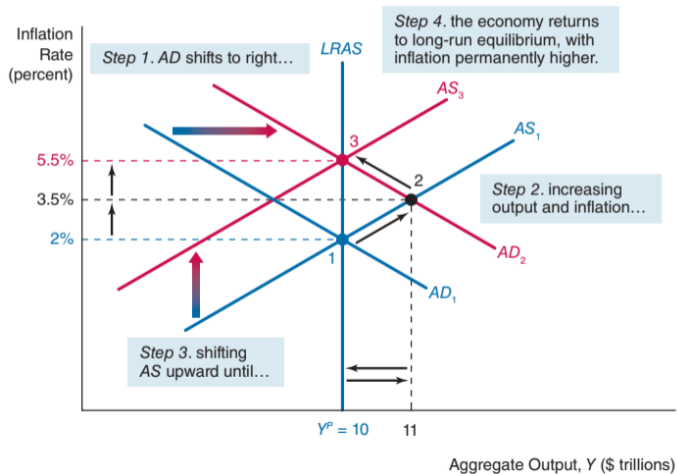
As long as $Y < Y^P$, expected inflation declines, shifting the AS down.

The process repeats until $Y = Y^P$ and the long-run equilibrium is reached.

3. AGGREGATE DEMAND SHOCKS

A POSITIVE DEMAND SHOCK

Consider that \bar{A} increases



PREVIOUS SLIDE'S DETAILS: READ AT HOME

We start from the long-run equilibrium at point 1.

The AD curve shifts to the right: we will have point 2.

At this point, $Y > Y^P$ and inflation increases.

The supply self-correction mechanism comes into operation until it passes to AS3 and GDP equals Potential GDP.

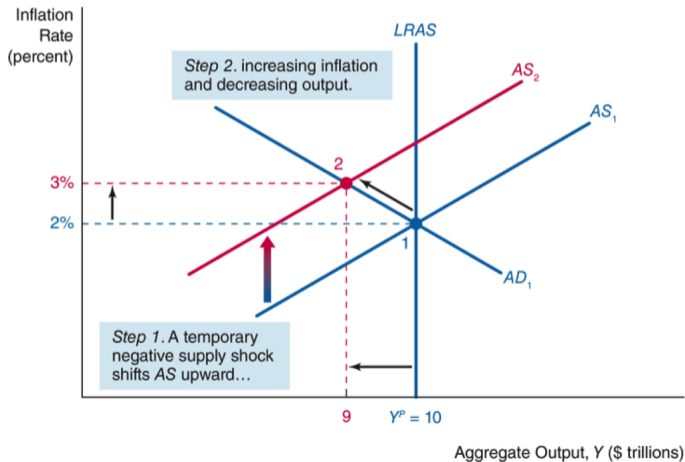
The short-run effect: an economic expansion and an increase in inflation.

The long run effect: inflation rises, but the economy returns to Potential GDP (Y^P).

4. AGGREGATE SUPPLY SHOCKS

A TEMPORARY NEGATIVE SUPPLY SHOCK

Suppose that oil prices increase temporarily ($\rho \uparrow$)



PREVIOUS SLIDE'S DETAILS: READ AT HOME

We start from the long-run equilibrium at point 1.

An increase in ρ shifts AS to the left, from AS1 to AS2.

We move to point 2, where $Y < Y^P$ leading to an increase in inflation.

However, the productive capacity of the economy (the LRAS) remains unchanged.

The self-correcting supply mechanism will make the adjustment along AD1, back to the initial equilibrium point.

The short run effect: an economic recession and an increase in inflation.

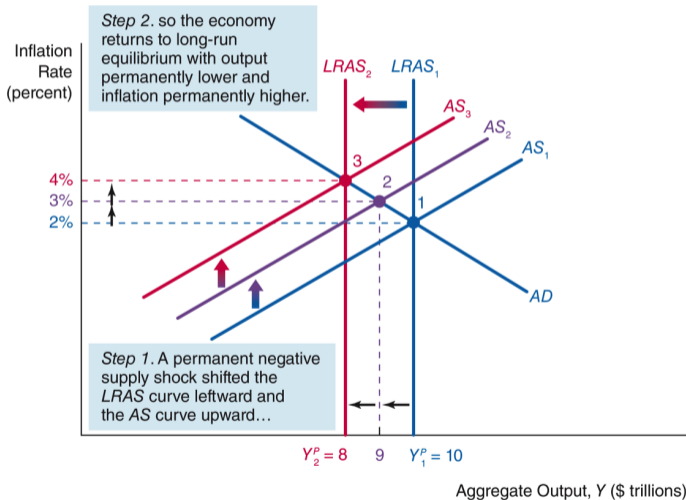
In the long run: output and inflation return to their initial equilibrium, Y^P and $\pi = 2\%$.

PERMANENT SUPPLY SHOCKS

- A permanent **negative** supply shock: a war that cuts off forever the supply of cheap oil or gas and leads to permanently higher energy costs. A permanent negative supply shock increases inflation and reduces output both in the short and long run.
- Another permanent **negative** supply shock: regulations that cause the economy to be less efficient.
- A permanent **positive** supply shock: the development of new technology that raises productivity or an increase in the supply of labor. A permanent positive supply shock lowers inflation and raises output both in the short and long run.

A PERMANENT NEGATIVE SUPPLY SHOCK

A decrease in potential output from $Y_1^P = \$10$ trillion to $Y_1^P = \$8$ trillion.



PREVIOUS SLIDE'S DETAILS: READ AT HOME

We start from the long-run equilibrium at point 1.

A permanent (negative) supply shock shifts supply to the left, from LRAS1 to LRAS2.

Inflation increases, shifting short-run supply to the left, from AS1 to AS2, moving to point 2.

At this point we see $Y > Y^P$, which causes inflation to increase again, shifting AS to AS3.

The new long-run equilibrium occurs at point 3.

The short-run effect: a fall in GDP and an increase in inflation.

In the long run: potential GDP falls and inflation rises, both permanently.

5. READINGS

READINGS

- Read Chapter 12 of the adopted textbook:

Frederic S. Mishkin (2015). *Macroeconomics: Policy & Practice*, Second Edition, Pearson Editors.