

Macroeconomic Policy: Shocks and the Macroeconomic Equilibrium

Week 09

ModernMacro team
Instituto Universitário de Lisboa (ISCTE-IUL)
vivaldo.mendes@iscte-iul.pt

2026-04-20

1. The Goals of Macroeconomic Policy

The Divine Coincidence

- Short-term macroeconomic policy has 2 *fundamental objectives*:
 - To stabilize economic activity (GDP) and the level of unemployment.
 - To stabilize inflation at a relatively low value.

...

i For economic policy makers, the ideal situation will be:

$$Y = Y^P, \quad \text{then} \quad U = U^n, \quad \text{and} \quad \pi = \pi^e = \pi_{-1}$$

...

- Some economists call this situation the *divine coincidence*, sarcastically, as something ideal but unattainable¹

Inflation Rate Target

All central banks in advanced countries have an optimal value for inflation they want to achieve. This is called the *inflation target*:

$$\pi^T$$

...

¹Blanchard, O. and Galí, J. (2007). Real Wage Rigidities and the New Keynesian Model. *Journal of Money, Credit and Banking*, 39, 35-65.

Target values for the annual inflation rate (%)			
US	2	New Zealand	2
Japan	2	Australia	[2-3]
EuroZone	2	Canada	2, +/-1
UK	2	Russia	4
Sweden	2	China	3
Noruega	2	Mexico	3, +/-1

Source: Central Bank News

Why 2% Inflation?

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According to the Swedish Central Bank (Sveriges Central Bank):

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Why 2 per cent?

The important thing is that inflation is low and stable.

- If inflation is too high it is a problem, as this usually means that inflation is fluctuating a lot. This creates uncertainty, which has a negative effect on the economy (see above).
- If inflation is too low, there is a risk of deflation, that is, the general price level falls, which has historically been shown to create major problems in the economy.

2. Stabilization Policy

The Macroeconomic Equilibrium

The macroeconomic equilibrium involves the simultaneous calculation of all endogenous variables.

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3. Aggregate Demand Shocks

Soft Reaction by the Central Bank

Suppose there is a positive demand shock that leads to higher inflation, and the Central Bank does not care about its 2% inflation target.

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Exogenous demand increases for some reason. It can be caused by a government decision ($T \downarrow$, $G \uparrow$), an increase in NX, or any other change in \bar{A} .

The AD curve moves from AD1 to AD2 and the economy moves to point 2. At point 2, we have an economic boom ($Y_2 > Y^P$), and an inflation rate above the target ($\pi_2 > \pi^T$).

At point 2, as inflation has increased, the CB raises the interest rate ($r_1 \rightarrow r_2$). Since we have a boom at point 2, by the supply self-correcting mechanism, inflation will increase over time and the AS curve moves from AS1 to AS2.

The new equilibrium will be at point 3. We will have:

$$Y = Y^P, \quad \pi = \pi_3 > \pi^T = 2\%, \quad r = r_3$$

Soft vs Aggressive Response By the CB

...

1. The Central Bank (CB) decisions in the previous figure have an implicit fact: the CB accepts the new value of inflation as the new equilibrium: $\pi^T = \pi_3$.

...

The textbook says that **“There is no policy response”** in this case, which may confuse more than elucidate. There is a policy response by the CB because it changes interest rates: $r_1 \rightarrow r_2 \rightarrow r_3$. The point is that its response is “soft”, rather than “aggressive” or “hard”. Understanding the difference between these two reactions (soft vs hard) is crucial.

...

2. So, what happens if the CB does not accept a change in its initial target value for inflation (π^T)? It will have to implement an aggressive monetary policy by imposing a radical increase in interest rates, not a gradual one.

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3. That will be the contents of next slide.
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Aggressive/Hard Reaction by the CB

If there is a positive demand shock that leads to higher inflation, and the Central Bank does not give-up its 2% inflation target: hard reaction.

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The only difference between the central bank's aggressive response and its soft one is related to the level of interest rate increases it imposes in both cases.

Soft response: The central bank imposes a small increase in the interest rate in order to accommodate the increase in inflation. The impact on demand is small. There is only a movement along the MP curve.

Aggressive response: the central bank does not want the economy to go from point 2 to point 3 (as in the previous soft case). To this end, when there is an increase in autonomous demand (\bar{A}), it drastically raises the interest rate (MP curve shifts to the right), constraining Consumption, Investment, and Net Exports, which leads to a shift in the AD curve to the initial position.

The new long-run equilibrium is now characterized by:

$$Y = Y^P, \quad \pi = \pi^T = 2\% \quad \text{and} \quad r = r_3$$

Demand Shock; Late Hard CB reaction

If there is a positive demand shock that leads to higher inflation, and the Central Bank does not give-up its 2% inflation target: late reaction.

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If the Central bank does not want to give up its 2% inflation target, and if it takes too long to react to demand shocks, the economy will experience a long swing in interest rates:

$$r_1 \rightarrow r_2 \rightarrow r_3 \rightarrow r_{3'} \rightarrow r_4 \rightarrow r_5 \rightarrow r_{5'}$$

And the central bank will eventually bring inflation to the 2% target level, but with a large swing in inflation as well:

$$\pi_1 \rightarrow \pi_2 \rightarrow \pi_3 \rightarrow \pi_4 \rightarrow \pi_5$$

And in the mean time, the economy goes through a boom and a recession, before it is stabilized at the long term equilibrium at point 5.

4. Permanent Aggregate Supply Shocks

Negative Shock and a CB Soft Response

Suppose Y^P suffers a reduction from 14 to 13.7 trillion dollars permanently; while the Central Bank is soft on inflation.

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There is a negative supply shock, for example, caused by an increase in tariffs, a natural disaster, or a reduction in immigration.

This increase causes a shift from LRAS1 to LRAS2 and it shifts also the (short run) AS from AS1 to AS2. The new equilibrium point is at point 2.

At point 2, the economy is in a boom, since ($Y_2 > Y_2^P$), which causes inflation to increase over time until it reaches point 3.

Notice that the central bank has been raising the interest rate in order to keep up with the increase in inflation.

Point 3 will be the new long-run equilibrium point if the central bank accepts a higher value π^T :

$$Y_3 = Y_2^P, \quad \pi = \pi_3 = \pi_3^T, \quad r = r_3$$

Negative Shock, Hard CB Response

Suppose Y^P suffers a reduction from 14 to 13.7 trillion dollars permanently; while the Central Bank is tough/hard on inflation.

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The central bank does not want the economy to reach point 3, as in the case where the response was soft.

To this end, when inflation increases, the central bank drastically raises the interest rate. This increase can be seen by the movement of MP1 to MP2, which leads to a reduction in Consumption, Investment, and Net Exports, generating a shift of the AD curve: AD1 to AD2.

The new long-run equilibrium will be characterized by:

$$Y = Y_2^P, \quad \pi = \pi^T = 2\%, \quad r = r_3$$

The aggressive response by the central bank, in this case, led to the stabilization of both GDP and inflation.

5. Temporary Aggregate Supply Shocks

Temporary AS Shock: Soft CB Response

Suppose there is a negative temporary supply shock (oil prices go up); while the Central Bank is soft on inflation.

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This temporary increase does not cause any shift in LRAS. It does cause a temporary increase in inflation, displacing AS1 to AS2.

The new equilibrium point is 2, where the economy is in a recession, since ($Y_2 < Y^P$), forcing inflation to decrease over time. This process is described by the gradual shifts from AS2 to AS3, until the initial point is reached.

Note that the central bank has been changing the interest rate in order to keep up with the changes in inflation.

Point 3 will be the new long-run equilibrium point:

$$Y_3 = Y^P = 14, \quad \pi = \pi_3 = \pi^T = 2\%$$

Temporary AS Shock; Hard CB Response

Suppose there is a negative temporary supply shock; while the Central Bank is tough on inflation.

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The central bank makes the mistake of responding aggressively to a temporary supply shock.

In point 2, we already know how things work: see the previous case. Except that now in point 2, the central bank decides to raise the interest rate by a lot. This causes $MP1 \rightarrow MP2$ and $AD1 \rightarrow AD2$. We move on to point 3 .

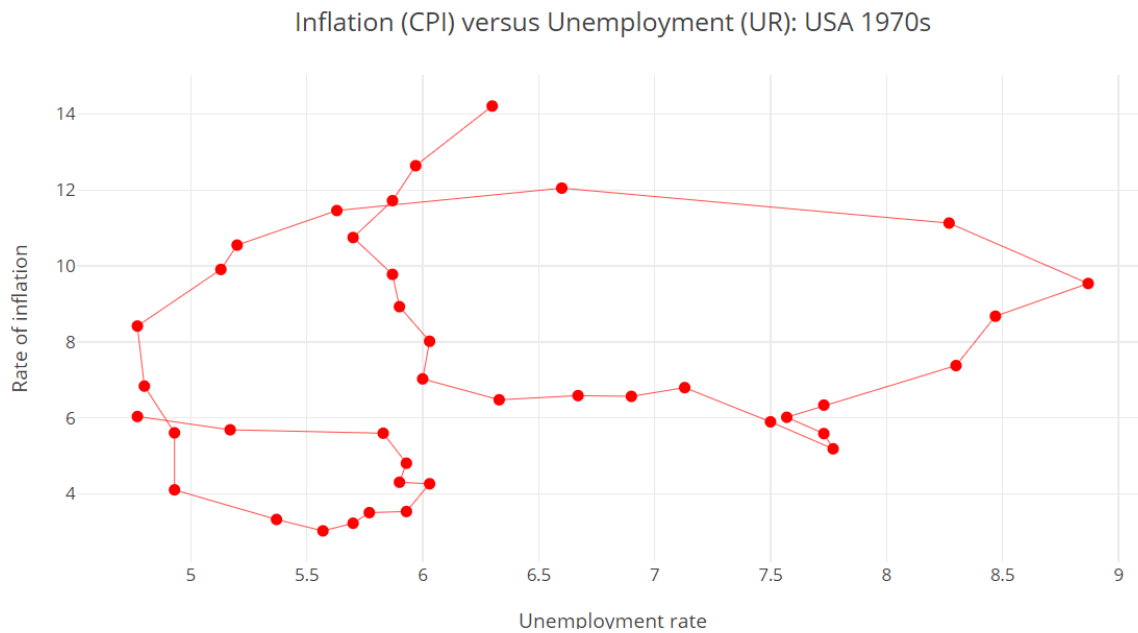
At point 3, we have a big recession, which will lead to a reduction in inflation, leading to $AS2 \rightarrow AS3$. We are left at point 4 .

At this point, inflation is below the desired level ($\pi_3 < \pi^T$), and the central bank has no other remedy than to undo what it did at the beginning: now drastically reduces the interest rate. This shifts AD2 to AD3 and we end the process at point 5 (the same as 1).

The central bank's mistake has created a loop in inflation like in the 1970s.

Inflation Loops in the 1970s: USA

The Phillips Curve of the 1970s seems to confirm the circular movement of inflation seen in the previous figure (points: 1, 2, 3, 4, 5).



5. Readings

Readings

Read *Chapter 13* of the adopted textbook:

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

Bibliography