

Macroeconomics

Based on the textbook by KARLIN and SOSKICE:
*Macroeconomics: Institutions, Instability, and the Financial
System*

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November 9, 2017

Monetary policy

Monetary policy is done by the central bank. Typically, the central bank is independent from the government.

Monetary policy is the most important tool for fine-tuning economic policy. Fiscal policy can only move more slowly and under political aspects.

Monetary policy could be used for boosting economic growth in the short run. It could also reduce fluctuations and dampen business cycles. It could at least soften the path toward a medium-run equilibrium.

Since around 1990, many central banks have been committed to targeting inflation. Their policy has to take a target inflation rate into account.

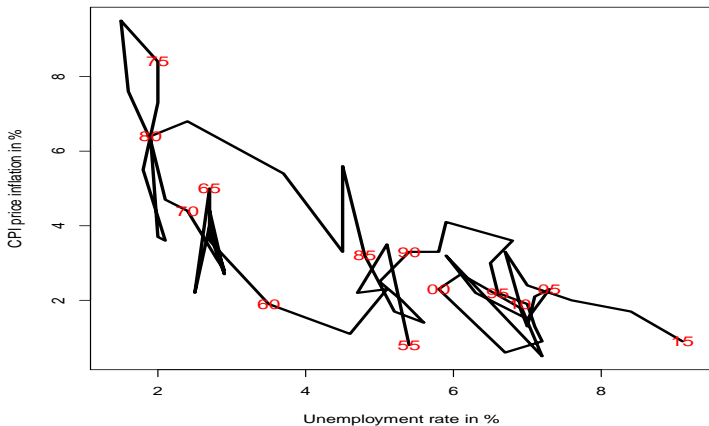
Cause and effect in the Phillips curve

Instinctively, many interpret the Phillips curve as a trade-off for economic policy: politicians may wish to pay with some price inflation for higher output and lower unemployment. Unfortunately, such policies do not work.

The realistic causality runs in the opposite direction. If inflation is too high, policy can create a short recession with higher unemployment, then inflation will come down. Such episodes are often called *disinflation*. The best known disinflation episode happened around 1980, when the high inflation inherited from the OPEC shocks was being fought down.

The most adequate tool for disinflation is monetary policy.

The Austrian Phillips curve



Empirical evidence on the Phillips curve

Austria has had a beautiful Phillips curve over many decades. During the 1980s, inflation decreased slowly from marks around 8%, and unemployment increased.

In most other countries, the Phillips curve looked nice until around 1970, then many points with high π and high unemployment or low real growth showed: *stagflation*.

Economists agree that a policy-relevant relation between a 'virtual' variable such as inflation and a real economic variable (output growth, output gap, unemployment rate) cannot exist. Printing money cannot yield sustained economic growth.

Inflation targeting

Nowadays, most central banks are committed to targeting a small positive rate of price inflation. This *inflation targeting* dominates monetary policy. Interest rates are chosen accordingly.

Central banks are moderately successful in pursuing the inflation target.

Another aim of monetary policy is keeping output close to equilibrium output and thus avoiding unnecessary fluctuations. Monetary policy can be fine-tuned continually, so it is better suited for policy targeting than fiscal policy.

Why do people not like inflation?

Inflation is even less popular among the population than with economists.

- ▶ The volatility of inflation typically increases with its level. Volatile inflation increases risk and discourages planning.
- ▶ The frequent readjustment of prices incurs extra costs: shoe-leather costs for consumers, menu costs for producers.
- ▶ Price rises confuse consumers and may lead to falling consumer demand by decreasing consumer confidence.

How low should inflation be?

- ▶ Some economists (e.g., MILTON FRIEDMAN) have argued that the optimal rate of inflation is negative. There are many practical considerations that suggest otherwise.
- ▶ With negative or very low inflation, tools of monetary policy do no longer work properly (ZLB=*zero lower bound* on the nominal interest rate).
- ▶ It is psychologically easier to adjust relative wages and prices with positive inflation—some workers receive a smaller wage rise—than with negative inflation (wage cuts).
- ▶ Other reasons for avoiding *deflation* (= negative inflation): increasing value of cash, increasing debt burden.
- ▶ Most central banks target inflation rates of around 2%.

Central bank in charge of inflation

- ▶ Inflation is a monetary phenomenon (FRIEDMAN). It takes time before less money (higher nominal interest i) actually yields less output and less inflation.
- ▶ If inflation is too high (low), the central bank raises (cuts) its *policy rate*. This will affect the market interest rate with a delay.
- ▶ The higher (lower) market interest rate i causes lower (higher) short-run output.
- ▶ The fact that output is below (above) the equilibrium output causes lower (higher) inflation.

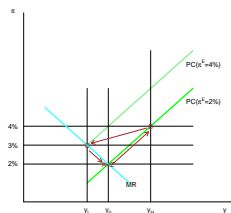
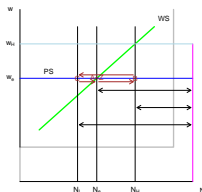
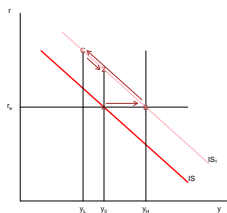
The 3–equation model

KARLIN AND SOSKICE suggest analyzing the macro-economy on the basis of three equations:

1. The **IS curve** representative of the demand side;
2. The **PC curve** representative of the supply side;
3. The **MR curve** (monetary rule) representative for the monetary policy of the central bank.

The new MR curve is a falling curve in the (y, π) space: with high inflation, the central bank creates a monetary contraction by raising r , output will be below y_e , and inflation will fall; with low inflation, the central bank implements a monetary expansion. The combination of y_e and the target π^T will be on the MR curve.

Monetary contraction after a demand shock



A demand shock shifts the IS curve out and raises employment beyond the equilibrium N_e . Inflation increases, as does expected inflation, so the Phillips curve shifts. The central bank increases r , output contracts, unemployment rises, inflation falls, inflation expectations fall and the Phillips curve shifts back to its original position.

Inflation is not the only target

By their statutes, central banks are obliged to fight inflation. Many of them are also committed to pursuing different targets, such as good economic growth. In our framework, they should keep y as close as possible to the equilibrium y_e .

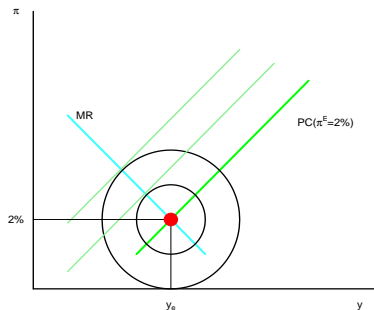
Formally, this can be conceptualized by a loss function

$$L = (y_t - y_e)^2 + \beta(\pi_t - \pi^T)^2,$$

with e.g. $\pi^T = 2\%$ and $\beta > 0$ indicating the relative importance of inflation in the loss function:

- ▶ $\beta = 0$ is a central bank that does not target inflation at all;
- ▶ $\beta = 1$ is a central bank that pursues both aims with equal importance;
- ▶ $\beta \rightarrow \infty$ is a central bank that pursues inflation targeting only.

Genesis of the MR curve



Central bank targets equilibrium output or unemployment level and a specific inflation rate. Circles (for $\beta = 1$; generally: ellipses) depict locations of equal loss relative to target. MR curve evolves by connecting tangency points of Phillips curves.

Deriving the MR curve analytically

Consider the loss function

$$L = (y_t - y_e)^2 + \beta(\pi_t - \pi^T)^2$$

and the Phillips curve

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e),$$

with the 'adaptive' rule $\pi_t^E = \pi_{t-1}$. After applying optimization (minimizing loss L), this yields the MR curve

$$y_t - y_e = -\alpha\beta(\pi_t - \pi^T)$$

Summary of the three equations

The IS curve

$$y = A - ar$$

represents the demand side. A depends on government expenditure G and thus reflects fiscal policy.

The Phillips curve (PC)

$$\pi_t = \pi_{t-1} + \alpha(y_t - y_e)$$

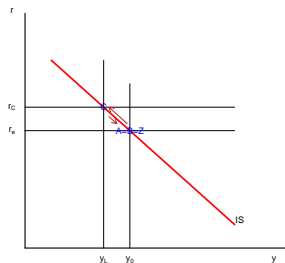
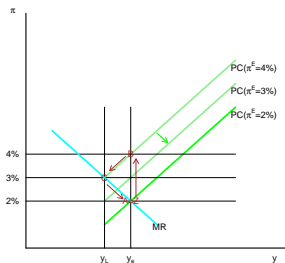
represents the supply side. It depends on the WS and PS curves.

The monetary policy rule (MR)

$$y_t - y_e = -\alpha\beta(\pi_t - \pi^T)$$

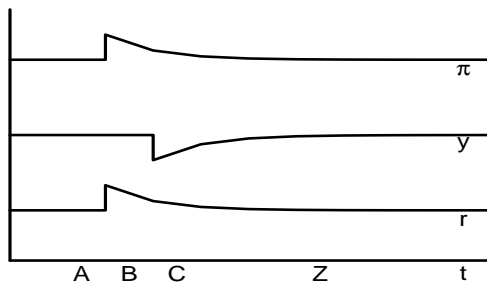
represents monetary policy. The central bank sets y_t depending on actual inflation π_t in order to target inflation π^T .

Monetary contraction following an inflation shock



The inflation shock shifts the Phillips curve up, the central bank steps on the brake and raises r , decreases y . The Phillips curve will shift down, and output iteratively increases back to y_e .

Impulse response of the inflation shock experiment



The increased real interest rate causes a temporary drop in output and succeeds in taking inflation to its original level.

Impulse response functions

Impulse response functions show time lines for reactions of variables to shocks, i.e. unexpected events.

They can be obtained statistically from dynamic econometric models, such as *vector autoregressions*, or analytically from dynamic economic-theory models.

The present three-equation model is not a full-fledged dynamic economic-theory model, as movements in expectations and curves have not been specified completely.

For a demand shock with subsequent monetary contraction, the impulse response is similar, except that output increases beyond y_e before it drops below y_e shortly afterwards.