Monetary Theory of Inflation

The *monetary theory of inflation* asserts that money supply growth is the cause of inflation. Faster money supply growth causes faster inflation. In particular, 1% faster money supply growth causes 1% more inflation.

With other things constant, the price level is proportional to the money supply. Doubling the money supply would double prices.

Exogenous Money Supply

The money supply is exogenous, set by the central bank. The central bank has the power to make the money supply larger or smaller and to make the money supply growth rate larger or smaller.

Real Fundamentals

Real fundamentals determine real economic variables:

- Consumer preferences;
- Technology;
- Resource endowments.

Real quantities and relative prices are determined by these real fundamentals. In particular, the real wage and the real interest rate are determined by them.

Neutrality of Money

Money affects the price level, but not real economic variables.

Neutrality of money is the idea that money has no effect on real economic variables.

Monetary policy and the real fundamentals are *independent* factors influencing the economy.

Long-Run Explanation

The monetary theory of inflation is a theory of the long-run.

Faster or slower money growth in a particular year may not cause faster or slower inflation.

The real fundamentals determine the real economic variables in the long run.

Notation

Let capital letters denote nominal magnitudes, and let lower-case letters denote real magnitudes.

Income Velocity of Money

The income velocity of money v is the nominal national income and product Y divided by the money supply M:

$$v := \frac{Y}{M}.$$

Since velocity is the ratio of two nominal variables, it is a real variable.

Real national income and product y is the nominal national income and product Y divided by the price level P:

$$y := \frac{Y}{P}.$$

Real money balances m is the nominal money supply M divided by the price level P:

$$m := \frac{M}{P}.$$

Consequently

$$v = \frac{y}{m}.$$

Equivalently,

$$v = \frac{Py}{M}.$$

Each of these relationships is an accounting identity and holds by definition.

Price Level

Rearranging yields the price level equation

$$P = \frac{Mv}{y}. \tag{1}$$

The monetary theory of inflation furnishes a theory of each of the three variables on the right hand side, and one thereby obtains a theory of the price level.

Growth Rate Form

In growth rate form, the price level equation (1) becomes the inflation equation

$$\text{Growth rate } P = \text{Growth rate } M - \text{Growth rate } y + \text{Growth rate } v. \tag{2}$$

Inflation is the growth rate of the price level. The monetary theory of inflation furnishes a theory of each of the three growth rates on the right hand side, and one thereby obtains a theory of inflation.

Velocity

Velocity is a real economic variable. By the neutrality of money, it is determined by real fundamentals.

The structure of the banking and payments system determines the velocity. Given the real national income and product, carrying out the required monetary transactions calls for a certain amount of real money balances. This amount determines velocity.

Real National Income and Product

The real national income and product is a real economic variable. By the neutrality of money, it is determined by real fundamentals.

Its growth rate is determined by

- Population growth;
- Investment and saving;
- Technical change.

Money Supply

The central bank uses monetary policy to set the money supply and its growth rate.

Price Level

In the price level equation (1), the money supply has no effect on the real economic variables y and v. Hence a 1% increase in the money supply raises the price level by 1%.

Inflation

In the inflation equation (2), the money supply growth has no effect on the growth rates of the real economic variables y and v. Hence a 1% increase in the money supply raises inflation by 1%.