

Money and Inflation

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What is Money?

- Three Functions of Money
 - Store of Value
 - Unit of Account
 - Medium of Exchange
- Types of Money
 - Fiat Money: money that has no *intrinsic* value.
 - Commodity Money: Some commodities with intrinsic value have been circulated as money.
 - If gold is used as money, the economy is said to be on a *gold standard*.

Money Supply

- The quantity of money available is called the *money supply*.
- The control over money supply is *monetary policy*.
- Monetary policy is delegated to the *central bank* (Bank of Japan, Federal Reserve).
- The central bank controls money supply through *open-market operations*.

The Quantity Theory of Money

The Quantity Equation :

Money \times Velocity = Price \times Output

$$M \times V = P \times Y$$

M/P is called real money balances.

$$\frac{M}{P} = kY \text{ or } M = kPY$$

where $k = 1/V$ is called the Marshal's k .

In the Quantity Theory of Money, V is assumed constant.

Then an increase in M causes a proportional change in nominal GDP (PY)

Seigniorage

- The revenue raised by the printing of money is called *seigniorage*.
- Printing money causes inflation. The government imposes *inflation tax*.
- Inflation is like a tax on holding money, because it reduces the real purchasing power of money.

Interest Rates

The Fisher Equation :

nominal interest rate = real interest rate + inflation rate

$$i = r + \pi$$

According to the Quantity Theory, the real interest rate is not affected by the money supply. Then a 1 percent increase in π causes a 1 percent increase in the nominal interest rate. (Fisher Effect)

Demand for Money

- You can buy government bonds, or deposit your money in a saving account.
- Therefore, the *opportunity cost* of holding money is the nominal interest rate.
- The demand for money is a demand for liquidity, which depends on the nominal interest rate (i) and the real income (Y).

$$\text{demand for money} = L(i, Y)$$

The Social Cost of Inflation

- The average people tend to say “inflation hurts my real buying power, it makes me poorer.”
- However, a change in the overall price level is like a change in the units of measurements, and does not cause a *significant* change in your purchasing power.

The Costs of Expected Inflation

- *Shoe-leather costs*: The higher the inflation rate is, the more often you have to go to the bank, which causes your shoes to wear out more quickly.
- *Menu costs*: The higher the inflation rate is, the more often shop owners have to change the price tags.
- *Greater variability in relative prices*: You have to spend more time in shopping.

The Costs of Unexpected Inflation

- Unexpected Inflation redistributes wealth among individuals.
- Most loan agreements specify a nominal interest, which is based on the expected inflation rate at the time of the agreement.
- With inflation higher than expected, debtors win, while creditors win with inflation lower than expected.

Indexation

- The unpredictability of inflation hurts almost everyone, because most people are *risk-averse*, even if they may be *ex-post* winners or losers.
- Both creditors and debtors can protect themselves from uncertainty by writing contracts in real terms.
- It is puzzling that nominal contracts are so prevalent.

Hyperinflation

- Lenin argued that the easiest and fastest way to destroy the Capitalist System is to *debauch the currency*.
- Hyperinflation utterly disordered all the permanent relations between debtors and creditors (J. M. Keynes)

Conclusion: The Classical Dichotomy

- *Real variables*: all variables measured in physical units such as quantities and relative prices.
- *Nominal variables*: all variables expressed in terms of money.
- *The Classical Dichotomy*: We can explain real variables without introducing any nominal variables.
- *Monetary Neutrality*: the irrelevance of money for real variables.