Monetary Policy

Basic Points About Money

Origin of money with Goldsmiths; Bank of England -1994

What is money?

Currency, Demand and time deposits, Financial assets and other liquid assets

Why do people want money?

Medium of Exchange

Unit of account

Standard for differed payment

Store of Value

Classical view

Keynesian and Monetarist View

Value of Money $\frac{1}{P}$

Objective Targets and Instruments of Monetary Policy

Ultimate objective: stability (P, r, E), high growth rate of output, low unemployment rate

Targets: inflation only; or money supply only; or exchange rate only; all of them; or two of them; or none of them.

Instruments: Open market operation on treasury bills - rediscounting

Fixing the interest rate, credit control

Money supply rule, reserve requirement

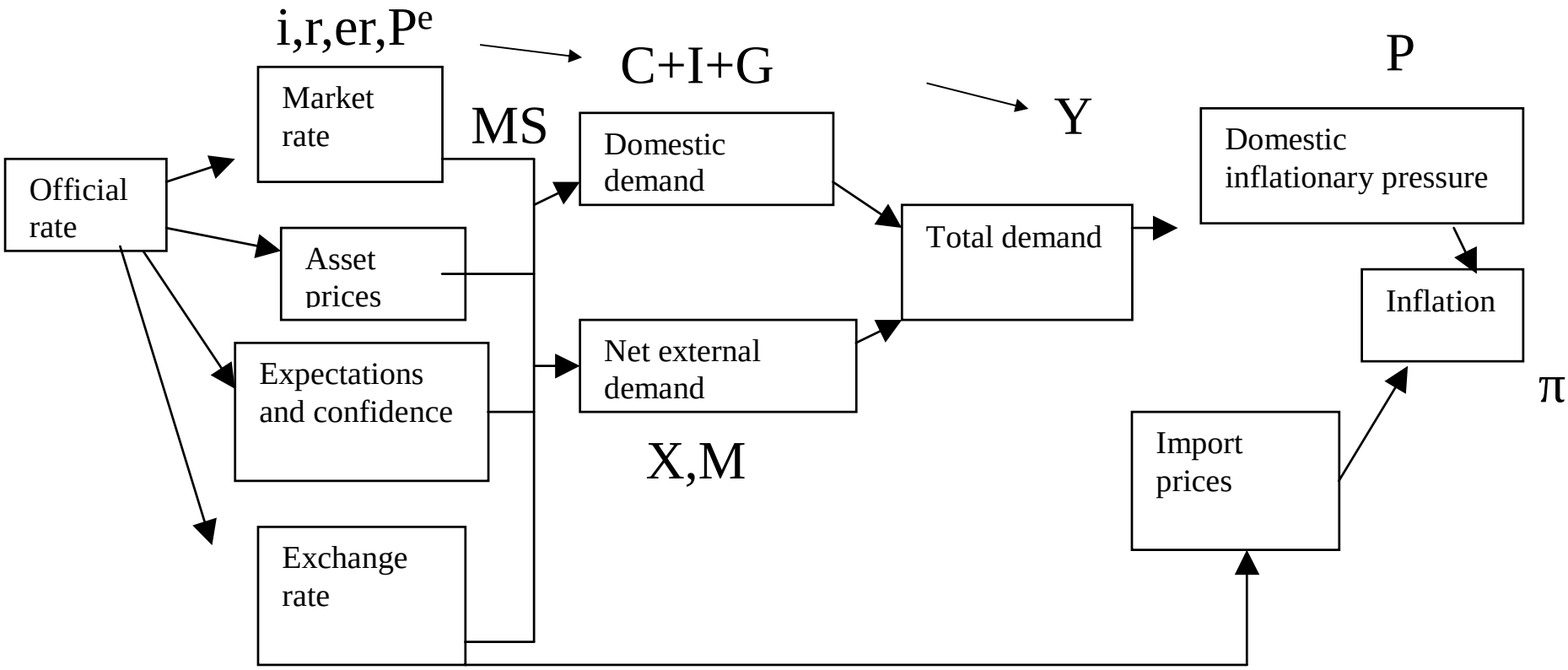
Deposit insurance

Effectiveness of monetary policy depends upon

Central bank independence and credibility ie, who appoints the governor?

Moral hazards - bank panics, systematic risk, regulation - bank supervision

Bank of England's View on Transmission Mechanisms of Monetary Policy: How Does Money Supply Affect the Price Level?



Two Conditions to have real effect of Monetary policy

Central bank controls monetary base M1 = R + Cu

Prices do not adjust instantaneously

$$M \Uparrow i, r \Downarrow C, I, X, G \Uparrow Y \Uparrow P \Uparrow \pi \Uparrow \frac{M}{P} \Downarrow i, r \Uparrow$$

Effects of Changes in the Rate of Interest

First round effects

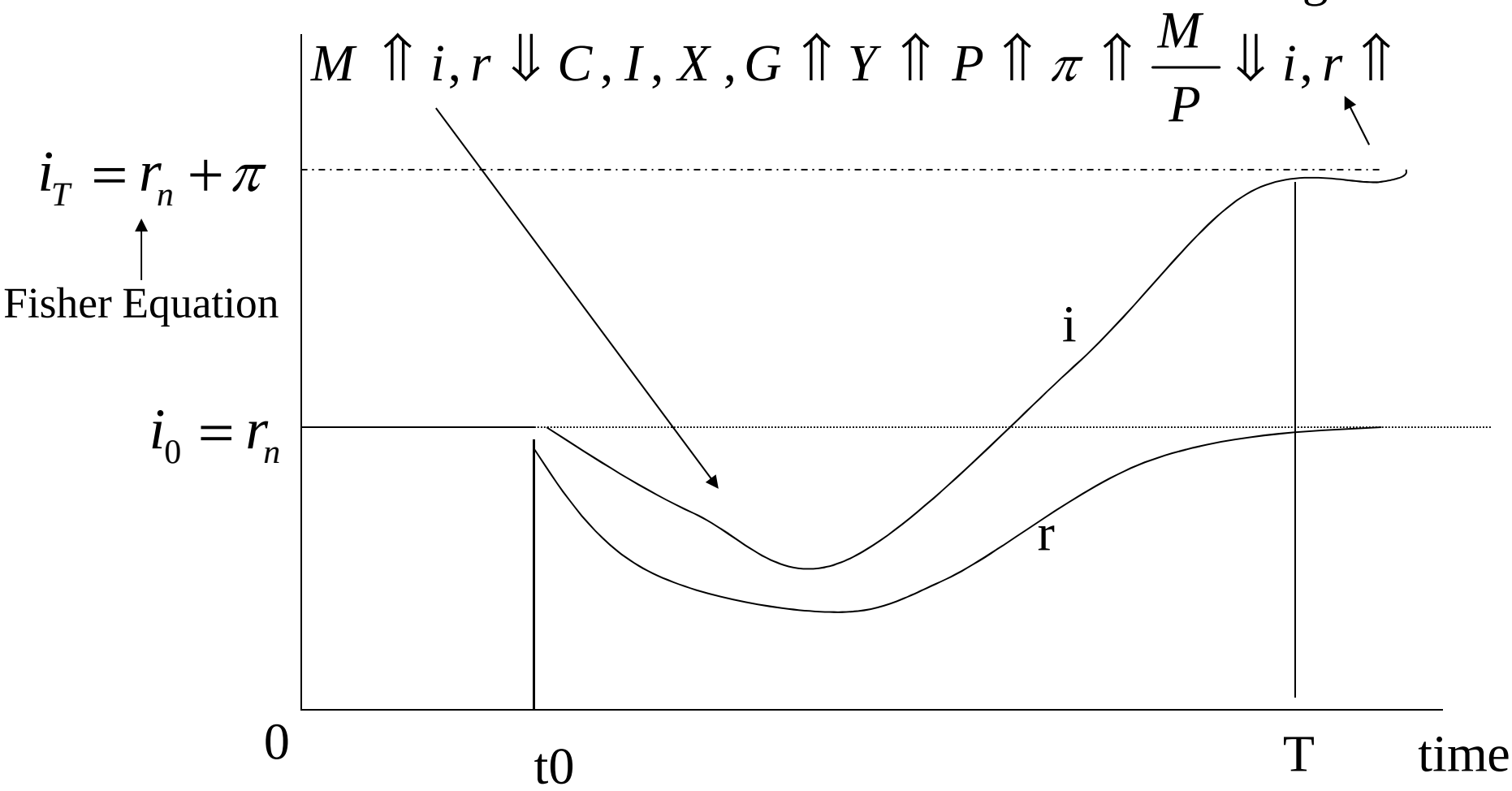
Households: saving, housing, wealth, foreign asset, portfolio allocations
Firms: cost of capital, debt-equity, portfolio allocations

$$P_2 = (1+i)P_1 \Rightarrow P_1 = \frac{P_2}{(1+i)}$$

Second round effects: consumption spending, additional demand for goods

Time lags: anticipated and unanticipated policy changes.

An Increase in Money Supply Can Lower Real and Nominal Interest Rates in the Short but not in the Long Run



Monetary policy can have some real effect in the short run but not in the long run.
Short runs become shorter with more accurate expectations

Transmission Mechanisms of Monetary Policy

- Interest rate Channel
  - Lower interest rate
  - More borrowing and Spending
  - More aggregate demand

  Open Market Operation

- Exchange Rate Channel
  - Lower interest rate
  - Depreciation of domestic currency
  - More exports and less imports
  - Higher aggregate demand

Buy back own currencies selling some foreign assets to avoid depreciation - sterilisation

selling its currency to avoid appreciation

- Credit Channel
  - Lower interest
  - More reserves
  - More lending
  - Higher aggregate demand

  Deficit financing

  Rediscounting of Treasury Bills

- Balance Sheet Channel
  - Lower interest rate
  - Increase in prices of stocks, bonds and other assets
  - More wealth
  - More aggregate demand

Moral hazards - bank panics, systematic risk, regulation - bank supervision

Open Market Operation: Interest Rate Channel

Expansionary Monetary Policy

- Short run:
  - Central bank reduces the repo rate
    - Commercial banks and financial institutions find it profitable to sell bonds to the central bank
  - Central bank raises their reserves
  - Commercial banks have more money to lend
  - Firms and households find it cheaper to borrow
  - They borrow and create more deposits
  - Demand for goods and services rises
  - Money supply expands
- Long run:
  - Prices will eventually rise following higher demand
  - Real money supply (M/P) shrinks
  - Interest rises back to natural position

Open Market Operation: Interest Rate Channel

- Contractionary Monetary Policy

Short run:

Central bank raises the repo rate

Commercial banks and financial institutions find it profitable to buy bonds from the central bank

Central bank sell bonds and reduces reserves of the financial institutions

Commercial banks have less money to lend

Firms and households find it expensive to borrow

They pay back loans and close deposits accounts

Demand for goods and services falls

Money supply contracts

Long run:

Prices will eventually fall

Real money supply increases

Interest rises back to natural position

Assets and Liabilities of the Financial System of An Economy

Central bank

Assets		Liabilities	
Loans to the government	Monetary Base	Currencies in circulation	M4
Loans to the commercial banks		Reserves of the commercial banks	RESERVE
Foreign asset (currency)		Deposit of the government	
Gold and other precious metals		Claim by foreigners and Net worth	

Commercial banks

Assets	Liabilities
Loans to the government	Deposits of private sector
Loans to the private sector	Deposit of the government sector
Reserves and deposit at the central bank	Obligation to foreigners
Claim on foreign assets	Network

Government Sector

Assets	Liabilities
Deposit with the commercial banks	Borrowing from the central bank
Deposit with the central banks	Borrowing from the private sector
Loans to foreigners	Foreign debt
Other assets	Network

Private sector

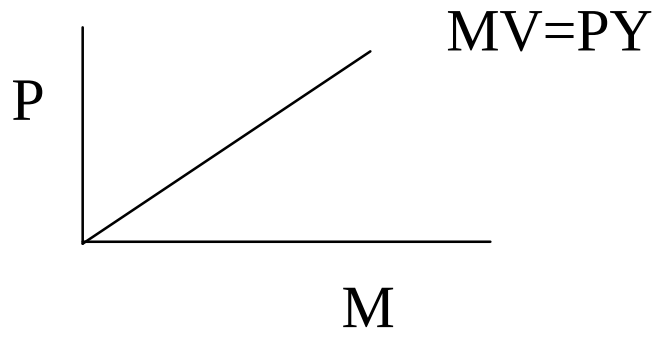
Assets	Liabilities
Deposit at commercial banks	Loans from the banking system
Tangible wealth	Payment due to the government
Currency and precious metal	Network

Quantity Theory of Demand for Money: Classical View

Cambridge equation of money demand: $\frac{M}{P} = kY$ =>

$$M\left(\frac{1}{k}\right) = PY$$

If Y and V are constants how does the relation between prices and money supply look like?



- Classical dichotomy: Price level is proportional to the supply of money; no link between monetary and real sectors.

No link between supply of money and the interest rate and the real side of the economy; missing link for Keynes.

Keynesian View on Monetary Policy : Main Points

Monetary affects real economy through the interest rate.

Interest rate is determined by the supply and demand in the money market.

Three kinds of demand

- Speculative Demand
- Transaction Demand
- Precautionary Demand

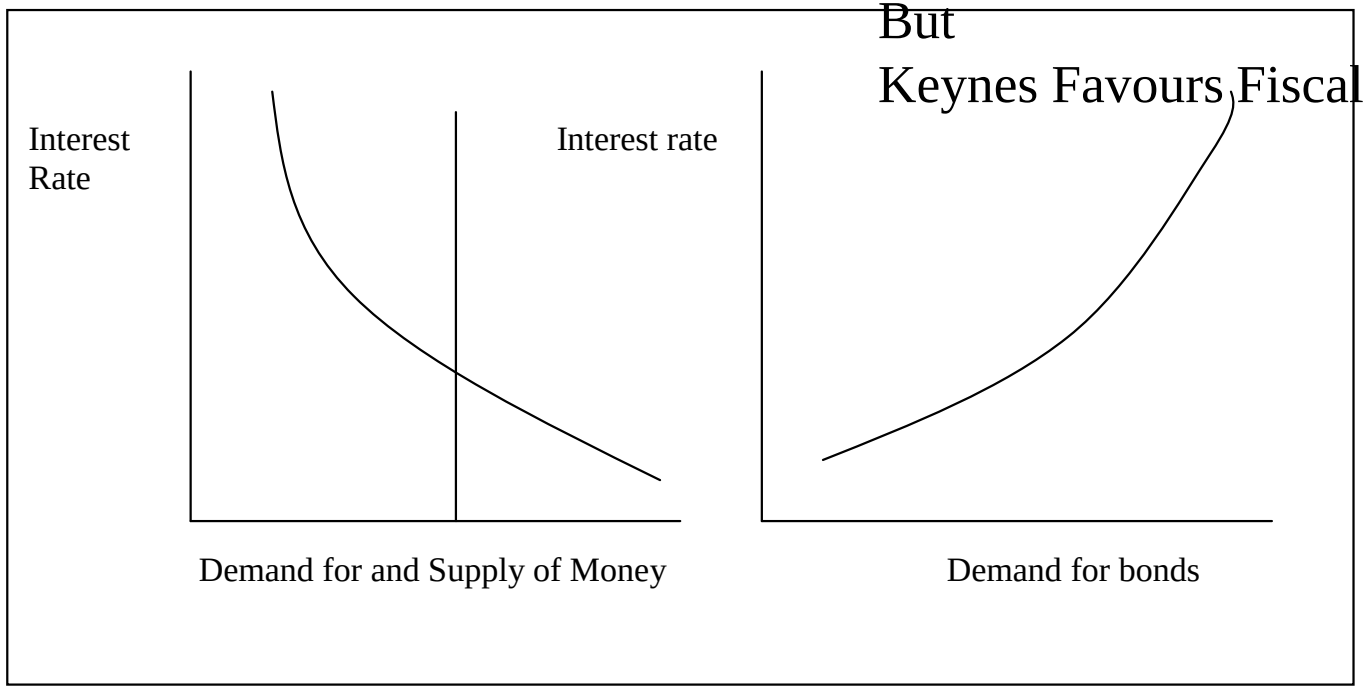
Demand for money is not stable because of chaning velocity of money. People do not spend and the velocity is low in depression and high in the boom.

Keynesian View on Monetary Policy : Main Points

$$\frac{M}{P} = kY - \eta \cdot r$$

Bonds = Financial Wealth – (M/P)

Increase in MS
Lower interest rate
Reduced cost of Investment
More investment
More Aggregate Demand
But
Keynes Favours Fiscal Policy



Money supply is controlled by the policy maker

Basic Structure of the Keynesian Static Model for Monetary Policy

Consumption: $C = a + bY^{d}$ (1)

Disposable income: $Y^{d} = Y - T$ (2)

Investment: $I(r) = I_0 - q \cdot r$ (3)

Demand for real balances: $\frac{M}{P} = kY - \eta \cdot r$ (4)

National income identity: $Y = C + I + G$ (5)

Money Market Equilibrium: $r = \frac{1}{\eta}\left(kY - \frac{M}{P} \right)$ (6)

Aggregate Demand Consistent with Goods and Money Market Equilibrium:

$$Y = \frac{a - bT + I_0 - q\left[\frac{1}{\eta}\left(kY - \frac{M}{P}\right)\right] + G}{1-b}; \quad Y = \frac{a - bT + I_0 + \frac{q}{\eta}\frac{M}{P} + G}{1 - b + \frac{q}{\eta}k} \quad (7)$$

Equilibrium Interest Rate:

$$r = \frac{k}{\eta}\left[\frac{a - bT + I_0 + \frac{q}{\eta}\frac{M}{P} + G}{1 - b + \frac{q}{\eta}k} - \frac{M}{P}\right] \quad (8)$$

Multiplier Effect of Increase in Money Supply on Output and Interest Rate

$$Y = h(a, b, q, \eta, k, M, G, T, P) \qquad (9)$$

Impact on Output from Increase in Money Supply :

$$\frac{\partial Y}{\partial M} = \frac{q/\eta}{1 - b + \frac{q}{\eta}k} > 0 \qquad (10)$$

Impact on Output from Increase in Public Spending:

$$\frac{\partial Y}{\partial G} = \frac{1}{1 - b + \frac{q}{\eta}k} > 0 \qquad (11)$$

Impact on Interest rate from Increase in Money Supply :

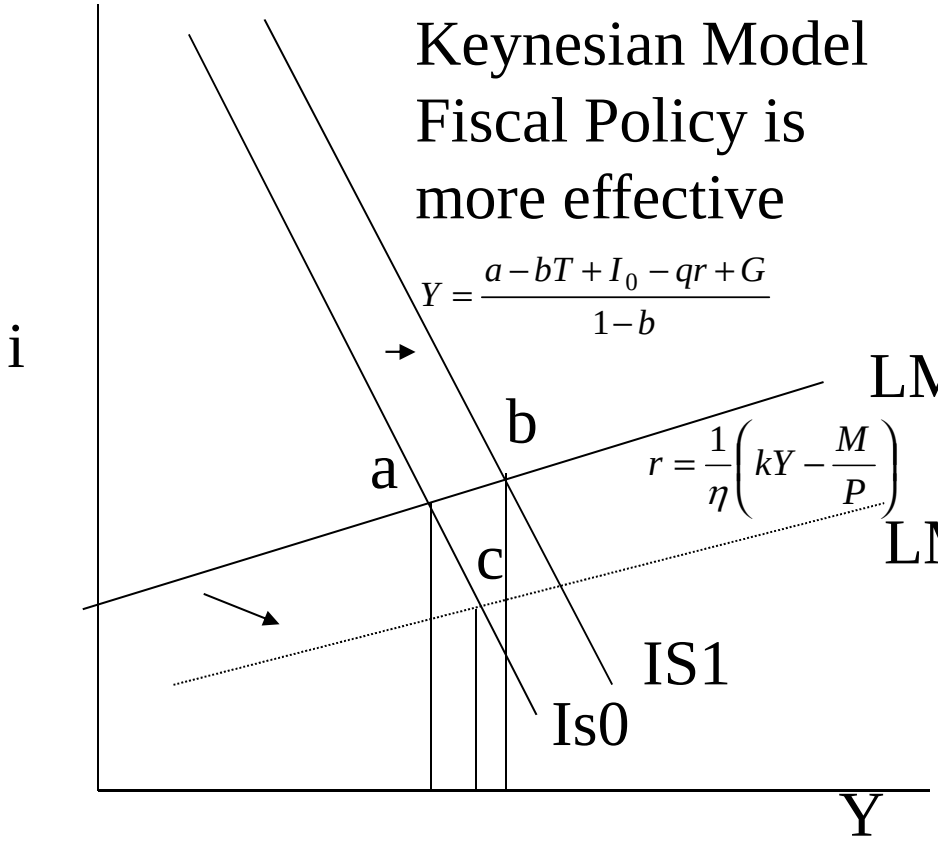
$$\frac{\partial r}{\partial\left(\frac{M}{P}\right)} = \frac{k}{\eta}\left[\frac{\frac{q}{\eta}}{1 - b + \frac{q}{\eta}k} - 1\right] < 0 \qquad (12)$$

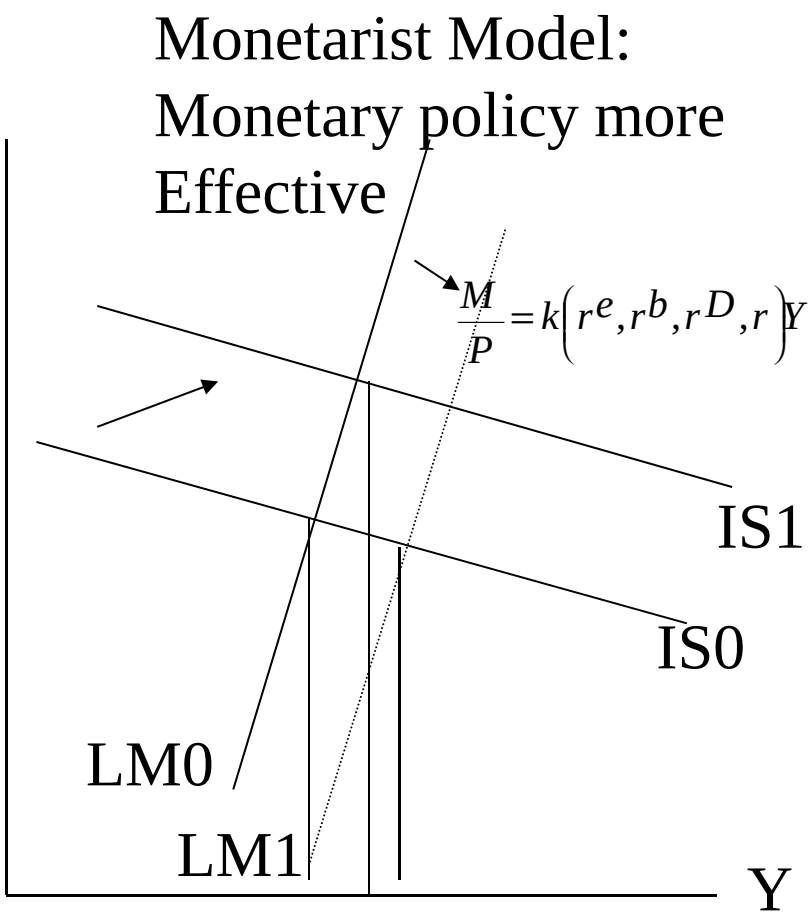
Impact on Interest rate from Increase in Public Spending:

$$\frac{\partial r}{\partial G} = \frac{k}{\eta}\left[\frac{1}{1 - b + \frac{q}{\eta}k}\right] > 0 \qquad (13)$$

Shortcoming of the Keynesian Model: Missing Supply Side

Controversy Over Macroeconomic Impacts of Fiscal and Monetary Policies





Small Change in public Spending has a larger output effect than a Larger change in money supply

Small Change in money supply has a larger output effect than a bigger change in public spending

Money Supply

Various types of money: M0, M1, M2, M3, M4 ;

Money multiplier: $m = \frac{1}{r}$ where $r = \frac{R}{D}$

If we considering a leakage in the currency holding:

$m = \frac{1+c}{r+c}$ where $r = \frac{R}{D}$ $c = \frac{C}{D}$

What is the value of the money multiplier if r = 10% and c = 20 %?

m = 4.

⇨ $M_0 = R + C$ (a)

⇨ $M_4 = C + D$ (b)

⇨ then dividing (b) by (a) $\frac{M_4}{M_0} = \frac{D+C}{C+R} = \frac{1+c}{c+r}$.

If people held more currency then multiplier becomes smaller.

Money Demand

Quantity theory of Money (QTM): MV = PT

Cambridge equation of money demand:

$$\frac{M}{P}=kY \Rightarrow M\left(\frac{1}{k}\right)=PY$$

Keynesian money demand

$$\frac{M}{P}=kY-\eta\cdot r$$

Friedman type money demand

$$M=kPY \Rightarrow M=k\left(r^{e},r^{b},r^{D},r\right)PY$$

Friedman (1968) on Monetary Policy

Given the natural rates of interest and unemployment, monetary policy cannot be pegged to lower the interest rate or the unemployment. Is so it only raises inflationary expectation and increase in price level. There will be no impact on real magnitudes.

Monetary authority can control nominal quantities such as it liabilities, M0, M3 or M4. By controlling them it can stabilise the price level.

Price mechanism in the market system works better when prices are stable and relative prices can adjust according to the dynamics of the economic system.

Contribution of Monetarism in Macroeconomic Policy

- Supply of money is the determinant of the national income
- In the long run, the influence of money is primarily on the price level and other nominal magnitudes. Real output and employment are not determined by monetary factors.
- In the short run the supply of money does affect the output. Money is the dominant factor in causing cyclical fluctuations in output and employment in the short run.
- Private sector is inherently stable and instability is primarily the result of the government policy.