

R12 Monetary and Fiscal Policy

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Version 1.0

1. Introduction to Monetary and Fiscal Policy

As compared to households and corporations, the economic decisions made by governments can have an enormous impact on economies because governments are usually the largest employers, largest spenders and largest borrowers in an economy.

There are two types of government policy:

Monetary policy: Refers to central bank activities directed towards influencing the level of interest rates and money supply in the economy.

Fiscal policy: Refers to government decisions about taxation and spending.

The overall goal of these policies is to create an economic environment of stable growth and low inflation.

1.1 Monetary Policy

As stated above, monetary policy refers to central bank activities directed towards influencing the level of interest rates and money supply in the economy.

To understand how monetary policy is implemented, we must first understand the functions and role of money.

2. Money: Functions, Creation, and Definition

Money is generally defined as a medium of exchange. Instead of using the barter system to exchange goods and services, money facilitates an indirect exchange and helps overcome the drawbacks of a barter system.

2.1 The Functions of Money

For money to be a medium of exchange, it must:

- Be readily acceptable.
- Have a known value.
- Be easily divisible.
- Have a high value relative to its weight (easy to carry).
- Be difficult to counterfeit.

Money fulfills three important functions. It:

- acts as a medium of exchange.
- provides individuals with a way of storing wealth.
- provides society with a convenient measure of value and unit of account. (For example, if a car is sold for \$20,000, you know what it is worth.)

2.2 Paper Money and the Money Creation Process

Fractional reserve banking: Our modern banking system is known as fractional reserve banking because at any point in time, banks hold with them only a fraction of total deposits

as reserves; this is based on the premise that not all customers want all of their money back at the same time.

Let us take the exhibit below (reproduced from the curriculum) to illustrate how fractional reserve banking results in money creation:

Money creation via Fractional Reserve Banking

First Bank of Nations	
Assets	Liabilities
Reserves €10	Deposits €100
Loans €90	

Second Bank of Nations	
Assets	Liabilities
Reserves €9	Deposits €90
Loans €81	

Third Bank of Nations	
Assets	Liabilities
Reserves €8.1	Deposits €81
Loans €72.9	

Now let us go over the example. Assume the reserve requirement is 10%, that is, banks are required to retain only 10% of the total deposits as balances with them. The rest can be lent out.

First Bank of Nations: If a customer makes a deposit of €100, then the bank must retain €10 and the remaining €90 can be loaned out to another customer.

Second Bank of Nations: Now suppose, the person who receives this €90 loan from First Bank uses this money to purchase some goods of this value and the seller of the goods deposits €90 in another bank, the Second Bank of Nations. Again, the Second Bank must retain 10% of €90, which is €9, and may loan out the remaining €81 to another customer.

Third Bank of Nations: This customer in turn spends €81 on some goods and services. The recipient of this money deposits it at the Third Bank of Nations. Once again, the Third Bank must retain 10% of €81, which is €8.1, as part of its reserves and may loan out the remaining €72.9 to another customer.

This process continues until there is no more money to be deposited and loaned out. How much total money is created from an initial deposit of €100 in this process? If you ask the first customer how much money he has, he will say €100, while the second customer will say €90, the third €72.9 and so on. It is the sum of all the deposits in the banking system. It can be calculated using this formula:

$$\text{Amount of money created} = \frac{\text{New deposit}}{\text{Reserve requirement}}$$

$$\text{Money multiplier} = \frac{1}{\text{Reserve requirement}}$$

The money created in our example is $\frac{100}{0.1}$ which is 1,000. Money multiplier is 10.

The smaller the reserve requirement, the greater the money multiplier effect.

Example

Given a reserve requirement of 8 per cent, how much money can be created by depositing an additional \$500?

- A. \$800
- B. \$5,000
- C. \$6,250

Solution: C

The expression used to calculate the amount of money created is $\frac{\text{New deposit}}{\text{Reserve requirement}}$.

$$\text{Therefore, } \frac{500}{0.08} = \$6,250$$

2.3 Definitions of Money

Most economies distinguish money into two categories 'Narrow money' and 'Broad money'.

Narrow money: Notes and coins in circulation plus other very highly liquid deposits.

Broad money: Narrow money plus the entire range of liquid assets used to make purchases.

Because financial systems, practice, and institutions vary from economy to economy, so do the definitions of money. The exhibit below, taken from the curriculum, defines broad and narrow money for the United States. M1 is narrow money and M2 is broad money.

Excerpt from Exhibit 3:

The U.S. Federal Reserve produces two measures of money. The first, M1, comprises of notes and coins in circulation, traveler's checks of non-bank issuers, demand deposits at commercial banks, plus other deposits on which checks can be written. M2 is the broadest measure of money currently produced by the Federal Reserve and includes M1, plus savings and money market deposits, time deposit accounts of less than \$100,000, plus other balances in retail money market and mutual funds.

M2 is a broader measure that includes instruments that are less liquid than those in M1. Also note, credit card balances are not considered part of money.

3. Money: Quantity Theory, Supply and Demand, Fisher Effect

The Quantity Theory of Money

We looked at this concept in a previous reading. Quantity theory of money states that total spending (in money terms) is proportional to the quantity of money.

$$M * V = P * Y$$

where:

M = quantity of money

V = velocity of circulation of money

P = average price level

Y = real output

If velocity is assumed to be constant as per quantity theory, then spending ($P * Y$) is proportional to the quantity of money (M).

Money neutrality

If money neutrality holds, then increasing money supply (M), and keeping the velocity (V) constant, will increase the price level (P) but real output (Y) will stay the same. In short, output cannot be increased by increasing the money supply. Money neutrality implies that an increase in money supply will ultimately lead to an increase in price level; real variables such as output and employment will not change in the long run.

3.1 The Demand for Money

The amount of wealth that the citizens of an economy choose to hold in the form of money rather than in bonds or equities is known as the demand for money.

Motives for holding money:

Transaction-related

- Money balances held to finance transactions are called transactions money balances. As real GDP increases, the size and number of transactions will increase, and the transaction-related demand for money increases.

Precautionary

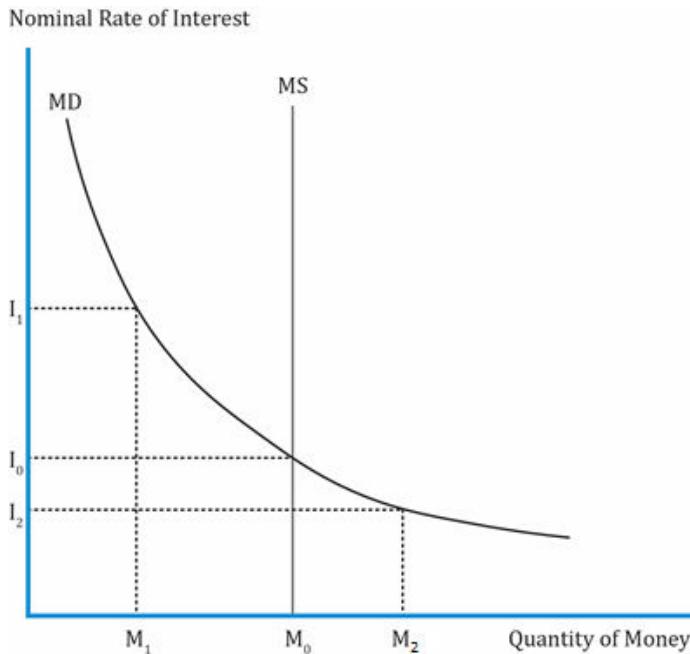
- More like an emergency fund.
- Precautionary money balances are held as a buffer for unforeseen events.
- These balances are also proportional to growth in GDP.

Speculative

- As the name indicates, it is the demand to hold money in anticipation that assets will decline in value in future as the current risk in those assets is high. It is directly proportional to perceived risk; if perceived risk is high, people choose to hold money rather than invest it.
- It is inversely proportional to return on assets; as return increases, people choose to invest money rather than hold it for speculative purposes.

3.2 The Supply and Demand for Money

As with other markets, the price of money is determined by the interaction of demand and supply.



Interpretation of graph:

- Plots interest rates on the y-axis and quantity of money on the x-axis.
- The demand curve (MD) is downward sloping because as interest rates go up, the speculative demand for money goes down. Interest rate here means the returns on stocks and bonds.
- The supply curve MS is vertical because there is a fixed nominal amount of money circulating at any time.
- The equilibrium interest rate is at the intersection of the MS and MD curves, represented here by I_0 .
- Let's consider two cases to understand why no excess money balance exists at the equilibrium rate I_0 .
 - Consider an interest rate I_1 higher than I_0 . At this rate, demand for money would be M_1 , which is less than M_0 . The excess supply of money is M_1-M_0 . The demand for bonds will be higher with this excess money; hence, the price of bonds would go up, and the interest would come down back to I_0 .
 - Now, consider an interest rate I_2 lower than I_0 . At this rate, demand for money would be M_2 , which is higher than M_0 . The shortage of money is M_2-M_0 . Firms and individuals would sell bonds to get money and remove this shortage. Hence, the price of bonds would go down, and the interest rate would go up back to I_0 .
- What is the short-run impact of an increase in money supply? If the central bank

increases the money supply from M_0 to M_2 , the vertical MS curve moves to the right. Since money is available in plenty, interest rate (its price) falls and price level increases.

- Excess money may mean more demand for goods and services, money loaned to others, or increase in bank deposits. Aggregate demand goes up in the short run and so may the output.
- However, excess demand for goods and services will not necessarily mean an increase in production in the long run because of limited availability of natural resources. The output will be back to equilibrium. So, the increase in the money supply does not increase output or unemployment in the long run. This is the concept of money neutrality.

3.3 The Fischer Effect

According to Fischer effect, the nominal interest rate is simply the sum of real interest rate and expected inflation.

$$\text{Fischer Effect: } R_{\text{nom}} = R_{\text{real}} + \pi^e$$

where:

R_{nom} = nominal interest rate

R_{real} = real interest rate

π^e = expected rate of inflation over any given time horizon

Fischer effect states that the real rate of interest in an economy is relatively stable and changes in nominal interest rates are due to changes in expected inflation. This is directly related to the concept of money neutrality.

But investors can never be sure of how much inflation or real growth would be in the future. They, therefore, require an additional return for bearing this risk, which is called the risk premium.

When we consider uncertainty, nominal interest rates have three components:

- Required real return
- Expected inflation
- Risk premium

For example, Let us assume an investor invests in a corporate bond that offers a yield of 15% over the next year. It can be broken down into three components: real return of 4%, expected inflation of 8% and risk premium of 3%. (You will learn in the 'fixed income' section that we can further divide this risk premium into credit risk premium, liquidity risk premium, and so on.)

4. Roles of Central Banks & Objectives of Monetary Policy

- Monopoly supplier of the currency: Central banks are the only authority with the capacity to print money.

- Banker to the government and the banker's bank: Central banks provide banking services to the government and other banks in the economy.
- Lender of last resort: Because central banks have the capacity to print money, they are able to supply funds to banks that are facing a shortage and helps prevent a run on the bank.
- Regulator and supervisor of the payments system: Oversees, regulates and sets standards for a country's payments system for millions of transactions that happen on a daily basis. It also coordinates with other central banks around the world to formulate processes.
- Conductor of monetary policy: Most important role of the central bank. It takes actions to control or influence the quantity of money and credit in an economy.
- Supervisor of the banking system: This varies from one country to another. But, in many countries, the central bank along with one/more regulatory authorities oversees the banking system including granting licenses for a new bank, etc.
- Manage foreign currency reserves and gold reserves: The central bank may decide to sell foreign currency from its reserves if its domestic currency is under sustained pressure and continues to depreciate quickly. For example, The Reserve Bank of India (RBI) repeatedly sold dollars in 2012 to boost the Indian rupee.

4.1 The Objectives of the Monetary Policy

Central banks normally have a variety of objectives (i.e. to maintain full employment and output, to maintain confidence in the financial system, or to promote understanding of the financial sector), but the overriding one is nearly always price stability or keeping inflation in check.

5. The Costs of Inflation

Expected inflation can give rise to:

- Menu costs: Due to high inflation, businesses constantly have to change the advertised prices of their goods and services. This is known as menu cost.
- Shoe leather costs: In times of high inflation, people would naturally tend to hold less cash and would therefore wear out their shoe leather in making frequent trips to the banks to withdraw cash. This is known as shoe leather cost. (However, in a modern economy, with internet banking and online transactions, the shoe leather costs are much lower as compared to the past)

If consumers/firms are aware of expected inflation, then they can negotiate wage increases or factor-in price rise in the goods and services ahead of time. But, in reality, all prices are not indexed to inflation and there is a surprise element in the form of unexpected inflation, the costs of which can be substantial.

Unanticipated (unexpected) inflation can, in addition:

- Lead to inequitable transfers of wealth between borrowers and lenders: If inflation is

higher than expected, then borrowers benefit at the expense of lenders because the real value of borrowing declines. Similarly, if inflation is lower than expected, then lenders benefit at the expense of borrowers because the real value of the payment on debt increases. For example, if a government borrowed \$100 million at a fixed rate and the expected inflation at the time of borrowing was 8%. But, during the life of this bond, assume the inflation increases to 15%. In nominal terms, the government will still repay \$100 million, but because of the higher than expected inflation, investors will lose as it is worth less at the time of repayment. The government benefited from the increase in inflation.

- Give rise to risk premia in borrowing rates and the prices of other assets: Lenders will demand higher rates if there is high uncertainty in inflation; the borrowing costs for firms goes up which negatively impacts the economy.
- Reduce the information content of market prices: Information about supply and demand from changes in prices becomes less reliable.

6. Monetary policy tools

The three tools available to central banks to control the money supply are: open market operations, refinancing rates and reserve requirements.

6.1 Open market operations

- Increase or decrease the amount of money in circulation.
- Increase money supply by buying government bonds from commercial banks → this increases the reserves of private banks → lends this money to firms and households, which then multiplies.
- Decrease money supply by selling government bonds to commercial banks → this decreases private banks' reserves to lend money to firms and households.

6.2 The Central Bank's Policy Rate

- Official interest rate: Known by different names in different countries. Called the official interest rate, or official policy rate, or policy rate, or discount rate. The objective is to influence short- and long-term interest rates.
- Repo rates: The rate at which the central bank is willing to lend money to commercial banks. The way it achieves this policy-rate setting is through a *repurchase agreement* wherein the central bank sells a security to commercial banks with a commitment to repurchase after a certain number of days. The maturity varies from overnight to two weeks; these are short-term collateralized loans. The rate implicit in this agreement is called repo rates.
- Base rates: The name varies from economy to economy. This is the rate at which commercial banks are willing to lend to each other.
- Federal funds rate: This is specific to the U.S. It is the interbank lending rate on overnight borrowings of reserves.

- In general, if the policy rate is high, the amount of lending will decrease and the quantity of money will decrease. On the other hand, if the policy rate is low, then the amount of lending will increase and the quantity of money will increase.

6.3 Reserve Requirements

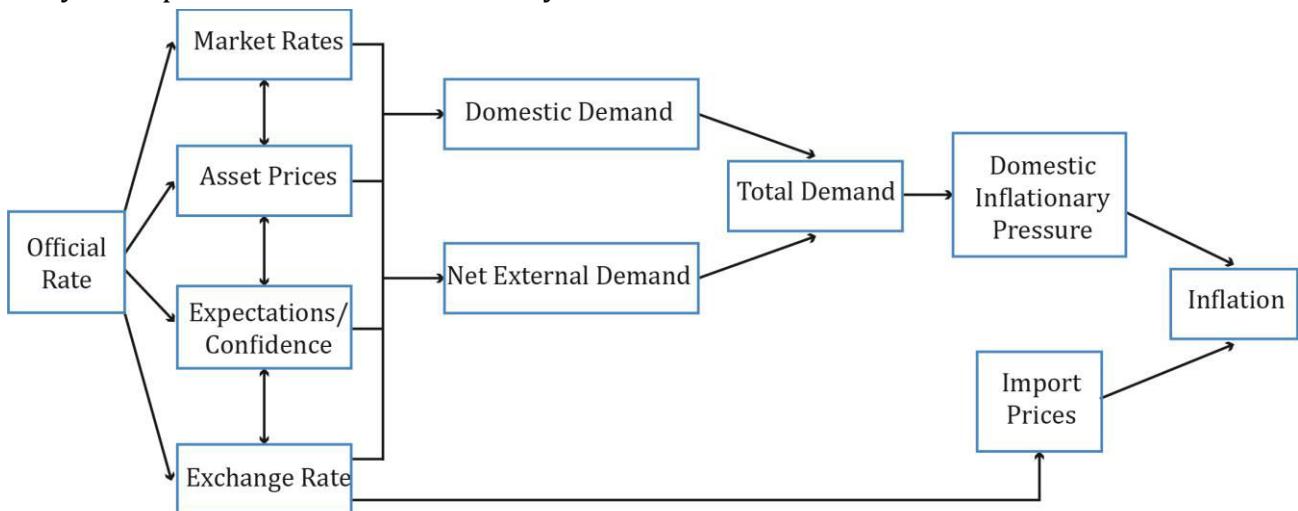
We looked at the reserve ratio briefly at the beginning of this reading in the ‘fractional reserve system’ topic. The central bank may change the money supply in the economy by changing the reserve requirement. If the reserve requirement is low, then the money multiplier (reciprocal of reserve requirement) goes up and the money supply increases. Similarly, if the reserve requirement is high, then the money multiplier goes down and the money supply decreases.

6.4 The Transmission Mechanism

We looked at the tools used by central banks to influence rates, in the previous section. Now, we will see how policy decisions (especially the policy rate) transmits across the economy and affects the price level. One of the notable points from the previous section was that the policy rates set by central banks are short-term in nature, ranging from overnight to a few weeks. So, how does it affect the economy (growth, employment) in the long run? This is because central bankers believe money neutrality does not hold in the short run. The effects are not often immediate across the economy when official interest rates rise; there is a lag.

The exhibit below is reproduced from the curriculum:

A Styled Representation of the Monetary Transmission Mechanism



Interpretation of the exhibit:

For simplicity, let us break it down into three parts.

- Link between the changes in official rates on other related markets: To restrict money supply, the central bank may decide to increase official interest rates. This affects four

interrelated channels:

- *Market rates*: An increase in official interest rates is reflected in short-term bank lending rates. Once the policy rate goes up, banks increase the base rates, which in turn affect the rates at which banks lend to customers (mortgages, loan rates). The rates on savings deposits also change, but not by the same amount as banks maintain a difference between deposit and loan rates.
- *Asset prices*: Market value of securities such as bonds and equities decreases when the official interest rates rise. In the case of bonds, prices are inversely related to long-term interest rates. Securities prices also decrease because future cash flows are discounted by a larger factor.
- *Expectations/confidence*: Increase in rates could influence (dampen) expectations about the future prospects of the economy, such as employment opportunities, firms' profitability, unemployment levels, etc. A rate increase may also imply the economy is growing faster than expected. Or, it could mean it is time to slow the growth in the economy and tame inflation, which would in turn lower confidence.
- *Exchange rate*: The exact impact is uncertain. But, an unexpected increase in official rate will lead to an appreciation of the domestic currency. A stronger domestic currency makes exports unattractive to overseas buyers as it is more expensive in their currency terms. This would lower the exporters' profitability.

Impact on individuals/households: Discourages borrowing, reduces spending, postponing consumption.

- Discourages consumer spending. Individuals tend to postpone consumption and are more inclined to save, if rates increase.
- The tendency to borrow to consume will also be low because of higher rates and interest rate expectations. If further rate increases are anticipated, then consumers will not borrow.
- Disposable incomes of individuals decrease as prices increase.
- The fall in asset prices affects their financial wealth. Higher rates → mortgage rates higher → lower demand → fall in market prices of houses.
- The outflow for those with mortgages increases.
- Makes domestic goods expensive relative to foreign goods. There may be a tilt in spending with more being spent on imported goods.

Impact on firms: Depends on the cost of capital

- Higher borrowing costs.
- Reduced profitability.
- Deferred new projects, investment spending, and hiring plans.

2. Impact on aggregate demand:

- Changes in consumption and investment spending behavior of consumers and firms affect aggregate demand. Low confidence → low spending → low demand.

- Increase in rate reduces real domestic demand and net external demand (difference between export and import consumption).
- Total aggregate demand goes weak.

3. Impact on inflation:

- Determines the nominal value of goods and services in the long run.
- Weaker demand may put a downward pressure on inflation.

7. Inflation Targeting

Some economies implement monetary policy by targeting a certain level of inflation and then ensuring this level is met by monitoring a range of monetary and real economic indicators.

The success of inflation targeting depends on the following three factors that assess the effectiveness of a central bank:

Central Bank Independence (free from political interference)	The degree of independence varies across economies. Some are operationally and target-independent, i.e. they determine the level of inflation to target, how to meet that target, and by when it must be achieved. There are others where the bank is assigned a rate of inflation to target by the government. Here, the government determines the appropriate level of inflation. So, they are only operationally independent.
Credibility	Follows through on its stated policy intentions. Is the central bank independent and does the market/public have confidence in the policy measures?
Transparency	Clear policy on economic indicators: Is the central bank transparent about its decision-making process? Being transparent in its quarterly assessment is one of the ways to gain credibility. What are the indicators the bank monitors before making the interest rate/policy decision?

Other features of an inflation-targeting framework include:

- A decision-making framework that considers a wide range of economic and financial market indicators.
- A clear, symmetric, and forward-looking medium-term inflation target, sufficiently above 0 percent, to avoid the risk of deflation, but low enough to ensure a significant degree of price stability. Similarly, it should not be too high either, because a high rate would result in price instability and inflation volatility.
- Exhibit 9 in the curriculum lists inflation targets for several economies. They are usually between 2% and 3%. For instance, if a country sets the target to 0.5% and misses it, then it runs the risk of deflation (or negative inflation).
- The inflation target set by central banks can become self-fulfilling prophecies if

economic agents believe the target will be met. Wage negotiations will factor in this level of inflation.

The following are some of the obstacles in successful implementation of monetary policy in developing economies:

- Rapid financial innovation.
- Absence of liquid government-bond market.
- Lack of independence of central banks.
- Rapidly changing economy.
- Poor track record in controlling inflation in the past.

8. Exchange Rate Targeting

Instead of targeting inflation, some economies implement monetary policy by targeting the exchange rate. It is done by setting a fixed level or band of values for the exchange rate against a major currency.

How it works:

- Government/central bank announces the target.
- Central bank supports the target by buying and selling the national currency in foreign exchange markets.
- By tying the domestic economy's currency to another economy with a good track record of inflation, the domestic economy would effectively "import" the inflation experience of the low inflation economy.
- Interest rates and conditions in the domestic economy must adapt to accommodate this target and domestic interest rates and money supply can become more volatile.
 - Let us take a simple example: The central bank of Brazil announces that it wishes to maintain a specific exchange rate against the U.S. dollar. Brazil, being a developing economy, faces volatile inflation. If inflation is higher than the U.S.'s, then its currency, the real, falls against the USD. To arrest its fall, Brazil's central bank would sell dollar reserves and buy reals. It restricts the money supply and increases short-term interest rates. In contrast, if the inflation was low, and the real appreciates against the USD, then the central bank would have to buy USD and sell real. This explains how domestic interest rates and money supply can be volatile when targeting an exchange rate.

In a pegged exchange rate, a country fixes the value of its currency against either the value of another single currency, a basket of other currencies, or another measure of value, e.g. gold. In dollarization, a country uses US dollar as its functional currency.

What you cannot do because of exchange rate targeting:

- Monetary policy is not independent.
- Monetary policy cannot be used to target domestic inflation.

9. Monetary Policies: Contractionary, Expansionary, Limitations

Central banks control liquidity by adjusting policy rates.

Contractionary monetary policy:

- High economic growth leads to high inflation. To cool off the economy, a central bank may employ a contractionary monetary policy.
- The central bank does this by increasing the official policy rate. This restricts the growth rate of money supply and the real economy contracts.

Expansionary monetary policy:

- To boost a slowing economy, the central bank decreases the official policy rate. This increases liquidity and growth rate of money supply and the real economy expands.
- This is only in the short-run. Given the money neutrality theory, increasing or decreasing interest rates will not affect the real economy in the long-run.

High and low policy rate is with respect to the neutral rate of interest:

- It is the rate of interest that neither spurs nor slows the economy.
- Typically neutral rate = Trend growth rate in the long run + long run expected inflation
- If policy rate > neutral rate, then the monetary policy is contractionary.
- If policy rate < neutral rate, then the monetary policy is expansionary.

Neutral rate = trend growth rate + inflation target

In an economy, if the trend growth rate is 3% and inflation target is 2%, then the neutral rate will be 5%. If the policy rate is set above 5%, then we have a contractionary policy. If the policy rate is set below 5%, then we have an expansionary monetary policy.

9.1 What's the Source of the Shock to the Inflation Rate?

The central bank must consider the source of inflation before deciding on contractionary/expansionary policy action. Two sources of shock to the inflation rate are:

- **Demand shock:** Caused by an increase in consumer confidence, which leads to more consumption and investment spending. Raising interest rates to control inflation is apt here.
- **Supply shock:** Caused by an increase in a supply factor such as oil prices. Raising interest rates is not appropriate as consumption will tend to fall, and consequently there will be an increase in unemployment.

9.2 Limitations of Monetary Policy

The will of the monetary authority does not necessarily transmit seamlessly through the economy.

This is because central banks cannot control:

1. The amount of money households and corporations put in banks on deposits.

2. The willingness of banks to create money by expanding credit.

It is relatively easy for central banks to influence short-term rates but long-term rates depend on expectations of interest rates and are not easy to control.

What is quantitative easing?

Quantitative easing is an unconventional monetary policy used when the traditional policy becomes ineffective. It is used to increase money supply where the central banks print (these days electronically) money to buy any assets.

10. Roles and Objectives of Fiscal Policy

Fiscal policy refers to the taxing and spending policies of the government. A government can influence the following aspects of the economy:

- Overall level of aggregate demand in an economy and hence the level of economic activity. (This is often the primary objective of a fiscal policy; secondary objectives, which are tied to the political motive of the government, are as follows:)
- Distribution of income and wealth among different segments of the population.
- Allocation of resources between different sectors and economic agents.

10.1 Roles and Objectives of Fiscal Policy

Primary objective: To help manage the economy through its influence on aggregate national output (real GDP).

Fiscal Policy and Aggregate Demand

Just like monetary policy, fiscal policy can be contractionary or expansionary.

An expansionary fiscal policy can take several forms:

- Lower taxes
 - Cuts in personal income tax (This increases the disposable income).
 - Cuts in sales taxes (This lowers the prices).
 - Cuts in corporate taxes increase business profits (This means that corporates have more money to invest).
- Higher government spending on social goods and infrastructure.

Contractionary fiscal policy: It is the opposite of expansionary fiscal policy. Higher taxes or lower government spending are examples of contractionary fiscal policy.

What are the Keynesian and Monetarist views on the effectiveness of fiscal policy?

Keynesian view: Government intervention is necessary in the form of fiscal policy to get an economy out of recession. They believe that the aggregate demand, employment, and output increase with fiscal policy .

Monetarist view: Monetary policy is a more effective tool to tame inflation; monetarists advocate a steady, stable monetary policy. They believe that Fiscal policy only has a

temporary effect.

Government Receipts and Expenditures in Major Economies

- Exhibits 13 and 14 show government revenues and expenditures as a percentage of GDP for some of the major economies. As of 2008, for the U.S., government revenue as a percent of GDP was 32.3%, while the government expenditure as a percent of GDP was 38.8%.
- The possibility that fiscal policy can influence output can be used to stabilize an economy.
- The budget deficit is the difference between government revenue and expenditure for a fixed period of time. Government revenue = tax revenues, net of transfer payments; government spending = interest paid on government debt.
- An increase in budget surplus indicates a contractionary fiscal policy.
- An increase in budget deficit indicates an expansionary fiscal policy.
- Two fiscal policies to stabilize the economy include:
 - Automatic stabilizers: When the economy slows and unemployment rises, government spending on social insurance and unemployment benefits will rise. Whereas, if the economy is at full employment, taxes collected will be high and there will be a budget surplus. These happen automatically without the intervention of policymakers, and the focus is primarily on aggregate demand. They help reduce the impact of a recession.
 - Discretionary fiscal policies: Changes in government spending or tax rates. In contrast to automatic stabilizers, this depends on the policy makers. The policies differ primarily with respect to timing.
- A balanced budget is one where government spending is equal to government revenues.

11. Deficits and National Debt

Government deficit = Revenue – Expenses

Government deficit (national debt) is the accumulation of these deficits over time. Should we worry about national debt? There are two schools of thought.

We should not worry because:

- The scale of the problem may be overstated because the debt is owed internally to fellow citizens.
- A proportion of the money borrowed may have been used for capital investment projects or enhancing human capital. We are borrowing now to increase our productive capacity in the future.
- Large fiscal deficits require tax changes that may actually reduce distortions caused by existing tax structures.
- Deficits may have no net impact because the private sector may act to offset fiscal

deficit by increasing saving in anticipation of future increased taxes. This is known as Ricardian equivalence.

- The government funds its spending by either increasing taxes or borrowing. It is the future taxpayers who will service the government's debt. So, it is the taxpayers who bear the burden in both cases. What matters is only the timing: now or later. According to Ricardian equivalence, if the government defers taxation, consumers anticipate higher taxes and the private sector will save enough today to pay for increased taxes in the future. This higher saving results in decreased private demand and increased government demand. The net effect is offsetting, as government spending does not create demand stimulus.
- If there is unemployment in an economy, then the debt is not diverting activity away from productive uses.

We should worry because:

- High levels of debt to GDP may lead to higher tax rates in the search for higher tax revenues. This may lead to disincentives to economic activity.
- If markets lose confidence in a government, then the central bank may have to print money to finance a government deficit. This may lead to inflation.
- Government borrowing may divert private sector investment from taking place (this effect is called crowding out). If savings are limited and the demand for funds from the government is high, then it will lead to higher interest rates and lower private sector investment.

12. Fiscal Policy Tools

- Government spending can take different forms:
 - Transfer payments: Welfare payments provided to low income households so that they get a basic minimum level of income. Not included in GDP calculation. Ex: pensions, housing, and unemployment benefit, etc.
 - Current government spending: Regular spending on goods and services such as education, healthcare, defense, etc.
 - Capital expenditure: Spending on infrastructure such as building roads, schools, hospitals, etc.
- Government spending is justified both on economic and social grounds as they ensure employment, economic growth, and a minimum standard of living for lower income households.
- Government revenue can take different forms.
 - Direct taxes: Taxes imposed on income, property, wealth, corporate profits, capital gains, inheritance, etc. These include taxes levied on individuals and businesses.
 - Indirect taxes: Taxes imposed on goods and services such as excise duty, VAT. Indirect taxes affect alcohol or tobacco consumption more directly than direct

taxes.

- Following are the desirable attributes of tax policy:
 - Simplicity: There should be no ambiguity, loopholes, or scope of interpreting the tax liability differently. It should be simple for the taxpayer to adhere to the rules, and the authority to enforce.
 - Efficiency: The tax policy should interfere as little as possible in the choices individuals make in the market place.
 - Fairness: Are people in similar situations levied the same tax, or are rich people taxed more? For example, should a person earning \$1 million a year be in the same tax bracket as one earning \$50,000 a year? It is subjective.
 - Revenue sufficiency: Tax revenues collected should be sufficient to cover expenditure.

12.1 The Advantages and Disadvantages of Using the Different Tools of Fiscal Policy

Advantages and disadvantages of using different tools of fiscal policy	
Advantages	Disadvantages
Indirect taxes (such as VAT) can be adjusted almost immediately after they are announced and can influence spending behavior instantly. Generates revenue for the government at little or no cost to the government.	Direct taxes are more difficult to change without considerable notice, often many months, because payroll computer systems will have to be adjusted. For instance, the government cannot increase income tax every year.
Social policies such as discouraging alcohol or use of tobacco can be adjusted almost instantly by raising such taxes.	The same may be said for welfare and other social transfers.
	Capital spending plans (building highways or schools) take longer to formulate and implement; typically, over a period of years.

12.2 Modeling the Impact of Taxes and Government Spending: The Fiscal Multiplier

- The objective of fiscal policy is to influence output through changes in government spending and/or taxes.
- The fiscal multiplier tells us about changes in output when there are changes in spending and taxes.
- The derivation for the fiscal multiplier is given in the curriculum, but it is important to know the formula given below:

$$\text{Fiscal multiplier} = \frac{1}{1 - c(1 - t)}$$

where:

c = marginal propensity to consume

t = tax rate

The fiscal multiplier is inversely related to the tax rate and directly related to the marginal propensity to consume.

For example, what is the value of the fiscal multiplier if the tax rate is 20%, and the marginal propensity to spend is 90%?

What is the increase in total income if government spending increases by \$1 billion?

Solution:

$$\text{Fiscal multiplier} = \frac{1}{1 - 0.9(0.8)} = 3.57$$

A \$1 billion increase in government spending increases total income by \$3.57 billion.

12.3 The Balanced Budget Multiplier

A balanced budget is a fiscal policy tool where the increase in government spending on goods and services is equal to the increase in tax revenues. The net effect is that there is no change in the budget deficit or surplus.

Since it is a balanced budget, government expenditure and taxes go up by the same amount. If this is the case, then the aggregate output actually rises. How? Because the fiscal multiplier is a function of marginal propensity to consume, c . Since c is less than 1, output Y increases. We will see how this happens using an example.

Assume in equilibrium, output $Y = 1,000$; $C = 900$ and $I = 100$. Assume government spending increases by 200, which is financed by an increase in tax revenue of 200. $MPC = 0.9$

Fiscal multiplier effect = 10

Taxes increase by 200. Disposable income decreases by 200.

Consumption decreases by $0.9 * 200 = 180$

Initial impact on aggregate demand = $200 - 180 = 20$

Impact on output because of multiplier effect = $20 * 10 = 200$

13. Fiscal Policy Implementation

- The deficit might not be an indication of the government's fiscal stance because an economy goes through a cycle. For example, at the peak of a cycle, unemployment would be low and government expenditure would be less with the likelihood of running a surplus. Similarly, if the economy is in a recession year, then incomes are low and taxes collected will be relatively low, causing the budget deficit to increase. So, one cannot conclude if the government is following a contractionary or expansionary policy by looking at the deficit.
- To get an idea of the government's policy, one should look at the structural or cyclically adjusted budget deficit. This is the deficit if the economy was at full employment. If the output is at long-run equilibrium, then the surplus or deficit

would be called the structural or cyclically adjusted budget deficit.

- Automatic stabilizers such as social security payments, progressive income taxes, and VAT must be considered to determine the fiscal stance. As unemployment rises, the benefits increase and net tax revenues decrease. These do not require policy changes, and automatically kick in to stimulate growth.
- In addition, there are also discretionary fiscal adjustments used by governments, such as tax changes, or huge spending to build a highway system in a country, to increase aggregate demand.
- The two approaches to fiscal policy vary primarily with respect to timing of implementation. But, fiscal policy does not always stabilize an economy, as executing fiscal policy can be difficult for the following reasons:
 - Recognition lag: There is a time lag before policymakers recognize whether the economy is going through a boom or is in recession. This is because it takes time to gather and collate the data: indicators such as unemployment and inflation are often presented weeks later. It is generally referred to as driving by looking in the rear-view mirror.
 - Action lag: Once the policymakers acknowledge the problem (recession, or economy slowing down, or inflation), then they have to decide on an action plan. The appropriate policy takes time to implement and must be passed through the congress/parliament/whatever is appropriate. For instance, increased spending on infrastructure to generate employment and boost growth may take several months to complete.
 - Impact lag: It may be a while before the result of the projects undertaken can be seen.
- The timing of the policy action is critical. It is important to understand the course of the economy without these policy changes. Is the economy in recovery mode because of a surprise increase in investment spending? Some issues associated with discretionary fiscal adjustments are:
 - If a government is concerned with unemployment and inflation, then increasing AD to full employment may push prices further up.
 - If the deficit is already large relative to GDP, then it may be difficult for the government to borrow more money to provide fiscal stimulus. Interest on government debt would rise.
 - Crowding out effect: Limited savings and increase in government spending → investment available for private sector decreases → less investment spending → less growth.
- Macroeconomic forecasting models are not accurate and cannot be used for policymaking decision effectively.

14. The Relationship between Monetary Policy and Fiscal Policy

Both monetary and fiscal policies are used to stabilize an economy. But the impact of one varies based on the other's stance, and their interaction, as illustrated in the table below:

Note: convention in the table below

First line denotes the effect of fiscal policy

Second line denotes the effect of monetary policy

Third line denotes the overall effect on the economy

	Easy/Expansionary Fiscal Policy	Tight Fiscal Policy
Easy/Expansionary Monetary Policy	AD up. Low rates → private sector demand up. Growing private and public sector.	AD down. Low rates → private sector stimulated. The public sector will become a smaller percentage of the economy.
Tight Monetary Policy	AD up. High interest rates → private sector down. Public spending will become a higher percentage of GDP.	AD down. High interest rates → private sector demand down. Shrinking private and public sectors.

Section 14.1 in the curriculum talks about the factors influencing which quadrant to choose from the table above, i.e. what is the right mix of monetary and fiscal policy. Key points are listed below:

- To increase overall output, private investment spending is important. For this, monetary policy with low interest rates and tight fiscal policy works best.
- If infrastructure is poor and there is a lack of skilled labor, then an expansionary fiscal policy and loose monetary policy works best, but at the risk of inflation.
- Fiscal loosening methods that can be reversed after a specific time period include:
 - Social transfers to households.
 - Decrease in income tax.
 - Increase in government spending.
 - Increase in transfers to poor people.
- Monetary policies that will go with the above fiscal policies for the same duration include:
 - No monetary accommodation: any increase in AD will lead to increase in interest rates.
 - Interest rates stay unchanged for the duration when the fiscal policy is implemented and reversed.

Section 14.2 talks about quantitative easing – an unconventional approach adopted by the

U.S. and U.K. governments during the recent recession of 2008-09 to print money. As interest rates were already near zero level, there was no option of reducing it further to stimulate growth. The central bank (prints money) bought trillions of dollars' worth of government bonds to increase money supply in the system, increase expenditure, and avoid deflation.

Section 14.3 talks about the risk of large fiscal deficits that grow year on year. This increases the real interest rate, inflation expectations, and crowds out private investment.

Summary

LO.a: Compare monetary and fiscal policy.

Monetary policy refers to central bank activities directed towards influencing the level of interest rates and money supply in the economy.

Fiscal policy refers to government decisions about taxation and spending.

LO.b: Describe functions and definitions of money.

Functions of money are: medium of exchange, store of value, and a unit of account.

Narrow money: Includes the amount of notes and coins in circulation plus the balances of checkable bank deposits.

Broad Money: In addition to narrow money also includes other liquid assets that can be used to make purchases.

LO.c: Explain the money creation process.

Money is created through the fractional reserve banking because, at any point in time, banks hold with them only a fraction of total deposits and can lend out the remaining portion of the deposit.

LO.d: Describe theories of the demand for and supply of money.

Households hold money for three types of demands: transaction demand, precautionary demand, and speculative demand.

Supply of money in the economy is determined by the central bank of the country.

Quantity theory of money states that total spending (in money terms) is proportional to the quantity of money.

LO.e: Describe the Fisher effect.

The Fisher effect states that a nominal risk-free interest rate is equal to the real interest rate plus the expected inflation rate.

LO.f: Describe roles and objectives of central banks.

Role of the central bank: supply currency; act as banker to the government and to other banks; regulate and supervise the payments system; act as a lender of the last resort; hold the nation's gold and foreign currency reserves; and conduct the monetary policy.

LO.g: Contrast the costs of expected and unexpected inflation.

Expected inflation can give rise to menu costs and shoe leather costs. In modern economy, the shoe leather costs are much lower as compared to the past.

Unanticipated (unexpected) inflation can lead to inequitable transfers of wealth between borrowers and lenders. It also gives rise to risk premia in borrowing rates and the prices of

other assets, and reduces the information content of market prices.

LO.h: Describe tools used to implement monetary policy.

The three tools available to central banks to control the money supply are open market operations, policy rates, and reserve requirements.

LO.i: Describe the monetary transmission mechanism.

Monetary transmission mechanism impacts in three ways: link between the change in official rates on other related markets, impact on aggregate demand, and impact on inflation.

LO.j: Describe qualities of effective central banks.

Effective central banks exhibit the following: Independence (free from political interference), credibility (follow through on stated policy intentions) and transparency (clear policy on economic indicators).

LO.k: Explain the relationships between monetary policy and economic growth, inflation, interest, and exchange rates.

The real trend rate is the long-term sustainable real growth rate of an economy.

The neutral interest rate is the sum of the real trend rate and the target inflation rate.

LO.l: Contrast the use of inflation, interest rate, and exchange rate targeting by central banks.

Target a certain level of inflation and interest rate, and then ensure these levels are met by monitoring a range of monetary and real economic indicators.

Exchange rate targeting can be done by setting a fixed level or band of values for the exchange rate against a major currency.

LO.m: Determine whether a monetary policy is expansionary or contractionary.

Monetary policy is said to be contractionary when the policy rate is above the neutral rate and expansionary when the policy rate is below the neutral rate.

LO.n: Describe limitations of monetary policy.

Monetary policy may not work as intended because central banks cannot control the amount of money households and corporations put in banks and the willingness of banks to create money by expanding credit.

Underdeveloped financial markets, rapid financial innovation, and lack of credibility of monetary authority may also hinder the utility of monetary policy.

LO.o: Describe roles and objectives of fiscal policy.

Primary objective is to manage the economy through spending and taxation and their influences on aggregate national output (real GDP).

LO.p: Describe tools of fiscal policy, including their advantages and disadvantages.

Government spending can take different forms such as transfer payments, current government spending, and capital expenditure.

Government revenue can be in the form of direct and indirect taxes.

Advantages and disadvantages of using different tools of fiscal policy	
Advantages	Disadvantages
Indirect taxes (such as VAT) can be adjusted almost immediately after they are announced and can influence spending behavior instantly. Generates revenue for the government at little or no cost to the government.	Direct taxes are more difficult to change without considerable notice, often many months, because payroll computer systems will have to be adjusted. For instance, the government cannot increase income tax every year.
Social policies such as discouraging alcohol or use of tobacco can be adjusted almost instantly by raising such taxes.	The same may be said for welfare and other social transfers.
	Capital spending plans (building highways or schools) take longer to formulate and implement, typically over a period of years.

LO.q: Describe the arguments about whether the size of a national debt relative to GDP matters.

The fiscal multiplier tells us about changes in output when there are changes in spending and taxes. Higher future taxes lead to disincentives to work, negatively affecting long-term economic growth. Fiscal deficits may not be financed by the market when debt levels are high.

A crowding-out effect may occur as government borrowing increases demand for loanable funds, thus leading to increased interest rates and decreased private sector investments. Deficits for capital spending can boost the productive capacity of the economy.

Ricardian equivalence may prevail: private savings rise in anticipation of the need to repay principal on government debt. At below full employment levels, deficits do not necessarily crowd out private investment.

LO.r: Explain the implementation of fiscal policy and difficulties of implementation.

Fiscal policy is difficult to execute because it suffers from the following lags:

- Recognition lag: Time taken to recognize that policy needs changes.
- Action lag: Time taken by governments to enact required fiscal policy changes.
- Impact lag: Time taken for fiscal policy to affect economic activity.

LO.s: Determine whether a fiscal policy is expansionary or contractionary.

	Easy/Expansionary Fiscal Policy	Tight Fiscal Policy
Easy/Expansionary Monetary Policy	<p>AD up.</p> <p>Low rates → private sector demand up.</p> <p>Growing private and public sector.</p>	<p>AD down.</p> <p>Low rates → private sector stimulated.</p> <p>The public sector will become a smaller percentage of the economy.</p>
Tight Monetary Policy	<p>AD up.</p> <p>High interest rates → private sector down.</p> <p>Public spending will become a higher percentage of GDP.</p>	<p>AD down.</p> <p>High interest rates → private sector demand down.</p> <p>Shrinking private and public sectors.</p>

LO.t: Explain the interaction of monetary and fiscal policy.

- Expansionary fiscal and monetary policy will result in lower interest rate and expand private and public sector.
- Expansionary fiscal and contractionary monetary policy will result in higher interest rate and government spending.
- Contractionary fiscal and expansionary monetary policy will result in lower interest rate and government spending.
- Contractionary fiscal and monetary policy will result in higher interest rate and contract private and public sector.