Macro Economics

Unit-4

Consumption, Savings and Investment

(1) What is aggregate demand?

Answer: Aggregate demand (AD) refers to the total quantity of goods and services demanded in an economy at a given overall price level and in a given period. It is the sum of demand for consumption, investment, government spending, and net exports (exports minus imports). Mathematically, it is often represented as:

AD=C+I+G+(X−M)AD = C + I + G + (X - M)AD=C+I+G+(X−M)

Where:

- **C is consumption by households**
- **I is investment by businesses**
- **G is government spending**
- **X - M is net exports (exports minus imports)**

(2) What is aggregate supply?

Answer: Aggregate Supply (AS) refers to the total quantity of goods and services that producers in an economy are willing and able to supply at a given overall price level in a specific time period. It represents the relationship between the price level and the output of an economy.

(3) What is consumption function?

Answer: The consumption function is an economic formula that represents the relationship between consumption expenditure (C) and disposable income (Yd) in an economy. It was introduced by John Maynard Keynes in his theory of consumption.

Basic Consumption Function Formula:

C=C0+cYdC = C_0 + cY_dC=C0+cYd

Where:

- **C = Total consumption**
- **C_0 = Autonomous consumption (consumption when income is zero)**
- **c = Marginal propensity to consume (MPC), which represents the proportion of additional income that is spent on consumption**

- **Yd = Disposable income (income after taxes)**

Key Concepts in the Consumption Function:

1. **Autonomous Consumption (C_0):**
    - **The minimum level of consumption that occurs even when income is zero (e.g., basic necessities).**
2. **Marginal Propensity to Consume (MPC):**
    - **The fraction of additional income that is spent on consumption. It ranges between 0 and 1.**
    - **Example: If MPC = 0.8, it means that for every extra ₹100 earned, ₹80 will be spent on consumption, and ₹20 will be saved.**
3. **Marginal Propensity to Save (MPS):**
    - **The fraction of additional income that is saved.**
    - **MPC + MPS = 1**

(4) What are the factors and propensity to consume?

Answer: Factors Affecting Consumption

Several factors influence the level of consumption in an economy. These include:

1. **Disposable Income (Yd):**
    - **The primary determinant of consumption. Higher disposable income leads to higher consumption.**
2. **Marginal Propensity to Consume (MPC):**
    - **The proportion of additional income that is spent on consumption rather than saved.**
3. **Wealth Effect:**
    - **Higher wealth (e.g., increase in property values or stock market gains) boosts consumer confidence and spending.**
4. **Interest Rates:**
    - **Lower interest rates make borrowing cheaper, encouraging more spending. Higher interest rates discourage consumption.**
5. **Consumer Expectations:**
    - **If people expect higher future income, they tend to spend more. If they anticipate a recession, they save more.**
6. **Government Policies (Taxes and Transfers):**
    - **Higher taxes reduce disposable income and lower consumption, while subsidies and welfare payments increase spending.**
7. **Availability of Credit:**
    - **Easy access to loans and credit increases consumer spending.**
8. **Demographic Factors:**
    - **Age distribution, population growth, and employment levels influence overall consumption patterns.**
9. **Inflation:**

- **Moderate inflation may encourage spending before prices rise, but high inflation erodes purchasing power and discourages consumption.**

10. Social and Cultural Factors:

- **Lifestyle choices, traditions, and societal norms affect consumption behavior.**

Propensity to Consume

Propensity to consume refers to the tendency of individuals to spend a portion of their income on consumption. It is divided into two types:

1. **Average Propensity to Consume (APC):**
   - **It measures the proportion of total income spent on consumption.**
   - **Formula: APC=CYAPC = \frac{C}{Y}APC=YC**
   - **Example: If total consumption is ₹80,000 and total income is ₹1,00,000, then: APC=80,0001,00,000=0.8APC = \frac{80,000}{1,00,000} = 0.8APC=1,00,00080,000=0.8**
2. **Marginal Propensity to Consume (MPC):**
   - **It measures the proportion of additional income that is spent on consumption.**
   - **Formula: MPC=ΔCΔYMPC = \frac{\Delta C}{\Delta Y}MPC=ΔYΔC**
   - **Example: If income increases by ₹10,000 and consumption rises by ₹8,000: MPC=8,00010,000=0.8MPC = \frac{8,000}{10,000} = 0.8MPC=10,0008,000 =0.8**

Key Relationship:

- **APC + APS = 1 (APS = Average Propensity to Save)**
- **MPC + MPS = 1 (MPS = Marginal Propensity to Save)**

The propensity to consume is crucial in determining aggregate demand and economic growth. High MPC leads to increased spending, boosting economic activity, while high MPS results in greater savings and investment.

(5) What is Saving function and propensity to save?

Answer: Saving Function

The saving function describes the relationship between savings (S) and disposable income (Yd) in an economy. It shows how much of an individual's or nation's income is saved rather than spent on consumption.

Saving Function Formula:

S=Yd−CS = Y_d - CS=Yd−C

or

S=−C0+(1−c)YdS = -C_0 + (1 - c)Y_dS=−C0+(1−c)Yd

Where:

- **S = Savings**
- **Yd = Disposable income**
- **C = Consumption**
- **C_0 = Autonomous consumption (consumption when income is zero)**
- **(1 - c) = Marginal Propensity to Save (MPS)**

🔷 **Key Point: When income is low, savings may be negative because people may borrow or use past savings to maintain consumption.**

Propensity to Save

The propensity to save refers to the tendency of individuals to save a portion of their income rather than spend it on consumption. It is divided into two types:

1. **Average Propensity to Save (APS):**
   - **It measures the proportion of total income that is saved.**
   - **Formula: APS=SYAPS = \frac{S}{Y}APS=YS**
   - **Example: If total savings are ₹20,000 and total income is ₹1,00,000: APS=20,0001,00,000=0.2APS = \frac{20,000}{1,00,000} = 0.2APS=1,00,00020,000=0.2**
2. **Marginal Propensity to Save (MPS):**
   - **It measures the proportion of additional income that is saved.**
   - **Formula: MPS=ΔSΔYMPS = \frac{\Delta S}{\Delta Y}MPS=ΔYΔS**
   - **Example: If income increases by ₹10,000 and savings rise by ₹2,000: MPS=2,00010,000=0.2MPS = \frac{2,000}{10,000} = 0.2MPS=10,0002,000 =0.2**

Key Relationship:

- **APS + APC = 1 (APC = Average Propensity to Consume)**
- **MPS + MPC = 1 (MPC = Marginal Propensity to Consume)**

📌 **Economic Importance:**

- **High MPS leads to more savings, which can be used for investments and economic growth.**

- **High MPC leads to more consumption, boosting demand and production.**
- **Governments use taxation and fiscal policies to influence savings and spending behavior.**

(6) What is investment function?

Answer: Investment Function

The investment function represents the relationship between the level of investment (I) and factors such as income, interest rates, and business expectations in an economy. It shows how much firms and individuals are willing to invest at different levels of income or interest rates.

Basic Investment Function Formula:

I=I0−f(r)I = I_0 - f(r)I=I0−f(r)

Where:

- **I = Total investment**
- **I_0 = Autonomous investment (investment independent of income or interest rates)**
- **r = Interest rate**
- **f(r) = A function representing the effect of interest rates on investment (negative relationship)**

🔷 **Key Point: Investment and interest rates have an inverse relationship. As interest rates rise, investment decreases, and vice versa.**

Types of Investment

1. **Autonomous Investment:**
    - **Investment that does not depend on income or output levels.**
    - **Examples: Government infrastructure projects, essential capital expenditure.**
2. **Induced Investment:**
    - **Investment that depends on income and demand.**
    - **Examples: Business expansion due to rising consumer demand.**

(7) What are the determinants of investment?

Answer: Determinants of Investment

1. **Interest Rates:**
    - **Higher interest rates increase borrowing costs, reducing investment.**
    - **Lower interest rates make borrowing cheaper, encouraging investment.**

2. **Business Expectations & Confidence:**
    - **Positive expectations about future profits and economic growth boost investment.**
    - **Uncertainty or fear of recession reduces investment.**
3. **Level of Income & Demand:**
    - **Higher income and demand encourage businesses to expand production and invest.**
    - **Low demand discourages investment.**
4. **Government Policies & Taxation:**
    - **Lower corporate taxes and investment incentives boost investment.**
    - **High taxes and excessive regulations discourage investment.**
5. **Technological Advancements:**
    - **New technology encourages firms to invest in modern equipment.**
    - **Lack of innovation slows down investment.**
6. **Availability of Credit & Banking Facilities:**
    - **Easy access to credit and loans promotes investment.**
    - **Strict lending policies and high collateral requirements limit investment.**
7. **Cost of Capital Goods:**
    - **Lower prices of machinery and equipment make investment more attractive.**
    - **Higher costs discourage investment.**
8. **Inflation Rate:**
    - **Moderate inflation may encourage investment by increasing expected returns.**
    - **High inflation creates uncertainty, reducing investment.**
9. **Political Stability & Economic Policies:**
    - **Stable political and economic conditions boost investor confidence.**
    - **Political uncertainty and policy instability reduce investment.**
10. **Global Economic Conditions:**

- **Strong global demand encourages exports and investment.**
- **Global recessions or trade restrictions negatively impact investment.**

📌 **Conclusion: Investment is influenced by a mix of economic, financial, and policy-related factors. Governments and central banks often adjust policies to stimulate investment and economic growth.**

(8) What is marginal efficiency of capital?
Answer: The Marginal Efficiency of Capital (MEC) refers to the expected rate of return on an additional unit of capital investment, considering its cost. It plays a crucial role in determining how much businesses invest in new capital assets like machinery, buildings, and equipment.

(9) What are the factors affecting marginal efficiency of capital?

Answer: Factors Affecting Marginal Efficiency of Capital (MEC):

1. **Expected Rate of Return on Investment (Profitability):**
    - **The more profitable an investment is expected to be, the higher the MEC. If businesses anticipate high returns, they are more likely to invest in new capital.**
2. **Cost of Capital:**
    - **The higher the cost of acquiring capital (such as interest rates, equipment costs, or borrowing expenses), the lower the MEC. Lower costs increase profitability and boost investment.**
3. **Interest Rates:**
    - **High interest rates raise the cost of financing capital, leading to lower MEC. Conversely, lower interest rates make borrowing cheaper, encouraging investment and increasing MEC.**
4. **Technological Advancements:**
    - **The availability of new technologies or improved production processes can increase the expected returns from investing in capital, thus raising the MEC.**
5. **Economic Growth & Demand:**
    - **A strong economy and increasing demand for goods and services generally result in higher profitability, which raises the MEC. In a booming economy, businesses expect higher returns from investments.**
6. **Inflation Expectations:**
    - **Moderate inflation may increase expected returns on investments as the value of money decreases over time, raising the MEC. However, high or unpredictable inflation can create uncertainty and reduce the attractiveness of investment.**
7. **Government Policies & Taxation:**
    - **Policies that provide tax breaks, subsidies, or other incentives for investment increase the MEC. Conversely, higher taxes or heavy regulation can reduce profitability and lower MEC.**
8. **Business Expectations & Confidence:**
    - **Positive business outlooks and strong consumer confidence lead to higher expectations of future profits, which raise MEC. If firms are optimistic about future economic conditions, they are more likely to invest.**
9. **Risk and Uncertainty:**
    - **High levels of economic, political, or financial uncertainty can reduce MEC, as firms are less likely to invest in capital when they face high risks of failure. Lower perceived risk increases MEC.**
10. **Availability of Credit:**

- **Easier access to credit and financing increases the ability of businesses to invest in capital, which in turn raises the MEC. Difficulty in obtaining credit reduces investment and lowers MEC.**

(10) What is multiplier ? Write its magnitude, assumptions , working and usefulness.

Answer: Multiplier

The multiplier is an economic concept that describes how an initial change in spending (such as investment or government expenditure) leads to a larger final change in national income or GDP. In other words, it measures the total impact on economic output from an initial injection of spending.

Formula for Multiplier:

Multiplier=11−MPC\text{Multiplier} = \frac{1}{1 - MPC}Multiplier=1−MPC1

Where:

- **MPC = Marginal Propensity to Consume (the proportion of additional income that is spent on consumption)**
- **Alternatively, it can also be expressed as:**

Multiplier=1MPS\text{Multiplier} = \frac{1}{MPS}Multiplier=MPS1

Where:

- **MPS = Marginal Propensity to Save (the proportion of additional income that is saved)**

Magnitude of the Multiplier

The magnitude of the multiplier depends on the MPC (Marginal Propensity to Consume) or MPS (Marginal Propensity to Save):

- **If MPC is high, the multiplier is larger, meaning that an increase in investment or government spending leads to a more significant rise in national income.**
- **If MPS is high, the multiplier is smaller, as more income is saved, reducing the flow of money circulating in the economy.**

For example, if the MPC is 0.8, the multiplier would be:

11−0.8=5\frac{1}{1 - 0.8} = 51−0.81=5

This means that for every unit of currency spent, the economy's income will increase by 5 units.

Assumptions of the Multiplier Effect

1. **No Changes in the Price Level:**

- **The model assumes that prices remain constant. In reality, an increase in demand could lead to price inflation, reducing the effect of the multiplier.**

2. **Fixed Output Capacity:**
   - **The multiplier effect assumes that the economy has spare capacity to produce additional goods and services without causing inflationary pressure.**
3. **Closed Economy (No Foreign Trade):**
   - **In its basic form, the multiplier assumes a closed economy where there is no trade (exports or imports), meaning that all increases in income stay within the domestic economy.**
4. **Constant Marginal Propensity to Consume (MPC):**
   - **The model assumes that the MPC remains unchanged regardless of the level of income. However, in reality, MPC may decrease as income rises.**
5. **Short-Run Focus:**
   - **The multiplier effect mainly applies to the short-run, where the economy can increase output without causing price changes or full employment issues.**

Working of the Multiplier

1. **Initial Injection of Spending:**
   The process starts with an initial increase in spending (e.g., government spending on infrastructure or investment by firms).
2. **Increased Income:**
   This spending creates income for workers and businesses involved in the project. They, in turn, spend a portion of that income on goods and services.
3. **Subsequent Rounds of Spending:**
   The money spent by the initial recipients of the spending circulates through the economy as they spend on goods and services. This generates more income, which leads to further spending in the economy. The process repeats, but the effect diminishes over time.
4. **Total Impact on National Income:**
   The total change in national income is greater than the initial change in spending due to the multiplier effect. The more people spend of their income, the greater the multiplier.

Usefulness of the Multiplier

1. **Policy Implications:**
   The multiplier helps policymakers understand the potential impact of government spending or tax cuts on the economy. A higher multiplier indicates that fiscal policies will be more effective in stimulating economic growth.
2. **Economic Stabilization:**
   In times of economic downturn or recession, increasing government spending (e.g.,

public works or subsidies) can stimulate demand and lead to a larger overall boost in economic activity through the multiplier effect.

3. **Investment Decisions:**
   Firms can use the multiplier concept to gauge the potential return on investment in an economy. High multiplier effects may lead to increased confidence in investing or expanding operations.
4. **Assessing Economic Policies:**
   The multiplier helps in evaluating the effectiveness of various economic policies, such as tax cuts, public expenditure programs, or investment incentives, in boosting national income.
5. **Understanding Economic Growth:**
   The multiplier effect helps in understanding how changes in one area of the economy (like investment or government expenditure) can lead to larger shifts in overall economic output, contributing to sustained growth.

Limitations of the Multiplier

1. **Leakages from the Economy:**
   The multiplier effect is weakened by leakages such as savings, imports, or taxes. When people save more, buy imported goods, or pay taxes, less money circulates in the economy, reducing the size of the multiplier.
2. **Inflationary Pressures:**
   A large increase in demand may lead to higher prices, reducing the effectiveness of the multiplier. If the economy is near full capacity, the extra demand might result in inflation instead of increased output.
3. **Time Lags:**
   The multiplier effect may not be immediate. It takes time for the increased spending to filter through the economy and generate additional rounds of income.
4. **Assumptions May Not Hold:**
   The assumptions of constant prices and a fixed MPC do not always hold in the real world, limiting the accuracy of the multiplier in predicting outcomes.

Conclusion:

The multiplier is a key concept in Keynesian economics, illustrating how an initial increase in spending can lead to a greater overall increase in national income. Its magnitude depends on factors like MPC, and while it is a useful tool for policy decisions, its effectiveness can be limited by factors like leakages, inflation, and time lags. Understanding the multiplier helps policymakers design more effective fiscal policies to stimulate economic growth.

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(11) What is accelerator? Write its magnitude, assumptions, working and usefulness.

Answer: The accelerator refers to the relationship between changes in national income (or output) and investment demand in an economy. The theory suggests that an increase in national income or demand leads to a proportionally larger increase in investment. Essentially, when the economy grows and output increases, businesses anticipate further growth and therefore invest in new capital to meet future demand.

Formula for the Accelerator:

Investment=α×ΔY\text{Investment} = \alpha \times \Delta YInvestment=α×ΔY

Where:

- **Investment = Change in investment**
- **α = Accelerator coefficient (the proportion of the change in output or income invested)**
- **ΔY = Change in national income or output**

The accelerator coefficient (α) measures the responsiveness of investment to changes in income.

Magnitude of the Accelerator

The magnitude of the accelerator depends on the level of output and the investment-to-output ratio:

- **A high accelerator coefficient (α) means that a small change in national income will result in a large increase in investment.**
- **A low accelerator coefficient (α) means that even a large change in income might not result in a large increase in investment.**

For example, if the economy grows by ₹10 billion, and the accelerator coefficient is 0.5, the resulting investment would be ₹5 billion (0.5 * ₹10 billion).

Assumptions of the Accelerator Theory

1. **Proportional Relationship Between Income and Investment:**
    - **The theory assumes a direct, linear relationship between changes in national income and investment. As income increases, investment increases in a fixed proportion.**
2. **No Excess Capacity:**

- **The accelerator works under the assumption that firms are operating below their full capacity. If they already have enough capital, additional output growth will lead to investment in new capital.**

3. **Constant Technology:**
   - **The accelerator theory assumes that technology remains constant. Technological advances could alter the relationship between output growth and investment.**
4. **Fixed Investment-to-Output Ratio:**
   - **The theory assumes that firms maintain a fixed ratio of investment to output. This means that for each increase in income, a fixed proportion of that income will be invested.**
5. **Short-Term Focus:**
   - **The accelerator effect is considered to operate primarily in the short run, where businesses respond quickly to changes in income but may not adjust their investment strategy immediately in the long run.**
6. **No Changes in Interest Rates or Government Policy:**
   - **The accelerator theory assumes that interest rates, government policies, and other external factors remain constant and do not affect investment decisions.**

Working of the Accelerator

1. **Increase in National Income or Output:**
   - **The accelerator is triggered when there is an increase in national income or output (ΔY). This could happen due to increased consumption, government spending, or export demand.**
2. **Expectation of Future Demand:**
   - **When firms observe a rise in income, they anticipate continued growth in demand. To meet the higher future demand, they increase their investment in capital (machinery, buildings, etc.).**
3. **Proportional Increase in Investment:**
   - **The increase in investment depends on the accelerator coefficient (α). For instance, if the accelerator coefficient is 0.5 and national income increases by ₹10 billion, investment will increase by ₹5 billion.**
4. **Multiplied Impact on Income:**
   - **The increase in investment leads to an additional round of income generation, further increasing aggregate demand, which in turn boosts national income and leads to even more investment.**

Usefulness of the Accelerator

1. **Understanding Investment Behavior:**

- **The accelerator helps explain how investment is related to changes in national income and output. It shows that investment does not respond directly to changes in income; instead, it is proportional to the rate of change in income.**

2. **Economic Growth:**
   - **The accelerator effect helps explain how economic growth can lead to further growth through increased investment. It highlights how an initial increase in demand (or output) can trigger a cycle of expanding income and investment.**
3. **Policy Implications:**
   - **The accelerator is important for understanding the multiplier-accelerator effect in policy decisions. For example, if the government increases spending, it not only increases demand (via the multiplier) but also encourages investment through the accelerator.**
4. **Business Investment Decisions:**
   - **The theory helps firms understand how changes in market conditions or demand growth influence their investment strategies. If the economy is growing, businesses are more likely to invest in new capital to meet future demand.**
5. **Explaining Economic Cycles:**
   - **The accelerator is useful in understanding business cycles. Investment fluctuations, driven by changes in income and demand, can lead to periods of economic expansion or contraction.**
6. **Linking Output and Investment in the Short Run:**
   - **The theory illustrates how changes in income and output are linked to changes in investment in the short run. This relationship can be important for economic forecasting and planning.**

Limitations of the Accelerator

1. **Over-Simplification:**
   - **The accelerator assumes a simple, linear relationship between income and investment. In reality, businesses might not always invest in direct proportion to income changes due to factors like expectations, interest rates, or capacity constraints.**
2. **Capacity Constraints:**
   - **If the economy is already operating at full capacity, firms may not invest even if income rises. Investment will only happen if there is unmet demand or excess capacity to expand production.**
3. **Ignoring Long-Term Effects:**
   - **The accelerator theory primarily focuses on short-term dynamics. Long-term changes in technology, market conditions, or government policies can alter investment decisions significantly.**
4. **External Shocks and Uncertainty:**

- **The accelerator assumes that firms can accurately predict future demand based on past trends. In reality, external shocks (e.g., economic crises, wars, pandemics) and uncertainty can make investment decisions more erratic.**

5. **Fixed Investment-to-Output Ratio:**
    - **The assumption that the investment-to-output ratio remains constant may not always hold. As technology advances or market conditions change, firms may adjust their investment-to-output ratio.**

Conclusion:

The accelerator theory helps explain the relationship between changes in national income and the resulting changes in investment. It is useful for understanding economic growth, business investment, and policy impacts in the short run. However, its assumptions and limitations mean it should be used alongside other economic models for a more comprehensive understanding of investment dynamics.