Multiplier Effect

Multiplier effect = Describes the more than proportionate increase in equilibrium real national income arising from an increase in autonomous expenditure.

Full Multiplier Effect
Assumptions

1. Economy has sufficient spare capacity
2. Constant GPL and i/r
3. Constant technology

**Short Explanation (insert for all explanations of how AD-management policies work)
An increase in AD leads to a depletion of stocks in the economy. Firms will step up production and in the process employ more factors of production including labour. Factor payment is made and therefore national income increases. This leads to further increase in AD as the increased income of households leads to the increase in induced consumption in the following rounds but the amount is smaller than the initial income increase due to leakages in terms of savings, import expenditure and taxes. The process continues until total leakages equals initial injection by which time the national income would have increased more than proportionately to the initial increase in AD.

OR

The multiplier is based on the concept that "one man's spending creates another man's income" through several time periods. In this case, the increase in C, I and net X creates new income will lead to subsequent rounds of induced consumption spending after some of the additional income has been leaked out from the circular flow of income in the form of savings, taxes and imports. This cycle continues until the initial increase in injections equals the total amount of withdrawals in the economy.

How to explain full multipier effect

1. ↑ in autonomous spending [C/I/G/X]; AD = C + I + G + (X-M) ⇒ ↑ in autonomous AD
2. ↑ AD ⇒ Depletion of stocks in the economy ⇒ Firms step up production to meet increase in AD ⇒ Employ more factors of production including labour ⇒ Factor payments = First increase in real NY
3. ↑ real NY ⇒ ↑ in induced C on domestic goods and services by households as
    - One person's spending is another person's income
    - Income stimulates further spending
4. Process is repeated over many rounds as income flows back into circular flow
5. Multiplier effect does not continue infinitely due to presence of leakages [S/T/M]
6. Eventually stops when ∑ increase in withdrawals = Initial ↑ in autonomous AD

7. Initial increase in autonomous AD ⇒ Multiple rightward shifts of AD curve ⇒ More than proportionate ↑ in the eqm NY via the multiplier effect
8. Actual growth achieved, ↓ in unemployment as labour is a derived demand

NOTE: Assume values for ↑ in autonomous spending and MPW when explaining multiplier effect in full

E.g.
An increase in autonomous spending will result in a more than proportionate increase in equilibrium level of real NY. Assume an increase in autonomous spending by $1m, this will cause an increase in autonomous AD by $1m. AD curve shifts to the right from AD_1 to AD_2, as shown in Fig. 1, by $1m. Real NY increases by the same value as increase in autonomous AD ($1m). Increase in real NY leads to many rounds of increase in induced consumption on domestically produced goods and services by households. This is because one person's spending is another person's income and income stimulates further spending. In order to increase production to meet the increase in AD, firms have to hire more factors of production from households. With increased income, househlods will use a portion of the additional income they receive on buying domestically produced goods and services. For example, we assume that the marginal propensity to consume (MPC) is 0.8 and the marginal propensity to withdraw (MPW) is 0.2. When NY increases by $1m, induced consumption will increase by $0.8m, causing the AD curve to shift rightwards from AD_2 to AD_3. As a result, real NY increases by another $0.8m. This process is repeated over many rounds as income flows back into the circular flow. However, the multiplier effect does not continue infinitely due to the presence of leakages in the form of savings, taxes and import spending. As a result, each additional increase in spending is a fraction of the previous addition to the circular flow. This means that the rightward shift in the AD curve becomes smaller with each additional round. Eventually, when the cumulative increase in induced withdrawals is equal to the initial increase in autonomous AD, the multiplier process will stop. Hence, an initial increase in autonomous spending will lead to a more than proportionate increase in the eqm level of real NY. Thus, actual growth is achieved.

Partial/Diminished Multiplier Effect (Limitations of increasing autonomous spending to stimulate actual growth)
How to explain partial/diminished multiplier effect

1. Full multiplier effect depends on the state of the economy
2. Economy is operating with significant idle resources/excess capacity → Horizontal region/Keynesian range → AD ↑ ⇒ real NY ↑, GPL constant → Full effect of multiplier experienced
3. Economy is approaching full empolyment, little spare capacity → Intermediate range → AD ↑ ⇒ Shortage at current GPL ⇒ Inventories ↓ ⇒ Firms ↑ production ⇒ ↑ scarcity of resources ⇒ Firms bid up factor prices (commodities, labour) ⇒ ↑ Cost of production ⇒ ↑ GPL ⇒ ↓ Purchasing Power ⇒ ↓ Induced consumption with each round of multiplier effect → Extent of multiplier effect and hence increase in real NY will be

moderated by increase in GPL

4. Economy is operating at full employment → Classical range → When AD ↑, only GPL ↑, constant real NY ⇒ No actual growth, only inflation

- If operating within Keynesian range, m.t.p. ↓ in real NY
- However, given that economy is operating within intermediate range of AS curve, effect of reverse multiplier effect on fall in real NY will be cushioned by a fall in GPL until the equilibrium level is reached

Value of Multiplier

$k = \Delta NY/\Delta AE = 1/MPW = 1/(1\text{-}MPC) = 1/(MPS+MPT+MPM)$

<u>Factors affecting k value</u>

1. MPS
    - Cultural values
    - Institutional/Government policies (e.g. CPF)
    - Interest rates
    - Presence of Welfare Policies
        - ↑ Standard of welfare policies ⇒ ↓ Need to save for retirement/rainy day
    - Cost of Living
2. MPT
    - Income tax
        - e.g. Brunei → No personal income tax
        - e.g. Singapore → Relatively low personal income tax (Max marginal tax rate is 20%; Highest income tax bracket is high)
        - e.g. Germany → High personal income tax (Max marginal tax rate is 50%; Highest income tax bracket is low)
    - Corporate tax rates
    - Other taxes (e.g. Capital gains tax)
    - Reasons for difference in taxes
        - Difference in amount of money the government needs to spend
        - Difference in government's tendency to build up national resources
3. MPM
    - Size of the country (Country's self-reliance/reliance on foreign goods)
        - E.g. Singapore (163%) vs USA (17%)
    - Strength of country's exchange rate
        - ↑ Strength of currency ⇒ Imports become relatively cheaper ⇒ ↑ Imports
    - Openness of the economy
4. State of the economy
    - Assuming same injection and k value, extent of multiplier effect depends on the state of the economy

How to explain differences in size of multiplier

1. Define multiplier and formula for multiplier
    - Multiplier effect describes the m.t.p. increase in real NY due to an increase in autonomous spending. Multiplier value, k, is calculated by 1/MPW or 1/(1-MPC)
2. Identify the 3 leakages that contribute to the size of the multiplier
    - MPW is the marginal propensity to withdraw that is the proportion of additional income that is spent on withdrawals, namely savings, taxes and imports
3. Quote data on difference in extent of MPW + Explain why
4. Higher MPW ⇒ For given a certain increase in autonomous spending, ↑ leakages with each round of induced consumption during multiplier effect ⇒ ↓ amount of additional income will be passed on in the circular flow ⇒ ↓ extent of further increase in real national output ⇒ ↓ k value
5. ∴ k value in A is smaller than that in B
6. However, insufficient information provided to arrive at an acurate size of the multiplier as not all the figures are given/data are only close approximates

Reverse Multiplier Effect

How to explain reverse multiplier effect

1. ↓ in autonomous spending [C/I/G/(X-M)]; AD = C + I + G + (X-M) ⇒ ↓ in autonomous AD ⇒ More than proportionate ↓ in real NY
2. Many rounds of ↓ in induced C on domestic goods and services by households
    - One person's loss in spending is another person's loss in income
    - Reduced income results in less spending
3. Fall in induced C is smaller with each successive round due to presence of leakages [S/T/M]
    - Additional ↓ in spending is a fraction of the previous ↓
4. Eventually stops when ∑ fall in withdrawals = ↓ in autonomous AD
5. Initial decrease in autonomous AD ⇒ Multiple leftward shifts of AD curve ⇒ More than proportionate ↓ in the eqm NY via the multiplier effect
6. Fall in actual growth

E.g.

A decrease in autonomous spending will result in a more than proportionate decrease in equilibrium level of real NY. Assume a decrease in autonomous spending by $1m, this will cause a decrease in autonomous AD by $1m. AD curve shifts to the left from AD_1 to AD_2, as shown in Fig. 1, by $1m. Real NY decreases by the same value as decrease in autonomous AD ($1m). Decrease in real NY leads to many rounds of decrease in induced consumption on domestically produced goods and services by households. This is because one person's loss in spending is another person's loss in income and less income results in less spending. Due to decrease in AD, firms will employ less factors of production from households. With decreased income, there will be a fall in induced consumption expenditure and hence, a

further fall in AD. For example, we assume that the marginal propensity to consume (MPC) is 0.8 and the marginal propensity to withdraw (MPW) is 0.2. When NY decreases by $1m, induced consumption will decrease by $0.8m, causing the AD curve to shift leftwards from AD_2 to AD_3. As a result, real NY decreases by another $0.8m. This process of fall in income and induced consumption is repeated over many rounds. However, the multiplier effect does not continue infinitely due to the presence of leakages in the form of savings, taxes and import spending. As a result, each additional decrease in spending is a fraction of the previous round. This means that the leftward shift in the AD curve becomes smaller with each additional round. Eventually, when the cumulative fall in induced withdrawals is equal to the initial decrease in autonomous AD, the multiplier process will stop. Hence, an initial decrease in autonomous spending will lead to a more than proportionate decrease in the eqm level of real NY. Thus, there will be a fall in actual growth.