



ECO.MAC7 National Income Determination and the Multiplier

AQA 7136 · Calculators not allowed · about 130 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer all questions. Full sentences are required for questions worth 4 marks or more and for the 25-mark essay. No calculator is allowed. Show your working for every calculation.

- 1** Define the marginal propensity to consume (MPC) in the context of national income and explain its role in the multiplier process.

Define the marginal propensity to consume (MPC) and state its role in the multiplier.

(Total for Question 1 is 1 mark)

- 2** Show that the marginal propensities $MPC = 0.55$, $MPS = 0.15$, $MPT = 0.20$ and $MPM = 0.10$ are consistent with each other in the circular flow of income (i.e. each extra pound of income is allocated).

(Total for Question 2 is 2 marks)

- 3** Calculate the value of the Keynesian expenditure multiplier given the marginal propensities $MPC = 0.55$, $MPT = 0.20$ and $MPM = 0.10$. Then calculate the total eventual change in national income if government spending increases by GBP 5 billion. Show your working.

(Total for Question 3 is 4 marks)

- 4** Explain, in three steps, how an initial increase in investment becomes a multiplied increase in national income through the multiplier process.

(Total for Question 4 is 3 marks)

- 5** Calculate the marginal propensity to withdraw (MPW) given $MPS = 0.05$, $MPT = 0.15$ and $MPM = 0.10$, and state its unit (dimension).

(Total for Question 5 is 2 marks)

- 6** Diagram task: Draw an injections and withdrawals diagram to show the economy in equilibrium where injections equal withdrawals, then show clearly on the same diagram what happens to the equilibrium level of national income if injections rise by GBP 8 billion. In your answer box label axes, the injections and withdrawals schedules, the original equilibrium, the new equilibrium and the direction of change in national income.

Figure (to be drawn): Student to draw national income on horizontal axis and injections/withdrawals on vertical axis. Upward-sloping withdrawals line $W(Y)$ and horizontal or upward-sloping injections line J . Equilibrium where $J = W$ at Y_1 . Show an upward shift in injections to J_2 and new equilibrium at higher income Y_2 .

(Total for Question 6 is 4 marks)

- 7** Explain why, all else equal, the multiplier is smaller if the marginal propensity to import (MPM) rises.

(Total for Question 7 is 2 marks)

- 8** Using the alternative formula multiplier = $1 / (1 - MPC)$, calculate the multiplier when $MPC = 0.6$. Then calculate the total change in national income if investment rises by GBP 8 billion. Show your working.

(Total for Question 8 is 4 marks)

- 9** State the condition for equilibrium in the circular flow of income in terms of injections and withdrawals, using symbols.

(Total for Question 9 is 1 mark)

- 10** Briefly explain how leakages (saving, tax, imports) limit the size of the multiplier effect.

(Total for Question 10 is 2 marks)

- 11** Calculate the multiplier when $MPC = 0.70$, $MPS = 0.05$, $MPT = 0.15$ and $MPM = 0.10$. Give your answer to 2 decimal places.

(Total for Question 11 is 3 marks)

- 12** State and briefly explain one limitation of relying on a calculated multiplier when making fiscal policy decisions.

(Total for Question 12 is 3 marks)

- 13** Evaluate the view that the multiplier makes fiscal expansion the most effective tool for stabilising aggregate demand in a recession.

Evaluate the view that the multiplier makes fiscal expansion the most effective tool for stabilising aggregate demand in a recession.

(Total for Question 13 is 25 marks)

Mark scheme · ECO.MAC7 National Income Determination and the Multiplier

Question 1

- **B1** a numerical definition, e.g. the proportion of an extra pound of disposable income that households spend on consumption, stated as a fraction or decimal
- **Answer: The MPC is the fraction of an extra pound of disposable income that households spend on consumption.**

Question 2

- **M1** adds the four marginal propensities: $0.55 + 0.15 + 0.20 + 0.10$
- **A1** equals 1.0, confirming the allocation of one pound of extra income
- **Answer: $0.55 + 0.15 + 0.20 + 0.10 = 1.0$.**

Question 3

- **M1** calculate marginal propensity to withdraw, $MPW = MPS + MPT + MPM = 0.15 + 0.20 + 0.10$
- **A1** $MPW = 0.45$
- **M1** multiplier = $1 / MPW = 1 / 0.45$
- **A1** multiplier = 2.222..., total change in national income = $2.222... \times \text{GBP } 5 \text{ billion} = \text{GBP } 11.11 \text{ billion}$, awrt GBP 11.1 billion
- **Answer: $MPW = 0.45$; multiplier = $1 / 0.45 = 2.22$ (awrt). Total change = $2.22 \times \text{GBP } 5\text{bn} = \text{GBP } 11.11\text{bn}$, awrt GBP 11.1bn.**

Question 4

- **B1** first step: the initial investment injection becomes income for firms and workers
- **B1** second step: recipients spend a proportion of that income (MPC), creating further income for others
- **B1** third step: repeated rounds of respending occur but shrink each time because of withdrawals (saving, tax, imports), so the cumulative increase in income equals the initial injection times the multiplier
- **Answer: Initial injection becomes income, a proportion is respent (MPC) creating further rounds, which shrink due to withdrawals so total income rises by injection x multiplier.**

Question 5

- **M1** $MPW = 0.05 + 0.15 + 0.10$
- **A1** $MPW = 0.30$, unit: fraction or decimal of one pound (no units)
- **Answer: $MPW = 0.30$ (dimensionless fraction of each extra pound).**

Question 6

- **B1** correctly labelled axes: Real national income (horizontal) and Level of injections/withdrawals (vertical)
- **B1** withdrawals schedule $W(Y)$ drawn upward sloping and injections schedule J drawn and labelled, with initial intersection at equilibrium Y_1
- **B1** a clear upward shift of the injections schedule to J_2 and a clear new intersection at higher income Y_2
- **B1** an arrow or annotation showing the direction of change in national income from Y_1 to Y_2

Question 7

- **B1** identifies that a higher MPM increases total withdrawals (MPW) because more of each extra pound spent leaks abroad
- **B1** explains that since multiplier = $1 / MPW$, a larger MPW reduces $1 / MPW$ so the multiplier falls
- **Answer: Higher MPM raises withdrawals so less of each extra pound is respent domestically; MPW rises and since multiplier = $1/MPW$ the multiplier becomes smaller.**

Question 8

- **M1** multiplier = $1 / (1 - MPC) = 1 / (1 - 0.6)$
- **A1** multiplier = $1 / 0.4 = 2.5$
- **M1** total change = multiplier x change in investment = $2.5 \times \text{GBP } 8\text{bn}$
- **A1** total change = GBP 20 billion

Question 9

- **B1** the equality written as $I + G + X = S + T + M$ or injections = withdrawals
- **Answer: Equilibrium condition: $I + G + X = S + T + M$ (injections = withdrawals).**

Question 10

- **B1** states that leakages reduce the proportion of income that is respent domestically each round
- **B1** explains that because each round of respending is smaller due to leakages, cumulative additional income is limited and multiplier size falls
- **Answer: Leakages remove part of each income round from domestic respending, making each subsequent round smaller so the cumulative multiplier effect is limited.**

Question 11

- **M1** $MPW = MPS + MPT + MPM = 0.05 + 0.15 + 0.10 = 0.30$
- **M1** multiplier = $1 / MPW = 1 / 0.30$
- **A1** multiplier = $3.333... = 3.33$ to 2 dp
- **Answer: $MPW = 0.30$; multiplier = $1 / 0.30 = 3.33$ (to 2 dp).**

Question 12

- **B1** identifies a limitation, e.g. uncertainty over the true value of the MPC or MPM, time lags, crowding out, or that some spending leaks abroad
- **B1** explains why this is a problem, e.g. an incorrect MPC leads to wrong multiplier size and hence wrong fiscal impulse estimate
- **B1** a brief example or development, e.g. if MPC is lower than assumed a planned spending increase will produce a smaller rise in income than forecast
- **Answer: Limitation: the true MPC/MPM is uncertain so multiplier estimates may be wrong; if MPC is lower than assumed the fiscal stimulus will have a smaller effect than planned.**

Question 13

- **Level 1** (1-5): Basic statements about the multiplier or fiscal policy with limited application. Limited or no use of examples. Little or no analysis of why the multiplier supports fiscal expansion.
- **Level 2** (6-10): Clear explanation of the multiplier mechanism and how fiscal expansion can increase AD, with some application to recession context. Some analysis of limitations such as leakage, crowding out or time lags, but limited evaluation and balancing of viewpoints.
- **Level 3** (11-15): Developed analysis, including quantitative illustration of the multiplier effect and exploration of practical limitations. Balanced evaluation considering alternative policy tools and the role of supply-side constraints, leading to a reasoned conclusion.
- **Level 4** (16-20): Comprehensive analysis with well-developed examples and diagrams. Strong evaluation of the multiplier's impact on fiscal policy, including discussion of MPW components, crowding out, automatic stabilisers, and the state of spare capacity, recognising distributional and financing issues.
- **Level 5** (21-25): Excellent and balanced judgement. Integrated use of theory, diagrams and empirical-style reasoning. Evaluates conditions under which fiscal expansion is most effective, compares monetary and supply-side alternatives, and reaches a supported, nuanced conclusion about when the multiplier makes fiscal policy the preferred stabilisation tool.
- **Indicative content:**
 - Explain how the multiplier works: initial injection raises income, responding via MPC, diminished by withdrawals (MPS, MPT, MPM), multiplier = $1/MPW$ or $1/(1-MPC)$.
 - Argue for fiscal expansion: direct injection into AD, potentially large multiplied effect especially where MPC is high and MPW is low, useful when monetary policy is constrained by a liquidity trap or interest rates are near zero.
 - Quantitative illustration: use a simple numerical example to show how a given increase in government spending might be multiplied into a larger rise in national income, noting how different MPW values change the outcome.
 - Consider limitations: leakages to imports and savings reduce effectiveness; high MPT reduces disposable income and multiplier; crowding out via higher interest rates can offset private investment; financing the fiscal expansion may raise future taxes or borrowing costs.
 - Discuss timing and implementation: fiscal policy can have long implementation lags and may be politically constrained; automatic stabilisers vs discretionary fiscal policy; temporary vs permanent fiscal measures and their different multiplier effects.
 - Role of spare capacity: when there is significant spare capacity multipliers are larger and inflation risk is low; near full capacity fiscal expansion may cause demand-pull inflation rather than increased output.
 - Compare with alternatives: monetary policy effectiveness when rates are positive and transmission channels work; supply-side policies raise LRAS and are better for long-term growth but act slowly.
 - Distributional and welfare considerations: fiscal expansion may benefit some groups more than others; targeted spending (e.g. transfers to low-income households) can raise the effective MPC and hence the multiplier.
 - Evaluation and judgement: weigh the size of estimated multiplier, state of the economy, financing constraints and time horizon to conclude when fiscal expansion is the most effective stabiliser and when alternative policies are preferable.