3.3 National income and the multiplier

Name: _____ Class: _____ Date: _____ **Total: 24 marks**

KEY WORDS multiplier • circular flow of income

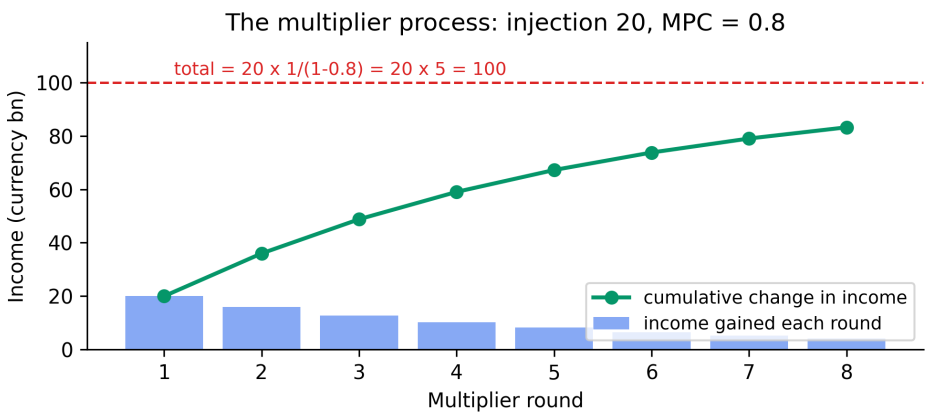
National income and the multiplier

Objective

Use the circular flow with injections and withdrawals, the equilibrium condition, and the multiplier formulae with marginal propensities (spec 2.3.4, rows 1–4).

1 Key knowledge and worked examples

The multiplier. Injections (I, G, X) add spending; withdrawals (S, T, M) drain it; equilibrium returns when $\mathrm{I}+\mathrm{G}+\mathrm{X}=\mathrm{S}+\mathrm{T}+\mathrm{M}$. The multiplier $k = 1/(1-MPC) = 1/MPW$ where $MPW = MPS + MPT + MPM$; the total change in income is k times the injection. SAM anchor: MPC 0.5 gives $k = 2$, so £30bn becomes £60bn.



Original data: injection 20 with MPC 0.8 converges to 20 x 5 = 100.

2 Practice

2.1 Name the three injections and the three withdrawals. [2]

2.2 Write the circular-flow equilibrium condition. [2]

2.3 With MPC = 0.8, calculate the multiplier. [3]

2.4 With MPS = 0.1, MPT = 0.15 and MPM = 0.25, calculate MPW and the multiplier. [3]

2.5 Distinguish income from wealth. [2]

3 Exam-style questions

3.1 *(SAM WEC12/01 Q9, adapted.)* A government invests £30 billion in infrastructure and households have an MPC of 0.5. Calculate the multiplier and the total change in national income, showing the formula. [4]

3.2 *(Original.)* An injection of 20 is made into an economy with MPC = 0.8. Explain the multiplier process and the total change in income. [4]

3.3 *(Original.)* Explain why an economy with a high marginal propensity to import has a small multiplier. [4]

Solutions

2.1 Injections: investment, government expenditure, exports. Withdrawals: saving, taxation, imports.

2.2 $I + G + X = S + T + M$ – total injections equal total withdrawals.

2.3 $k = \frac{1}{1-0.8} = \frac{1}{0.2} = 5$.

2.4 $MPW = 0.1 + 0.15 + 0.25 = 0.5$, so $k = \frac{1}{0.5} = 2$.

2.5 Income is a FLOW of earnings per period; wealth is a STOCK of assets held at a point in time.

3.1 Multiplier $= \frac{1}{1-MPC} = \frac{1}{1-0.5} = \frac{1}{0.5} = 2$. Total change $= 2 \times$ £30 billion = £60 billion.

3.2 The 20 becomes income; 80% is re-spent (16), which becomes someone else's income; 80% of that (12.8) is spent again – rounds 20, 16, 12.8, 10.24 … Each round shrinks by the 0.2 withdrawn. The sum is $20 \times \frac{1}{1-0.8} = 20 \times 5 = 100$: income rises by 100 in total.

3.3 A high MPM means each round of re-spending leaks abroad quickly: of every extra unit of income, more is spent on IMPORTS, which are withdrawals from the domestic circular flow. That raises MPW, so $k = 1/MPW$ falls – the same injection raises domestic income by less (an open economy imports its stimulus).

Local review guidance: the formula stated before substitution with MPC or MPW identified; at least three rounds shown or the geometric sum justified; (R1 3.3) the leakage mechanism named as a withdrawal from the circular flow, not just "money leaves". This is authored classroom guidance.