

The Multiplier

The multiplier is when an initial increase in an **injection** causes a bigger final increase in **real GDP (national income)**. Injections include **government spending (G), investment (I), and exports (X)**.

The core idea is that **one person's spending becomes another person's income**, so the initial injection triggers **multiple rounds of spending** through the economy.

For example the UK government spent **£9.3 billion** on the London 2012 Olympics generated an estimated **£16.5 billion** for the UK economy by 2014 .

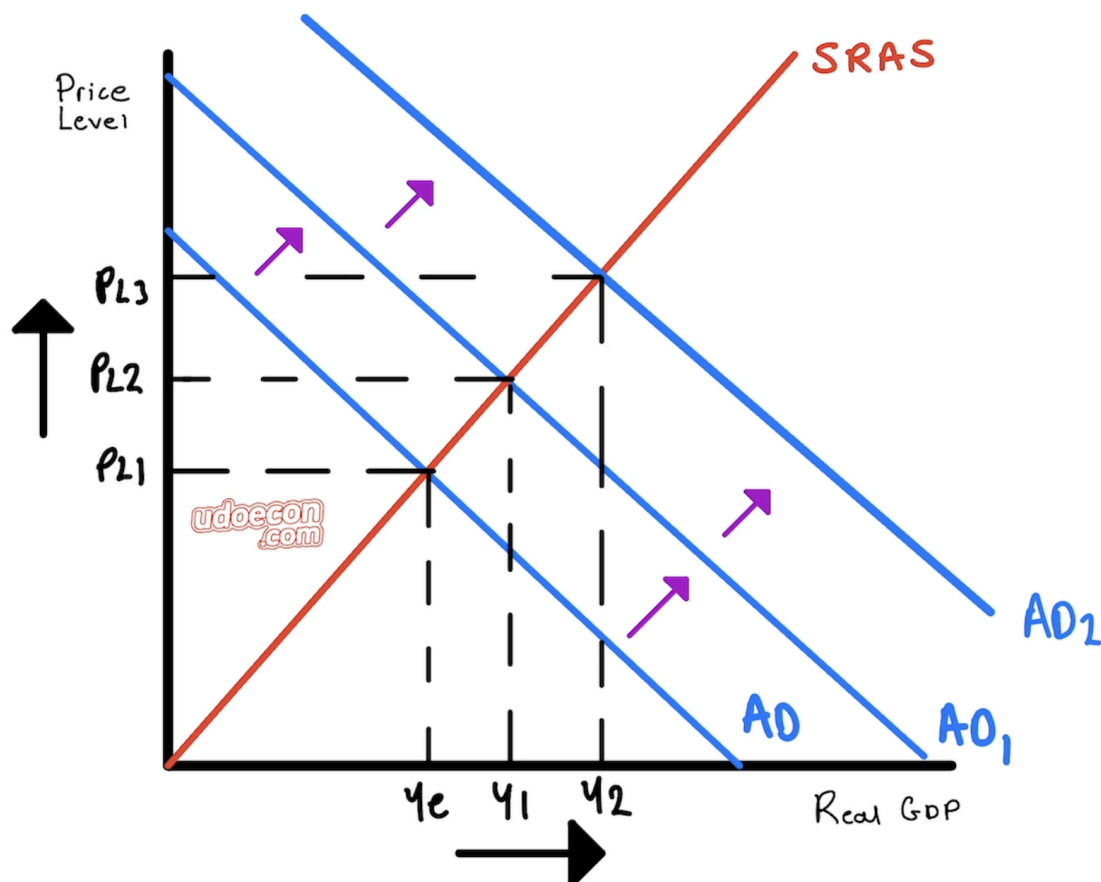
How the multiplier process works

When an injection rises (for example, higher government spending), **aggregate demand (AD)** increases because G is part of AD. Firms receive higher revenue, so profits rise . With profits rising firms may choose to expand and hire more workers , which raises household incomes.

As incomes rise, households increase **consumption (C)**. This increases AD again, creating a chain reaction where total spending (and GDP) rises by **more than** the original injection.

Link to AD shifts

The initial injection shifts AD to the right once. The multiplier effect then creates a **further** rightward shift because extra income keeps generating extra spending in later rounds.



The negative multiplier effect

The multiplier also works in reverse. If an injection falls, firms' revenues and household incomes fall, so consumption falls.

This means AD can decrease by **more than** the initial fall in the injection, leading to a larger overall drop in GDP.

The multiplier ratio

The multiplier ratio is:

Multiplier = change in real GDP ÷ initial injection

For example, if an injection of **£5m** leads to a **£15m** rise in real income, the multiplier is **3**.

Marginal propensities

Marginal propensities show what happens to each extra £1 earned:

Written by udoecon.com

- **MPC:** proportion spent on consumption
- **MPS:** proportion saved
- **MPT:** proportion paid in tax
- **MPM:** proportion spent on imports

A higher **MPC** means more spending, so the multiplier is larger. Higher withdrawals through saving, tax, and imports reduce the amount re-spent, so the multiplier is smaller.

MPW and leakages

The **marginal propensity to withdraw (MPW)** is the proportion of extra income that leaks out of the circular flow:

$$\text{MPW} = \text{MPS} + \text{MPT} + \text{MPM}$$

Because income is split between consumption and withdrawals, **MPC + MPW = 1**. A higher MPW reduces the multiplier because less of each extra £1 is re-spent.

Calculating the multiplier

Using MPC

You can calculate the multiplier using MPC. The higher the MPC, the more spending continues through the economy, so the multiplier is larger.

Using withdrawals

You can calculate the multiplier using leakages:

$$\text{Multiplier} = 1 \div (\text{MPS} + \text{MPT} + \text{MPM})$$

This approach shows clearly that larger leakages lead to a smaller multiplier.

Worked example

If **MPS = 0.10**, **MPT = 0.25**, and **MPM = 0.15**, total withdrawals are **0.50**. The multiplier is **$1 \div 0.50 = 2$** .

If the government increases spending by **£80m**, the total increase in GDP is:

$$\text{Impact on GDP} = \text{injection} \times \text{multiplier} = £80\text{m} \times 2 = £160\text{m}$$

What changes the multiplier in the real world

Written by udoecon.com

Anything that changes disposable income or spending behaviour can change the multiplier:

- Higher taxes increase leakages, so the multiplier falls
- Higher interest rates can raise saving and reduce consumption, so the multiplier falls
- An appreciated exchange rate can increase imports, so the multiplier falls
- Higher confidence can raise consumption, so the multiplier rises

Why the multiplier matters

Governments care about the multiplier because it helps estimate how much economic growth could result from higher spending. However, the multiplier effect is not instant because it takes time for repeated rounds of spending to work through the economy.

Time lags are an important evaluation point. The full effect can take a while to appear, and if confidence or other conditions change in that time, the final outcome may be different from what policymakers expected.