AS Macro: The Multiplier and the Accelerator
The Multiplier Effect

A change in one of the components of aggregate demand (AD) can lead to a multiplied final change in the equilibrium level of GDP.

1. The multiplier effect comes about because injections of new demand for goods and services into the circular flow of income stimulate further rounds of spending – because “one person’s spending is another’s income.”
2. This leads to a bigger final effect on national output and total employment.

Formal calculation for the value of the multiplier is:
Multiplier = 1 / (sum of the propensity to save + tax + import)
An Example of the Multiplier Effect

The government injects £200m in a project to build thousands of new affordable houses.

Why is the final increase in measured GDP likely to be more than £200m?
Housebuilding in Scotland rises 6%

By Reeveld Alderson
BBC Scotland's social affairs correspondent

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The number of new homes built in Scotland has risen, according to government figures.

In the year to the end of September last year, 15,436 homes were completed - up 6% on the previous year.
An Example of the Multiplier Effect

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Why is the final increase in measured GDP likely to be more than £200m?

If the final rise in GDP is £300m the value of the multiplier = 1.5

If the final rise in GDP is £250m the value of the multiplier = 1.25
The government injects £200m in a project to build thousands of affordable new houses.

A new house building project injects £200m of extra demand and output into the economy.

Many businesses benefit directly including building supply industries, architects etc.

Building new houses generates a new flow of factor incomes – including wages and profits.

Will the extra income stay inside the circular flow of income and spending?

If so, the multiplier effect is likely to be strong and the resultant impact on GDP quite large.
The rate of leakage from the circular flow
Assume that for each £100 of extra income
• 10% is saved
• 20% is taken in taxation
• 20% leaks from the economy in imports

At each stage the extra money flowing around the circular flow gets smaller

Multiplier = 1 / (sum of the propensity to save + tax + import)
If propensity to save = 0.1
Propensity to tax = 0.2
Propensity to import = 0.2
Then the multiplier = 1/0.5 = 2
When AS is highly elastic, the multiplier effect is likely to be high.

When AS is inelastic, it is harder for AS to expand to meet rising AD.
Summary of Factors Affecting Value of the Multiplier

High Multiplier Value
- Economy has plenty of spare capacity
- Propensity to import and tax is low
- High propensity to consume any extra income

Low Multiplier Value
- Economy is close to capacity limits
- Rising demand causes rising inflation
- Higher inflation causes rising interest rates

The Size of the Fiscal Multiplier

Government capital investment—such as new infrastructure building—results in higher multiplier effects.

Economists at the IMF have calculated the long-run multiplier value at +1.5 for developed countries and +1.6 for developing countries.

Source: The Economist
Examples of UK infrastructure projects

- 2nd Forth Road Bridge in Scotland
- Beijing Construction Group investing £800m in new manufacturing, logistics & leisure city hub around Manchester airport
- 1,400 new flood defence projects
- Cross Rail and High Speed Rail project (HS2)
- London Gateway Port & new London super sewer
- Nuclear power plants including Hinkley Point
The Accelerator Effect

Where planned capital investment is linked positively to the past and expected growth of consumer demand or national income

• Consider an industry where demand is rising quickly
• Firms will respond by making using their existing productive capacity or running down stocks of finished products
• If they expect high demand will be sustained – they will increase spending on plant and machinery, factories and new technology in order to increase their supply capacity
• This causes an accelerator effect – where a given change in demand for consumer goods and services will cause a greater percentage change in demand for capital goods
Examples of the Accelerator Effect in Action

- Investment to create extra capacity in cloud storage services
- Investment in 4G mobile networks to meet rising demand
- Expanding the fleet sizes of growing airlines
- Capital investment in renewable energy

The Negative Accelerator Effect

When the rate of growth of demand in an industry slows then net investment spending by businesses often falls.

E.g. Declining investment in steel plants in a recession or a drop in investment demand when subsidies for renewable energy are cut.
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