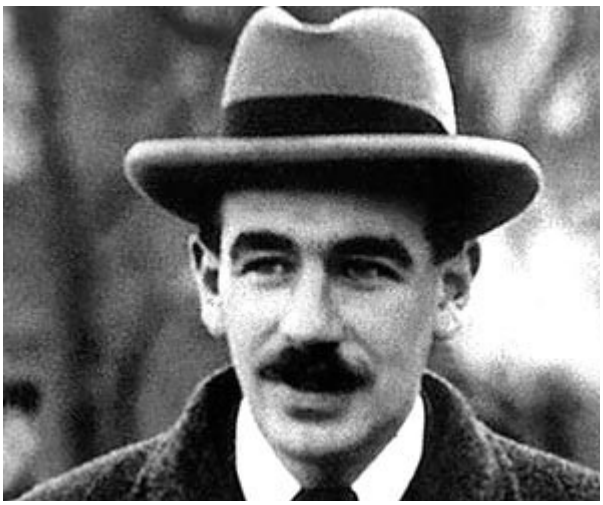
A Level Economics Theme 2

The UK economy – Performance and policies

2018-19

Course companion 2



$$\text{Multiplier (k)} = \frac{1}{1\text{-mpc}} = \frac{1}{\text{mpw}}$$

Aggregate demand, aggregate supply, equilibrium national income, the multiplier

Name: _____Tutor Group: _____

Teacher: _____

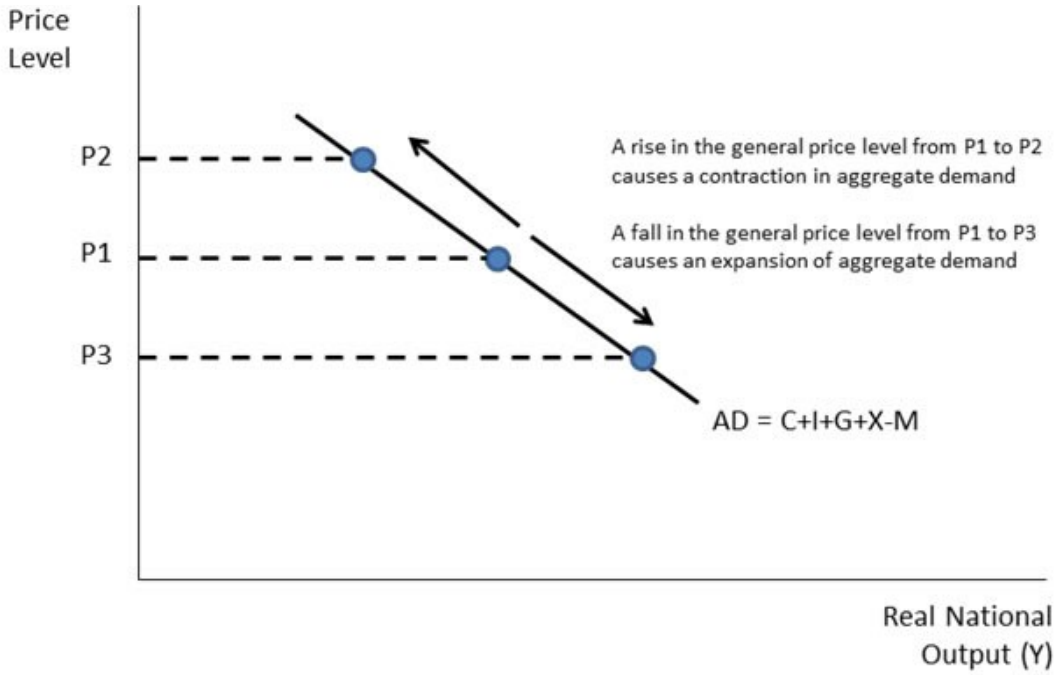
Contents

The aggregate demand (AD) curve

Aggregate demand (AD): the total of all demands or expenditures in the economy at any given price level.

AD = C + I + G + (X-M)

Reasons why aggregate demand curve slopes downwards



The aggregate demand curve is assumed to **slope downwards** i.e. real output **falls** as **the price level rises:**

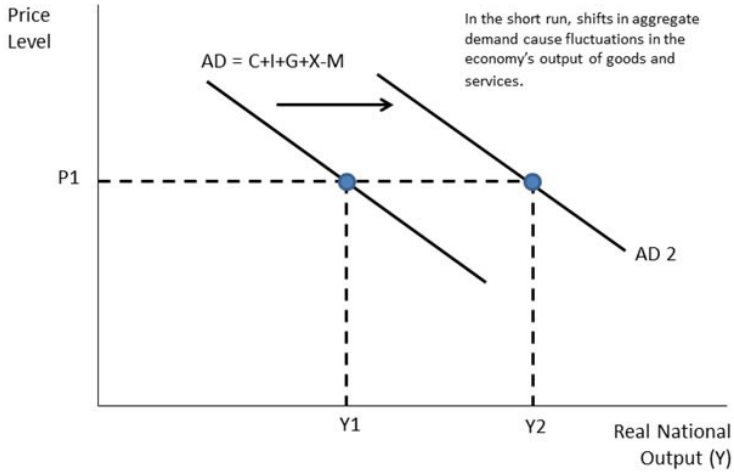
- **Income effect:** Households on fixed income can buy fewer goods/services.
- **Real balance effect:** If prices rise, the real value of people's cash savings will fall. They may therefore save more and spend less to compensate.
- **International competitiveness:** Higher UK price level makes UK exports less competitive.
- **Higher interest rates:** When the price level rises, interest rates tend to rise, reducing investment and consumption.

NB: A change in the **price level** causes a **movement along** the aggregate demand curve.

Shifts in the aggregate demand (AD) curve

Caused by changes in the components:

- Consumption (C)
- Investment (I)
- Government spending (G)
- Exports & Imports (X-M)



With reference to the diagram, briefly explain the likely effect of the following on the aggregate demand curve for the UK:

a) The 3.5 per cent fall in real household consumption expenditure between 2007 and 2011.

b) The fall in the Bank of England's base interest rate (the price of money: cost to borrowers and reward to savers) from 5.75 per cent in 2007 to 0.25 per cent in 2016. (back to 0.5% in Nov-17)

c) Rises in taxes in the 2011 and 2012 budgets.

d) The 40 per cent fall in London Stock Exchange prices between October 2007 and February 2009.

e) The rise in the household savings ratio (or average propensity to save = APS = the proportion of disposable income which is saved) from 5.6 per cent in 2008 to 11.0 per cent in 2010.

f) The fall in real government spending between 2011 and 2014 and forecast to continue to 2018.

g) The 23 per cent fall in the average value of the pound against other currencies between 2007 and 2011.

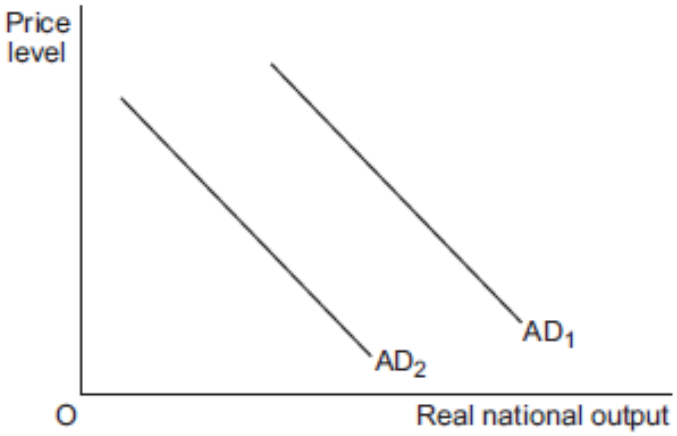
Possible exam questions

- Explain why the AD curve slopes downwards
- Show & explain shifts in the AD curve when one of the components changes e.g. a fall in consumption or an increase in government spending.

Multi-choice questions on aggregate demand

(1)

The diagram below shows two aggregate demand (AD) curves for an economy.



The shift from AD_1 to AD_2 could be explained by an increase in

A imports.

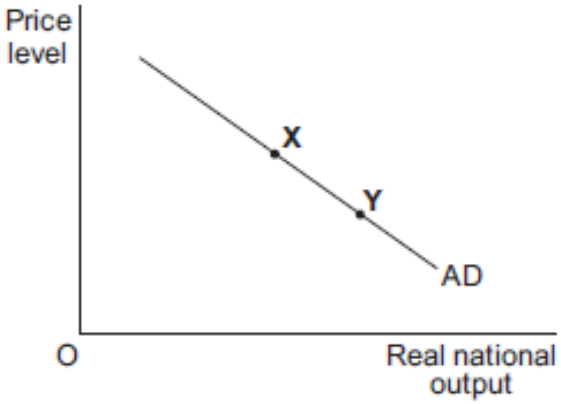
B the price level.

C costs of production.

D investment.

(2)

The diagram below shows an aggregate demand (AD) curve for an economy.



(3)

The movement down the aggregate demand curve from **X** to **Y** shows that

A as real national output rises, firms can lower their costs due to mass production.

B as real national output falls, the price of imported goods rises.

C as the price level rises, the nominal value of consumption and investment falls.

D as the price level falls, consumers and firms purchase more goods.

Anderton: unit 23

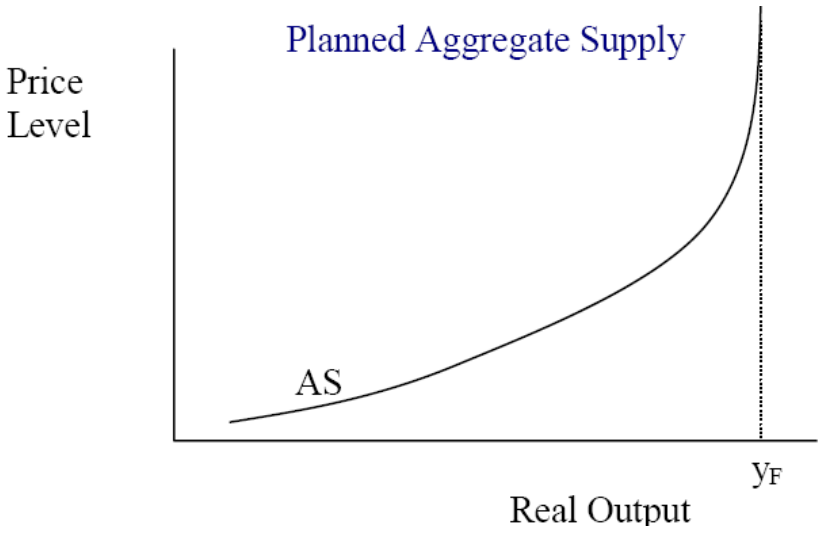
P Smith, p150-151, The Aggregate Demand Curve

Sloman, 9th edition, p441-442: The aggregate demand curve

The characteristics of Aggregate supply (Keynesian)

Aggregate Supply curve shows the total quantity of goods and services firms are willing to produce at each price level.

As the price level rises firms are willing to produce a higher level of real output.



y_F : The **full employment level of output** corresponds to the economy being on the **PPF** – that is, it is impossible for an economy to exceed the output level y_F in the short run because it has used all of its available resources.

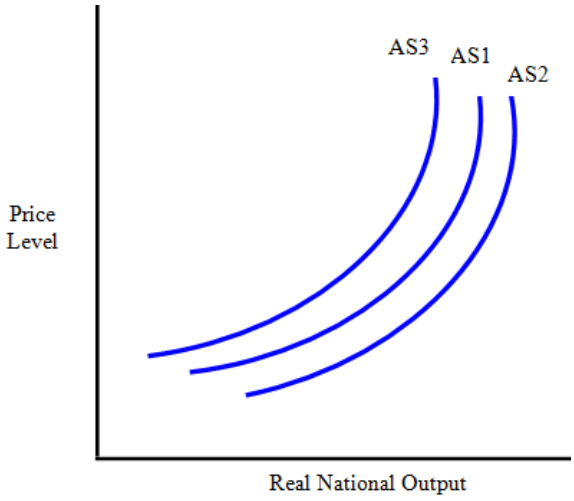
As a result of this short-run constraint the (Keynesian) AS curve is shown becoming more **inelastic** the closer the economy gets to the PPF. At the full employment level of output the AS curve is **perfectly inelastic**.

At lower levels of real output, where there are plenty of **spare resources** (e.g. unemployed workers) it is likely that the AS curve is much more **elastic.**

As with AD, **movements along** the AS curve is down to changes in the price level alone.

Shifts in aggregate supply curve

- As the AS curve shows the total quantity of goods/services firms are willing to produce at any given price level, any factor which changes **production costs** will shift the AS curve.
- **Productivity** (output per worker) is an important factor affecting production costs, e.g. if productivity rises with wages unchanged, labour costs per unit fall (AS_1 to AS_2) i.e. firms willing to produce more at any given price level.
- A **fall** in labour productivity would result in a leftward shift of AS from AS_1 to AS_3.



Equilibrium levels of real national output

Equilibrium is defined as the price level and level of real output at which planned **aggregate demand** is **equal to** planned **aggregate supply**. At equilibrium there will be no tendency for the economy's price level or level of real output to change.

In the diagram above, **Y1 is the equilibrium level** of real output consistent with AD1; the price level (PL) is P1. Notice that in the economy illustrated **Y1 is less than Y3** (so called 'full employment') so the economy has a (negative) ***output gap*** i.e. **is inside its PPF**.

This reflects the Keynesian assumption that economies can suffer lost output and unemployment due to insufficient aggregate demand.

Changes in the equilibrium level of income/output and the price level

are caused by:

- Shift of AD OR
- Shift of AS

How much national income or the price level change **depends on**:

1. How much AD or AS changes, for example a rise in consumer spending will have a larger effect on AD because C is the largest component of AD
2. How close the economy is to full employment (i.e. elasticity of aggregate supply curve). A rise in AD is more likely to cause a larger effect on the price level if the economy is close to full employment
3. Whether there are counteracting changes, e.g. consumer spending may rise but if government spending falls there is less effect on AD and national income; exports to US may rise but exports to China may fall so cancelling out the effect

Explanation of these factors provides **evaluation marks** in exam answers.

U.S. consumer spending, inflation data point to strong economy (Reuters August 2018)

U.S. consumer spending increased solidly in July, suggesting strong economic growth early in the third quarter, while a measure of underlying inflation hit the Federal Reserve's 2 percent target for the third time this year.

The Commerce Department said consumer spending, which accounts for more than two-thirds of U.S. economic activity, rose 0.4 percent last month after advancing by the same margin in June. Households spent more at restaurants and on accommodation last month. Prices continued their gradual upward trend in July. Minutes of the Fed's July 31-Aug. 1 meeting published last week showed some policymakers worried that "a prolonged period in which the economy operated beyond potential could give rise to inflationary pressures."

Given strong domestic demand and a tightening labor market, inflation could rise further. Consumer spending should blunt some of the impact on the economy from an anticipated widening in the trade deficit.

1. Draw an AD-AS diagram to show the changing level of national income and price level in the US.

2. Explain the impact on rising AD of the growing US trade deficit

Use the AS/AD model to evaluate the effect on real output and the price level of:

1) **A recession in the Eurozone**

Skill	**Workings**
Analysis (1): Draw AS/AD diagram and explain shifts in AS and/or AD	
Analysis (2): State effect on real output & price level	
Evaluation (1):	
Evaluation (2):	

2) A fall in interest rates

Skill	Workings
Analysis (1): Draw AS/AD diagram and explain shifts in AS and/or AD	
Analysis (2): State effect on real output & price level	
Evaluation (1):	
Evaluation (2):	

3) A rise in oil prices

Skill	Workings
Analysis (1): Draw AS/AD diagram and explain shifts in AS and/or AD	
Analysis (2): State effect on real output & price level	
Evaluation (1):	
Evaluation (2):	

(4) A fall in the exchange rate value of the UK pound sterling.

Skill	Workings
Analysis (1): Draw AS/AD diagram and explain shifts in AS and/or AD	

Analysis (2): State effect on real output & price level	
Evaluation (1):	
Evaluation (2):	

The multiplier

(a) The multiplier ratio
(b) The multiplier process
(c) Effects of the economy on the multiplier
(d) Understanding of marginal propensities and their effects on the multiplier:
    - the marginal propensity to consume (MPC)
    - the marginal propensity to save (MPS)
    - the marginal propensity to tax (MPT)
    - the marginal propensity to import (MPM)
(e) Calculations of the multiplier using the formulae 1/(1-MPC) and 1/MPW, where MPW=MPS+MPT+MPM
(f) The significance of the multiplier to shifts in AD

The **multiplier** is the number of times a **rise in national income** *exceeds* the **rise in injections** that caused it.

The multiplier in a closed economy with no government sector

Recap:

Marginal propensity to consume (MPC): The proportion of a change in disposable income which is spent on goods/services in the domestic economy.

MPC = $\Delta C/\Delta Yd$

Marginal propensity to save (MPS): The proportion that is saved out of a change in disposable income.

MPS = $\Delta S/\Delta Yd$

The multiplier process

- The multiplier process is based on the principle that **one person's spending becomes another person's income** within the circular flow of income.
- If there is an additional injection into the circular flow, e.g. a new investment, then **national income** will **increase** by **more than** the **additional injection.**
- For example, if there is a new investment of £1m in the economy then national income will rise by more than £1m.
- Based on ideas of Keynes

Real world examples of the multiplier process

1. The Eden Project (Cornwall)

- The initial investment in the Eden Project in Cornwall has had a significant local multiplier effect on the South West. It employs more than 400 **staff** and 600 in the Summer.
- It spends a great deal on **supplies** which mostly come from **local businesses** which has led to further job creation.
- It stimulated further **investment** in the tourism industry.
- It led to infrastructure improvements.

2. Ireland

http://www.bbc.co.uk/news/business-15238637

1. How might FDI help the Irish economy to recover?

2. How does Ireland attract so much FDI?

3. Mostyn Port

http://www.bbc.co.uk/news/uk-wales-15193101

How will this project help the Welsh economy?

An example of the 'negative multiplier effect'

4. Bombardier

http://www.bbc.co.uk/news/business-14024617

1. How many jobs will be lost at Bombardier?

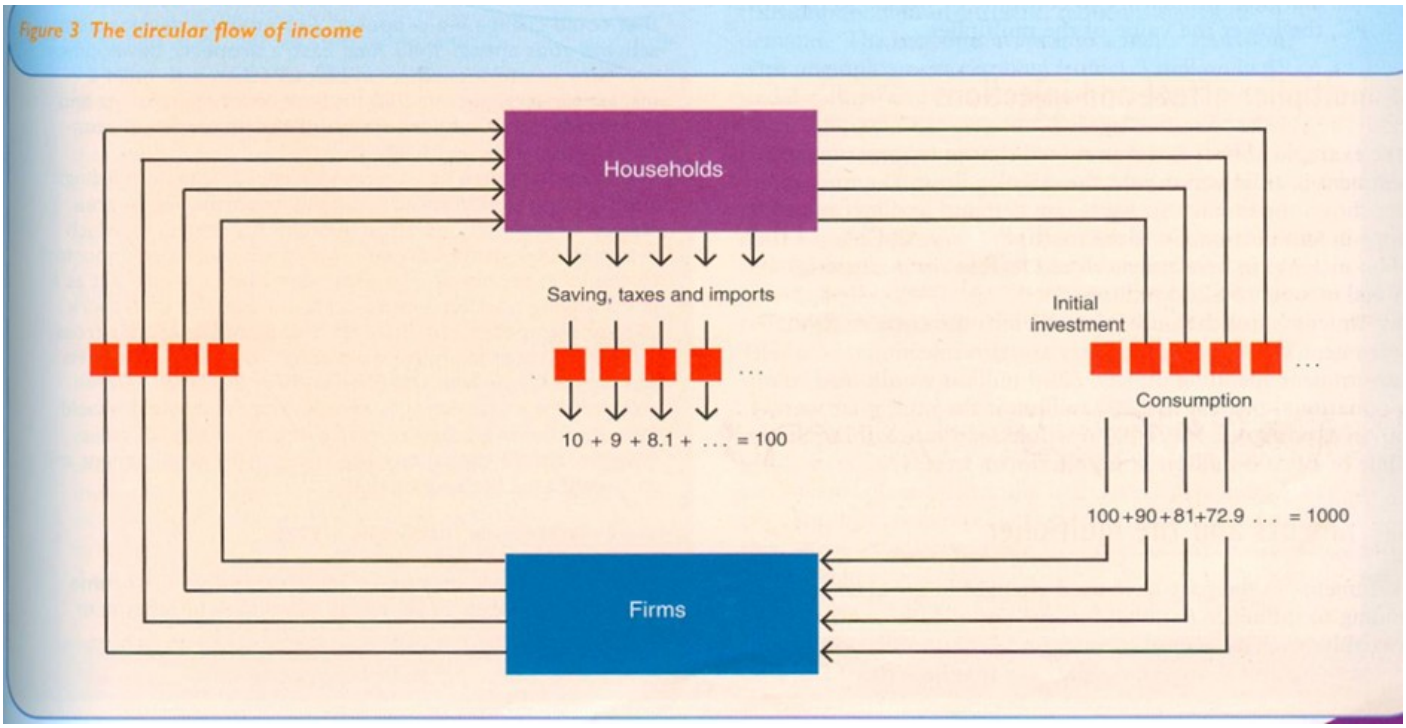
2. How many more jobs will be lost as a result?

3. How will this affect the local economy?

Recent 2017 developments: http://www.bbc.co.uk/news/uk-northern-ireland-41532309

(220% + 80% = 300% US import tariff)

The circular flow model – showing multiplier effect of a new investment



The multiplier process

- This is additional spending within the circular flow. This additional income of firms **is spent on wages** and **other factor incomes** so becomes new income to households who own the factors of production.
- In this example households spend 9/10 of any additional income, so their MPC = ___
- The remaining 1/10 of income is saved by households so is a _____ from the circular flow of income, and **£90m is spent.** It will be spent on goods and services produced by firms so **firms now receive additional income of £90m**. This is spent on **wages** and other factor incomes so households earn a further £90m. Once again 9/10 of this is spent, which is £____ and the rest saved, that is £___.
- The diagram above shows that eventually this process will end when the additional savings in the economy = £100m, equal to the initial increase in investment.
- The increase in national income caused by the additional investment is £1,000m. This is linked to the MPC which is 9/10.

The multiplier ratio

Simple formula for multiplier:
Multiplier (k) = 1/(1-MPC) = 1/MPS (in closed economy with no government sector)

Change in income = multiplier (k) x change in injection into circular flow

Calculate the eventual rise in national income in each case:

1. Government infrastructure investment spending increases by £32 billion and the MPC is 0.5

2. Government infrastructure investment spending increases by £32 billion and the MPC is 0.75

3. Government infrastructure investment spending increases by £50 billion and the MPC is 0.5

4. Government infrastructure investment spending increases by £50 billion and the MPC is 0.75

The production of new films in the UK: Star Wars 2015

Production of the last Star Wars movie has brought a £150m economic impact to Britain, according to recently released accounts
The ready supply of skilled staff is a key reason for shooting in Britain. Star Wars has been filmed at Buckinghamshire's Pinewood Studios with the number of

direct production staff peaking at 258. Together they were paid a total of £11.2m contributing to the total £147.6m costs of the picture over the period.
In addition to paying staff, other key costs include equipment hire, travel and paying the studios to shoot there – all generating jobs for hundreds more UK-based workers
Two further Star Wars movies will be filmed in Britain.
Figures released by the British Film Institute (BFI) show that £1.4bn was spent in Britain by international filmmakers last year. It is a 35pc increase on the previous year and the highest since the BFI began collecting records 20 years ago.
Pinewood alone has been home to the three largest film productions of 2015, being Star Wars, Avengers: Age of Ultron and the 24th Bond film Spectre. They fuelled a 17pc rise in revenue at Pinewood to a record £75m for the year-ending 31 March 2015 while operating profits rose £0.9m to £5.8m.
To cope with the continuing boost in demand, the studio is preparing a £200m expansion which will see it add 12 stages over the next 15 years.

With reference to the extract above, describe the multiplier effect on the UK economy of new films being produced in the UK

The multiplier in an open economy with a government sector

Savings is not the only withdrawal.

The examples given above assume that the only withdrawal from the circular flow of income is savings. However, in reality there are two other withdrawals from any additional income for households – **tax** and **imports.**

Marginal propensity to import (MPM): The proportion of a change in disposable income which is spent on imports. MPM = $\Delta M/\Delta Yd$

Marginal propensity to tax (MPT): The proportion of a change in income which is paid in tax.

MPT = $\Delta T/\Delta Y$ (NB: in the UK this would be 0%/20%/40%/45% dependent on your income bracket)

Marginal propensity to withdraw (MPW) = MPS + MPM + MPT

Therefore the value of the multiplier depends not just on the MPS but on the MPW, where:

Multiplier (k) = 1/MPW = 1/(MPS+MPM+MPT)

Questions on the multiplier

(1) In a remote region of a developing country, incomes are low and mostly spent on basic essentials so the MPS is only 0.1. As the area is far from the coast and transport infrastructure poor, few imported goods are available, so the MPM is only 0.05. The tax collection system is poorly developed so the MPT is only 0.06.

(a) Calculate the value of the multiplier

(b) Calculate the eventual rise in national income from government spending on infrastructure of £100,000.

(2) In a developed country with relatively high average incomes, the MPS is only 0.07, however demand for imported goods is high so the MPM is 0.5, taxes are relatively high to finance health, education and welfare spending so the MPT is 0.38.

(a) Calculate the value of the multiplier

(b) Calculate the eventual rise in national income from government spending on infrastructure of £100,000.

The Multiplier and Keynesian Economics

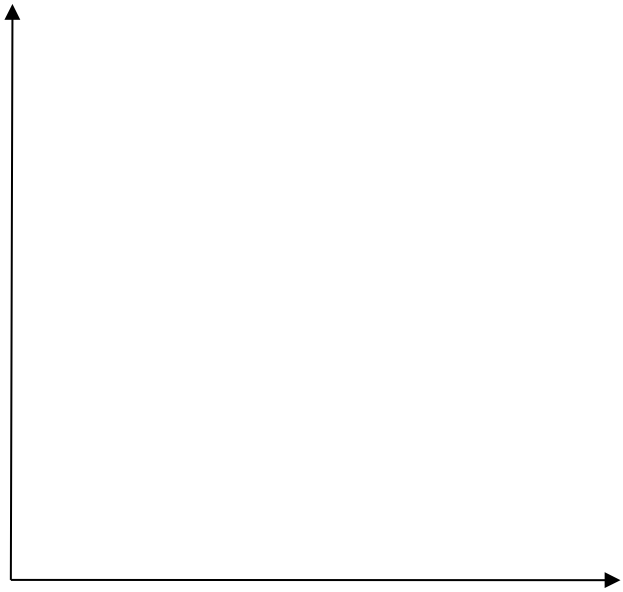
- In the 1930s Keynes recommended a demand-management approach to reducing unemployment
- Government spending on infrastructure to be used as injection into circular flow of income, with multiplier effect on national income

The effects of the economy on the multiplier

- Depends on **marginal propensity to tax (MPT**) & **marginal propensity to import (MPM**) which are both relatively high in UK making value of **multiplier low.**

- Depends on **marginal propensity to save (MPS)** which is relatively low for UK but changes over time, e.g. due to consumer confidence or interest rates.
- Impact depends on spare capacity in economy: If **aggregate supply is inelastic**, increases in AD will lead to **higher prices** rather than an increase in real national output. In contrast, when AS is **perfectly elastic** a rise in aggregate demand causes a **large increase in national output.**

Draw an AS/ AD diagram to illustrate this point.



Further evaluation of the multiplier effect

- It is **difficult to know** the exact size of the multiplier, despite attempts to model it.
- Multiplier effect **not instantaneous**: takes time for money to flow around the circular flow, time lags between initial investment and the final increase in national income.
- Economists **disagree about the exact size**: Supply-side economists believe it has a low value as increased government spending causes a fall in private sector spending due to so-called 'crowding out' – where government borrowing pushes up the demand for and hence the price of of borrowed funds (i.e. the interest rate). Keynes thought multiplier between 2 and 3, more recent estimates of multiplier for UK: 0.5 to 1.2.

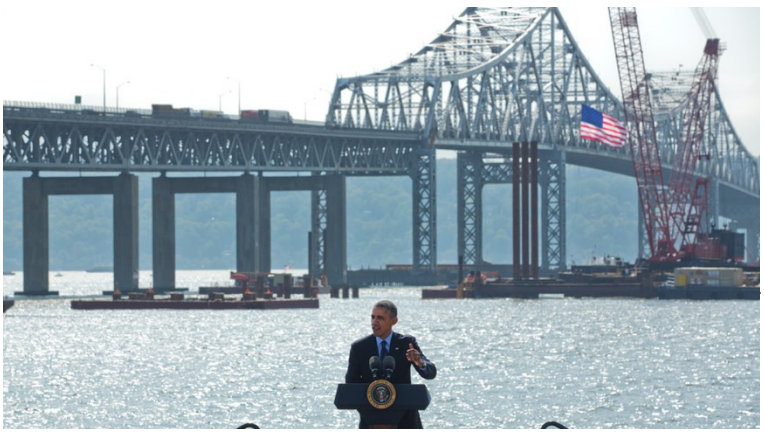
Discuss why a rise in **investment** in the UK may lead to a **more than proportional change** in aggregate demand. Use an aggregate demand and supply diagram to illustrate your answer. (15)

NB: exam question does not mention the word 'multiplier' but the phase 'more than proportionate change in AD' indicates reference to the multiplier.

Typical exam question

Evaluate why a change in the government budget deficit may lead to a **more than proportional** change in aggregate demand. Use an aggregate demand and supply diagram to illustrate your answer.

Infrastructure spending



US plans to boost infrastructure spending

… the potential benefits outweigh the spending. In the short run, infrastructure investments provide a boost to a feeble recovery. (It was) estimated in 2011 that for every dollar the federal government spent on infrastructure through Mr Obama's stimulus, the value of economic activity increased by between $1 and $2.50—one of the biggest multipliers of the main components of the programme. And a study by the University of Massachusetts-Amherst in 2009 found that every $1 billion spent on infrastructure creates 18,000 jobs, almost 30% more than if the same amount were used to cut personal income taxes. (The Economist, March 2013)

1. Why might infrastructure have potentially large multiplier effects?

2. Why might these effects be delayed for certain projects?

Multi-choice questions on the multiplier

(1) The multiplier effect of an increase in investment in an economy is

A an increase in productive capacity.

B a larger increase in national income than in investment.

C an increase in the underlying trend rate of growth.

D the movement of the economy from recession to boom.

(2) The multiplier can refer to the effect of a change in the level of

A aggregate demand upon imports.

B national income upon aggregate demand.

C saving upon investment.

D investment upon national income.

(3) The Japanese Government plans to spend 200 million yen on building new power stations. The final increase in GDP as a result of this investment is estimated to be 300 million yen.

In this case the value of the multiplier would be

A 1.2

B 1.0

C 1.5

D 2.0

(4) Assuming a two-sector economy, the government has calculated that the marginal propensity to consume is 0.8. If there is an increase in investment of £50 million, how much would the economy grow?

A. £40 million
B. £50 million
C. £150 million
D. £250 million

(5) An economy has a marginal propensity to consume of 0.6 and an injection of £110 million is made into that economy. By how much will national income increase?

A. £176 million
B. £183 million
C. £275 million
D. £660 million

Data Response questions on the multiplier

1.

Extract C: Is investment in infrastructure the solution to low growth?

The weak recovery of the UK economy has led to renewed demands for a boost to investment in the infrastructure of the UK economy. The Coalition Government has responded by relaxing planning rules and by providing construction companies with a guaranteed return on their investment to try to encourage the private sector to finance large scale projects. The Government says that it hopes to encourage infrastructure investment in, for example, transport, energy supplies, housing, and faster broadband and mobile phone networks. However, it is reluctant to finance such investment in the infrastructure by increasing government spending. More government spending on infrastructure projects could mean cuts elsewhere, tax increases or more borrowing.

Investing in infrastructure can be expected to result in a multiplier process and is important for growth. It can increase real GDP by reducing unproductive journey times, improving labour mobility, providing better access to overseas markets, attracting foreign firms to set up in the UK and by increasing aggregate demand during the construction phase of the projects. However, any increase in spending might, in the short run, also lead to higher inflation and an increase in the balance of payments deficit.

Source: news reports, September 2012

With reference to the extract, explain what is meant by the multiplier (5)

2. Extract A (The Economist 2016)

The multiplier emerged from arguments in the 1920s and 1930s over how governments should respond to economic slumps. John Maynard Keynes, one of history's most important economists, described the role of the multiplier in detail in his seminal book, "The General Theory of Employment, Interest and Money". Conventional wisdom had it that government borrowing raises interest rates and uses resources which might otherwise have been spent by private firms or households. Keynes agreed that this could be the case in normal times, but he also argued that when an economy is operating below full employment, how much is spent determines the levels of investment and income rather than what the economy is capable of producing. During such slumps, stimulus provided by the government does not crowd out private activity, because the economy is operating below capacity. Instead, it ripples across the economy, boosting the incomes of those who receive government contracts or benefit payments, who then go on to spend and invest more. Should the government cut back, the ill effects would multiply in the same way.

Extract B (The Economist 2009)

The size of the multiplier is bound to vary according to economic conditions. For an economy operating at full capacity, the multiplier should be zero. Since there are no spare resources, any increase in government demand would just replace spending elsewhere. But in a recession, when workers and factories lie idle, a fiscal boost can increase overall demand. And if the initial stimulus triggers a cascade of expenditure among consumers and businesses, the multiplier can be well above one.

The multiplier is also likely to vary according to the type of government action. Government spending on building a bridge may have a bigger multiplier than a tax cut if consumers save a portion of their tax windfall. A tax cut targeted at poorer people may have a bigger impact on spending than one for the affluent, since poorer folk tend to spend a higher share of their income.

Crucially, the overall size of the government spending multiplier also depends on how people react to higher government borrowing. If the government's actions bolster confidence and revive animal spirits, the multiplier could rise as demand goes up and private investment is "crowded in". But if interest rates climb in response to government borrowing then some private investment that would otherwise have occurred could get "crowded out". And if consumers expect higher future taxes in order to finance new government borrowing, they could spend less today. All that would reduce the fiscal multiplier, potentially to below zero. Different assumptions about the impact of higher government borrowing on interest rates and private spending explain wild variations in the estimates of multipliers

With reference to the extracts above, explain TWO factors that might affect the value of the government spending multiplier. Include a diagram in your answer (8)