Cambridge Assessment International Education

Cambridge International AS & A Level

ECONOMICS **9708/42**

Paper 4 Data Response and Essays **February/March 2020**

2 hours 15 minutes

3291694977

You must answer on the enclosed answer booklet.

You will need: Answer booklet (enclosed)

INSTRUCTIONS

- Answer **three** questions in total:
  - Section A: answer Question 1.
  - Section B: answer **two** questions.
- Follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.
- You may use a calculator.
- You may answer with reference to any economy you have studied where relevant to the question.

INFORMATION

- The total mark for this paper is 70.
- The number of marks for each question or part question is shown in brackets [ ].

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Section A

Answer this question.

1 Well-being and economic growth

For many years governments have sought to deal with economic performance with policies and tools based on the assumption that consumers would act rationally in response to incentives or sanctions. They have also operated public sector services assuming that the best outcome is achieved through the power of government to regulate, tax and spend.

The tools the government uses are designed to influence consumer demand, often with the aim of increasing economic growth and GDP. But economic growth does not guarantee rising prosperity and well-being, as illustrated by Table 1.1 that compares HDI and GDP of selected countries.

Ideally, all major investment projects in the public sector should require a cost-benefit analysis. This assesses the wider effects of projects. The project may have different effects on a poorer group than on a wealthy group. For example, a poorer group may gain considerably more benefit, or well-being, from a government grant than a richer group.

Some economies have tried to influence economic growth by using an expansionary monetary policy. In some countries this has meant that bank interest rates have been kept very low. It was hoped that this would encourage investment and borrowing and increase spending. Recently there has been some pressure to raise interest rates. But raising interest rates is not always wise.

Higher interest rates could be justified in an economy experiencing economic growth, falling unemployment and an increase in business investment with the result that there are fewer unused resources in the economy.

Against that, higher interest rates could decrease consumer spending and also result in a decrease in investment. This may mean no increase in real wages. It could suggest interest rates should stay low.

Table 1.1 HDI and GDP of selected countries by HDI rank order

	HDI	Rank		GDP (US$ millions)	Rank
Norway	0.89	1		370 449	31
Australia	0.86	3		1 258 978	13
Germany	0.85	5		3 466 000	4
UK	0.83	13		2 629 000	5
Thailand	0.58	70		406 949	26
Botswana	0.43	103		15 018	116
Pakistan	0.38	117		284 185	42
Eswatini	0.36	121		3 770	157

Sources: RSA Issue 1, 2017; RSA Issue 3, 2016; hdr.undp.org; World Bank

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(a) Identify from the article **one** example, other than expansionary monetary policy, of a macroeconomic policy tool that a government could use and analyse how it might affect the economy. [4]

(b) Explain **two** merits of using a cost-benefit analysis before starting a major investment project in the public sector. [4]

(c) Consider whether there is any evidence in the information that a high GDP means that the well-being of the population is also higher. [5]

(d) Use the article to consider the reasons why there are different opinions about the level at which central bank interest rates should be fixed. [7]

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Section B

Answer **two** questions.

2 'The existence of externalities implies market failure and therefore that the good should necessarily be provided by the government.'

Discuss this assertion. [25]

3 **(a)** Explain the link between a consumer's rational behaviour, marginal utility, prices of different goods and the demand for a good. [12]

(b) To what extent may the demand theory based on indifference curves be considered superior to that derived from marginal utility? [13]

4 **(a)** Explain what determines the size of a firm. [12]

(b) Consider the view that in the absence of government regulation there are no limits on the ability of a monopolist to charge whatever price it wishes. [13]

5 **(a)** How does economic analysis explain the level of wage rates in a perfectly competitive labour market? [12]

(b) Discuss, with the aid of a diagram, the possible effects on the operation of an imperfectly competitive labour market of a government fixing a wage rate in this market. [13]

6 'Monetarists insist that control of the money supply is the key to solving the problem of inflation, Keynesians argue that inflation can only be controlled by controlling expenditure.'

To what extent do you agree that both these approaches are only partially correct? [25]

7 **(a)** With the help of a diagram explain the Laffer Curve analysis and consider its link to supply-side policies. [12]

(b) 'Supply-side policies do not work when economies are in recession.'

How far do you agree with this statement? [13]

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Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

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1(a) One tool in the article is taxation (fiscal policy): governments use "the power of government to regulate, tax and spend". If the government cuts income tax, households have higher disposable income, so consumption rises. Because AD = C + I + G + (X − M), aggregate demand shifts to the right, and through the multiplier real GDP rises by more than the initial increase in spending, so economic growth and employment increase. However, if the economy is close to full capacity the extra AD mainly raises the price level (demand-pull inflation), and some of the extra income leaks into imports and saving, which reduces the multiplier effect.

1(b) Merit 1: a cost-benefit analysis includes externalities, not just private financial costs and revenues. For a new road, for example, it values external benefits (time saved, fewer accidents) and external costs (noise, pollution) in money terms, so the project only goes ahead if total social benefits exceed total social costs. This helps allocate scarce public funds efficiently.

Merit 2: it shows the distribution of the effects. As the article says, a poorer group may gain considerably more well-being from a benefit than a richer group (diminishing marginal utility of income). CBA can identify who gains and who loses and give extra weight to gains for low-income groups, so the government can judge the effect on equity and overall well-being, not just on GDP.

1(c) GDP measures the total value of output, while HDI combines life expectancy, education and GNI per capita, so HDI is a better indicator of well-being: the higher the HDI, the higher the well-being. There is some evidence of a link: Germany has the 4th highest GDP (US$3 466 000m) and the 5th highest HDI

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	(0.85), the UK is 5th for GDP and 13th for HDI, and the two countries with the lowest GDP, Botswana and Eswatini, also have low HDIs (0.43 and 0.36). However, apart from Germany the rank orders show little correlation. Norway is only 31st for GDP (US$370 449m) but has the highest HDI (0.89), while Thailand has a higher GDP (US$406 949m) but an HDI of only 0.58, and Pakistan, with GDP of US$284 185m, has an HDI of just 0.38. A key limitation is that the table gives total GDP, not GDP per capita: Norway has a population of about 5 million while Pakistan has over 200 million, so income per head is very different. Without population data it is difficult to judge, so the information gives little evidence that a high GDP means higher well-being.
1(d)	Opinions differ because the right interest rate depends on the conditions in the economy and on which objective is given priority. Case for low rates: the article says rates were kept very low to "encourage investment and borrowing and increase spending". When there is unemployment and spare capacity, a low rate reduces the cost of borrowing, so firms undertake more investment projects and households borrow more and save less. Consumption and investment rise, AD shifts right and, through the multiplier, output and employment rise with little inflation because unused resources are available. Case for higher rates: the article says higher rates could be justified when there is economic growth, falling unemployment and rising business investment, so "there are fewer unused resources". Close to full capacity, further rises in AD mainly raise the price level, so raising rates moderates spending and prevents demand-pull inflation. Higher rates also reward savers. Against raising rates: the article warns that higher rates could reduce consumer spending and investment, so there may be "no increase in real wages". If the recovery is fragile, raising rates too early could cut AD, slow growth and raise unemployment again. Higher rates may also attract hot money, appreciate the

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exchange rate and reduce net exports.

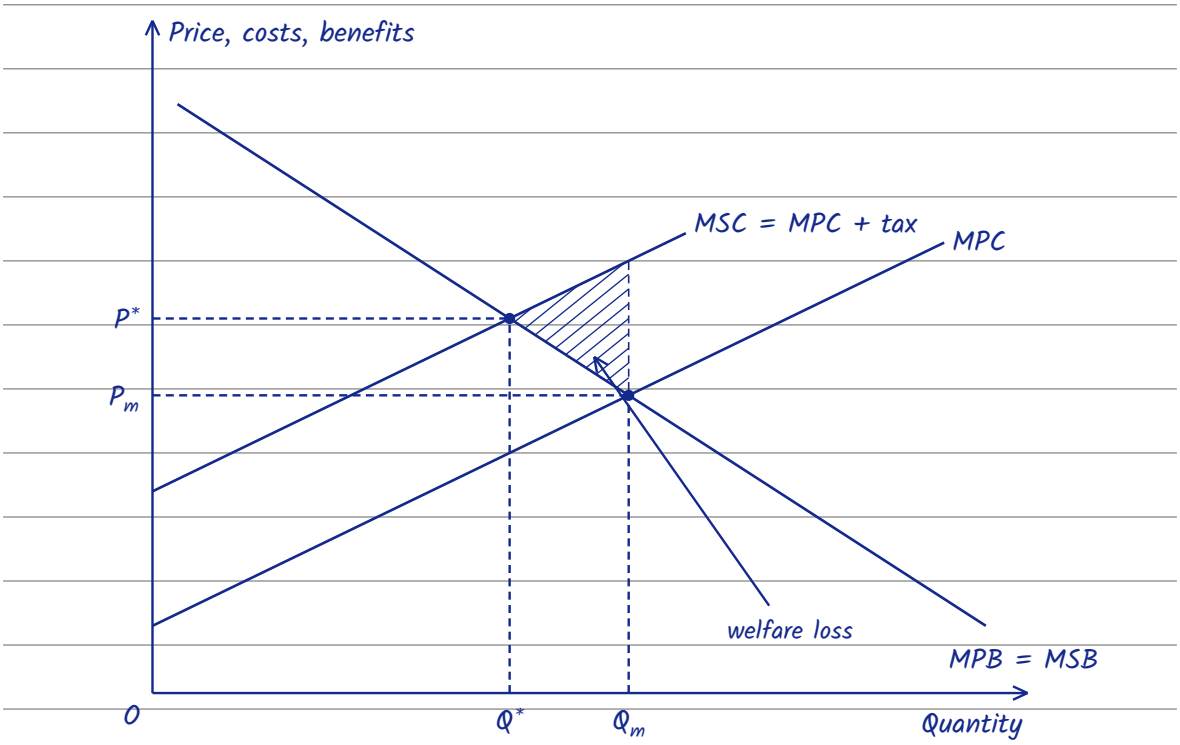
So people disagree because they judge differently how much spare capacity remains, weight inflation against growth and real wages differently, and face time lags and uncertain forecasts. The best level depends on the state of the economy at the time.

2

An externality is a cost or benefit of production or consumption that affects a third party and is not reflected in the market price. With a negative externality, such as pollution from a factory, marginal social cost (MSC) is greater than marginal private cost (MPC): MSC = MPC + marginal external cost. With a positive externality, such as education or vaccination, marginal social benefit (MSB) exceeds marginal private benefit (MPB).

In the diagram, a free market produces where MPB = MPC, at Q_m and price P_m. The socially optimal output is Q^*, where MSB = MSC. Because producers ignore the external cost, the good is over-produced: for each unit between Q^* and Q_m the social cost exceeds the social benefit, giving the shaded welfare loss. Price does not equal marginal social cost, so resources are not allocated efficiently. Equally, goods with positive externalities are under-consumed. So the first part of the assertion is largely correct: externalities do mean that the market fails to achieve allocative efficiency.

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Even this needs qualification. If the external cost is very small, the welfare loss is trivial and intervention may cost more than it saves. Coase argued that if property rights are clearly defined and bargaining costs are low, the affected parties can negotiate (for example, residents being compensated by the polluter), and the externality is internalised without government. In practice, though, many people are affected and transaction costs are high, so some market failure usually remains.

The second part of the assertion, that the good should necessarily be provided by the government, is much weaker. Externalities are different from public goods. A pure public good, such as national defence or street lighting, is non-excludable and non-rival, so the free-rider problem means the market may not provide it at all, and government provision is justified. A good with an externality, by contrast, is still provided by the market, just in the wrong quantity. The problem is the level of output, not the absence of a market.

The government therefore has several alternatives to direct provision. It can impose an indirect (Pigouvian) tax equal to the marginal external cost: this shifts MPC up to MSC in the diagram, so the market itself produces at Q^* and the polluter pays.

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For positive externalities it can give a subsidy, for example to training or vaccinations, so consumption rises to the social optimum. It can use regulation, such as emission limits or bans, or tradable pollution permits, which cap the total externality while allowing firms that can cut pollution cheaply to sell permits. It can also provide information to correct information failure. None of these requires state ownership.

Government provision does make sense in some cases. Where positive externalities are large and the good has strong merit-good features, such as primary education or basic healthcare, provision free at the point of use ensures consumption reaches the socially optimal level and also improves equity. For a negative externality, however, government production would not by itself remove the external cost; it would still need to reduce output or clean up.

All forms of intervention also risk government failure. It is very hard to value external costs in money terms, so the tax may be set too high or too low. If demand is price inelastic, a tax raises revenue but reduces the externality only slightly, and it may be regressive. State provision lacks the profit motive, which can cause productive and X-inefficiency, and it has an opportunity cost because it is financed by taxes. Regulation needs monitoring and enforcement, which are costly.

In conclusion, the existence of externalities generally implies market failure, although the size of the failure varies and private bargaining can sometimes solve it. It does not follow that the government must provide the good. The best response depends on the size of the externality, whether the good is excludable, the information available and the cost of each policy. In most cases taxes, subsidies, regulation or permits correct the failure more efficiently than state provision, which is best kept for goods with large positive externalities or public-good characteristics. The word "necessarily" makes the assertion incorrect.

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3(a)

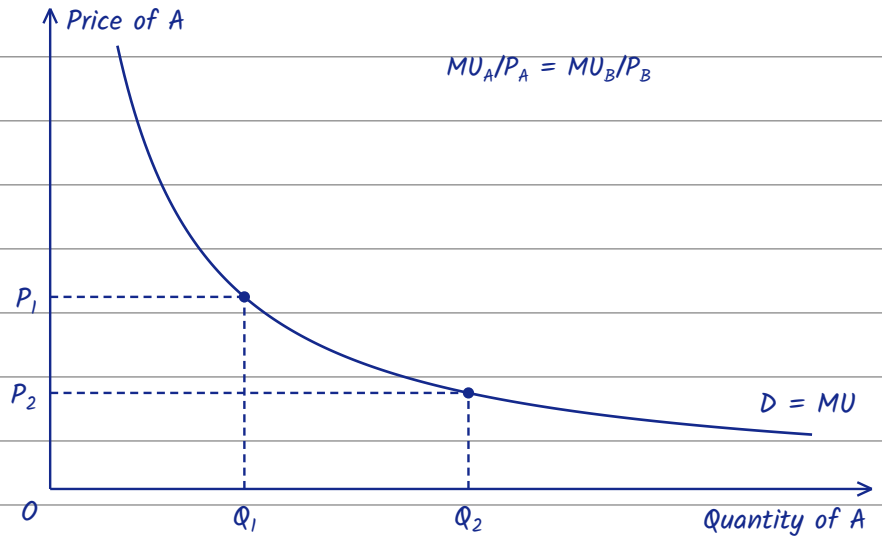
A rational consumer aims to maximise total utility (satisfaction) from a limited income, given the prices of goods. Marginal utility (MU) is the extra utility gained from consuming one more unit of a good. Because of the law of diminishing marginal utility, each additional unit adds less satisfaction than the one before. With one good, a consumer buys more units as long as the MU of the next unit (valued in money) is greater than its price, and stops where MU = P. With several goods, the consumer must compare the utility gained per unit of money spent. Total utility is maximised (consumer equilibrium) when all income is spent and the equi-marginal condition holds:

$MU_A/P_A = MU_B/P_B = ... = MU_N/P_N$

If MU_A/P_A were greater than MU_B/P_B, moving \$1 of spending from B to A would add more utility than it loses, so a rational consumer would switch until the ratios are equal. For example, if MU_A = 20 utils with P_A = \$2, and MU_B = 30 utils with P_B = \$3, both ratios equal 10 utils per \$, so the consumer is in equilibrium.

This explains the demand curve. Suppose the price of A falls from \$2 to \$1. Now MU_A/P_A = 20, which is greater than 10 for good B. To restore equilibrium the consumer buys more of A; as consumption rises, MU_A falls (diminishing MU) until the ratios are equal again. So a fall in price from P_1 to P_2 raises quantity demanded from Q_1 to Q_2, and the demand curve slopes downwards, as in the diagram. The demand curve reflects marginal utility: the price a consumer is willing to pay for each extra unit falls because MU falls.

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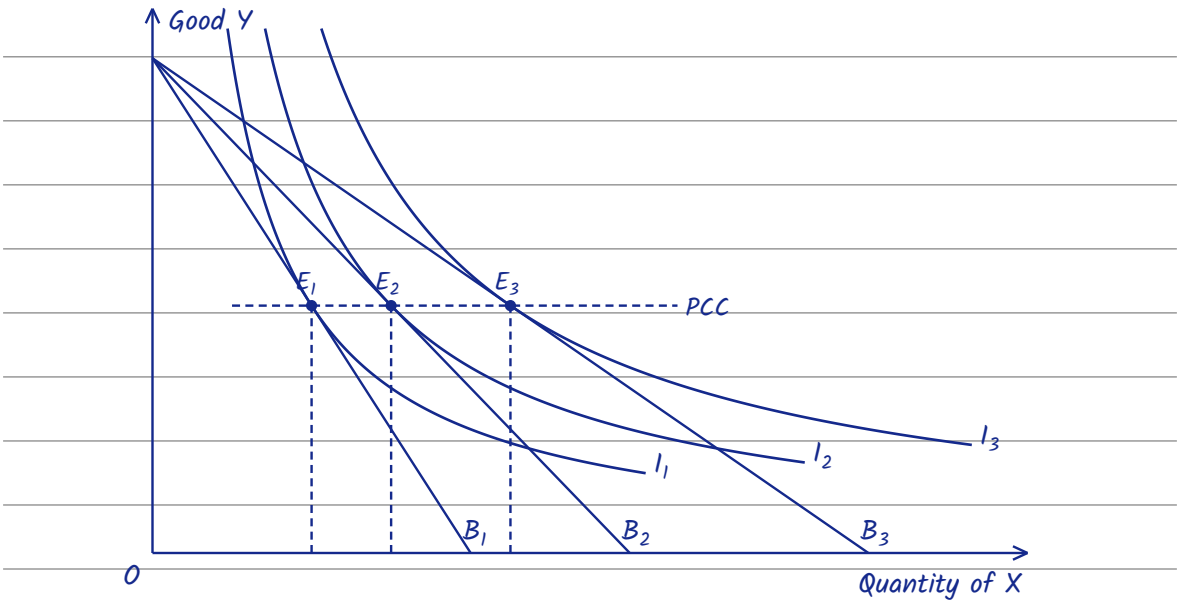


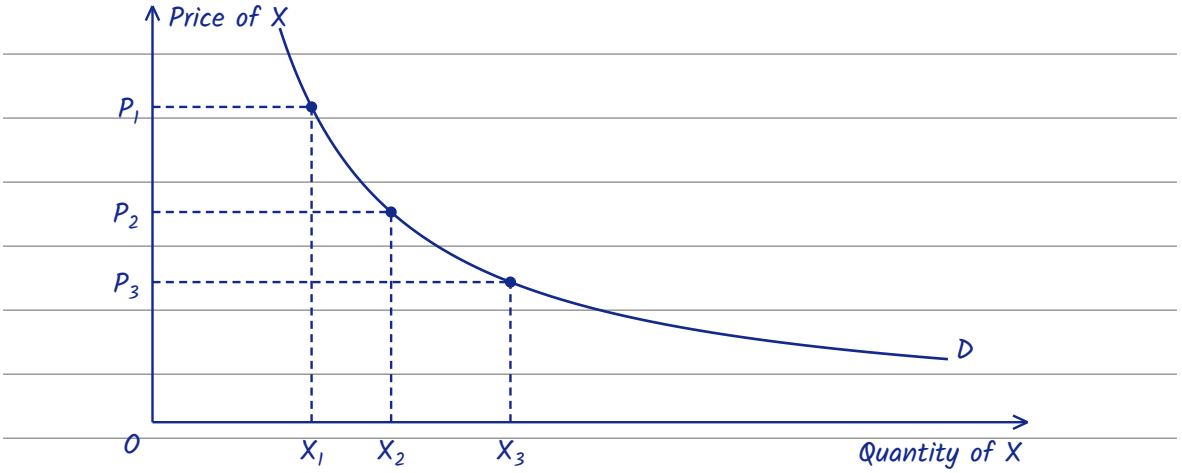
The prices of other goods also matter. If the price of a substitute B rises, MU_B/P_B falls, so the consumer switches spending towards A and the demand curve for A shifts to the right. A change in income also shifts demand, as the consumer can buy more of all goods until the ratios are again equal. So rational behaviour, diminishing marginal utility and relative prices together determine the quantity of each good demanded.

3(b) Indifference curve analysis uses two tools. An indifference curve shows combinations of two goods that give the consumer equal satisfaction; it is convex to the origin because of a diminishing marginal rate of substitution. The budget line shows the combinations the consumer can afford with a given income and prices, and its slope is the price ratio. The consumer maximises satisfaction at the tangency of the budget line with the highest attainable indifference curve, where $MRS = P_X/P_Y$.

When the price of X falls, the budget line pivots outwards (B_1 to B_2) and the consumer moves from E_1 to E_2 on a higher curve. Repeating this for different prices traces the price-consumption curve, and plotting each price against the quantity of X bought derives the demand curve, as shown below.

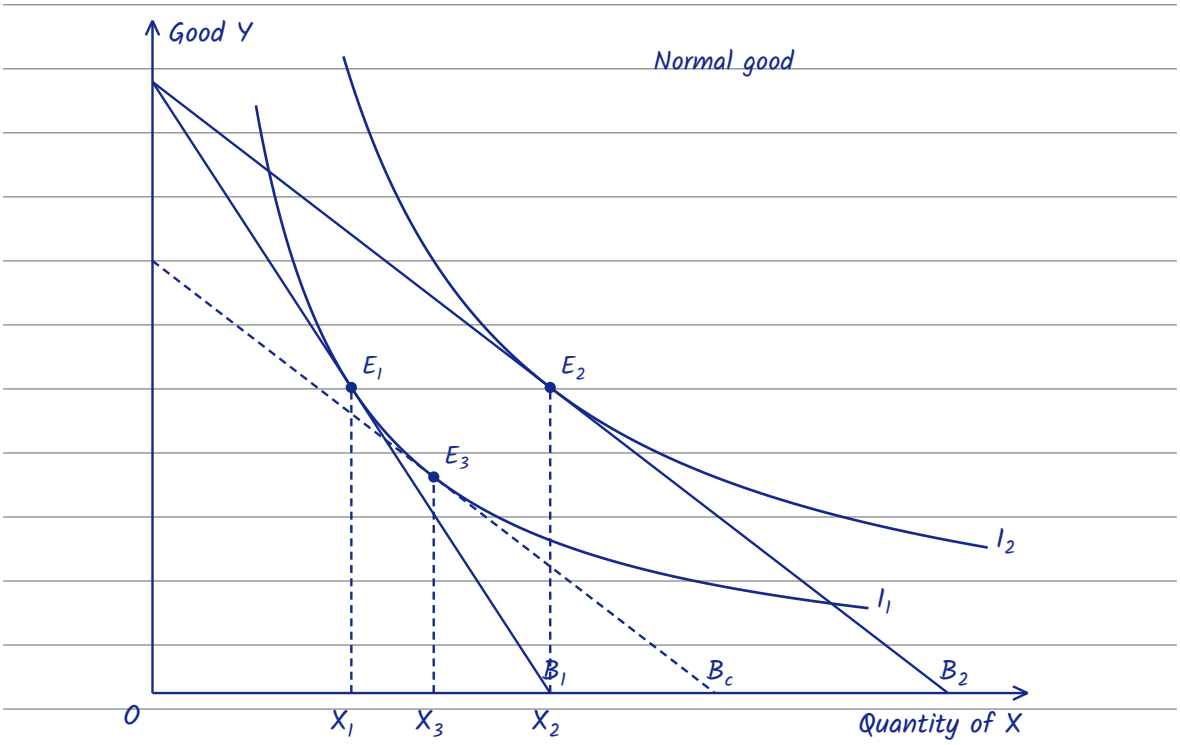
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Arguments that it is superior. First, it does not need cardinal measurement of utility in "utils", which is unrealistic; it only needs the consumer to rank bundles (ordinal utility), so a higher curve means more satisfaction. Second, it splits the effect of a price change into a substitution effect and an income effect. In the diagram below, the compensated budget line B_c shows the substitution effect (E_1 to E_3) and the move from E_3 to E_2 is the income effect. Marginal utility theory cannot separate these clearly.

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Third, because of this it can distinguish different types of goods: for an inferior good the income effect is negative, and for a Giffen good the negative income effect outweighs the substitution effect, so demand rises as price rises. MU theory, which always predicts a downward sloping demand curve, cannot explain this. It also shows the effect of a change in income through the income-consumption curve.

Arguments against. Indifference analysis still assumes a rational consumer with complete, consistent and transitive preferences and perfect knowledge, the same assumptions as MU theory, which behavioural economics questions (habits, impulse buying, limited information). It still requires some identification of satisfaction to construct the precise position of each curve, which in reality is not possible, so it is no easier to test. It is usually limited to two goods, and the indifference diagram has no direct representation of price against quantity: the demand curve has to be derived in a second diagram, whereas MU theory links price and demand directly and is easier to understand. For normal goods both theories give the same prediction.

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In conclusion, indifference curve analysis is superior as a theory, because it avoids measurable utility and explains income and substitution effects, inferior and Giffen goods. However, it shares the same unrealistic assumptions about rational behaviour, so it is superior in analytical power but not in realism.

4(a) The size of a firm can be measured by output, employment, capital employed or market share. Several factors determine how large a firm becomes.

Entrepreneurial skill and aims: some owners aim for growth and maximum profit, while others are satisficers or run lifestyle businesses and wish to keep control, so they stay small. Firms that aim to grow may expand internally or by mergers and takeovers.

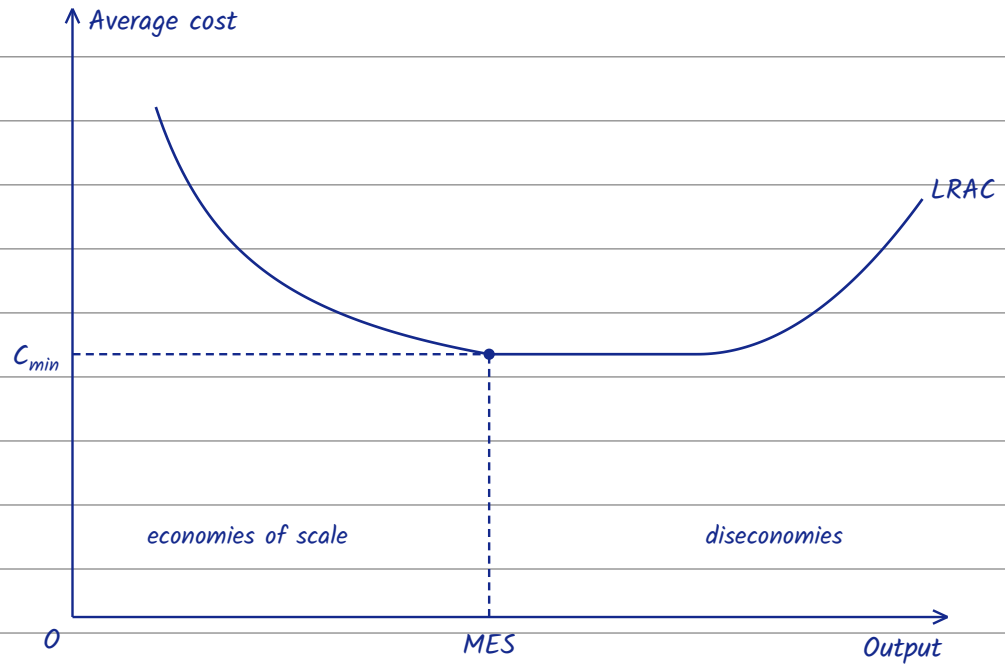
Managers and managerial ability: as a firm grows it becomes harder to co-ordinate and communicate, and managerial diseconomies of scale raise average cost. Able managers can delay this, so firms with better management can grow larger.

Market size: a firm cannot grow larger than its market allows. Markets that are local (because of high transport costs or personal service), small niche markets, or markets for fashion or customised goods keep firms small, while mass and global markets allow very large firms.

Availability of finance: growth needs capital. Small firms often find it hard to borrow and pay higher interest rates, while large firms can issue shares, retain profits and borrow cheaply, so they can grow further.

Nature of the business and economies of scale: where fixed costs are high, as in car manufacturing, steel or pharmaceuticals, technical, financial and purchasing economies of scale make long-run average cost fall over a wide range of output. The minimum efficient scale (MES), the lowest output at which LRAC is minimised, is large, so firms must be large to compete. Where MES is small, as in hairdressing, firms can be small and still efficient.

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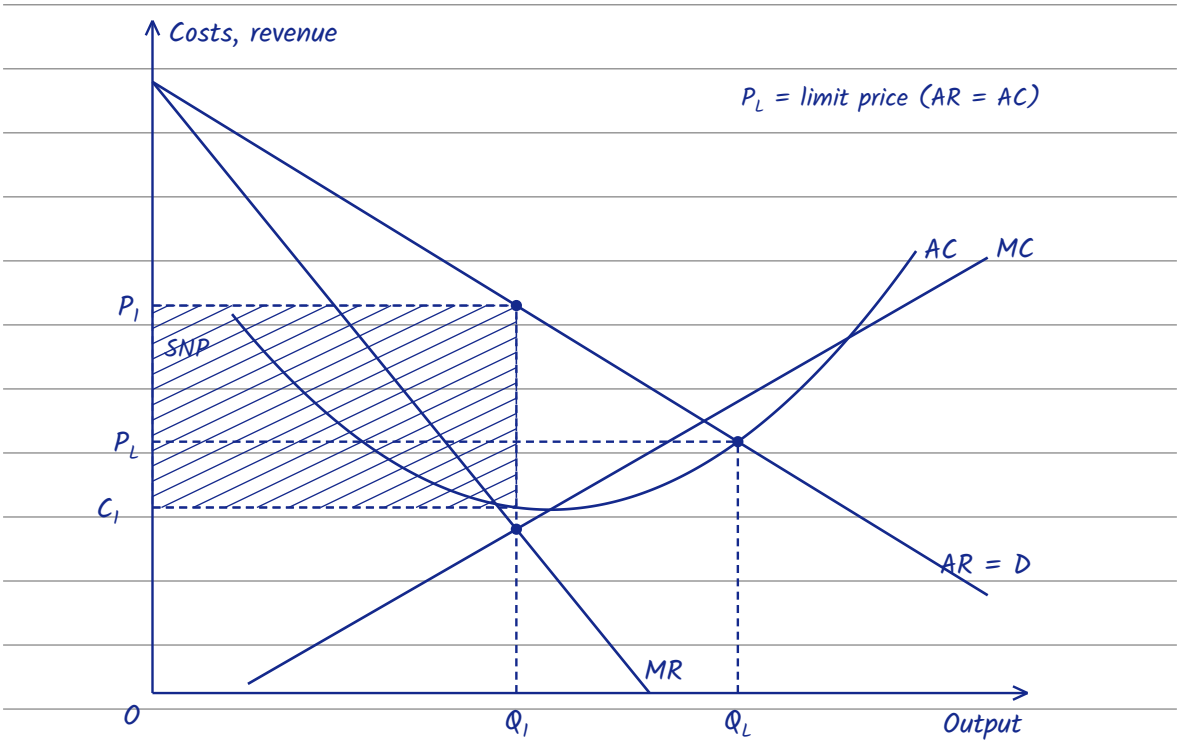
Availability of labour: firms need enough workers with the right skills; a shortage of skilled labour limits growth. Government policy also matters, as competition law may block mergers, while grants may support small firms.

So the size of a firm depends on both its cost conditions, mainly the extent of economies of scale, and on demand, finance and the aims and abilities of those who run it.

4(b)

A monopolist is the sole supplier in a market protected by barriers to entry, so it is a price maker. The usual aim is assumed to be profit maximisation, where MC = MR. In the diagram the monopolist produces Q_1 and charges P_1, read from the AR (demand) curve, earning supernormal profit (shaded) of $(P_1 - C_1) \times Q_1$.

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Even without regulation, the monopolist cannot charge whatever price it wishes. First, it faces a downward sloping demand curve: it can set price or quantity, but not both. A higher price means fewer sales, and above P_1 profit falls because MR is greater than MC for the units given up. A profit-maximising monopolist therefore chooses P_1, not the highest possible price. How high P_1 is depends on price elasticity of demand: the more substitutes consumers have in the wider market, the more elastic demand is and the lower the price. Second, price is limited by costs: in the long run price must at least cover average cost.

Price discrimination allows a monopolist to charge different prices to different groups, for example peak and off-peak rail fares, which raises profit and converts consumer surplus into producer surplus. But each price is still limited by what each group is willing to pay, depending on its PED.

Potential competition is another limit. Not all monopolies are protected by high barriers. If the market is contestable, with low entry and exit costs and no sunk costs, high prices and supernormal profit attract hit-and-run entry. The monopolist may therefore set a limit price below the profit-maximising level, such as P_L where

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AR = AC, earning only normal profit to deter entry. Foreign competition, new technology (creative destruction) and the threat of consumer boycotts or bad publicity also restrain prices. Some monopolists choose other objectives, such as sales or revenue maximisation, which lead to lower prices.

On the other hand, where barriers are very high, for example through patents on life-saving drugs or control of a natural monopoly such as water supply, and demand is very price inelastic, these limits are weak. The monopolist can charge a price far above marginal cost, causing allocative inefficiency and a loss of consumer surplus. This is why governments regulate such firms.

In conclusion, the view is incorrect: even an unregulated monopolist is limited by demand, costs and potential competition, and a profit maximiser has no incentive to charge more than P_1. However, the limits may still allow a price well above the competitive level, so how much they protect consumers depends on barriers to entry and the elasticity of demand.

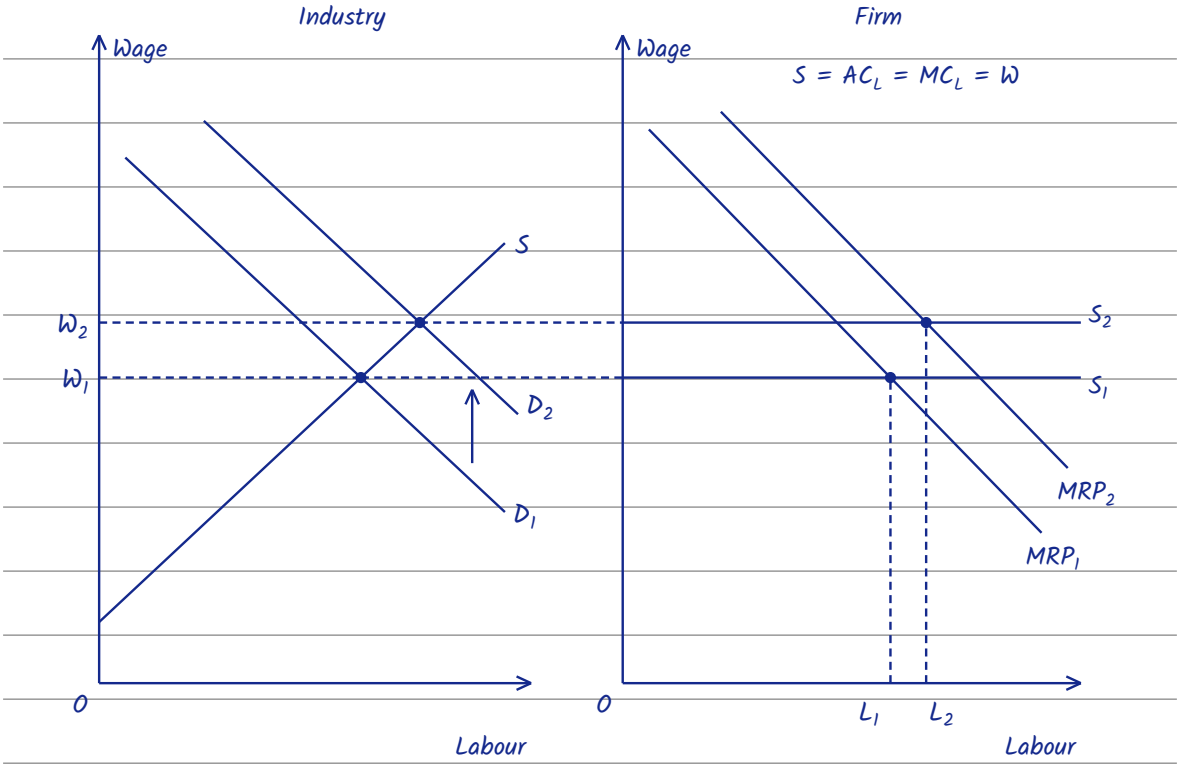
5(a) In a perfectly competitive labour market there are many firms and many workers, labour is homogeneous, there is perfect information and free mobility, and neither firms nor workers can influence the wage. The wage is set in the industry by the demand for and supply of labour, and each firm is a wage taker.

Demand for labour is a derived demand, given by marginal revenue product: MRP = MPP × MR. In a perfectly competitive product market MR equals the price of the product. As more workers are employed, marginal physical product falls because of diminishing returns, so the MRP curve slopes downwards. The industry demand curve is the sum of the firms' MRP curves. The industry supply curve slopes upwards because a higher wage attracts workers from other occupations and encourages people to work more hours.

In the left-hand diagram the industry wage is W_1, where $D_1 = S$. The firm faces a perfectly elastic supply of labour at W_1, so the wage is both the average and the

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marginal cost of labour: $S_1 = AC_L = MC_L$. A profit-maximising firm employs workers up to the point where $MRP = MC_L = W$, giving L_1. If it employed fewer, the last worker would add more to revenue than to cost; if it employed more, the extra worker would cost more than the revenue he or she produces.



Changes in the wage are explained by shifts in MRP or supply. If labour productivity rises (better training or technology) or the price of the product rises, MRP rises from MRP_1 to MRP_2. Industry demand shifts from D_1 to D_2, so the wage rises to W_2. Each firm now faces the higher supply curve S_2 and employs L_2, where $MRP_2 = W_2$. In the same way, an increase in the supply of labour, for example through migration, would lower the wage.

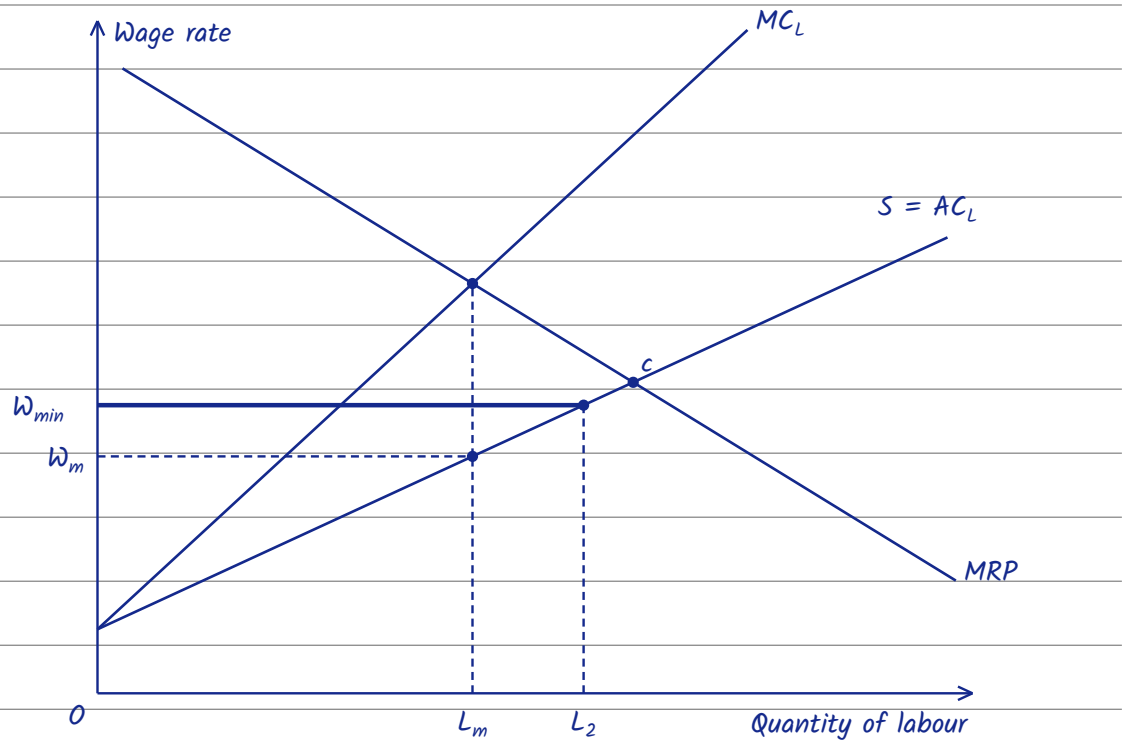
So in a perfectly competitive labour market the wage equals the marginal revenue product of the last worker employed, and differences in wages between occupations reflect differences in MRP and in the elasticity of labour supply.

5(b) An imperfectly competitive labour market includes monopsony, where one employer (or a dominant employer) buys most of the labour, for example a large hospital or

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mine in a small town. The monopsonist faces the upward sloping market supply curve, which is its average cost of labour (AC_L). To hire one more worker it must raise the wage for all workers, so the marginal cost of labour (MC_L) lies above AC_L.

The monopsonist maximises profit where MRP = MC_L, employing L_m. It pays only the wage needed to attract L_m workers, W_m, read from the supply curve. This wage is below the MRP of the last worker, so workers are paid less than the value of what they produce, and employment is lower than in a competitive market (point c, where MRP = S).



Suppose the government fixes a minimum wage W_{min} above W_m. The firm can now hire any number of workers up to L_2 at W_{min}, so its supply curve becomes horizontal at W_{min} up to the supply curve, and in that range $MC_L = W_{min}$. Since MRP is above W_{min} at L_m, it pays the firm to employ more workers, up to L_2. So both the wage and employment rise, which is the opposite of the prediction for a competitive market.

The outcome depends on where the wage is fixed. If it is set at the level of point

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c, where MRP = S, employment is maximised at the competitive level. If it is set higher, along MRP, employment starts to fall from that maximum, but as long as the wage is below the MRP at L_m (the point where MRP = MC_L) employment is still at least L_m; workers gain a higher wage with constant or higher employment. Only if the wage is set above that level does employment fall below L_m, and unemployment appears because more workers want jobs than are offered.

Other effects should be considered. A higher wage may raise worker morale and productivity (efficiency wage effects), shifting MRP to the right and protecting jobs. It reduces in-work poverty and the exploitation of workers. However, the firm may cut training or non-wage benefits, substitute capital for labour in the long run, or pass higher costs on as higher prices. The government is unlikely to know the firm's MRP, so it may set the wage too high. If a trade union rather than the government sets the wage, the result is a bilateral monopoly and the outcome depends on bargaining power.

In conclusion, in a monopsony a government-fixed wage can raise both pay and employment, unlike in a competitive market, but the effect depends critically on the level at which the wage is fixed relative to the MRP and supply curves, and on how firms respond in the long run.

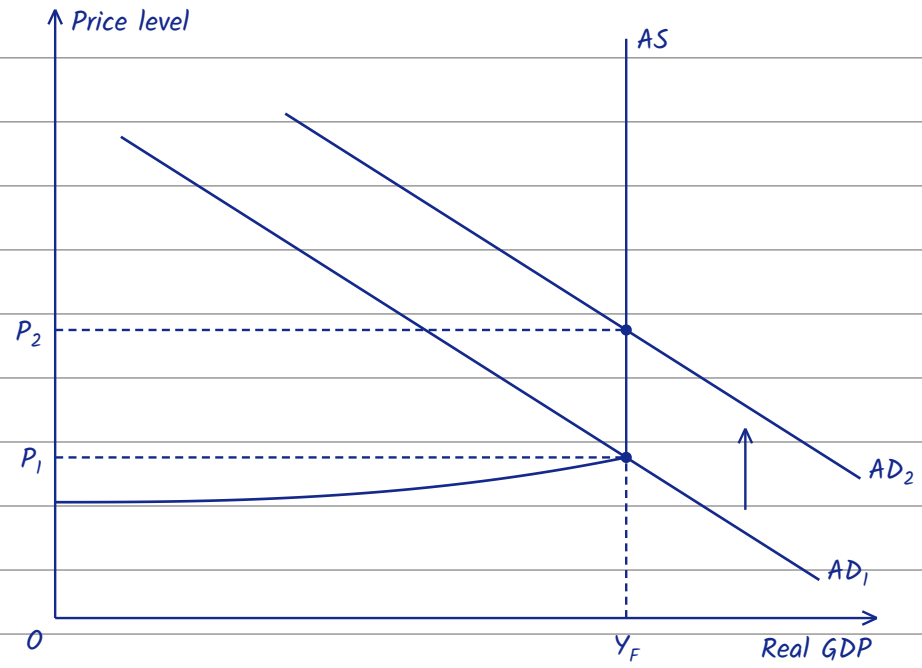
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Inflation is a sustained rise in the general price level, which reduces the purchasing power of money. Keynesians and monetarists disagree about its causes and therefore about how to control it.

Keynesians identify two causes. Demand-pull inflation occurs when aggregate demand (C + I + G + X − M) rises faster than the economy's capacity to produce. In the diagram, when the economy is at full employment output Y_F, an increase in AD from AD_1 to AD_2 cannot raise real output and only raises the price level from P_1 to P_2: there is an inflationary gap. The Keynesian solution is to control expenditure through contractionary fiscal policy, such as higher income tax

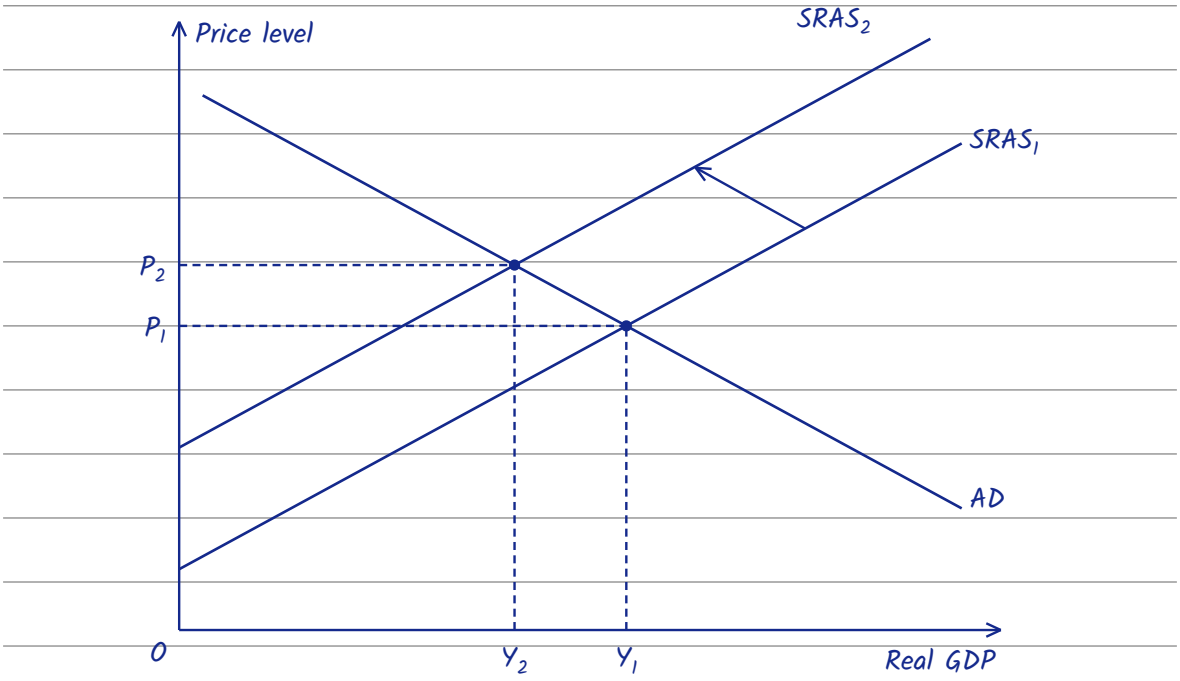
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or lower government spending, to reduce AD and close the gap.



Cost-push inflation occurs when costs of production rise independently of demand, for example higher wages won by trade unions, higher imported oil and raw material prices or a depreciation of the currency. SRAS shifts left from $SRAS_1$ to $SRAS_2$, so the price level rises from P_1 to P_2 while real output falls from Y_1 to Y_2 (stagflation). A wage-price spiral may follow. Here controlling expenditure is only a partial answer: reducing AD would lower inflation but deepen the fall in output and raise unemployment further. Keynesians therefore suggested prices and incomes policies, and supply-side measures that increase capacity.

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Monetarists explain inflation using the quantity theory of money, MV = PT, where M is the money supply, V the velocity of circulation, P the price level and T the number of transactions (real output). Monetarists assume V is stable and T is fixed in the long run at the full-employment level determined by supply-side factors. So an increase in M leads to a proportional increase in P: inflation is "too much money chasing too few goods". To control inflation the government should control the growth of the money supply, keeping it in line with the growth of real output, using higher interest rates, open market operations and reducing government borrowing.

Evaluation of the monetarist view. There is strong evidence that very rapid monetary growth causes inflation: hyperinflation in Zimbabwe in 2008 followed large-scale printing of money. In the long run the theory is widely accepted. However, V is not stable in the short run, because financial innovation and changes in confidence change how quickly money circulates, and T is not fixed when there is spare capacity, so extra money may raise output rather than prices. The money supply is also hard to define and control, because banks create credit. When the UK tried to target money supply growth in the early 1980s, the targets

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were repeatedly missed and were abandoned. Keynesians also argue that causation may run the other way: rising prices and wages lead to more borrowing and a larger money supply, which accommodates cost-push inflation rather than causing it.

Evaluation of the Keynesian view. Controlling expenditure works well against demand-pull inflation, but fiscal policy has time lags, may be politically unpopular, and cuts in spending raise unemployment. In the 1970s many economies experienced high inflation and high unemployment together, which demand management could not explain or cure, and expectations of inflation built into wage bargaining made inflation persistent. So controlling spending alone is not enough for cost-push or expectations-driven inflation.

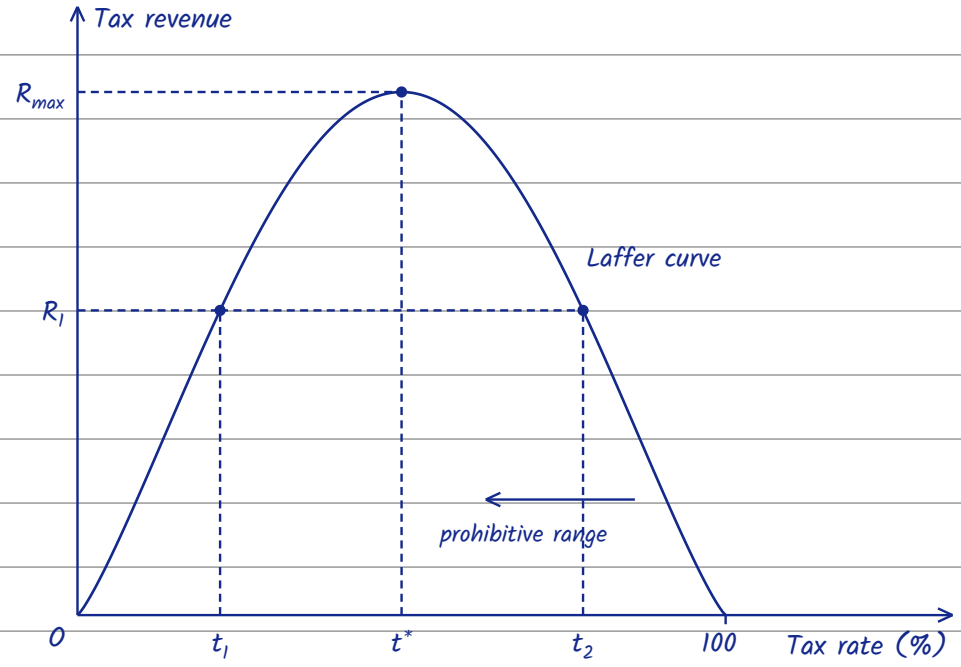
In practice the two views have come closer together. Most central banks now use interest rates to hit an inflation target; this works mainly by controlling spending (the Keynesian channel), while accepting the monetarist point that sustained inflation cannot continue without monetary growth and that credible policy keeps expectations low.

In conclusion, I largely agree that both approaches are only partially correct. Each identifies a genuine cause of inflation and a policy that works in the right circumstances: monetary control in the long run and against excessive money creation, demand management against demand-pull inflation. Neither on its own deals with cost-push inflation from a supply shock, which needs supply-side measures. The best approach depends on the cause of the inflation and the state of the economy.

7(a) The Laffer curve shows the relationship between the rate of tax and the total tax revenue received by the government. At a tax rate of 0% revenue is zero. At 100% revenue is also zero, because there is no incentive to work, earn or declare income. Between these, revenue first rises as the rate rises, reaches a maximum R_{max} at

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rate t^*, and then falls. Above t^* (the prohibitive range) higher rates reduce revenue, because the tax base shrinks: people work fewer hours, entrepreneurs invest less, and tax avoidance, evasion and migration of high earners increase.



The diagram also shows that the same revenue R_1 can be raised at a low rate t_1 or a high rate t_2. A government at t_2 could cut the rate to t^* and receive more revenue, while also improving incentives.

This is the link to supply-side policies. Market-based supply-side policies aim to increase aggregate supply (shift LRAS to the right) by improving incentives. Cutting income tax raises the reward for working, so labour supply and effort increase; cutting corporation tax raises post-tax profit, encouraging investment and enterprise. The Laffer curve suggests that if tax rates are above t^*, these cuts need not cost the government revenue and may even raise it. This argument was used for the US tax cuts of the 1980s and the UK cut in the top income tax rate from 83% to 40% during the 1980s.

For policymakers, however, the link is uncertain. The position of t^* is unknown and may differ between taxes and countries. If rates are below t^*, as is likely for most taxpayers, tax cuts reduce revenue and increase the budget deficit. A tax cut has

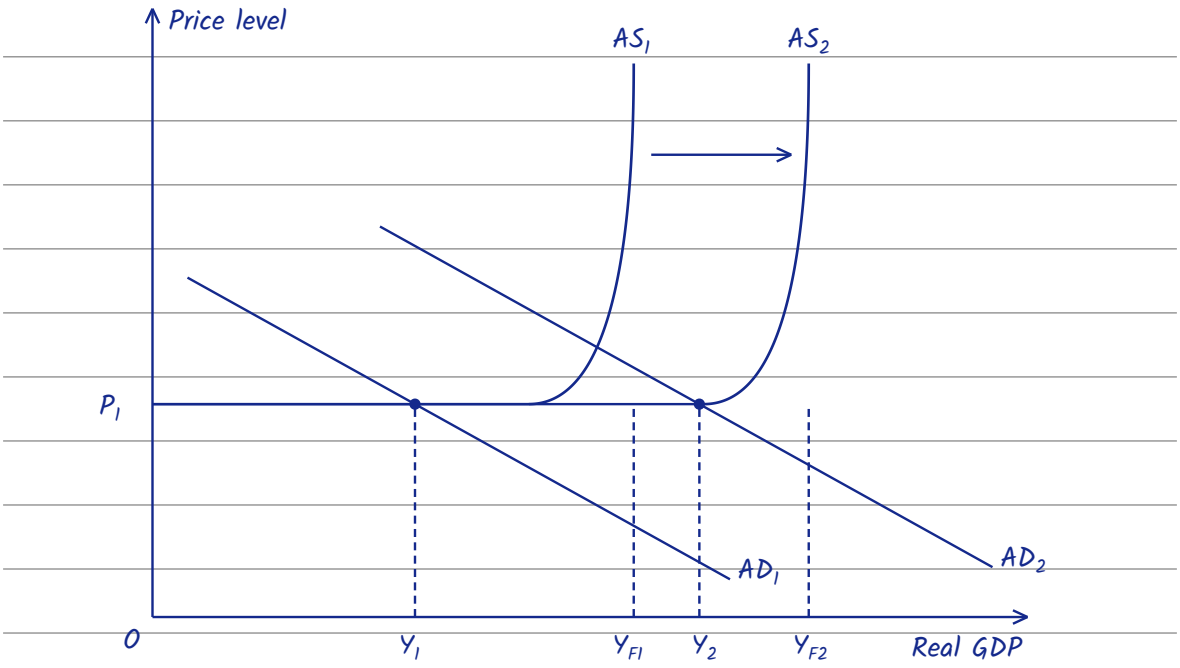
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an income effect as well as a substitution effect, so some workers may choose to work fewer hours. Cuts in top rates may also widen inequality. Finally, interventionist supply-side policies, such as spending on education, training and infrastructure, need tax revenue, so tax cuts that reduce revenue could limit these. The Laffer curve is therefore an important argument for supply-side tax cuts mainly when rates are very high.

7(b) A recession is usually defined as two consecutive quarters of negative real GDP growth. It brings rising cyclical unemployment, falling incomes and investment, business closures, spare capacity and falling tax revenue with higher welfare spending. Supply-side policies aim to increase the productive capacity of the economy, shifting LRAS to the right. Market-based policies include tax cuts, deregulation, privatisation and making labour markets more flexible; interventionist policies include government spending on education, training, infrastructure and research.

Arguments for the statement. A recession is mainly a problem of deficient aggregate demand. In the diagram the economy is at Y_1, on the flat part of AS_1, well below full-employment output Y_{F1}. Shifting AS from AS_1 to AS_2 raises potential output to Y_{F2} but, while AD stays at AD_1, actual output stays at Y_1: it simply adds to spare capacity. Supply-side policies also have long time lags; training and infrastructure take years to raise productivity. Some market-based policies may make the recession worse: cutting unemployment benefits or weakening employment protection reduces incomes and confidence, lowering consumption. Corporation tax cuts may not raise investment if firms already have unused capacity and expect low sales, and with falling tax revenue the government may not be able to afford them.

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Arguments against. Many supply-side policies also increase AD, shifting AD_1 towards AD_2. Infrastructure spending is an injection of government spending with a multiplier effect, so it creates jobs immediately while raising capacity later. Income tax cuts raise disposable income and consumption, and investment allowances can bring forward investment. Training schemes for the unemployed prevent skills being lost, so cyclical unemployment does not become long-term structural unemployment (hysteresis), which would otherwise reduce LRAS. A recession may also be a good time to reform, since resources are available and lower costs improve international competitiveness, raising net exports.

In conclusion, I only partly agree. Pure market-based supply-side policies work weakly in a recession, because the problem is demand, not capacity, and some may even reduce demand. However, interventionist policies such as infrastructure investment and training do work, because they boost AD in the short run and AS in the long run. The most effective approach is to combine supply-side policies with expansionary demand-side policy, so that, as in the diagram, AD_2 can raise output to Y_2 at P_1 without inflation.