GCE AS/A LEVEL

2520U20-1

S18-2520U20-1

ECONOMICS – AS unit 2
Economics in Action

THURSDAY, 17 MAY 2018 – MORNING

2 hours

2520U201
01

ADDITIONAL MATERIALS

In addition to this examination paper, you will need:

- a calculator;
- a WJEC pink 16-page answer booklet.

INSTRUCTIONS TO CANDIDATES

Answer **all** questions.

Use black ink or black ball-point pen.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question.

You are reminded of the necessity for good English and orderly presentation in your answers.

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Answer **all** *the questions.*

1. PLASTIC BAGS: TO CHARGE OR NOT TO CHARGE?

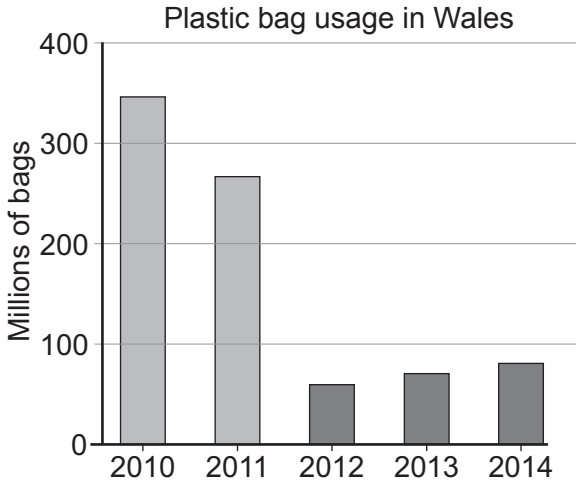


As of 5 October 2015, the law now requires shops in England to charge 5p for plastic bags. This was an attempt by the Government to reduce the use of plastic bags and the litter and environmental damage they can cause.

The largely automated processes of industrial manufacturing these days mean that the price elasticity of supply for plastic bags is almost perfectly elastic and the cost of producing a single unit is negligible. As a result, supermarkets used to be content to give them away for free with customers' purchases which resulted in over-use.

Wales had already introduced the charge on plastic bags four years earlier in 2011. According to data from the Welsh Government:

- Carrier bag use between 2011 and 2014 declined by 71%.
- Money raised from the charge has been estimated at between £17m and £22m to be used for good causes.



Similar results were achieved in Ireland in 2002 when a €0.15 (11p) charge on bags led to a 90% reduction in consumption. One journalist wrote: "it's a great example of people responding to incentives, even if the incentives are tiny. Prices have only increased a relatively small amount – from nothing to 5p – and yet the decrease in demand has been incredible".

The main problem is the amount of litter that plastic bags can cause. It is reported that the average American family takes home almost 1 500 plastic shopping bags a year with very little obvious difference between income deciles. And yet these plastic bags can take 1 000 years to degrade. The Department for Environment, Food and Rural Affairs (Defra) describes the bags as "an iconic symbol of waste". They also cause ecological harm. As a study used by the Government explains, "when seabirds, sea mammals or fish ingest plastic particles, blocking of the gut is likely to harm or even kill".

Consumer groups have also complained that the flat 5p charge will hit the poorest hardest as a percentage of their weekly income. Whilst others have criticised the environmental claims and have argued that plastic bags are simply not a very large component of total rubbish. It is estimated that plastic bags account for less than 1% of all items of litter.

In terms of their general environmental impact, plastic bags might actually be the best option for the environment. Studies have shown that paper bags, which are not subject to the English bag charge, create greater landfill waste than plastic bags. Likewise, reusable cotton bags – often known as 'Bags for Life' – would need to be used 131 times compared with a regular plastic bag before they are better in terms of limiting global warming. Such studies have concluded that the use of tradeable pollution permits is the single most effective policy available to governments trying to reduce environmental damage.

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(a) Using mathematical examples, explain why "the flat 5p charge will hit the poorest hardest as a percentage of their weekly income." (lines 34-35) [4]

(b) With reference to lines 5-7, draw a supply curve for the production of plastic bags and explain the curve that you have drawn. [4]

(c) Consider whether the price elasticity of demand for plastic bags is likely to be elastic or inelastic. [6]

(d) Using a welfare loss diagram and with reference to the data, explain how the consumption of plastic bags can lead to market failure. [8]

(e) Using the data, discuss the extent to which the 5p charge on plastic bags should be considered an example of government failure. [10]

(f) To what extent are tradeable pollution permits effective at reducing the environmental damage within a country? [8]

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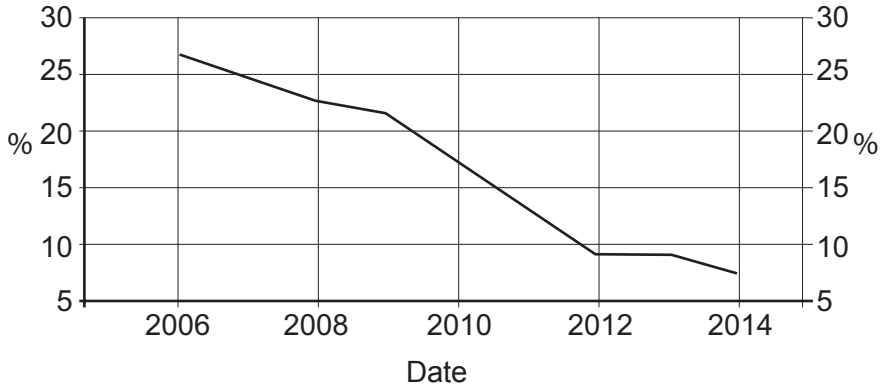
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2. HAS BRAZIL'S BUBBLE BURST?

Background

Between 2002 and 2008 Brazil grew quickly, expanding at 4% a year. Domestic consumption and the boom in exports of iron, oil and sugar were the main drivers of growth. Millions of people were lifted out of poverty and income inequality was greatly reduced.

% of population in poverty



But by 2015 Brazil was showing signs of economic trouble as annual growth slowed and many commentators began to predict a recession in 2016.

The outlook for 2016:

Consumption

The prospects for private consumption, which accounted for around 50% of GDP growth over the past ten years, are unfavourable. With annual inflation above 7%, shoppers' purchasing power is being eroded. Inflation has been caused by energy prices going up by 30% and the Brazilian currency (the real) losing 10% of its value against the dollar leading to rising import prices.

Investment

The World Bank attempts to measure how 'business friendly' a country is and in its recent 2015 report Brazil ranked 116 out of 189 countries surveyed. Masses of regulations and complicated tax laws mean that companies waste hundreds of hours filling out forms and dealing with bureaucratic processes. In addition, strong employment legislation makes it difficult for bosses to dismiss unproductive workers. Companies looking for a base in South America seem to prefer to invest in Chile which is more business-friendly.

There has also been a lack of infrastructure spending down the decades. Brazil ranks a lowly 107th in the world for infrastructure quality; the poor quality of roads, railways and telecoms all acting as deterrents to entrepreneurs.

Exports

In the past, exports have normally made a major contribution to Brazil's economic success. In 2015, the total value of Brazilian exports was $230.6bn which made up 13.1% of the country's total GDP. China and the USA are Brazil's largest trading partners, buying two-thirds of all Brazilian exports. However, even though the real has depreciated, slow growth in China and the USA has meant that exports are underperforming.

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Government spending and fiscal policy

Brazil's public sector debt is the highest of the emerging economies (at 66% of GDP) and it spent 311.4 billion reals (6% of GDP) on debt payments alone in 2014. It seems that its fiscal policy options are limited.

Brazil's finance minister, Joaquim Levy, has tried to balance the budget as much as possible. For example, he has increased taxes on petrol and he is also lowering the generous state pension but in doing so he runs the risk of undoing all of the good work that had been done in tackling poverty.

Monetary policy

The Governor of the Central Bank of Brazil, Alexandre Tombini, has his own choices to make too. Firstly, he could choose to keep interest rates high despite the weak economy. This would support the real and help to reduce inflation but both households and firms will be hurt as a result. Alternatively Mr Tombini could cut interest rates – despite rising inflation – to encourage growth.

(a) Using an AD/AS diagram, explain why inflation in Brazil is so high. [6]

(b) Using the data in lines 26 to 28, calculate:

(i) Brazil's GDP in 2015 [1]

(ii) the value of Brazilian exports bought by China and the USA. [1]

(c) To what extent can the use of supply-side policies increase the level of investment in Brazil? [10]

(d) Discuss whether the policies of increased taxes on petrol and lowering state pensions are likely to be beneficial for the Brazilian economy. [10]

(e) Discuss whether Alexandre Tombini should "keep interest rates high". (line 40) [12]

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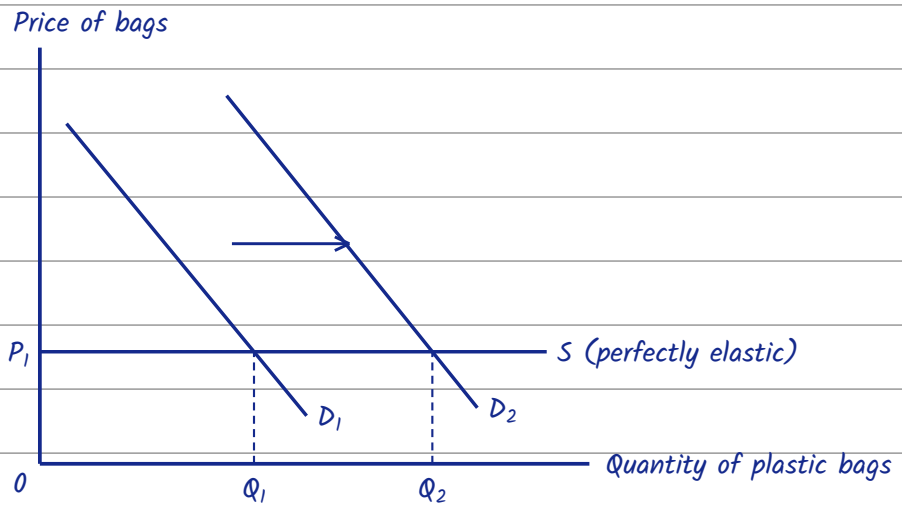
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Surname	StemUp Model Solution
Answer booklet	Write the question number in the left-hand margin at the start of each answer.

Question number

1 (a) Spending on plastic bags hardly changes with income: there is 'very little obvious difference between income deciles' (lines 28 to 29), so bags are income inelastic (YED close to 0). For example, a low earner on £200 a week who buys 10 bags pays 50p, which is 50/20 000 × 100 = 0.25% of income. A high earner on £2 000 a week who buys 12 bags pays 60p, only 60/200 000 × 100 = 0.03% of income. The charge takes a larger percentage of the poor person's income, so it is regressive.

1 (b) As the diagram shows, the supply curve for plastic bags is horizontal (perfectly elastic, PES is infinite) at a very low price P_1. Production is 'largely automated' (line 5), so the marginal cost of an extra bag is negligible (line 7) and constant. Firms can raise output from Q_1 to Q_2 in response to an increase in demand from D_1 to D_2 without any rise in costs, so the extra demand is met with no change in price.

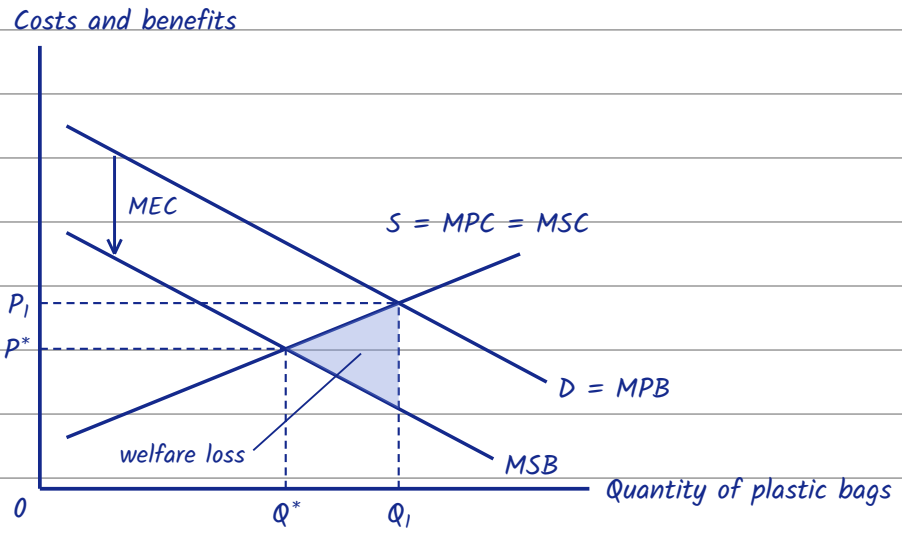


1 (c) Price elasticity of demand (PED) measures the responsiveness of quantity

Question number	
	demanded to a change in price: PED = %ΔQd ÷ %ΔP. Demand is elastic if %ΔQd is greater than %ΔP (PED > 1) and inelastic if it is smaller (PED < 1). Demand appears elastic. A tiny 5p charge cut bag use in Wales by 71% between 2011 and 2014 (line 12); the chart shows usage falling from about 345 million bags in 2010 to about 57 million in 2012. In Ireland an 11p charge led to a 90% fall (line 17). There are close substitutes, such as reusable 'Bags for Life', paper bags or simply carrying items, so consumers switch easily. The journalist calls the fall in demand 'incredible' for such a small price rise (lines 19 to 23). However, mathematically demand is inelastic. The price rose from 0p to 5p, which is an infinite (enormous) percentage increase, so even a 90% fall in quantity is smaller than the % rise in price, giving PED close to 0. Also, 5p is a very small share of income, and substitutes such as cotton bags cost far more, so many shoppers who forget their bag still pay 5p for the convenience. Usage in Wales actually rose again from about 57 million in 2012 to about 78 million in 2014, showing that many people buy bags despite the charge. Overall, demand is technically price inelastic, but the response to the charge was very large, partly because a charge also makes people notice the cost, so in practice behaviour was more elastic than the formula suggests.
1 (d)	Market failure is when the free market misallocates resources, so allocative efficiency and maximum community surplus are not achieved. Plastic bags create a negative consumption externality: a negative spill-over effect of a private transaction on third parties who are not compensated. Bags take 1 000 years to degrade (line 30), cause litter and harm seabirds, sea mammals and fish, which can be killed when they swallow plastic (lines 32 to 33). Defra calls them 'an iconic symbol of waste' (line 31). Consumers only consider their marginal private benefit (MPB). The external cost is subtracted from MPB, so the marginal social benefit is lower: MSB =

Question number

MPB – external cost. Because bags were given away free (lines 8 to 9), and supply is almost perfectly elastic at a negligible cost, consumption was very high; an average American family takes home almost 1 500 bags a year (line 27).



As the diagram shows, the free market consumes at Q_1, where MPB = MPC, but the socially optimal level is Q^*, where MSB = MSC. Bags are over-consumed by Q^*Q_1: for each of these units MSC is greater than MSB, so too many resources are allocated to plastic bags. The shaded triangle is the welfare loss to society, so community surplus is not maximised and the market fails.

1 (e) Government failure occurs when government intervention to correct a market failure makes the allocation of resources worse, fails to improve it, or creates a new market failure elsewhere, for example because of imperfect information or unintended consequences.

There are reasons to see the 5p charge as government failure. Plastic bags account for less than 1% of all items of litter (line 37), so even a large fall in their use makes little difference to the litter problem and may be more of a publicity exercise. There are also unintended consequences: paper bags, which are not charged in England, create more landfill waste than plastic bags (lines

Question number

39 to 40), and a cotton 'Bag for Life' must be used 131 times before it is better for global warming (lines 41 to 42). If consumers switch to these substitutes, the negative externalities may actually rise, so resources are misallocated in other markets. The charge is also regressive (lines 34 to 35), taking a bigger share of the income of the poorest, which worsens equity. Finally, use rose again from about 57 million bags in 2012 to about 78 million in 2014, a rise of about 37%, perhaps as people became used to the charge and its real value fell with inflation. Studies suggest tradeable permits would be more effective (line 43).

However, the charge has clearly worked in its main aim. As a negative externality diagram shows, consumption needs to fall from the free market level towards the social optimum, and the charge does this: bag use in Wales fell by 71% (line 12), from about 345 million in 2010 to under 80 million, and by 90% in Ireland (line 17). Usage in 2014 is still far below the 2010 level. Between £17m and £22m has been raised for good causes (lines 13 to 14), which could fund litter clean-ups and so offset some of the remaining external cost. The regressive effect is small in money terms, because the charge is only 5p and poorer households can avoid it completely by reusing bags. The comparison with paper and cotton bags depends on how often they are reused: a Bag for Life used every week for three years is clearly better. It may also be too early to judge, since the English charge only began in October 2015.

Overall, the 5p charge should not be seen as a government failure, because it greatly reduced over-consumption at almost no cost. Its weakness is limited scope: extending the charge to paper bags and raising it in line with inflation would make it even more effective.

1 (f)

Tradeable pollution permits give firms a legal right to emit a set amount of pollution, for example 100 tonnes of CO_2 a year. The government sets a cap on total pollution and issues that number of permits. A firm that pollutes less

Question number

than its allowance can sell spare permits to other firms, while a firm that pollutes more must buy extra permits.

Permits are effective because the cap fixes the total amount of pollution, so the government can guarantee the level of damage, unlike a tax where the effect depends on PED. The market creates an incentive: if firms pollute a lot, demand for permits is high relative to the fixed supply, so the price rises and polluting becomes expensive. Firms that invest in cleaner technology can make money by selling permits, so firms that can cut pollution most cheaply do so and pollution falls at the lowest cost. Reducing the cap each year raises the permit price and reduces pollution further, which is why studies call them the 'single most effective policy' (lines 43 to 44).

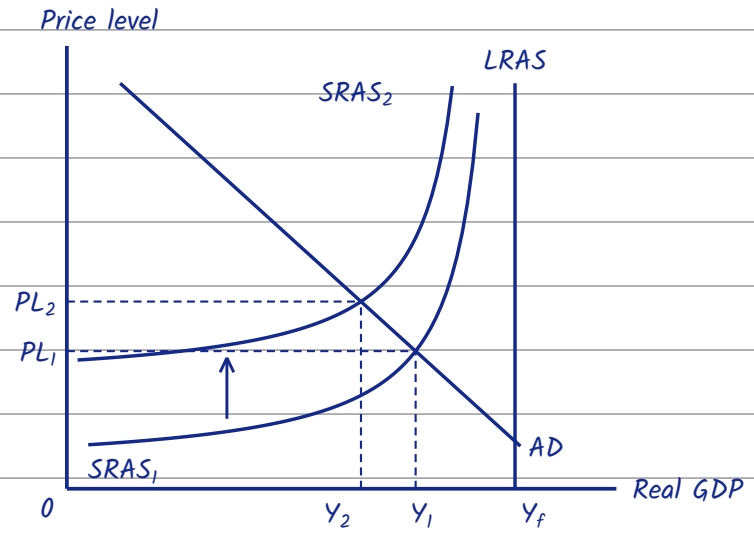
However, it is difficult to know how many permits to issue. If the government is too generous, the price falls (as in the early EU ETS) and pollution hardly falls; if it is too strict, firms' costs rise, output and jobs may fall and firms may move abroad, so pollution is simply exported. Pollution is hard to measure and firms may hide emissions, and monitoring involves high administration costs. Trading can create 'hot spots' where many permit buyers are concentrated in one area. Permits suit a few large polluters, such as power stations, not millions of consumers: they could not easily be used to cut plastic bag litter.

Overall, permits can be very effective for industrial emissions within a country, provided the cap is set tightly and emissions are properly monitored, but they are not a solution to every environmental problem.

2 (a) Inflation in Brazil (above 7%, line 10) is mainly cost-push inflation, caused by rising costs of production. First, energy prices have risen by 30% (line 11), so firms' costs of power and transport rise. Second, the real has lost 10% of its value against the dollar (line 12), so imported raw materials and components cost more. Third, the higher tax on petrol (line 35) adds to fuel costs. Firms pass these costs on to consumers through higher prices.

Question number

As the diagram shows, SRAS shifts upwards (to the left) from $SRAS_1$ to $SRAS_2$. The price level rises from PL_1 to PL_2 while real GDP falls from Y_1 to Y_2, which explains why Brazil has high inflation at the same time as slowing growth.



2 (b)

(i) GDP = \$230.6bn ÷ 0.131 = \$1 760bn (to 4 s.f.)

(ii) Exports bought by China and the USA = 2/3 × \$230.6bn = \$153.7bn

2 (c)

Investment is spending by firms on capital goods such as factories and machinery. Supply-side policies are government policies that increase the productive capacity (LRAS) of the economy by improving incentives and the efficiency of markets.

Brazil ranks only 116 out of 189 for being 'business friendly' (line 16), because masses of regulations and complicated tax laws make firms waste hundreds of hours on forms (line 17). Deregulation and simplifying the tax system would cut firms' administration costs, raise expected profits and so increase investment by both Brazilian and foreign firms. Lower corporation tax would raise post-tax returns further. Strong employment legislation makes it hard to dismiss unproductive workers (lines 18 to 19); a more flexible labour market would reduce the risk and cost of hiring, encouraging firms to expand. Brazil

Question number

ranks 107th for infrastructure (line 22): spending on roads, railways and telecoms would lower transport and communication costs, especially for exporters of iron, oil and sugar, raising the returns on private investment. These policies shift LRAS right, so Brazil could grow without the inflation it now faces.

However, investment decisions are relative. Firms looking for a South American base prefer Chile (line 20), so Brazil must not only improve but offer better conditions than Chile. Investment also depends on expected demand: with a recession predicted for 2016 (line 6), consumption hit by 7% inflation and exports underperforming because of slow growth in China and the USA (lines 28 to 29), firms may see little reason to expand capacity however good the supply side is. If the Central Bank keeps interest rates high (line 40), the cost of borrowing will deter investment. Infrastructure is expensive and slow: public debt is 66% of GDP and 311.4 billion reals (6% of GDP) already go on debt payments (lines 31 to 32), so there is little money, and projects take years to complete. Deregulation and tax simplification cost little, but labour market reform may be politically difficult and could increase poverty and inequality, undoing recent progress.

Overall, supply-side policies can increase investment in Brazil to a large extent in the long run, especially cheap measures such as cutting red tape and simplifying taxes. In the short run their effect depends on demand recovering and interest rates falling, so they work best alongside measures to restore confidence.

2 (d)

Both policies aim to reduce the budget deficit and Brazil's public sector debt, the highest of the emerging economies at 66% of GDP, with 311.4 billion reals (6% of GDP) spent on debt payments in 2014 (lines 31 to 32).

Petrol has few substitutes and is a necessity, so demand is price inelastic: a tax raises the price by more than it reduces quantity, so tax revenue rises significantly. Lowering state pensions cuts government spending on transfer

Question number

payments, often one of the largest parts of G. Lower pensions may also encourage people to work for longer, which increases the size of the labour force and raises income tax revenue. Together these cut the deficit and slow the growth of the debt, reducing future interest payments and freeing money for infrastructure, where Brazil ranks only 107th (line 22). A credible plan to balance the budget could raise investor confidence, lowering the interest rates Brazil pays on its debt and supporting the real. The petrol tax may also reduce negative externalities from congestion and pollution.

However, the timing is poor. Brazil faces a predicted recession in 2016 (line 6), and both policies are contractionary: higher petrol prices and lower pensions reduce disposable income, so consumption, which was around 50% of GDP growth (line 9), falls. Through the multiplier, AD and output fall by more, unemployment rises and tax revenue may fall, so the deficit may not improve much. Higher petrol taxes add cost-push pressure when inflation is already above 7% (line 10). Both policies are regressive: the poor spend a larger share of income on fuel, and pensioners with no other income lose most. This risks 'undoing all of the good work' on poverty (line 36), which fell from about 27% of the population in 2006 to about 8% in 2014. Lower living standards among pensioners may raise spending on healthcare and other benefits, offsetting the savings. Revenue may be smaller than expected because many Brazilian cars run on ethanol from sugar cane, and if the tax is set too high people may switch, so revenue falls (the Laffer curve).

Overall, the policies are likely to be beneficial in the long run, because the debt burden limits Brazil's fiscal options, but in the short run they could deepen the recession and increase poverty. They would be more beneficial if introduced gradually, with protection for the poorest pensioners.

2 (e)

The interest rate is the cost of borrowing and the reward for saving. The Central Bank of Brazil sets its base rate as part of monetary policy, mainly to control inflation.

Question number

There is a strong case to keep rates high. Inflation is above 7% (line 10), eroding shoppers' purchasing power. High rates reduce consumption and investment, so AD grows more slowly and inflationary pressure eases; cutting rates would add demand-pull pressure to existing cost-push inflation and could push it even higher. High rates also make saving in Brazil more attractive to foreigners (hot money), so demand for the real rises and it appreciates, or at least stops falling. Because the real has lost 10% against the dollar (line 12), raising import prices, a stronger currency makes imports cheaper, directly reducing cost-push inflation. Keeping rates high also shows that the Central Bank is credible, so inflation expectations and wage demands stay lower. A stable currency may also reassure foreign lenders to a government with debt of 66% of GDP.

However, high rates have serious costs. Households and firms 'will be hurt' (line 41): higher loan and mortgage repayments cut disposable income and consumption, which accounted for around 50% of GDP growth (line 9). The cost of borrowing for investment rises when Brazil already struggles to attract investment, ranking 116 out of 189 (line 16). With a recession predicted in 2016 (line 6), high rates could deepen the downturn and raise unemployment. A stronger real makes exports, worth $230.6bn or 13.1% of GDP (lines 26 to 27), less price competitive just when slow growth in China and the USA is already hurting them. High rates also raise the cost of servicing the government's debt, already 311.4 billion reals a year (line 32), worsening the fiscal problem.

Most importantly, the inflation is mainly cost-push, caused by 30% higher energy prices and depreciation (line 11), not excess demand. High rates cannot reduce energy prices, so they would cut output a lot for only a small fall in inflation; this inflation may also be temporary once energy prices stabilise.

Cutting rates would boost C and I, ease household debt and weaken the real, helping exports, but risks an inflationary spiral. Monetary policy also works with a time lag of around 18 to 24 months.

Question number

On balance, Mr Tombini should keep rates high in the short run, because cutting them with inflation above 7% would damage credibility and could cause further depreciation and more inflation. However, he should not raise them further, and should cut them once inflation and the real stabilise, since the economy is weak and the inflation is largely cost-push. It depends on whether inflation expectations become embedded.