Surname	StemUp Model Solution	Centre Number	Candidate Number
Other Names			2

GCE A LEVEL

1520U30-1

S18-1520U30-1

ECONOMICS – A2 unit 3
Exploring Economic Behaviour

TUESDAY, 5 JUNE 2018 – AFTERNOON

2 hours

	For Examiner's use only		
	Question	**Maximum Mark**	**Mark Awarded**
Section A	**1**	**6**	
	2	**6**	
	3	**8**	
	4	**4**	
	5	**8**	
	6	**8**	
Section B	**7**	**4**	
	8	**6**	
	9	**6**	
	10	**10**	
	11	**4**	
	12	**10**	
	Total	**80**	

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01

ADDITIONAL MATERIALS

A calculator.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

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

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SECTION A

Answer **all** *questions in the spaces provided.*

1. The following table provides information on the costs and revenues for a firm.

Output (units)	Total Revenue (£)	Total Cost (£)
0	0	150
1	325	300
2	650	540
3	975	865
4	1300	1325
5	1625	1950
6	1950	2700

(a) Identify all levels of output at which this firm makes abnormal profit. [1]

Output levels 1, 2 and 3 units (TR > TC, so profit is £25, £110 and £110).

(b) Calculate average fixed cost when output is 5 units. [1]

TFC = TC at zero output = £150. AFC = £150 ÷ 5 = £30

(c) Explain **two** reasons why the information in the table shows a firm operating in a perfectly competitive market in the short run. [4]

1. Price taker: AR = TR ÷ Q = £325 at every output (e.g. 650 ÷ 2 = 975 ÷ 3 = £325), so MR = AR = £325 and TR is a straight line. Demand is perfectly elastic: the firm is a price taker, a feature of perfect competition.

2. Short run: there is a fixed cost of £150 (TC at zero output) and MC rises (£150, £240, £325, £460), showing diminishing returns to a fixed factor. At Q = 3, MC = MR = £325 and abnormal profit is £110; with no entry barriers, new firms would enter and compete this away in the long run.

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2. According to the website Tripadvisor there are nearly 900 restaurants in Cardiff. Some types of food are very popular - 95 restaurants serve Italian food, 90 serve Indian food, and 53 serve Chinese food. Some types of food are more unusual – there is just one Ethiopian restaurant for example.

Eight restaurants in Cardiff are regarded as expensive "fine dining" restaurants and around 200 are classified as "cheap eats". Around 30 new restaurants have been opening in Cardiff each year since 2012. Over half of the new entrants to the Cardiff restaurant market, though, are actually branches of large national chains such as Las Iguanas (South American-themed food) and Zizzi (Italian food).

Assess the likely market structure of the Cardiff restaurant market. [6]

A market structure is the set of characteristics of a market (number and size of firms, product differentiation, barriers to entry) that determines how firms behave. Cardiff restaurants look monopolistically competitive. There are many small firms (nearly 900 restaurants). Products are differentiated, from Italian (95) and Indian (90) to just one Ethiopian restaurant, so each firm faces a downward sloping demand curve and has some price making power (8 "fine dining" against 200 "cheap eats"). Barriers to entry are low: about 30 new restaurants open each year.

However, it depends how the market is defined. Over half of new entrants are national chains such as Las Iguanas and Zizzi, so the market may be getting more concentrated, closer to oligopoly. Italian food is highly competitive but the one Ethiopian restaurant is a local monopoly, and "cheap eats" suggest price competition matters more than non-price competition. Overall, with low barriers making it highly contestable, monopolistic competition is the best description.

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3. The following table provides information on key macroeconomic indicators for the various UK regions.

Indicator	England	Northern Ireland	Scotland	Wales
Output per head in 2015 (£)	25 367	18 682	23 102	17 573
Estimated annual economic growth rate 2015 – 2025	2.8%	2.2%	2.2%	2.2%
Unemployment rate 2016 (Claimant Count; % of working-age population)	4.9%	5.6%	4.7%	4.1%
Employment rate 2016 (Labour Force Survey; % of working-age population)	74.8%	69.4%	74.1%	73.2%
Government spending per head 2015 – 2016 (£)	8 638	11 106	10 374	9 904
Median income tax paid 2014 – 2015 (taxpayers only) (£)	2 400	2 120	2 390	2 050

Source: ONS regional data report 2016

(a) With reference to the data, calculate the rate of economic inactivity in both England and Wales. [2]

Inactivity rate = 100% – employment rate – unemployment rate

England: 100 – 74.8 – 4.9 = 20.3%

Wales: 100 – 73.2 – 4.1 = 22.7%

(b) With reference to the data, discuss the view that the UK is an optimal currency area. [6]

An optimal currency area (OCA) is a region where one currency and one monetary policy bring more benefits than costs. Conditions are similar cycles, factor mobility, wage and price flexibility and fiscal transfers. Cycles look similar: Scotland, Wales and NI are all forecast to grow 2.2% a year, close to England's 2.8%, and unemployment only ranges from 4.1% (Wales) to 5.6% (NI), so one Bank of England rate suits all. There are fiscal transfers: Wales has the lowest output per head (£17 573) and pays

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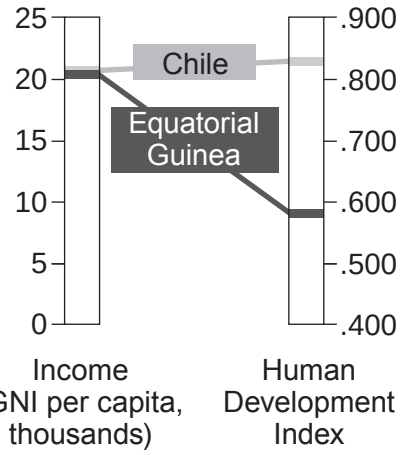
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the lowest median income tax (£2 050) but gets £9 904 spending per head, more than England's £8 638, cushioning asymmetric shocks. However, England's output per head is 44% higher than Wales's, and Scotland (£23 102) gets more spending per head (£10 374) than poorer Wales, so transfers are not purely needs based. Regions specialise differently (finance in London, oil in Scotland), so shocks may be asymmetric, and there is no data on labour mobility. Overall the UK is close to an OCA, mainly because fiscal transfers offset regional differences.

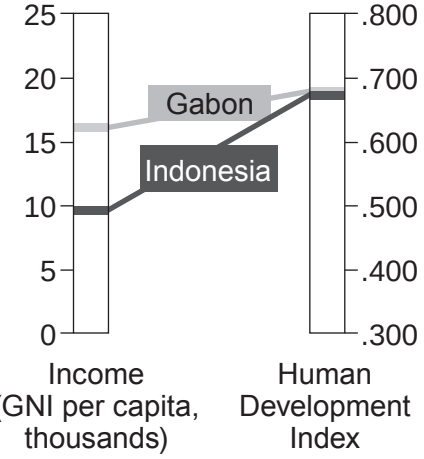
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4. The information below is taken from the 2016 Human Development Report from the United Nations. Income, as measured by Gross National Income (GNI) per capita, is given in US dollars.

Similar income, different HDI value



Different income, same HDI value



With reference to the data and your own economic knowledge, outline why high GNI per capita may not necessarily result in a high value of the Human Development Index (HDI). [4]

The HDI is a composite of income (GNI per capita at PPP), health (life expectancy at birth) and education (mean and expected years of schooling). GNI is only one component, so high income can be offset by poor health and education. Chile and Equatorial Guinea both have GNI per capita of about $21 000, yet Chile's HDI is about 0.83 and Equatorial Guinea's only about 0.59. Gabon (about $16 000) and Indonesia (about $10 000) share an HDI of about 0.69, so Indonesia has better health and education. High GNI may come from oil exports with income concentrated among a few, or not be spent on healthcare and schools.

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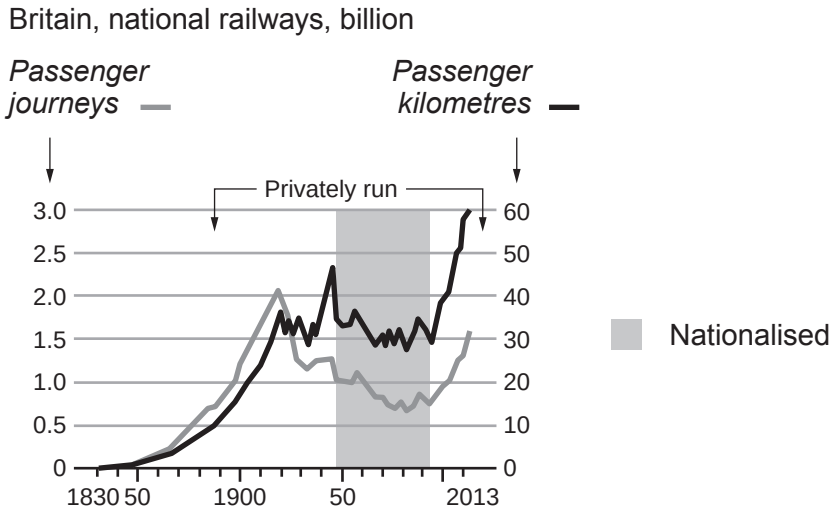
5. According to surveys, over 60% of Britons would like Britain's railways to be renationalised. Figure 1 below shows that since Britain's railway network was privatised in 1994, the number of train journeys taken each year has more than doubled.

However, by 2016 rail fares were 24% higher in real terms than in 1995. In addition to high prices, many passengers face overcrowding with 22% of passengers commuting into London and 14% of passengers commuting into Manchester having to stand rather than sit.

Many of today's problems are blamed on the 1994 privatisation being poorly managed. This resulted in overemployment of railway workers due to the large number of competing train operators. However, investment by private train operating companies has risen since 1994, by roughly the same total amount as the government subsidies to the rail sector of nearly £5bn each year.

The high prices and poor service are the main reasons why many passengers are calling for renationalisation. However, although fares may become simpler, they may not become lower. And the process could take decades, causing train operating companies to delay investment. The overemployment of workers could remain as the powerful railway unions threaten strike action.

Figure 1 – usage of Britain's railways



Source: "Gravy Train", The Economist, 3/10/15

(a) With reference to Figure 1, describe the difference in railway usage when railways were nationalised compared with being privately run. [2]

Nationalised (1948 to 1994): usage fell, journeys from about 1.0bn to 0.75bn a year and passenger km from about 34bn to 30bn. Privately run since 1994: usage rose sharply, journeys roughly doubling to 1.6bn and passenger km to about 60bn by 2013.

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(b) "The high prices and poor service are the main reasons why many passengers are calling for renationalisation."

With reference to the data, discuss the view that renationalisation of the railways will lead to lower prices for passengers. [6]

Prices are high: fares in 2016 were 24% higher in real terms than in 1995, while journeys have more than doubled since 1994, causing overcrowding (22% of London and 14% of Manchester commuters stand). Renationalisation could lower fares. A state railway need not profit maximise (MR = MC); it could price where P = MC, the allocatively efficient level, lowering fares and raising output. One operator would remove the overemployment caused by many competing operators and gain economies of scale, cutting average costs, and as a monopsony employer of rail workers it could hold down wages, lowering costs passed on as lower fares.

However, the passage warns fares "may not become lower". Rail is a natural monopoly with high fixed costs, so P = MC pricing makes a loss; the government already pays nearly £5bn a year in subsidies with little effect on fares, and without more subsidy fares might rise to cover average cost. Powerful unions threatening strikes could keep overemployment and raise costs, and a process taking decades would delay investment, worsening overcrowding. Lower fares are therefore not guaranteed: they depend on the government's willingness to subsidise.

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6. The table below provides information regarding the amount of aid received by 2 Less Economically Developed Countries (LEDCs), their populations, and their GDP per capita in US $ at Purchasing Power Parity (PPP) for selected years from 1995 to 2015.

Country / indicator	1995	2000	2005	2010	2015
BOTSWANA					
Total aid inflow (US $m)	89.54	30.62	47.98	153.47	99.64
Total population (millions)	1.576	1.737	1.864	2.048	2.262
GDP per capita at PPP (US $)	3001	3333	5327	6244	6360
ETHIOPIA					
Total aid inflow (US $m)	876.49	687.22	1928.00	3453.00	3585.00
Total population (millions)	57.237	66.444	76.608	87.562	99.391
GDP per capita at PPP (US $)	134	124	162	342	619

(a) Define 'GDP per capita at PPP'. [2]

GDP per capita is the total value of output (income) of a country in a year divided by its population. At PPP it is converted into dollars using purchasing power parity rates, which adjust for differences in the cost of living, so it shows what average income can actually buy.

(b) With reference to the data, evaluate the link between aid (as represented by total aid inflow) and GDP per capita at PPP. [6]

Aid is a transfer of resources to LEDCs on concessional terms, often not repaid. It is an injection that raises AD with a multiplier effect, and project aid for infrastructure, health and education raises productivity and LRAS, so GDP per capita should rise. Both countries received aid and GDP per capita at PPP rose from 1995 to 2015: by 112% in Botswana ($3 001 to $6 360) and 362% in Ethiopia ($134 to $619). In Ethiopia the link looks positive: aid per head rose from about $15 to $36, and growth was

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fastest after aid jumped to $3 453m in 2010.

However, in Botswana the link is weak or negative: aid per head fell from about $57 to $18 (1995 to 2000) and was $44 in 2015, yet GDP per capita rose steadily, and when aid tripled in 2010 GDP per capita rose only 17%. Correlation is not causation: Botswana's growth owes more to diamond exports. It also depends on the type of aid (humanitarian aid prevents falls in output rather than creating growth) and on governance, as aid can be lost to corruption. Overall the link is weak and varies by country.

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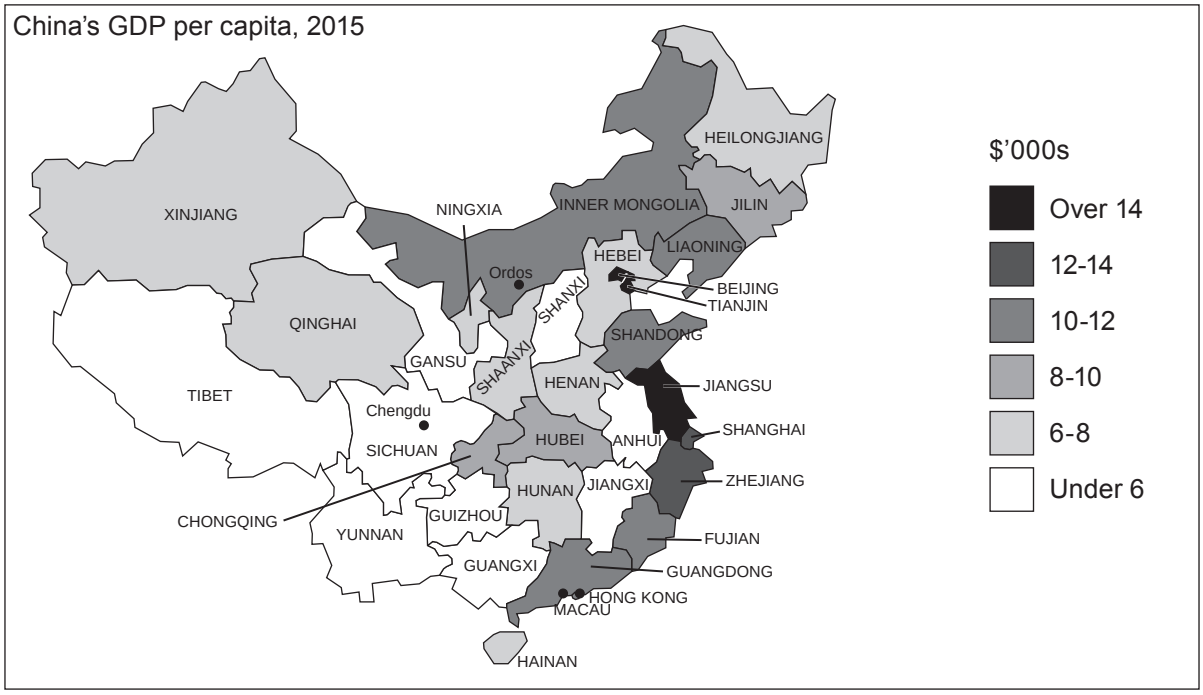
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Section B

Answer **all** *the questions in the spaces provided.*

1 China's economy is characterised by high levels of inequality. Households in coastal regions enjoy a much higher GDP per capita than households inland (see Figure 1 and Table 1).

Figure 1 – the unequal distribution of income in China



Sources: CEIC; World Bank

Table 1 – annual income and population of selected Chinese provinces (April 2016)

Rank	Province	Income per capita (in US $ at PPP)	Population ('000s)
1	Tianjin	30611	15319
3	Shanghai	29245	24205
11	Chongqing	14838	30040
23	Sichuan	10445	81721
28	Tibet	9073	3208
31 (last)	Gansu	7419	25952
	China as a whole	**14175**	**1371220**

5 **The causes of inequality in China**

The pattern of inequality in China today is a reversal of the pattern in the 1970s when coastal areas were significantly poorer than inland areas. To reduce the 1970s inequality, China's government established Special Economic Zones (SEZs) along the coast to encourage the production of manufactured goods for export from the newly built ports in Shenzhen and Shanghai. Inland areas continued to specialise
10 in producing commodities, such as coal, that were essential to the manufacturing industry along the coast. The result was rapid economic growth across China, especially in the coastal manufacturing sector which was most able to take advantage of the benefits of globalisation.

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The widening income gap between coastal and inland China seen today is a result of a number of factors:

- Demand for the commodities produced by inland Chinese provinces has slowed as global economic growth has slowed. Coal and steel prices, for example, fell by nearly 70% between 2011 and 2015.
- Government spending in some poor Chinese provinces has been wasteful. In the city of Ordos in Inner Mongolia, for example, the government built a brand new district that could house 1 million people, but that stood empty for years.
- Despite subsidies from the Chinese government to poor provinces, these areas struggle to compete with highly skilled labour, efficient legal and financial institutions, and the "network effects" of the large urban coastal areas where dynamic efficiency and innovation is high.
- Private sector research and development (R&D) in manufacturing industries is estimated to contribute over 50% to Chinese growth, with around 2% of GDP spent on R&D. That proportion is set to rise so much that spending on R&D in China is estimated to overtake the amount spent in the US by 2022.

Chinese policies to reduce inequality and gain from globalisation

Worried about possible economic and social problems resulting from high levels of inequality and the failure of some parts of China to benefit from globalisation, the Chinese government has introduced a range of policies.

The 2001 "Go West" plan saw the Chinese government spend $325bn in poor, inland areas on capital infrastructure projects such as roads, railways and oil pipelines in order to tempt further investment by the private sector. This policy was effective in helping existing cities such as Xian and Chongqing to expand and modernise; Xian's economic output has grown by 13% each year since the launch of the policy.

Another policy, from Autumn 2013, was the "Belt and Road" which attempted to link China with other Central and South-East Asian economies to stimulate trade between poorer areas of China and other countries. Richer Chinese provinces and cities were encouraged to provide aid and economic advice to "twinned" inland provinces and cities on everything from "how to start a business" through to helping universities develop cutting-edge courses. The Chinese government provided an initial $40bn, and also spent a significant amount on building transport hubs such as ports and freight train stations in other countries.

China's government also uses current spending in addition to capital spending. Redistributive fiscal policy ensures tax revenue collected from richer areas is spent on poorer areas; indeed, the local government in 10 of China's 33 provinces receive more than half of their funding from taxes raised outside of their own province.

Coastal areas continue to grow, although more slowly than they once did, therefore workers continue to migrate from inland to coastal areas. China's government estimates that around 300m people work outside of their hometown. Theoretically this migration should help to even out wages across China. However, many migrant workers are forced to leave their children behind at home with non-working relatives, such as grandparents, because of China's *hukou* system (or household registration system) which prevents people from accessing state-provided healthcare and education anywhere other than their original hometown. Migrant workers send money back home to financially support their children, but may only get to visit once a year. This stressful family situation is now causing some migrant workers to return home, and fewer rural workers think that migration to coastal urban areas is desirable. As the flow of workers into China's coastal economic powerhouses slows down, city workers gain bargaining power and can demand higher wages. This has forced some manufacturers out of business, or caused them to raise prices. Perhaps the Chinese government needs to do very little to help rebalance the economy; perhaps the free market is more alive in this socialist economy than we thought.

Sources: "Go West is an economic milestone for nation" from China Daily (9/12/11); "Rich Province Poor Province" from The Economist (1/10/16); "China migration: at the turning point" from the Financial Times (4/5/15); IMF's World Economic Outlook Database April 2016; "China's One Belt One Road plan greeted with caution" from the Financial Times (20/11/2015); "China's rise as a major contributor to science and technology" from Journalist's Resource (5/1/2015)

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7. Calculate:

(a) GDP per capita in Tianjin as a proportion of GDP per capita in China as a whole. [1]

30 611 ÷ 14 175 × 100 = 215.95%

(b) GDP per capita in Gansu as a proportion of GDP per capita in China as a whole. [1]

7 419 ÷ 14 175 × 100 = 52.34%

(c) Total income in Gansu as a proportion of total income in Tianjin. [2]

Gansu total income = 7 419 × 25 952 000 = $192 537 888 000

Tianjin total income = 30 611 × 15 319 000 = $468 929 909 000

Proportion = 192 537 888 ÷ 468 929 909 × 100 = 41.1%

4

8. Assess **two** reasons why GDP per capita is not always a good measure of living standards in an economy. [6]

First, GDP per capita is an average, so it ignores income distribution. China's is $14 175, but Tianjin's is $30 611 and Gansu's only $7 419, so the average overstates living standards for most inland households. However, this matters less if inequality is stable, and it can be corrected by using median income or the Gini coefficient alongside it.

Second, GDP ignores non-market activity and externalities. Unpaid work, such as grandparents caring for migrants' children, and the informal economy are not counted, understating living standards, while pollution from rapid manufacturing harms health but is not subtracted, overstating them. Yet GDP per capita is still useful: higher income buys healthcare, education and housing, it correlates strongly with the HDI, and almost every country collects it, so it is objective and comparable. It is a good starting point but should be used with measures such as the HDI.

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9. With reference to the data, assess the view that globalisation is good for the Chinese economy. [6]

Globalisation is growing integration of economies through trade, FDI and technology. SEZs and new ports in Shenzhen and Shanghai let coastal China specialise in manufactured exports by comparative advantage; rising exports increase AD (X – M) and, via the multiplier and derived demand for labour, real GDP and jobs. Coastal incomes are now high: Tianjin $30 611 and Shanghai $29 245 per head, over double the national $14 175. Openness also brings FDI, knowledge transfer and dynamic efficiency, with R&D at 2% of GDP contributing over 50% of growth.

However, the gains are unequal. Inland provinces specialising in coal and steel suffered when global growth slowed and prices fell nearly 70% (2011 to 2015), showing exposure to external shocks; Gansu's income ($7 419) is under a quarter of Tianjin's. Inequality causes social problems and manufacturing pollutes. Some gains are redistributed: 10 of 33 provinces get over half their funding from taxes raised elsewhere. We also lack data on health or HDI. Overall globalisation has been good for China as a whole, but only if policy spreads the gains inland.

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10. With reference to the data, discuss the view that government capital spending is a better method of reducing inequality in China than government current spending. [10]

Capital spending is government investment in long-lived assets such as infrastructure; current spending is on day-to-day items such as wages, healthcare, education and transfer payments. Inequality in China is regional: income per head is $30 611 in Tianjin but $7 419 in Gansu (Table 1), and Figure 1 shows most inland provinces under $8 000 against over $14 000 on the coast.

Capital spending can reduce inequality. The 2001 "Go West" plan spent $325bn on roads, railways and oil pipelines in poor inland areas. This injection raises AD at once, creating construction jobs and, via the multiplier, incomes in poor regions; in the long run better infrastructure cuts firms' costs and shifts LRAS right, attracting private investment to areas with cheap labour that can still reach coastal ports. Xian's output has grown 13% a year since. The "Belt and Road" ($40bn plus transport hubs) links inland China overland with Central and South-East Asia, so inland firms need not rely on coastal ports. The SEZ ports show capital spending can transform regions.

However, capital spending has long time lags, high costs and can be wasteful: the Ordos district built for 1 million people stood empty for years. Go West mainly helped existing cities such as Xian and Chongqing rather than the poorest rural areas, and Chongqing ($14 838) is still under half of Tianjin's income. Its success also depends on the global economy, since factories need customers, and on effective legal and financial institutions.

Current spending works more directly. Redistributive fiscal policy taxes rich areas and spends in poor ones: local governments in 10 of China's 33 provinces get over half their funding from taxes raised outside the province.

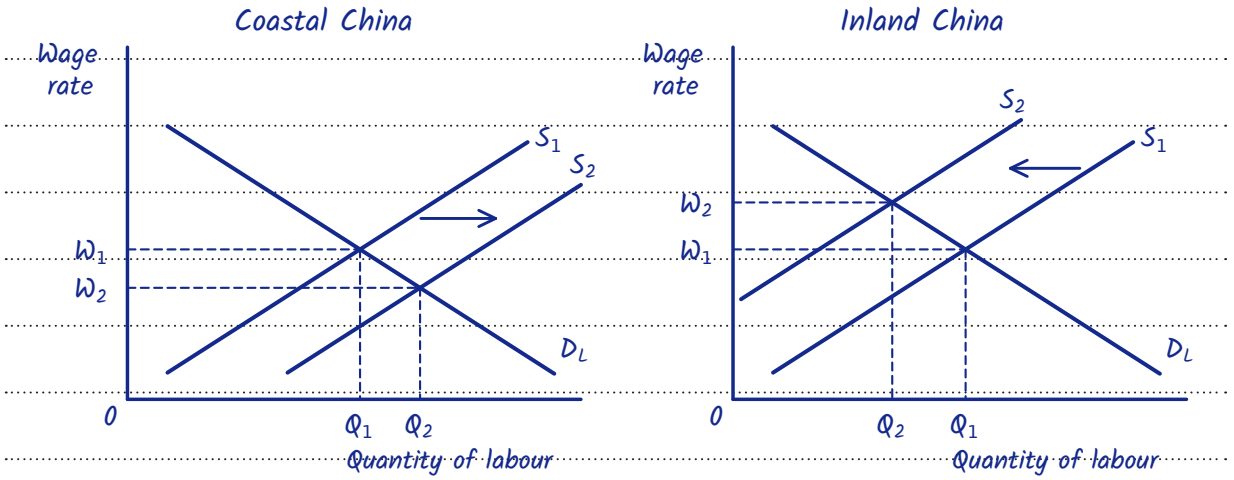
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11. Using appropriate diagrams, explain why the migration of workers from inland China to coastal China should help to even out wages across the country. (line 50) [4]



Migration increases labour supply on the coast (S_1 to S_2); at W_1 there is excess supply of labour, so the wage falls to W_2 (assuming no unions or minimum wage). Inland, labour supply falls (S_1 to S_2); at W_1 there is excess demand, so employers bid wages up to W_2 (assuming no monopsony). As labour becomes scarcer inland, workers there gain bargaining power, while coastal workers lose it. Coastal wages fall and inland wages rise, so the wage gap narrows.

4

12. Discuss the view that economic development in China is more likely to be achieved through free market forces rather than government intervention. [10]

Economic development is a broad improvement in living standards, including income, health, education and freedom, not just growth in real GDP.

Free market forces have driven much of China's development. On the coast, skilled labour, efficient institutions and network effects create dynamic efficiency and innovation: private sector R&D, about 2% of GDP, contributes over 50% of growth and may overtake US spending by 2022. The price mechanism allocates resources efficiently, whereas governments struggle to "pick winners", and profit opportunities attract FDI, bringing capital, jobs and knowledge transfer. The labour market is also rebalancing itself: as fewer migrants move to the coast, city workers gain bargaining power and wages rise, pushing firms to raise prices or move inland where labour is cheaper, raising

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inland incomes without state spending. Lower government spending also avoids borrowing and crowding out. Government failure is real: the empty Ordos district wasted resources, and the hukou system splits families and limits migrants' healthcare and education, harming development.

However, free markets also caused problems. Market forces cut coal and steel prices by nearly 70% from 2011 to 2015, deepening poverty in inland provinces such as Gansu ($7 419 per head against Tianjin's $30 611). Markets under-provide public goods and merit goods such as healthcare and education, because of free riders and positive externalities, yet these are central to development. Intervention has worked: SEZ ports began export-led growth, Go West's $325bn of infrastructure helped Xian grow 13% a year, and redistributive fiscal policy funds over half of spending in 10 provinces, where the poor's high MPC creates large multiplier effects. Intervention can be cheap too: twinning rich and poor provinces to share business advice.

It depends on time and region. Rich coastal areas may now develop best through markets, while poor inland areas need infrastructure and redistribution before private firms invest. It also depends on the type of intervention: well targeted infrastructure and education complement markets, while wasteful projects and hukou restrictions hinder them.

Overall, growth in China is increasingly driven by market forces, but development, which includes reducing inequality and providing healthcare and education, is unlikely without government intervention. The best approach is a mix: markets for innovation and growth, the state for infrastructure, merit goods and redistribution, with hukou reform so markets work better.

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10. (continued) Benefits raise poor households' disposable income at once, and as the poor have a high MPC, consumption and the multiplier effect are large, so inequality can fall quickly. It can be targeted, e.g. more support in Gansu than Sichuan ($10 445). However, hukou limits healthcare and education spending to hometowns, splitting migrant families, and transfers do not raise productive capacity.

Overall, current spending cuts inequality faster in the short run, but only capital spending raises the earning potential of poor regions in the long run, so capital spending is the better method, provided it is well targeted and avoids waste like Ordos. Ideally both are combined, with current spending on education and hukou reform making infrastructure more effective.

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