**ECONOMICS** **8843/01**

Paper 1 **3 hours**

No Additional Materials are required.

## READ THESE INSTRUCTIONS FIRST

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional answer paper ask the invigilator for a continuation booklet.

Answer **all** questions.

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

This document consists of **9** printed pages and **3** blank pages.

Answer **all** questions.

**Question 1: Feeding a net-zero world**

**Extract 1: Relationship between food systems and climate change**

Food systems are generally defined as all the activities related to producing, transporting, consuming food, and their effects. They account for around a third of all global greenhouse gas emissions and the emissions are not evenly distributed within the food systems. Agriculture land-uses make up about 65% of food-related emissions, with the remainder driven by both downstream (e.g. transport, waste) and upstream (fuel production) activities.

Economic growth in developing countries and the accompanying large increase in consumption for animal-based proteins are expected to sizeably increase emissions from food systems in the coming years. Without urgent action, food system emissions are expected to grow by about 30 – 40% by 2050. This means that even if all other fossil-fuel emissions stopped now, emissions from food systems alone would prevent the world from achieving climate change target.

But, affordable and availability of food is essential for food security. Maintaining this and ensuring its resilience in the face of climate change and increasing international tensions is imperative. Recent events have underscored the importance of this issue, with high cost of food contributing to the cost-of-living crisis following Russia's invasion of Ukraine, and the increasing number and severity of extreme weather events. Agriculture is by its nature affected by climatic conditions, particularly rain-fed agriculture. These impacts are being increasingly felt today. Recently in 2022, Europe experienced its driest summer on record, leading to a drop in agricultural yields of up to 16% compared to previous years.

Beyond agriculture, climate impacts are also being experienced in other parts of the food systems. Climate shocks affect not only agriculture farming, but also transportation of farmed goods, for example if extreme events such as floods and landslides damage key transport infrastructure.

Food systems will need to adapt to climate change which poses challenges for how food is produced and transported.

Source: adapted from Feeding a net-zero world, OECD, 8 September 2023

**Extract 2: How can the UK reduce meat consumption and cut emissions?**

Globally, 83% of farmland is taken up by livestock, and many are arguing for an overhaul of meat consumption to free up more land for nature.

In UK, there appears to be a downward trend in meat-eating but figures are still high. A report from last year found Britons have reduced meat consumption by 17% in the past decade. The increasing production of plant-based alternatives and their availability from being niche to widely available in most large supermarkets and restaurants has driven this decline. But strong public support has to be garnered given consumer sensitivities around food choices and cultural habits. Without strong public support, the switch to plant-based alternatives would be limited.

No doubt, some groups believe that the market will internalise the environmental costs if better information is provided, we can't just simply provide people with any information on the impacts of meat-eating. Information regarding environment impact may help people understand and oppose what meat consumption does to the environment but it doesn't seem to impact what and how much they actually eat. Generally, self-interested individuals will not think about the climate crisis when browsing supermarket shelves. Information must be targeted at how meat-eating would impact the individuals themselves (e.g. health costs arising from obesity) to change their behaviours.

A meat tax, or "sin taxes" would perhaps work by incentivising food manufacturers to put less meat in their food products (e.g. a sausage might have 60% meat instead of 70%). Yet most governments provide subsidies for livestock farming instead with some groups saying a meat tax would damage the domestic livestock farming sector, risking the livelihood of the farmers. So, most governments have no appetite for a meat tax.

Source: adapted from How can the UK reduce meat consumption and cut emissions?, The Guardian, 16 August 2022

**Extract 3: Making farming into restorer, not a destroyer of ecosystems**

UK's farmers will receive government payments for environmental work and sustainable ways of food production. The Environmental Land Management Schemes (ELMS) aims to boost food production sustainably and improve the environment while boosting UK farmers' income as a result of doing the right thing for the environment.

The ELMS will comprise three payment schemes:

- The Sustainable Farming Incentive focuses on soil health and reducing the use of inputs such as chemical fertilisers and insecticides. It also includes payments for looking after hedgerows, grasslands and soils.

- The Landscape Recovery Scheme will pay landowners for ambitious large-scale rewilding projects. These will lead to vast tracts of land being managed to conserve species, provide habitats for wildlife and restore health to rivers and streams.

- The Countryside Stewardship Plus scheme will reward farmers for action to support climate change adaptation and help nature. It will reward farmers for taking coordinated actions, including natural flood management, wetland restoration and enhancing forest.

However, low-cost imports made to lesser environment standards continue to drive down the prices of domestically grown, sustainably produced food in the UK. The UK is also already a large net importer of food and the ELMS' ambition to maximise the value to society of the landscape may in reality mean that that increases further. The big danger is that we end up with an even more divided two-tier food system, where cheaper food from abroad, with huge environmental costs, replaces food that could be grown in nature-friendly ways in the UK.

Source: adapted from Farm subsidy plan 'risks increasing the UK's reliance on food imports', The Guardian, 09 January 2022

**Extract 4: Cleaner and healthier food systems**

Action to address issues in the food systems requires a focus on both supply and demand.

On the supply side, current subsidies are often not sufficiently aligned with climate and healthier living objectives, and present a barrier to achieving these goals. The UK government spends at least £1.5b a year subsidising livestock farming, ten times the UK's annual budget for planting trees. Meanwhile, despite a global explosion in demand for planet-friendly alternative proteins, the UK has only committed £90m in research and development to this sector.

Two particular avenues stand out to reorient subsidies towards better practices. One is to prioritise reforming support to the most emissions-intensive and carbohydrates-heavy products. For example, support given to rice – a product that is high in carbohydrates and is emissions-intensive due to methane produced by flooded paddies – should be removed. Another is to phase-out subsidies for harmful agricultural inputs, such as chemical fertiliser. The subsidies could be reoriented to fund low-emission and healthier solutions instead. These changes place stronger incentives for restructuring the farming sector away from high to lower-emissions production and towards production of healthier food.

Efforts to reorient subsidies are never easy. This is particularly the case for food-related subsidies given the tumultuous events of recent years. Measures need to consider potential impacts on food prices and producer incomes. Food prices have recently contributed considerably to the cost-of-living crisis and as a driver of inflation, due to supply disruptions and high prices following Russia's war against Ukraine, on top of climate-related disruptions to harvests in various parts of the world.

Governments must also explore policies that influence the demand side of food systems. This can include information and labelling schemes that aim to shift diets and preferences towards healthier products, for instance by providing information on the negative health impacts.

Source: adapted from Feeding a net-zero world, OECD, 8 September 2023

**Questions**

**(a)** With reference to Extract 1 and using Price Elasticity of Demand (PED), explain the impact on consumers' food expenditure as a result of the climate change. [4]

**(b)** With reference to Extract 1, explain the reason for the increase in consumption for animal-based proteins in developing countries. [2]

**(c)** With reference to Extract 2, explain why there is "a downward trend in meat-eating but figures are still high" (Extract 2). [4]

**(d)** With reference to Extract 3,

    **(i)** and using a demand and supply diagram, explain how the Environmental Land Management Schemes (ELMS) boost UK farmers' income as a result of doing the right thing for the environment. [4]

    **(ii)** explain the unintended consequence of UK's higher environment standards in food production on its economy. [2]

**(e)** Using a demand and supply diagram, explain and comment on the likely effects of the decrease in demand for meat (Extract 2) and the subsidies for livestock farming (Extract 4) on the quantity of meat transacted in UK. [6]

**(f)** With reference to the information provided, discuss the view that providing information would reduce allocative inefficiency caused by imperfect information on "the demand side" (Extract 4) of UK's food systems. [8]

**(g)** With reference to the information provided, discuss whether a reduction in subsidies given to high-emission food production should be implemented by the UK government to address the market failure on "the supply side" (Extract 4) of UK's food systems. [10]

[Total: 40]

**Question 2: Economic challenges in Singapore**

**Extract 5: Singapore's economic growth slows to 3.8% in 2022; outlook darkens for 2023**

Singapore's economy grew by 3.8% in 2022, slowing sharply from the 7.6% growth achieved a year earlier, according to advance estimates from the Ministry of Trade and Industry (MTI) on Tuesday.

Analysts said anaemic global growth due to high inflation and rising global interest rates has started to hit merchandise exports from Asia, pulling the region's manufacturing sector into recession territory. However, a relatively resilient services sector aided by the reopening tailwinds should mitigate the weakness in manufacturing and also keep unemployment low.

Still, much depends on the outlook of the global economy, which could turn gloomier. International Monetary Fund (IMF) managing director Kristalina Georgieva warned that 2023 will be a tougher year for the global economy than 2022. "We expect one-third of the world economy to be in recession," Dr Georgieva said in an interview on Sunday. "Why? Because the three big economies – the United States, the European Union and China – are all slowing down simultaneously."

Source: Straits Times, 3 January 2023

**Table 1: Gini coefficient among resident employed households, Singapore, 2020 and 2023**

|  | 2020 | 2023 |
|---|---|---|
| Household Income from Work Per Household Member | 0.452 | 0.433 |
| Household Income from Work Per Household Member (After Accounting for Government Transfers and Taxes) | 0.375 | 0.371 |

Source: Singstat, accessed 14 May 2024

**Extract 6: Workfare Supplement Scheme**

Introduced in 2007, the Workfare Income Supplement (WIS) is a broad-based measure that tops up the salaries of lower-income workers to help them save for retirement. The recipient will receive 40% of WIS in cash and 60% in CPF contributions. WIS is targeted at Singaporean workers whose earnings are in the bottom 20%, with some support for those slightly above. The table below shows the maximum WIS amount an individual can receive each year, based on their age group.

**Table 2: Increase in WIS from Year 2023**

| Age | Maximum Annual WIS | |
|---|---|---|
|  | **Year 2020** | **From Year 2023** |
| 30-34 | Not applicable | $2,100 |
| 35-44 | $1,700 | $3,000 |
| 45-54 | $2,500 | $3,600 |
| 55-59 | $3,300 | |
| 60 and above | $4,000 | $4,200 |

Source: https://www.cpf.gov.sg/member/growing-your-savings/government-support/workfare-income-supplement, accessed 14 May 2024

**Extract 7: Wage growth inevitable, but cannot outstrip productivity**

A tight labour market means that wage increases are inevitable as employers compete to fill vacancies, but Singapore must continue to ensure that salaries rise in tandem with productivity. Failing to do so could lead to "a destabilising wage-price spiral, where higher wages feed directly into higher prices", said Deputy Prime Minister Lawrence Wong.

Mr Wong noted that Singapore faces a range of challenges such as rising inflation, retreating globalisation and worrying signs of potential economic slowdown across major economies such as the US, Europe and China. In this milieu, Singapore will lose its global competitiveness if its wages rise too quickly, he said. "This will hurt both employers and employees, and it will be the most vulnerable workers who will ultimately bear the brunt if companies cannot sustain themselves," he said.

One of the reasons for Singapore's wage increases is its rapid economic growth in 2021. The tight labour market could pose a real risk that wages would spin out of control, undoing the progress that it had made in attracting foreign investors. The National Wages Council's (NWC) annual recommendations have ensured that wages move in tandem with productivity and economic performance, Mr Wong said.

That is why, more than ever, the NWC has an important role to play in bringing its partners together to champion fair, inclusive and sustainable growth for all, said Mr Wong, who is also Finance Minister. He noted that the NWC – a tripartite body comprising employer, employee and government representatives – was set up in 1972 under similar conditions.

The tripartite partners must now redouble their efforts to encourage skills upgrading and productivity improvements across all sectors of the economy, he said, as that is the only way to ensure sustainable wage growth and improve Singaporeans' welfare. To this end, the 23 industry transformation road maps will help prepare firms and workers for the future, while SkillsFuture helps workers acquire new skills. But each business must consider how these strategies apply to them, and chart their own concrete action plans to stay relevant, Mr Wong added.

Singapore also needs to keep at the work of reducing income inequality and ensuring that wage gaps across society do not move too far apart, he said. Part of the strategy is increasing the Workfare Income Supplement (WIS), expanding progressive wages to more sectors.

Source: Straits Times, 29 September 2022

**Extract 8: The impact of artificial intelligence on growth and employment**

The use of artificial intelligence (AI) for day-to-day tasks has increased rapidly over the last decade and ChatGPT (developed by OpenAI) is a prime example of this, with the popular generative AI used by more than a billion users for everyday tasks like coding and writing. AI-powered technologies can now perform a range of tasks, including retrieving information, coordinating logistics, providing financial services, translating complex documents, writing business reports, preparing legal briefs, and even diagnosing diseases. Moreover, they are likely to improve the efficiency and accuracy of these tasks due to their ability to learn and improve via the use of machine learning.

AI is generally acknowledged to be an engine of productivity and growth. With its ability to process and analyse enormous volumes of data, it has the potential to boost the efficiency of business operations. The McKinsey Global Institute predicts that around 70% of companies will adopt at least one type of AI technology by 2030. Price Waterhouse Coopers predicts that AI could increase global GDP by 14% in 2030.

Researchers identified the implications of AI on the labour market into two broad categories: a doomsayer's perspective and an optimist's perspective. Doomsayers believe that labour substitution by AI will harm employment. Frey and Osborne estimate that 47% of total US employment is at risk of losing jobs to automation over the next decade. Optimists believe that AI and robotics will have created up to 90 million jobs by 2025, indicating a strong positive labour market impact. The World Economic Forum concluded in October 2020 that while AI would likely take away 85 million jobs globally by 2025, it would also generate 97 million new jobs in fields ranging from big data and machine learning to information security and digital marketing.

Source: CEPR, 20 June 2023

**Extract 9: Income tax cuts**

Even as the United States (US) economy shows signs of slowing down, many states around the US are flush with cash, with their so-called rainy day funds estimated to reach a record high of $136.8 billion this fiscal year.

The drive to cut state taxes has accelerated during the pandemic. During the past two years, dozens of states reduced their income tax rates or created new tax credits and rebates, partly as their coffers overflowed due to strong economic growth and billions in federal pandemic aid. Of those, 21 states cut their personal tax rates, with more contemplating deeper or new income tax reductions in 2023, according to the Tax Foundation.

State lawmakers say they are proposing tax cuts for a number of reasons: To make their states more economically competitive with others; to boost economic growth; or to boost taxpayers who are struggling with inflation.

But Auxier, a senior policy analyst at the Tax Policy Centre, said voters should examine whether these tax strategies match up with lawmakers' objectives, noting that the cuts might not actually accomplish their stated goals. For instance, reductions in income tax rates are often portrayed as helping put money back into ordinary workers' pockets. Yet in the 11 states that cut individual income tax rates in 2022, the biggest direct benefits were enjoyed by the highest-earning households. By comparison, lower- and middle-income households received only a modest or no benefit. The reason: Higher-income households pay the most in taxes, while some low-income households pay no taxes. That means a tax cut wouldn't provide those individuals with any benefit.

Source: CBS News, 9 February 2023

**Questions**

**(a)** Using a diagram, explain the impact of the use of artificial intelligence (AI) on a country's production possibility curve. [3]

**(b)** Extract 5 highlights that Singapore's outlook darkens for 2023 and 'warned that 2023 will be a tougher year for the global economy than 2022.'

Explain how 'rising global interest rates' in 2022 and 'one-third of the world economy (would) be in recession' is expected to affect Singapore's economic growth negatively in 2023. [5]

**(c)** **(i)** Extract 7 highlights that 'Singapore also needs to keep at the work of reducing income inequality and ensuring that wage gaps across society do not move too far apart.'

Comment on the effectiveness of 'increasing the Workfare Income Supplement' to reduce income inequality. [6]

**(ii)** Explain how inclusive growth could help improve the standard of living of a country. [4]

**(d)** With reference to Extract 7 and using a demand and supply diagram, explain **one** reason for the rising labour wages in 2021. [4]

**(e)** Extract 7 explains that wage increases are inevitable.

Using AD-AS analysis, discuss how rising wages outpacing productivity growth will negatively impact Singapore's economy. [8]

**(f)** Extract 8 highlights that 'AI is generally acknowledged to be an engine of productivity and growth.'

Discuss whether embracing AI or decreasing income tax rates (Extract 9) is better for enhancing inclusive economic growth in a country amidst the global slowdown in economic growth. [10]

[Total: 40]

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