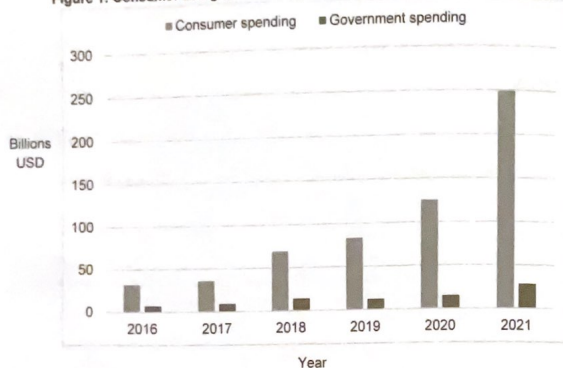


Answer all questions.

Question 1: Impacts of the electric vehicle industry

Figure 1: Consumer and government spending on electric vehicles (2016 – 2021)



Source: International Energy Agency, 23 May 2022

Extract 1: Singapore Green Plan: EV-ready towns by 2025

Singapore is taking its climate action a step further with new initiatives, including plans to make every Housing and Development Board (HDB) town "EV-ready" (electric vehicle ready) ahead of schedule, and help more businesses improve energy efficiency. The Government said last month that it would bring forward the country's target to reach net zero "by or around mid-century", a move Senior Minister Teo Chee Hean described on Tuesday as "necessary, practical and implementable", given international developments in technology and carbon markets.

Last week, a major UN report released dire warnings about climate change inaction, with findings showing that irreversible climate impacts are happening faster and with greater intensity than ever before. Rising temperatures could expose Asia to threats like food scarcity and human-health risks, with an increasing likelihood of heatwaves and floods as well as water- and vector-borne diseases.

Minister Teo said the government will review its 2030 nationally determined contributions (NDCs) which is a national roadmap that charts how the country plans to reach net zero along with its long-term low-emissions development strategy (LEDS).

A new target has also been set to reduce Singapore's land transport emissions by 80% from its 2016 peak of 7.7 million tonnes "by or around mid-century". Currently, the land transport system accounts for 15% of Singapore's emissions today, making it the third-largest source

of emissions. Singapore will also accelerate its target of making every HDB town EV-ready by 2025, earlier than its previous target of the 2030s.

This comes after a major survey of switch rooms and substations across the island conducted by the Land Transport Authority (LTA) to assess the additional electrical capacity needed to support electric vehicle (EV) charging. To support the implementation of EV-ready towns, EV charging points will be installed at nearly 2,000 HDB car parks over the next three to four years.

Source: Channel News Asia, 8 March 2022

Extract 2: The effect of China's EV dominance on the global automotive sector

China's supremacy in the electric vehicle (EV) industry and its exports are reshaping the global automotive landscape. China now has the largest percentage share of the global EV market, accounting for approximately 50% or more of global EV production and exports.

China's rapid ascent in the EV sector is partly attributed to the absence of significant entry barriers or bottlenecks. Unlike certain industries like semiconductor manufacturing, which require substantial capital investments and advanced technological capabilities, EV production involves readily available technology and less complex manufacturing processes. This accessibility lowers the barriers to entry for both established automakers and new entrants, facilitating China's remarkable rise in the sector.

China boasts an immense manufacturing infrastructure that can be quickly adapted to EV production. The country's experience in mass production of conventional vehicles, consumer electronics, and other products provides a significant advantage. China's automakers can leverage their existing production facilities and skilled labour force to scale up EV production rapidly. This capacity to achieve economies of scale further solidifies China's dominance in the EV sector.

Source: Hinrich Foundation, 28 November 2023

Extract 3: Tesla's latest price cuts risk wiping out China's earnings

Tesla's price cuts in China could cost the carmaker the entirety of its operating profit in the world's biggest electric vehicle market. Tesla also dropped prices in both the United States (US) and Germany after disappointing first-quarter sales contributed to swelling inventory. In China, the revamped Model 3 fell to 231,900 yuan (\$343,635) from 245,900 yuan. China's Li Auto immediately responding with discounts and cash rebates on new models. The company cut prices by 6% to 7% across its lineup.

China's EV price war has been running since late 2022, when Tesla started discounting its vehicles. Competition intensified as automakers struggled to meet sales targets, and has shown little sign of abating this year, with market leader BYD marking down some of its most popular cars. Its Seagull hatchback, for example, now costs less than US\$10,000.

Source: The Business Times, 22 April 2024

Extract 4: Singapore aims to phase out petrol and diesel vehicles by 2040

Singapore aims to ban petrol and diesel vehicles by 2040, making a bigger bet on electric cars as part of its efforts to cut greenhouse gases and fight climate change.

The wealthy city-state of 5.7 million, which is hiking investment in flood defences, joins Norway, Britain and others in setting a target to cut the use of vehicles with combustion engines.

"Our vision is to phase out internal combustion engine (ICE) vehicles and have all vehicles run on cleaner energy by 2040," Finance Minister Heng Swee Keat said in his budget speech. This process includes ceasing the registration of new ICE cars and taxis from 2030.

Singapore, which has been criticised by Tesla's Elon Musk as not being supportive of electric vehicles, is one of the most expensive places in the world to buy a car and there are few electric vehicles on the roads.

In Tuesday's budget, Heng said measures to encourage electric vehicle adoption included a registration fee rebate on purchases of fully electric car and taxis.

The country, an oil-refining hub, will also expand public charging infrastructure to 28,000 points by 2030 from 1,600 now.

Source: Reuters, 18 February 2020

Questions

- (a) With reference to Figure 1, compare consumer and government spending on electric cars between 2016 to 2021. [2]
- (b) Explain two reasons why electric vehicle charging points are not public goods. [4]
- (c) With reference to Extract 3,
 - (i) State the economic concept you would use to measure the relationship between the fall in price of Tesla's electric vehicle and the resulting change in demand for Li Auto's electric vehicle. [1]
 - (ii) Explain the value you would expect to get from this measurement. [3]
- (d) Imagine that you are a potential new firm trying to enter the electric vehicle market in China.

Considering the developments described in Extracts 2 and 3, discuss whether you should enter the electric vehicle market in China. [8]
- (e) Explain the externality that exists in the internal combustion engine (ICE) car market. [2]
- (f) Discuss whether banning new ICE cars or provision of more electric vehicle charging points is more effective in achieving efficiency in resource allocation in the ICE car market. [10]

[Total: 30]

Question 2: Costs and benefits of globalisation

Extract 5: ASEAN benefits from production diversification

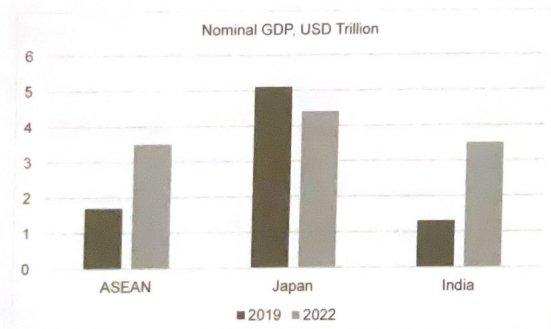
Disruptions to the global supply chain have mounted in recent years, with international challenges ranging from the Sino-US trade war to the coronavirus pandemic. The closure of two of the world's busiest ports in China for container cargoes due to COVID-19 and weather events have also increased strain on the flow of goods in recent months. This followed the brief blockage of the Suez Canal in March 2021, which had disproportionate impact on a global trade system already under pressure.

These issues highlighted how Western consumer goods companies have been highly reliant on a single manufacturing partner: China. In a bid to diversify their risk of exposure to such geopolitical challenges, companies are accelerating a shift in their supply chains and production factories away from China. Member countries of the Association of Southeast Asian Nations (ASEAN), being close to China and with competitive cost bases, are reaping the benefits.

The global uncertainty simply emphasises that multiple sourcing bases are critical to minimise product disruption. While there are now clear incentives to diversify into ASEAN, the trend is likely to continue into the future. One key advantage is the region's demographic advantages. ASEAN, with its combined population of more than 600 million, has one of the youngest median ages among economic blocs to supplement labour force growth.

Source: Financial Time, 22 May 2022

Figure 2: ASEAN GDP compared to Japan and India



Source: SP global, 12 January 2024

Extract 6: Free trade agreements are critical to Singapore's economic survival

Singapore, being a small country with no natural resources, has to embrace globalisation to survive and inking free trade agreements (FTAs) is one way of doing so, said Health Minister Ong Ye Kung in Parliament on Tuesday.

Mr Ong said that Singapore is too small to survive on its own and tapping into global markets to earn a living and be self-reliant is fundamental to the country's economic survival. But while the country does not have any natural resources, it has its geographical location, which is "one precious natural endowment".

In addition, greater connectivity such as more deep-sea and feeder connections from the port offers top-notch productivity and unrivalled connectivity on an unmatched scale. Feeder services involve the use of smaller container ships, known as feeder vessels, which are designed to transport cargo between smaller, regional ports and major hub ports.

This has allowed Singapore to capture the trade flows through the Straits of Malacca and Singapore, enabling home-grown port operator Port Authority of Singapore (PSA) to become the largest container transshipment port in the world. Shipping services provided by the Sea Transport Industry is a key pillar of the Singapore Maritime Cluster, which contributes to about 7% of the nation's Gross Domestic Product (GDP) and employs about 170,000 people. Exports of services consist of transactions where services are provided from Singapore to overseas trading partners. Shipping services is among the top services exported by Singapore.

"Free Trade Agreements (FTAs) have spurred local companies to venture abroad and Singapore's investments overseas have increased nearly five times from S\$200 billion in 2005 to more than S\$930 billion in 2019. Meanwhile, the FTAs' requirement for countries to remove or lower tariffs on all trade between partners is of tremendous benefit to Singapore. Because while other countries customarily impose tariffs on thousands of items, we are already very open, imposing duties on only three alcohol products. Hence, any FTA that substantially removes tariffs imposed by both parties is inherently beneficial to Singapore," said Mr Ong.

An example would be the EU-Singapore Free Trade Agreement (EUSFTA). The agreement removes customs duties that Singaporean companies face when exporting key goods like electronics, pharmaceuticals and most petrochemicals to the EU. Singapore's exports are expected to grow 10% over a 10-year period due to EUSFTA.

↑ growth in SEA (Singapore) → ↑ export of services → ↑ (Singapore) income
Source: Reuters, 6 July 2021

Extract 7: How Donald Trump damaged America's interests in Asia

Donald Trump entered the White House in 2017 with a long hit list. The Trans-Pacific Partnership (TPP), a trade deal, was near the top. Just three days into his presidency, Mr Trump moved to kill it. He succeeded only in denying America its benefits.

During his presidential campaign, he criticised the accord as a "potential disaster for our country", arguing it harmed United States (US) manufacturing. Mr Trump has claimed trade deals like this have been a "disaster" and cost millions of jobs. While America ditched the pact, others defied expectations by staying wedded to it and the principles of free trade and multilateral rule-making it represented.

Certain pairs within the group, especially those such as Vietnam and Canada that did not have free-trade agreements, have seen big rises in trade. In some industries, import values within the bloc rose by as much as 23% and export values by as much as 12% for every percentage-point drop in tariffs, reckons the Asia Competitiveness Institute, a research centre in Singapore.

Other countries, including America's greatest rival, China, as well as Indonesia, the Philippines, South Korea and Thailand are clamouring to join the deal.

Source: Economist, 7 March 2023

Extract 8: Prospects and challenges for Vietnam's economy in 2022

Vietnam was an economic star in 2020, as it managed to control the COVID-19 pandemic while maintaining one of the highest growth rates in the world. While GDP growth was only about 3%, about half of its normal 6 to 7% growth rate, most countries faced falling levels of output. 2021 was a tough year as shutdowns made life difficult and GDP slowed to 2.6%. Increasing supplies of vaccines eventually allowed more normal activity in the last few months of 2021. Vietnam's GDP shrank 6% in the third quarter before bouncing back in the fourth quarter.

Despite factory closures, exports rose 19% in 2021 to an astonishing US\$336 billion while GDP was only US\$271 billion in 2020 and grew only slightly in 2021. The high level of foreign direct investment (FDI) did not grow nor shrink much.

A bigger problem for both FDI and overall economic growth is the lack of skilled labour needed to replace simple factory assembly jobs, which are migrating to countries with lower-cost labour. Intel decided not to expand in Vietnam due to a combination of concerns about stable electricity, excessive red tape and the skill levels of Vietnam's university graduates. Losing the expansion of an incumbent and major firm will make it challenging for Vietnam to move further up the value chain to competitive chip manufacturing. It could also limit the inflow of high-tech FDI that would allow Vietnam to transform its economy into 'Industry 4.0' and improve productivity. The quality of FDI will have to be a focus, along with more efforts to upgrade education and training.

While external factors significantly contribute to slower growth, the problems with ensuring stable electricity supply also contributed to the slow growth in FDI. Another issue is the continuing amendment of PDP-8, the new plan for expanding electricity production. It has changed from a balanced approach with more renewable energy to one heavily favouring coal. Plans to increase transmission have been scaled back and this will hurt any FDI in green energy. Indeed, solar energy growth has been capped in 2022. This change is not consistent with Vietnam's 26th United Nations Climate Change conference of the Parties (COP26) declarations.

Vietnam's GDP per capita in purchasing power parity (PPP) terms exceeded US\$11,000 per capita in 2021. This is a huge gain from 2000 but still leaves it poorer than most of the larger ASEAN economies and facing important environmental problems in the Mekong Delta and cities. Rising wages relative to productivity, pressures to reshore exports and falling technology ratings for its workers pose medium-term challenges for Vietnam.

Source: East Asia Forum, 11 February 2022

Questions

- (a) (i) With reference to Figure 2, compare the changes in GDP between ASEAN, Japan, and India. [2]
- (ii) With reference to Extract 5, explain a possible reason for the change in GDP for ASEAN. [3]
- (b) Extract 6 states that shipping services contributes to about 7% of Singapore's Gross Domestic Product (GDP).
Using the concept of comparative advantage, explain why shipping services is a significant component of Singapore's export revenues. [3]
- (c) With reference to Extract 6, explain a possible cost advantage to a shipment firm operating in Singapore when there is growth in Singapore's transshipment industry. [2]
- (d) Extract 8 states that Vietnam's GDP per capita in purchasing power parity (PPP) terms exceeded US\$11,000 per capita in 2021.
Explain why GDP per capita in PPP terms is used to compare standard of living across countries in ASEAN. [2]
- (e) Discuss the benefits and costs of joining Free Trade Agreements (FTAs) such as the Trans-Pacific Partnership (TPP) to countries such as Singapore and the United States (US). [8]
- (f) Discuss whether 'more efforts to upgrade education and training' will necessarily bring about higher standard of living for Vietnam. [10]

[Total: 30]