

RIVER VALLEY HIGH SCHOOL JC 2 Preliminary Examination in preparation for General Certificate of Education Advanced Level Higher 2

# ECONOMICS

# 9570/01

Paper 1 Case Study

18 September 2023

2 hours 30 minutes

Additional Materials: Answer Booklet

## **READ THESE INSTRUCTIONS FIRST**

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

Answer Question 1 and Question 2 on **separate** booklets. You can ask for an additional booklet if you need more than one for a question.

## For each Answer Booklet:

Write your name, Centre number and index number on the first page of all Answer Booklets that you hand in. Write clearly and use capital letters.

For each booklet, use both sides of the paper. Write in dark blue or black pen. HB pencil may be used for graphs and diagrams only.

## DO NOT WRITE ON ANY BARCODES.

Write the number of the question you are responding to in the first margin.

V		
Question	Part	
1	ai	
1	aii	
	•	

If the question you are responding to also contains parts, for example 1a, write the question part in the second margin.

Do not tear out any part of the Answer Booklet.

All work must be handed in. If you have used any additional booklet, please insert it inside the first Answer Booklet.



This document consists of 8 printed pages.

### Answer all questions.

## **Question 1: Driving the future: Electric vehicles**

### Extract 1: Electric vehicles are 'green' but it is complicated

Experts broadly agree that electric vehicles (EVs) create a lower carbon footprint over the course of their lifetime than cars that use traditional, internal combustion engines (ICE).

However, there are questions about how energy-intensive it is to build an EV or an EV battery, versus building a comparable ICE vehicle. The batteries in EVs charge on power coming straight off the electric grid, which is often powered by fossil fuels such as coal or oil. Separately, a study from Massachusetts Institute of Technology found that the battery and fuel production for an EV generates higher emissions than the manufacturing of an ICE vehicle. But these higher environmental costs are offset by EVs' superior energy efficiency over time. In short, the total emissions per mile for EVs are lower than comparable ICE vehicles.

EVs rely on rechargeable lithium-ion batteries to run. The process of making these batteries which include using mining raw materials like cobalt and lithium, to production in gigafactories and transportation, can be energy-intensive. It is also one of the biggest sources of carbon emissions from EVs today. Gigafactories are facilities that produce EV batteries on a large scale. China currently dominates battery production, with 93 gigafactories producing lithium-ion battery cells versus only 4 in the US, the Washington Post reported this year. Batteries made in older gigafactories in China are usually powered by fossil fuels, because that was the trend five to ten years ago. So, EVs that are built with batteries from existing factories are going to have large carbon footprints. Experts said that can change over time as raw materials needed for battery production are in limited supply, leaving firms with no choice but to recycle.

Experts also agree that a transition from ICE vehicles to EVs is not a cure-all solution for the global fight against climate change. It needs to go hand-in-hand with societal change that promotes greater use of public transportation and alternative modes of travel, including bicycles and walking. Reducing the use of private vehicles requires plenty of funding and policy planning.

Source: CNBC, 26 July 2021

### Extract 2: Adoption of EVs in Singapore

About \$30 million in rebates were distributed out last year to encourage car and taxi owners to switch to EVs, said Transport Minister S. Iswaran. The rebate was introduced to lower the upfront cost of buying an EV, which cost about 78% more than an equivalent ICE car in 2020.

Mr Iswaran said: "The Land Transport Authority will continue to monitor EV adoption trends and accelerate the deployment of our EV charging network where necessary to meet our 2030 target of 60,000 charging points islandwide." This target, which comprises 40,000 chargers at public car parks and 20,000 chargers at private premises, has been assessed to be sufficient to meet expected EV charging demand based on the projected EV population in 2030, he added. At the same time, as Singapore transitions to EVs, automotive workers here will need to pick up new skills. For example, the Singapore Motor Workshop Association Training Academy will train at least 1,000 automotive workshop technicians over the next three years to maintain EVs.

Source: Straits Times, 10 January 2022

## Extract 3: China dominates the world of EVs

Before most people could realize the extent of what was happening, China became a world leader in making and buying EVs. In just the past two years, the number of EVs sold annually in the country grew from 1.3 million to a whopping 6.8 million, making 2022 the eighth consecutive year in which China was the world's largest market for EVs. For comparison, the US only sold about 800,000 EVs in 2022. This dominance in the EV sector has not only given China's auto industry sustained growth during the pandemic but boosted China in its quest to become one of the world's leaders in climate policy.

Starting in 2009, the country began handing out financial subsidies to EV companies for producing buses, taxis, or cars for individual consumers, which resulted in a slew of homegrown EV brands emerging. While the subsidy policy officially ended at the end of last year, it already had its intended effect. With more than 6 million EVs sold in 2022, China accounted for over half of global EV sales.

The most important part of an EV is the battery cells, which can make up about 40% of the cost of a vehicle. And the most important factor in making an EV that is commercially viable is a battery that's powerful and reliable, yet still affordable. Chinese companies really pushed battery technology forward by championing lithium iron phosphate batteries, which is safer and cheaper. China also has one key advantage in battery manufacturing as it controls a lot of the necessary materials.

In the current geopolitical environment, the most growth potential for Chinese EV companies will likely come from Asia. That region will continue to need more EVs for its energy transition even after China's domestic market becomes saturated. This is why the benefits from China's focus on producing EVs are twofold: it both reduces China's need for car imports from Western countries and creates another long-lasting export industry. In 2022, China exported 679,000 EVs, a 120% increase from the year before. There's little reason to doubt the numbers will only grow from here.

Source: MIT Technology Review, 21 February 2023

## Extract 4: Tesla forges separate pricing strategies in China and the US

Tesla showed signs of divergent strategies in the world's two biggest automotive markets, raising prices to boost profit margins in the US while keeping prices steady in China and hoping to grow sales there.

"Tesla is looking to be as competitive as it can be in China. Lower prices will be a part of that aggressive market positioning," Roth Capital Partners analyst Craig Irwin said. "There is a very large difference in battery prices in the US and China, as well as local vehicle manufacturing costs." Since Tesla started production at a Shanghai factory in late 2019, it has boosted sourcing of cheaper local components, including batteries from Chinese factories.

In China, Tesla faces competition from EV makers like Nio Inc. and Xpeng Inc. while in the US, Tesla's brand is stronger and its main rivals are legacy automakers like Ford and General Motors, which generate only a fraction of their sales from EVs.

Source: Automotive News, 28 July 2021



Figure 1: Actual and forecasted global power vehicle sales share (%)

Source: Counterpoint Research Passenger Vehicle Forecast, April 2022

## Questions

- (a) Compare the changes in sales share of battery EVs and ICE vehicles between 2018 and 2030. [2]
- (b) With reference to Extract 2, explain why EV charging points should not be classified as a public good. [2]
- (c) Explain how focusing on EVs by the Chinese government is likely to have benefited the China economy. [4]
- (d) Extract 4 explains that Tesla forges separate pricing strategies in China and the US.

Explain **one** possible cost factor and **one** possible revenue factor to justify this move by Tesla. [4]

- (e) Discuss whether demand factors or supply factors have a greater impact on the adoption of EVs. [8]
- (f) The market for transport can be segmented into the market for private transport (which includes EVs and ICE vehicles) as well as the market for public transport.

Discuss whether adoption of EVs is the best policy to improve efficiency of resource allocation in the market for private transport. [10]

[Total: 30]

### Question 2: Globalisation on the world's economies

#### Extract 5: Singapore, a post-covid winner

Like any small, highly open economy that is heavily engaged in trade, finance and tourism, Singapore has had its share of challenges in dealing with the global health crisis. Nevertheless, it has come through the pandemic reasonably well. In fact, having managed one of the greatest shocks the world economy has experienced, Singapore could even be said to have emerged stronger than it went into the pandemic.

One important reason for Singapore's resilience is economic diversification. Although the citystate is very much a services-dominated economy, manufacturing still accounts for a sizeable 20% of total economic output. Within manufacturing, Singapore is especially proficient in electronics and biomedical products, the very sectors that benefited from the crisis, as demand for work-from-home equipment and medical devices has boomed. Singapore's services sector is also spread across many segments, each with different dynamics, such as financial services, business services, transportation and tourism. Continued expansion in the financial and business services segments helped to offset declines in the air transportation and tourism segments.

In a world marked by financial turbulence and now, the fear of natural disasters such as pandemics or climate change, individuals and companies are seeking 'safe havens', like Singapore, to locate themselves, their business operations and their wealth. In fact, large new investments over the past 18 months have been announced in high-value manufacturing, in the electronics sector as well as in pharmaceuticals. Many large companies, including some of the US and Chinese tech giants, have located large business operations in Singapore.

Source: ACCA Global, June 2021

### Extract 6: Singapore government pushes ahead with Green Plan

With a scarcity of natural resources and a small domestic market, Singapore's economy has depended heavily on international trade and the global market. Consequently, the country was hit hard by the impact of the pandemic, which disrupted the whole global supply chain, forced many businesses to close and restricted the movements of people and goods.

Singapore's Green Plan aims to harness sustainability as a "new engine of growth" while strengthening the country commitments under the United Nations Sustainable Development Goals and the Paris Agreement on climate change. Under the plan, the government will lead and drive all economic actors to make the transition toward more sustainable economic models, including establishing the country as a hub for green finance, carbon trading and sustainability consultancy. It also creates a welcoming business ecosystem to attract international companies to conduct research and development of sustainability solutions.

"I think a lot of us realise how fragile our supply chains, our need for goods and every other product was in this globalised world," said Mayur Singh, co-founder of The Green Collective SG, a pioneering retail concept showcasing sustainable alternatives to consumers and businesses seeking "to live, eat and dwell responsibly". Many entrepreneurs are also developing and adapting new software to promote a shift toward sustainable practices, including precision urban farming, local food sourcing, and energy efficiency at home and in the workspace.

Source: Bangkok Post, June 2021

## Extract 7: The role of trade in addressing climate change

Supply chain linkages mean that foreign climate events, such as floods, landslides, and wildfires, severely impacting world's leading stock markets, with negative effects on globalised firms. Rich countries thus have a direct financial interest in financing climate adaptation and mitigation in other nations. Global firms with extensive supply-chain operations, such as those in the automobile industry, are a natural constituency for climate finance within advanced economics. These firms suffer share-price declines when foreign climate events disrupt their global supply chains, which gives them a stake in seeing climate finance progress at the international level. Thus, advanced economies have every incentive to mitigate these risks through providing climate adaptation finance.

The expansion of global supply chains is an important reason why solar and wind power production has exploded over the past decade. Low-cost solar modules and wind turbines, produced mainly in China, have reduced the price of clean technologies globally, thereby encouraging their use. However, geopolitical tensions between the US and China since 2019 could disrupt clean tech global supply chains and threaten to reduce these environmental gains. Over the past decade, the US has erected trade barriers on imported clean tech products from China and policymakers are considering whether to ramp up these efforts in order to shift clean tech production and employment from China to the US In response to the tariffs, production shifted from China to Vietnam and other Asian economies. Since many of the firms in Asia that now assemble solar modules are Chinese-owned, and/or use components produced in China, the tariffs also had little impact on China's relative economic position in clean tech. While US tariffs likely had a neutral effect on imports of renewable energy-related products to the US, they did lead China to retaliate. An escalating trade war in clean tech helps no one and is harmful to the environment because it raises the costs of clean tech products.

On the goal of promoting clean tech jobs in the US, Professor Davidson encourages policymakers to pay attention to the sector as a whole, which includes installation of clean technologies as well as production. Since clean tech installation is a service that must be performed locally, these jobs will not only increase in number; they will also be immune to offshoring, which suggests additional political-economy benefits relative to manufacturing jobs.

Source: University of California San Diego, November 2021



## Figure 2: Trade balance between Vietnam & major trading partners (in US\$ billion)

## Extract 8: Global supply chains in a post-pandemic world

It is very difficult for a single firm to possess the breadth of capabilities necessary to produce everything by itself. Therefore, global supply chains facilitate firms' sourcing of the most suitable inputs and components from all over the world to put together higher-quality and lower-cost products. Manufacturers in most industries have turned to suppliers and subcontractors who narrowly focus on just one area. Such an arrangement offers benefits. It gives a lot of flexibility in what goes into their products, and firms are better able to incorporate the latest technology in their production. But they are left vulnerable when they depend on a single supplier somewhere else for a crucial component or material. If that supplier only manufactures in a single plant or country, disruption risks are even higher.

At the same time, consumers increasingly want low prices, especially in a recession. Competition will ensure that firms will not be able to charge more just because they manufacture in higher-cost home markets. In addition, the pressure to operate efficiently and use resources more productively will continue.

Such risks and rewards are especially evident during the pandemic. Lockdowns have led to staffing constraints in the shipping industry, where ports emerged as choke points for global trade as lines of container ships waiting outside major harbours. At the same time, it also facilitated alternative sources of demand when post-pandemic recovery in the domestic economy remained weak.

Source: Harvard Business Review, October 2020 and The Economist, 31 Mar 2021

Source: Vietnam Briefing, Aug 2021

## Questions

- (a) Using Extract 5, explain one factor that contributed to Singapore's economic resilience. [2]
- (b) Using a diagram and Extract 5, explain how Singapore's 'safe haven' role is likely to affect the value of her currency. [3]
- (c) With reference to Extract 6, explain how sustainable growth in Singapore can be achieved through the Green Plan. [5]
- (d) Describe the change in Vietnam's trade balance with US and China from 2018 to 2020. [2]
- (e) With the use of a diagram, discuss the extent to which tariffs on imported clean tech products from China can grow the green tech industry in the US. [8]
- (f) Discuss whether the participation in global supply chains poses more risks or rewards to an economy. [10]

[Total: 30]