

*NSS Exploring Economics (3<sup>rd</sup> Edition)*  
**National Security Education Worksheet (SAMPLE)**

**Worksheet 6: The Importance of the Linked Exchange Rate System to Hong Kong**

Book	Chapter	Related concepts
5 National Income and Price Level	5	Changes in equilibrium output level
6 Money and Trade	8	Functions of the Hong Kong Monetary Authority

**Source A:** Changes in the exchange rates of selected currencies against the US dollar

The global foreign exchange market was volatile in 2024, with many currencies experiencing a significant decline in their exchange rates against the US dollar. For example, the Australian dollar fell by 9%, the Korean won by 12%, the Mexican peso by over 20%, and the Japanese yen by more than 9%. Meanwhile, the exchange rate between the Hong Kong dollar and the US dollar remained stable.

*Source: Hong Kong Monetary Authority*

**Source B:** Operation of the Linked Exchange Rate System

The Linked Exchange Rate System in Hong Kong operates under the currency board system. Under this system,

- The monetary base is fully backed by US dollar assets, and all changes in the monetary base are fully matched by corresponding changes in US dollar assets at a fixed exchange rate.
- The Hong Kong Monetary Authority (HKMA) provides Convertibility Undertakings (CUs) (兌換保證), under which the HKMA commits to sell Hong Kong dollars upon request by banks at the strong-side CU of HK7.75 per US dollar, and to buy Hong Kong dollars upon request by banks at the weak-side CU of HK\$7.85 per US dollar.

Hong Kong has sizable foreign currency reserves of over US\$420 billion, which is equivalent to about 1.7 times of the monetary base, ensuring the smooth functioning of the Linked Exchange Rate System.

*Source: Hong Kong Monetary Authority*

### Source C: Difficulty in maintaining the Linked Exchange Rate System

In order to maintain the Linked Exchange Rate, Hong Kong's foreign currency reserves dropped in 2024 by 15% from their highest level in 2021. Many hedge funds (對沖基金) believed that the Linked Exchange Rate System is coming to an end and claimed that they would attack the Hong Kong dollar.

*Source: Summary of news report*

#### Discussion:

1. With reference to Source A and your own knowledge of Economics, explain the impact on Hong Kong's economy if there were no Linked Exchange Rate System in Hong Kong.
  
2. With reference to Source B and your own knowledge of Economics, determine which of the following statements about how the HKMA maintains the Linked Exchange Rate is/are correct. Put a tick (✓) in the appropriate box(es).
  - a. When Hong Kong dollars become strong, the HKMA will purchase US dollars from note-issuing banks.
  - b. When Hong Kong dollars become strong, the HKMA will purchase Hong Kong dollars from note-issuing banks.
  - c. When Hong Kong dollars become weak, the HKMA will purchase US dollars from note-issuing banks.
  - d. When Hong Kong dollars become weak, the HKMA will purchase Hong Kong dollars from the public.
  - e. Hong Kong must keep a large amount of foreign currency reserves so as to sell US dollars to banks when Hong Kong dollars become weak.

3. With reference to Source C and your own knowledge of Economics, explain the difficulty the HKMA may encounter when maintaining the Linked Exchange Rate System in the following two aspects.

<b>Size of foreign currency reserves held</b>	<b>External factors</b>

4. If international speculators successfully attack the Hong Kong dollar and Hong Kong can no longer maintain the Linked Exchange Rate, what will be the immediate impact on you and your family?

**Answers:**

1. If there were no Linked Exchange Rate System in Hong Kong, the Hong Kong dollar might greatly depreciate against the US dollar during market fluctuations. As more Hong Kong dollars would be required in exchange for the same amount of foreign currency, firms in Hong Kong may suffer a loss in international transactions. This will increase the exchange rate risk, lowering the willingness to conduct business or invest in Hong Kong, and leading to a decrease in investment. As a result, aggregate demand decreases and hence aggregate output decreases.
2. a, e
- 3.

<b>Size of foreign currency reserves held</b>	<b>External factors</b>
The HKMA must keep a large amount of foreign currency reserves to maintain the Linked Exchange Rate System. However, the size of these assets has been decreasing in recent years.	Facing an attack by speculators, the HKMA needs to maintain the Linked Exchange Rate System by selling US dollars, resulting in a further drop in foreign currency reserves.

4. Free answer.

For example, Hong Kong relies heavily on imported goods. If Hong Kong can no longer maintain the Linked Exchange Rate System, the exchange rate may fluctuate from time to time. This may cause the price of daily necessities to fluctuate significantly. Volatility in the exchange rate will also lower the incentive to invest. As a result, many families will lose their jobs, threatening their livelihood.

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**National Security Education Worksheet (SAMPLE)**

**Worksheet 7: China safeguards national security through export control on critical minerals**

Book	Chapter	Related concepts
1 Demand and Supply	4	Changes in demand and supply
6 Money and Trade	13	Trade barrier

**Source A:** China controls the export of critical minerals

On 2 December 2024, the US government launched the third round of restrictions on China's semiconductor industry, curbing exports to 140 Chinese companies. In response, China's Ministry of Commerce imposed an immediate export ban against the US on minerals, including gallium (鎵), germanium (鍺) and antimony (銻). Exports of graphite (石墨) to the US also faced a tightened review of end users and uses.

*Source: Summary of news report*

**Source B:** Export restrictions on rare earths (稀土), industrial upgrade and national security

China is the largest producer of rare earth elements and its rare earth sector is undergoing a transformation. Overexploitation has long been seen in some of China's rare earth resources, resulting in resources wastage and pressure on the environment. As early as 2016, the Chinese government planned to turn the rare earth sector into a medium to high-end and high value-added industry with emphasis on resource conservation and ecological protection, thereby implementing green transition. The *Export Control Law of the People's Republic of China* (《中華人民共和國出口管制法》) that was officially implemented on 1 December 2020 also included the protection of rare earths. On 4 April 2025, China announced export restrictions on selected rare earths. Some experts analysed that export restrictions on rare earths could speed up the transformation of the rare earth industry to prevent overexploitation. In addition, the measure could also safeguard national security and strengthen China's bargaining power in international negotiations.

*Source: Summary of news report*

**Source C:** Uses of critical minerals and China's share of global production in 2024

Mineral	Major civil use	Major military use	China's share of global production
Gallium	5G chips, semiconductors, solar cells	Radar, satellite communication	~ 99%
Antimony	LCD display, touch screen	Stealth aircraft coating, missile guidance system	~ 60%
Graphite	Lithium-ion battery, lubricant	Stealth aircraft coating, neutron moderator	~ 80%

Source: US Geological Survey

**Source D:** Discussion on China's control of mineral exports

Student A: Why does China control the export of minerals instead of agricultural products?

Student B: Compared with agricultural products, imposing export controls on minerals could better safeguard China's military and economic security. Moreover, China has been a net importer of agricultural products since 2005. For example, 80% of soybeans now consumed in China are imported.

**Discussion:**

1. With reference to Source A and Source B, which of the following are possible reasons for China to impose export restrictions on critical minerals? Put a tick (✓) in the appropriate box(es).
  - a. Raise the price of critical minerals in international markets.
  - b. Prevent the outflow of critical military resources.
  - c. Respond to the US ban on China's technology sector.
  - d. Reduce environmental pollution caused by the mining industry.
  - e. Strengthen China's bargaining power in the global supply chain.
2. With reference to Source C and your own knowledge of Economics, explain TWO impacts of China's export restrictions of critical minerals on the US.

3. With reference to the above sources and your own knowledge of Economics, explain why Student B in Source D is correct in the following aspects.

Military security	Economic security

4. As a consumer, how would the trade barriers implemented by China and the US on the technology sector affect you? How would you respond to these impacts? Compared with these personal impacts, what do you think about the importance of national security?

**Answers:**

1. b, c, d, e

2. **Supply chain disruption:** China is the major producer of critical minerals such as gallium, germanium and graphite worldwide. Imposing an embargo on these minerals to the US would make it difficult for US companies to find substitutes, potentially disrupting the supply chain and production.

**Increased production cost:** China’s restrictions on the export of critical minerals would cause a decrease in the supply of raw materials for technology products and military equipment in the US. US companies would need to purchase raw materials or semi-finished products from other countries, resulting in an increase in production cost and lower product competitiveness.

**Hindering technological development:** Critical minerals are primarily used in technology-related products such as semiconductors, 5G chips, batteries and display panels. China’s export control measure would lower the output of these products and slow down development of the technology sector in the US.

**Affecting national security:** Critical minerals have important military uses such as radar and missile guidance systems. China’s export restrictions on critical minerals would weaken the military capabilities and threaten the national security of the US.

(Any TWO of the above or other reasonable answers)

3.

Military security	Economic security
<p>Critical minerals have important military uses such as military communications, missiles and military aircraft. Since China has a very large share of the global production of critical minerals, export restrictions on critical minerals would make it difficult for the US to find substitutes. As a result, this may suspend the military equipment supply chain of the US and reduce the threat of the US to China.</p>	<ul style="list-style-type: none"> <li>• Since China is a net importer of agricultural products, export controls on agricultural products may have a limited effect. In contrast, China should produce more agricultural products and diversify its import sources to safeguard economic security.</li> <li>• Moreover, critical minerals are mainly used in the technology sector. China's export control measures could effectively hinder the development of the domestic technology sector in the US, reducing the competition faced by China's technology industry.</li> </ul>

4. Free answer.

For example, trade barriers implemented by China and the US on the technology sector may hinder R&D and the production of technology products, leading to an increase in R&D costs and a drop in production, resulting in higher prices. Since technology products are durable goods, I can buy new products later to reduce my expenditure. However, the impact of national security on our lives is so great that we can neither handle it alone nor ignore it.