**Global rice prices are expected to increase sharply by 2050 due to factors ranging from a rise in world consumption, greater use of feed rice for animal feeding, to falling crop yield levels in major rice-producing countries. With Singapore importing most of its rice from Thailand and Vietnam, concerns over long-term food security have prompted the creation of the country’s first and only rice variety – Temasek Rice – in 2018.**

**Explain why global rice prices are expected to increase sharply and discuss the policies that the Singapore government can adopt to keep domestic rice prices stable. [25]**

**Question Approach**

* Explanation of both demand and supply factors leading to a sharp rise in global rice prices, with reference to the preamble provided, economic concepts learned (such as PED and PES) and contextual knowledge where appropriate.
* Discussion of policies that the Singapore government can use to keep domestic rice prices stable, contextualised to the Singapore context.

**Introduction**

* In any market, the price of the good is determined by the interaction of demand and supply forces. At the market equilibrium price, the quantity demanded is exactly the same as the quantity supplied, suggesting that there is neither surplus nor shortage in the market.
* The increase in global rice prices can be explained by an increase in global rice demand coupled with a decrease in global rice supply.
* Given that rice is a necessity, its price inelastic demand would cause global rice prices to increase sharply when there is a decrease in global rice supply.
* In addition, with rice having a price inelastic supply due to its long gestation period, any increase in global rice demand will cause global rice prices to increase sharply.
* To keep domestic rice prices stable, the Singapore government can adopt these policies:
	+ Stockpiling of imported rice
	+ Expanding domestic rice supply sources
	+ Maintaining a modest and gradual appreciation of the Singapore dollar
1. **Explain demand factors contributing to the sharp increase in global rice prices.**
* As mentioned in the preamble, global rice demand has risen due to an increase in world consumption, possibly caused by an **increase in world population size or income.** With rice being a normal good, an increase in household income would cause consumers to demand for more rice. This is particularly true in large emerging economies such as China and India where both purchasing power and population size have been rising in recent years.
* **Demand for rice is price inelastic as it is a necessity required for survival and a staple food for most Asians.** Any increase in price due to changes in supply will therefore only bring about a less than proportionate decrease in quantity demanded, ceteris paribus. To clear the shortage at the original equilibrium price, global rice prices will end up rising sharply.

**2. Explain supply factors contributing to the sharp increase in global rice prices.**

* As mentioned in the preamble, there has been a **fall in crop yields** in major crop-producing countries. This could be due to factors such as poor weather conditions affecting harvest and falling land productivity.
* When rice-producing countries impose an **export ban** due to domestic shortages (e.g. Thailand), world supply will also decrease accordingly,
* **With all agricultural food items requiring time to grow, the supply of rice is price inelastic** as rice producers are not able to increase rice production immediately in response to an increase in price caused by an increase in demand. This means that an increase in price will only cause quantity supplied to increase less than proportionately, ceteris paribus. Hence, global rice prices will end up rising sharply.

Figure 1: Global Rice Market

Quantity of sugar

D1

S2

S1

Price of sugar

P1

P2

Q1 Q2

0

D2

**3. Explain the combined impact of supply and demand shocks on global rice prices**

* The increase in global rice demand (shown by the rightward shift of the demand curve from D1 to D2) coupled with price inelastic supply, as well as the decrease in global rice supply (shown by the leftward shift of the supply curve from S1 to S2) coupled with price inelastic demand, will cause a **huge** **shortage** at P1, hence exerting strong upward pressure on price, eventually leading to a sharp increase in global rice prices from P1 to P2 while equilibrium quantity rises minimally from Q1 to Q2.

**4. The Singapore government should continue to stockpile imported rice as a buffer against short-term rice shortages:**

* Singapore currently stockpiles a three-month supply of rice by requiring rice importers to import a minimum of 50 tonnes every month and to maintain two months’ worth of imports in government warehouses for up to a year.
* This policy ensures that there can be an increase in the supply of rice in the market during times of short-term rice shortages, thus effectively stabilising domestic rice prices until the stockpiled rice supply runs out.
* **However, stockpiling of rice is subjected to the availability of land required for the building of warehouses, trade policies of rice-exporting countries (e.g. they may impose an export ban), and excessive stockpiling can lead to losses from spoilage.** For instance, if there is a global shortage of rice due to poor weather conditions, rice-exporting countries may limit rice exports to ensure self-sufficiency, hence reducing the amount available for Singapore to import for consumption and stock-piling purposes.
* **In addition, there is a concern that the stockpiled rice may eventually run low, causing rice shortages to return. In view of this, stockpiling is at best a short-term measure.**
* **More importantly, stockpiling does not address Singapore’s continued exposure to fluctuations in global rice prices due to a lack of self-sustainability.**

**5. In the event that stockpiling of imported rice runs low, the Singapore government can use the strength of the Singapore dollar (SGD) to reduce the extent of imported inflation when importing rice from overseas.**

* Being a small and import-dependent economy, Singapore is a price-taker in global markets of goods and services. This means that Singapore is not able to influence world prices and can only take world prices as given. Rising global rice prices will thus eventually pass through to domestic consumers via higher import prices paid by rice importing firms.
* Maintaining a modest and gradual appreciation of the SGD can help to reduce the extent of domestic rice prices rising due to the increase in global rice prices.
* Unlike a price ceiling policy, modest and gradual appreciation will not lead to rice shortages as the domestic rice market continues to operate without distortions.
* **However, if rice-exporting countries were to significantly reduce their export quantity due to supply disruptions, the modest and gradual appreciation of the SGD might not be sufficient to act as a buffer against the sharply rising global rice prices.**
* In addition, whether or not the SGD can be appreciated is dependent on the economic conditions and extent of inflationary pressures faced by the country. **If there are downside risks to the country’s economic growth coupled with weakening inflationary pressures, the Monetary Authority of Singapore will choose to adopt zero appreciation,** where the currency is allowed to depreciate, instead of a modest and gradual appreciation, despite rising global rice prices. This is because continuation of the modest and gradual appreciation policy will decrease the country’s export competitiveness.
* **In view of the constraints faced when adopting the modest and gradual appreciation policy, the government should explore supply-side policies that can help to address both short-term and long-term rice shortages.**

**6. As a long-term approach, Singapore should explore domestic production of rice to enhance the country’s ability at mitigating changes in global rice prices.**

* **In view of the vulnerabilities caused by Singapore’s reliance on rice imports, it is important for the government to look into how Research & Development (R&D) can be used to develop domestic rice varieties.**
* Encouragement of R&D can be done via the government giving **subsidies** to absorb part of the high R&D costs incurred or by promoting **public-private partnerships** among local agricultural firms.
* In 2018, scientists at the Temasek Life Sciences Laboratory have successfully developed Temasek Rice, an organic and whole grain rice variety that can help contribute to longer-term food security in Singapore, after 8 long years of R&D work.
* **However, not only is a long time period required for R&D to take effect, substantial financial resources are also needed by the government to subsidise these R&D efforts.** Faced with the need to support economic restructuring and a rapidly ageing population, the Singapore government may not have sufficient tax revenue to channel into the R&D of domestic rice varieties.
* **In view of these constraints, the government’s fastest policy against external price fluctuations is actually its exchange rate policy of maintaining a modest and gradual appreciation of the Singapore dollar.**

**Synthesis**

* In conclusion, there are several policies that the Singapore government can undertake to stabilise domestic rice prices. However, not all policies are equally feasible and effective.
* As it is not feasible to reduce the domestic demand for rice given that it is a necessity, implementing supply-side policies is necessary and should be urgently looked into to ensure that the country can address rice shortages when they happen.
* With poor weather conditions expected to worsen in the future, the vulnerabilities faced by farmers in rice-exporting countries suggest that continuous dependence on imported rice will only expose Singapore to greater price fluctuations in the future.
* Thus, R&D should be poured into the creation of rice varieties that can withstand extremely dry and weather for extended periods of time. R&D can also help to increase crop yield and enhance resistance against diseases.
* Although Singapore does not have favourable rice-growing conditions domestically, technological advances in the agricultural field can help local agricultural firms to grow crops using methods such as vertical farming, therefore successfully overcoming the geographical constraints faced.
* All in all, the Singapore government should prioritize supply-side policies, continue to adopt a modest and gradual appreciation of the SGD alongside stockpiling of imported rice.