## PJC 2018 H2 P2 Question 1:

Over the past decade, the average price of milk powder has risen about 120 per cent. Large milk powder companies such as Abbott and Nestle said it was due to research and development to improve formulas and rising costs. Aggressive advertisements have also led parents to choose 'premium' milk powder over standard milk powder. As milk powder is seen as a necessity for growth and development of infants in the early years, many have raised concerns over the large increase in price.

- a) Explain how the above-mentioned factors might have caused price of milk powder to rise in Singapore. [10]
- b) Discuss the measures government can undertake to prevent prices of goods such as the milk powder from rising too high. [15]

## Part (a)

As mentioned in the preamble, factors such as market dominance of large firms, demand and supply factors have caused prices of milk powder to rise by a large extent.



Fig 1: Fall in SS

The rise in cost of production would have caused the price of milk powder to rise over the past decade. Due to improved formulas and rising cost possibly due to labor and ingredient cost, the cost of producing milk powder would have risen. As shown in the diagram, as cost in the production of milk powder increases, firms are less willing and able to produce milk powder. Supply curve shift left from S1 to S2. Given that are only a few substitutes for different brands of milk powder and coupled with the fact that it is a necessity for growth and development of infants in the early years, demand for milk powder is price inelastic. As such, a fall in SS would result in price to rise by large extent and quantity to fall by small extent. Thus prices of milk powder have increased over the past decade.



Furthermore, due to aggressive advertisements, parents have a change in taste and preference towards the 'premium' milk powder over standard milk powder. As such, there is a rise in demand for 'premium' milk powder from companies such as Abbott and Nestle. As shown in the diagram, as more parents switch from standard milk powder to 'premium' milk powder, demand for milk powder would rise, shifting demand from DD to DD2. At the original price P1, a shortage was created as Qd was greater than Qs. This therefore create an upward pressure on the market price. Thus prices rose from P1 to P2 in response to the rise in demand for milk powder, firms are also more entice to produce 'premium' range of milk powder so as to profit from the changing trends. As such, the rising demand for 'premium' milk powder have resulted in an overall rise price of milk powder in Singapore.

With the combined effect of a fall in SS, rise in DD and a price inelastic DD curve, price of milk powder will rise by a large extent. As shown in fig 3, the fall in SS and rise in DD would cause price of milk powder to rise by a large extent from P1 to P2. The extent of increase in price is further compounded by the price inelastic demand curve.

Fig 3: Combine effect of DD and SS

In conclusion, factors such as market power of large firms, nature of the good, rise in demand and rise in cost of production have resulted in the price of milk powder to rose by large extent over the past decade.

## Part (b)

As prices of milk powder rose by 120 percent over the past decade, it is a concern to consumers as it affects the cost of living for parents with young children and infants. As such, the government can intervene with several measures such as price ceiling, introduction of new competitors in the market and increase information in the market to reduce the effects of aggressive advertisement for 'premium' milk powder.



Firstly, the Singapore government can enforce price ceiling over the price of milk powder. As the market price Pe is deemed too high, the Singapore government can impose a price ceiling Pc. By doing so, price of milk powder would only be allowed to be sold at a maximum of Pc which is lower than the market price. Thus, regardless of the factors influencing the price of milk powder in the market, price of milk powder will not exceed Pc.

Fig 4: Effect of price ceiling on market price.

However, a policy of price ceiling would create the problem of shortage as it is set below the market clearing price of Pe. As shown in the diagram above, at Pc, firms are only willing and able to produce at Qs while consumers are willing to and able to buy at Qd. Since Qd > Qs, there is a shortage. This would mean that not all consumers would be able to purchase milk powder despite the efforts in government to reduce price through a policy of price ceiling.

Furthermore, as price mechanism would cease to work in distribution of such a good to consumers, the government would have to step in to ration milk powder based on non-price rationing schemes like coupon, drawing lots or first-come-first serve basis. This is to prevent the problem of civil unrest arising from a shortage of an essential good such as milk powder. However, this not only creates inefficiency in allocation of such a good, it also wastes resources as government officials have to be deployed to the rationing of such a good. In addition, whether the price of milk powder can be kept at Pc would depend on whether the government would be able to prevent the emergence of black market. The black market might emerge to fulfill the needs of people who do not get the goods. At output Qs, consumes are willing to pay a maximum price of Pa, thus the maximum black market price will rise to Pa, defeating the original intention of preventing price of milk powder from rising to high.

Lastly, as milk powder are produced by foreign firms and imported into the country, a policy of price ceiling would be undesirable for as it limits the revenue and thus profits that they can earn from the sales of milk powder in Singapore. Hence, firms may deem Singapore market as unprofitable and thus withdrew the sales of milk powder in Singapore. This may worsen the original problem as when more firms exit the Singapore market, market supply of milk powder would fall and thus further raising the price of milk powder in Singapore. In addition, consumers in Singapore would be left with less variety and choices to choose from, further reducing their consumer welfare.

As such, given the limitations and undesirable consequences, price ceiling may not be a good measure for Singapore government to undertake and other policies such as an introduction of more competitors into the milk powder market.

The Singapore government can encourage more firms to produce and sell milk powder in Singapore. As such, market supply for milk powder would rise and thus reduce the market price of milk powder. For example, a

made-in-Singapore formula, Einmilk was introduced into the Singapore market for milk powder in light of the rise in price of milk powder. NTUC Fairprice supermarket is also exploring ways to bring in different brands of milk powder as well as introducing their own house-brand milk powder.

Furthermore, introduction of new competitors into the market would also increase the number of substitutes in the market for milk powder. With reference to Fig 3 in part a), demand for 'premium' milk powder would fall as more consumers would switch over to substitutes such as Einmilk. Demand for 'premium' milk powder would also become more price elastic due to the rise in number of substitutes. As such, market price would fall as existing firms lose their market power to new competitors. Thus, introduction of new competitors into the milk powder market through a relaxation of rules and regulation can help to prevent prices of milk powder from rising by large extent.

However, whether the introduction of new competitors into the milk powder market may successfully reduce market price of milk powder depends on consumer's perception.

Despite having more competitors in the milk powder market, consumers may not switch over to these new brands due to brand loyalty and the belief in having 'premium' quality milk powder for their infants so as to enhance their future development. Without better information, parents may rely on claims made by producers of milk powder, or be misled into using price as a proxy for the quality of the product. As such, demand for 'premium' milk powder may not change by large extent as consumers would still stick to those brands thinking that the higher priced milk powder are of better quality and are more superior compared to the cheaper and new milk powder brands such as Einmilk.

Furthermore, if firms continue with the aggressive advertisement and marketing tactics, consumers may continue to demand for 'premium' milk powder, perceiving other brands of standard milk powder as inferior quality even though there might not be any actual difference in quality of milk powder between the different brands. As such, the problem lies in the presence asymmetric information between the producers of milk powder and parents with infants as such advertisement may have excessively play up the benefits of the good without actual real benefits.

Thus despite having cheaper alternatives in the market for milk powder, market price of milk powder may not have lowered and consumers continue to suffer with high prices of milk powder. Hence, there is a need for government to intervene with other policies to ensure that consumers aren't exploited due to asymmetric information between the producers of milk powder and parents with infants.

To curb the problem of imperfect information between producers of milk powder and parents with infants, the Singapore government can implement policies such as education campaigns and screening policies to validate the claims made by producers of milk powder. The Singapore government can work with HPB to launch education campaigns to educate parents on the nutrition needs of infants so that parents are able to make an informed choice rather than to rely on claims of producers. Thus this would reduce the effect of brand loyalty that consumers have on 'premium' milk powder and would thus be more receptive of cheaper alternatives available in the market.

Furthermore, the government would require producers of 'premium' milk powder to validate the claims made so that the under-informed party (consumers) can get more information about the actual quality of the 'premium' milk powder. Thus, consumers are able to make a more informed choice on the different brands of milk powder. As such, demand for 'premium' milk powder may fall and become more price elastic thus reduce price of milk powder in the market. In addition, the positive CED values between standard milk powder and 'premium' milk powder may become greater as more consumers would perceive them as close substitutes. Thus 'premium' milk powder would be subjected to greater competition as a fall in price of standard milk powder would result in a more than proportionate fall in DD for 'premium' milk powder. Thus, this prevents prices of milk powder from rising too high.

However, such a policy would take time to see its effects as it takes time for government agencies to validate claims made by producers of milk powder. Consumers may also take time to change their perspectives of 'premium' brand milk powder as it is often difficult to change their perspectives given the importance of milk powder on the growth and development of their child. Thus, prices are likely to remain high in the short term

and would only start to decrease in the future when the effects of the policies have kicked in.

In conclusion, there are several measures that the government can undertake to prevent prices of milk powder from rising too high. Given the fact that Singapore imports majority of the foods products including milk powder, it is not possible to implement a policy of price ceiling as the unintended consequences are far too undesirable to manage. Thus, the policy of introducing new competitors into the market of milk powder and the policy of education campaigns and screening are much more appropriate as the root cause of the problem lies in the lack of cheaper substitutes and imperfect information between producer of milk powder and parents with infants.