

### EQ1

Toy building brick companies like Lego have increasingly switched away from using cheaper oil-based plastics to sustainable plant-based ones. Such a move will enhance their image, hence mitigating the effects of a pessimistic economic outlook. Additionally, parents are opting for mobile interactive games as an avenue for imaginative play for their children.

Discuss how the above might affect expenditure by consumers on toy building bricks and its related goods. [25]

### Introduction

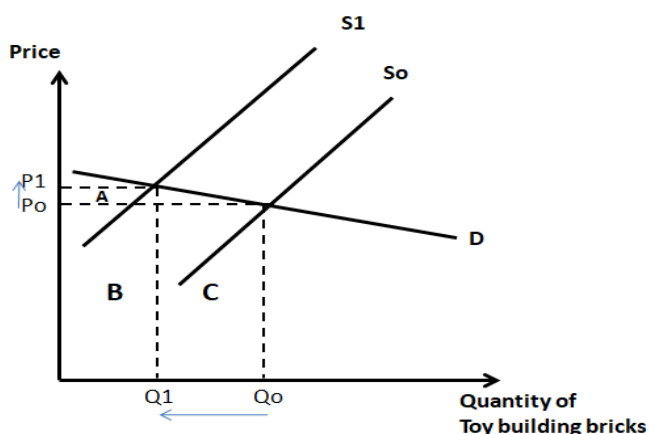
Consumer expenditure on goods and services can be derived by multiplying price by quantity consumed. Equilibrium price and quantity is determined by the demand and supply of the good or service. Changes in demand and supply can be caused by factors such as economic outlook and changes in taste and preferences. Such factors will lead to changes in consumer expenditure on toy building bricks as well as its related goods such as mobile interactive games and toy building bricks related guide books.

### Body

**P1: Switching from cheaper oil-based plastics to sustainable plant-based ones could lead to a fall in supply of toy building bricks thus affecting consumer expenditure.**

Sustainable plant-based plastic costs more than the traditional oil-based ones. This switch will lead to a rise in cost of production for toy companies such as Lego. This means that the producer will need to receive a higher minimum amount of price for each corresponding unit in order to produce it. Producers such as Lego will reduce their supply thus causing a rise in equilibrium price and a fall in quantity. The change in expenditure will depend on the price elasticity of demand for toy building bricks.

Price elasticity of demand (PED) measures the responsiveness of a change in quantity demand due to the change of the price of the good itself ceteris paribus. Due to the availability of many close substitutes such as other types of toys and games which helps develop imagination and creativity such as Playdoh and K'Nex, consumers are very responsive to the changes in price of toy building bricks. A rise in price will lead to a more than proportionate fall in its quantity demanded.

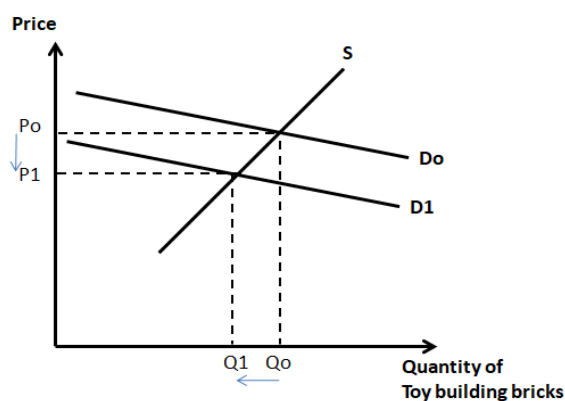


The fall in supply is represented by a leftward shift of the supply curve from  $S_o$  to  $S_1$ . Consumer expenditure changes from area  $B+C$  to  $A+B$ . As the fall in expenditure (area  $C$ ) due to the fall in quantity is greater than the rise in expenditure (area  $A$ ) due to rise in price, consumer expenditure for toy building bricks will fall.

**P2: The new environmental image of toy building bricks and the pessimistic economic outlook will affect its demand thus affecting consumer expenditure.**

As consumers become more environmentally conscious, they tend to prefer to purchase more environmental friendly products such as toy building bricks made of sustainable plant-based plastics resulting in a rise in demand. This rise in demand however can be either mitigated or offset by a fall in demand due to the pessimistic economic outlook. The overall impact depends on the income elasticity of demand (YED) of toy building bricks.

YED measures the responsiveness of consumer demand due to the change in income. Toy building bricks are considered normal goods. Therefore the sign of YED is positive. The pessimistic economic outlook will result in consumers reducing their demand for normal goods in favour of inferior goods as they expect a fall in their purchasing power.



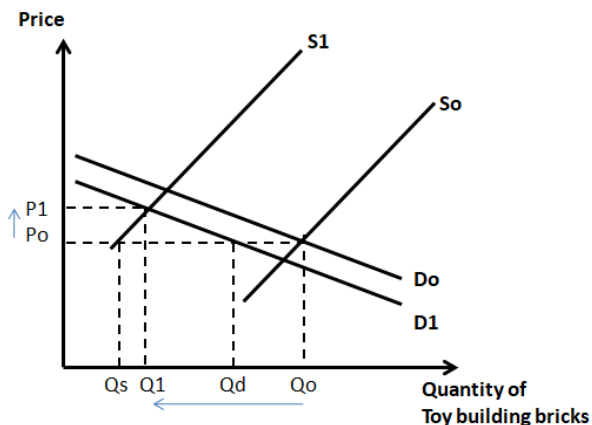
EV: Toy building bricks are also luxury goods as they are not essential and crucial for survival. Their YED value will be more than 1 meaning that there will be a more than proportionate fall in demand. This fall in demand will be able to offset the rise in demand due to the change in taste and preferences.

Demand will fall causing a leftward shift in the demand curve from  $D_0$  to  $D_1$ . The fall in price ( $P_0$  to  $P_1$ ) and quantity ( $Q_0$  to  $Q_1$ ) will result in a fall in consumer expenditure.

**P3: The combined fall in demand and supply of toy building bricks will result in a change in its consumer expenditure.**

The fall in demand and supply will result in a fall in quantity for toy building bricks. The change in price depends on the extent of the fall in demand and supply.

Ev: The extent of the fall in supply is greater than the fall in demand. This is because plastic is the main raw material in the production of toy building bricks. Therefore there will be a substantial increase in its production costs causing a large fall in its supply.



The initial price is at  $P_0$  where the initial demand  $D_0$  and supply  $S_0$  curves intersect one another. With a leftward shift in both demand and supply curves, a shortage of  $Q_d - Q_s$  arises as quantity demanded ( $Q_d$ ) is greater than quantity supplied ( $Q_s$ ) at the initial price  $P_0$ . This shortage will result in an upwards pressure on price. This upwards pressure on price will lead to a rise in quantity supplied and a fall in quantity demanded. Price will continue to rise until it reaches  $P_1$  where  $Q_d = Q_s$  at  $Q_1$ . There will be an overall rise in price and fall in quantity. As  $PED > 1$ , consumer expenditure will fall.

**P4: The rise in price of toy building bricks and change in taste and preferences will result in a rise in demand and consumer expenditure on mobile games.**

With children getting more tech savvy and the development of games that cultivate imagination and creativity, consumer demand for mobile interactive games will increase.

The rise in price of toy building bricks will also affect the demand for these games depending on the cross elasticity for demand (XED) to the good. XED measures the responsiveness of the demand of a good due to a change in price of its substitute or complement. The sign of XED can be positive or negative depending on whether the other good is a substitute or a complement. Toy building bricks and mobile games are substitutes as they both competitively satisfy similar wants resulting in a positive XED for the goods. Both goods help cultivate imagination and creativity of children. A rise in the price of toy building bricks will increase the demand for mobile games as consumers switched to the cheaper alternative. Their XED value is also high meaning that they are close substitutes as children are getting more tech savvy allowing them to utilise these games with ease.

Therefore, the rise in price of toy building bricks will result in a more than proportionate rise in demand for these games. Coupled with the change in taste and preferences for these games, demand will increase by a large extent causing consumer expenditure to rise exponentially due to the rise in price and quantity. This could offset the effects of the pessimistic economic outlook despite the YED of these games being more than 1 as they are not a form of necessity. Consumer expenditure will therefore increase.

**P5: Rise in price of toy building bricks will lead to a fall in demand for its guide books thus reducing consumer expenditure on them.**

The rise in price of toy building bricks will also affect the demand for its complements. Their XED sign is negative. These guide books (such as Avengers, Star Wars, etc) are considered a complementary good to toy building bricks as it allows the users to explore other methods of using them. The rise in price in toy building bricks will lead to a fall in its consumption leading to a fall in demand for these books. However their XED will be less than 1 meaning that these guide books are not essential in the usage of toy building bricks. Consumer can still create toy models based on their own imagination and creativity without the use of these guide books. Therefore the fall in demand for these books will be small causing consumer expenditure to fall by a smaller extent. However, the effects of the pessimistic economic outlook will cause consumer expenditure to fall further given that the YED of these guide books is more than 1 as they are not a form of necessity.

### Conclusion

In conclusion, the above development has led to a fall in consumer expenditure on toy building bricks.

### Stand with criteria

The most important factor will have to be the switch to the more costly sustainable plant-based plastics. The decision by toy building bricks companies to make the switch is to improve their image hoping that the rise in demand could offset the rising costs so that profit could rise.

### Question underlying assumptions

However due to other factors such as the pessimistic economic outlook which could dampen the demand, these companies will not be able to enjoy as much of a rise in demand in the short run. However, if the economic conditions were to improve in the long run, demand might increase thus resulting in a rise in consumer expenditure. Furthermore, time is needed to change consumers' mindset and preferences towards more sustainable resources. We can therefore see a greater rise in demand and thus consumer expenditure on toy building bricks in the long run.

### Marking Scheme

Level	Knowledge, Understanding, Application and Analysis	Marks
L3	<ul style="list-style-type: none"> <li>For a detailed analysis of the impact of the mentioned factors on the expenditure on toy building bricks and its related goods (<b>must cover 2 other related goods</b>)</li> <li>Good application of <b>both</b> PED and XED to determine the impact on expenditure on the different markets.</li> <li>Well-drawn demand and supply diagrams (<b>including simultaneous shift</b>) to support clear analysis and made reference in the write-up.</li> </ul>	15-20
L2	<ul style="list-style-type: none"> <li>Some analysis of the impact of the mentioned factors on sales revenues <b>on the expenditure on toy building bricks and at least 1 other related good</b> but analysis may not be rigorous</li> <li>Demand and supply diagrams drawn to support analysis but reference may not be consistent.</li> <li><b>Good application of at least 1 elasticity concept OR</b> Some application of elasticity concepts to discuss the direction and extent in the change in expenditure.</li> </ul>	9-14
L1	<ul style="list-style-type: none"> <li>For a descriptive response with some relevant points.</li> <li>Limited economic analysis.</li> </ul>	1-8
Level	Allow up to 5 additional marks for Evaluation	Marks
E3	<ul style="list-style-type: none"> <li>Able to provide a reasoned judgement on the change or extent of change in consumer expenditure and/or considers SR vs LR perspective and/or challenges relevant assumptions.</li> <li>Evaluative judgement supported by appropriate analysis for the combined effect of the factors for the different markets.</li> <li>Assess the extent of impact on consumer expenditure using relevant elasticity concepts.</li> </ul>	4-5
E2	<ul style="list-style-type: none"> <li>Some attempt at evaluation, but are mostly summative conclusion.</li> </ul>	2-3

	<ul style="list-style-type: none"> <li>Evaluation is relevant to the question but does not fully explain the judgment or does not base it on relevant analysis.</li> </ul>	
E1	<ul style="list-style-type: none"> <li>Unexplained judgement OR limited or weak evaluative comments.</li> </ul>	1