

RVHS 2016 Question 1

Coffee farmers in the major coffee-producing regions have been grappling with climate change threatening crop harvest. In addition, rising affluence combined with marketing efforts have fuelled the growth of café culture. These have impact on the commodities market for coffee and also firms selling coffee-based beverages.

Discuss the likely combined impact of these events on the market for coffee and how it may cause firms selling coffee-based beverages to make differing decisions. [25]

Introduction

The demand for coffee beans arises from owners of cafes and coffee shops that are both willing and able to purchase while the supply of coffee beans arises from farmers who combines the factors of production to produce coffee beans. Various determinants of demand and supply will affect the price and equilibrium quantity of coffee beans, and the relative extent of shift in demand and supply and other factors like the price elasticity of demand and supply will also play a role in affecting the extent of the change in price and quantity of coffee beans. The impact of these events on the market for coffee beans will determine the potential price rise for coffee-based beverages in a range of markets, such as coffee stalls in hawker centres and high-end cafes.

Impact on the market for coffee beans

Demand Factors:

Rising affluence has increased consumers' purchasing power. Consumers are now more willing and able to purchase coffee-based beverages, which are normal goods. Demand for coffee-based beverages increases.

Successful marketing efforts have fuelled the growth of café culture. The emergence of the café-hopping culture has seen consumers checking out new coffee joints as a hobby and something they can post about on social-networking sites. Also, consumers evolving tastes, with more seeking out speciality coffee resulted in a change in taste and preference in favour of coffee-based beverages. Consumers are now more willing to purchase coffee-based beverages, leading to an increase in demand for coffee-based beverages.

Taken together, it leads to an increase in demand for coffee beans which is derived from the demand for coffee-based beverages. As seen in Figure 1, demand for coffee beans shifts rightwards from D_0 to D_1 . Hence, a shortage occurs at the original price level P_0 , thus putting an upward pressure on the price. Market price thus rises until P_1 , where quantity supplied equals to quantity demanded at a higher quantity Q_1 . However, the extent of the increase in price and quantity will depend on the price elasticity of supply of coffee beans, ceteris paribus. Supply is price inelastic when an increase in the price brings about less than proportionate increase in quantity supplied, ceteris paribus. As in the case of coffee beans, even if the price of coffee beans were to rise, farmers are unable to respond by significantly increasing the quantity supplied of coffee beans given the relatively long gestation period involved in growing coffee beans. Referring to Figure 1, an increase in demand from D_0 to D_1 brings about a larger increase in the price of the good from P_0 to P_1 along the more price inelastic supply curve (S_i) than the more price elastic supply (S_e), and a smaller increase in equilibrium quantity from Q_0 to Q_1 . Consumer expenditure/total revenue increases from OP_0aQ_0 to OP_1bQ_1 .

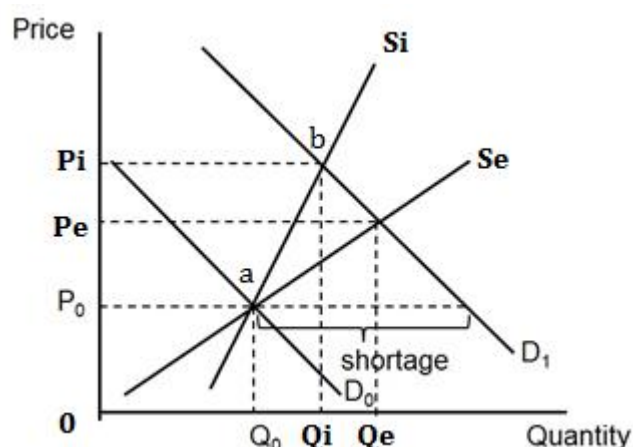


Figure 1: Increase in demand for coffee beans coupled with price inelastic supply and price elastic supply

Supply Factor:

Climate changes such as prolonged periods of drought or unusually cold weather resulted in low harvest. For example, Vietnam, the second largest coffee-producer experienced unseasonably cold weather while coffee-producing areas in East Africa have suffered from a lack of rain. Thus, producers' will be less able to supply coffee beans resulting in a fall in quantity supplied at each and every price level. Supply of coffee beans decreases from S_0 to S_1 as seen in Figure 2. As a result, equilibrium price increases while equilibrium quantity falls. The extent of the increase in price and the fall in equilibrium quantity will depend on the price elasticity of demand of coffee beans, *ceteris paribus*. Demand for coffee beans is likely to be price inelastic due to the lack of close substitutes, and coffee beans are a necessity for cafes that make coffee-based beverages. Referring to the Figure 2 below, a decrease in supply from S_0 to S_1 brings about a greater increase in the price of the good along the more price inelastic demand curve (D_i) than the more price elastic demand (D_e), and a smaller decrease in equilibrium quantity. Hence, there will be an increase in equilibrium price from P_0 to P_1 , and a less than proportionate fall in quantity from Q_0 to Q_i . Total expenditure could increase, decrease or remain unchanged depending on how much quantity demanded has changed.

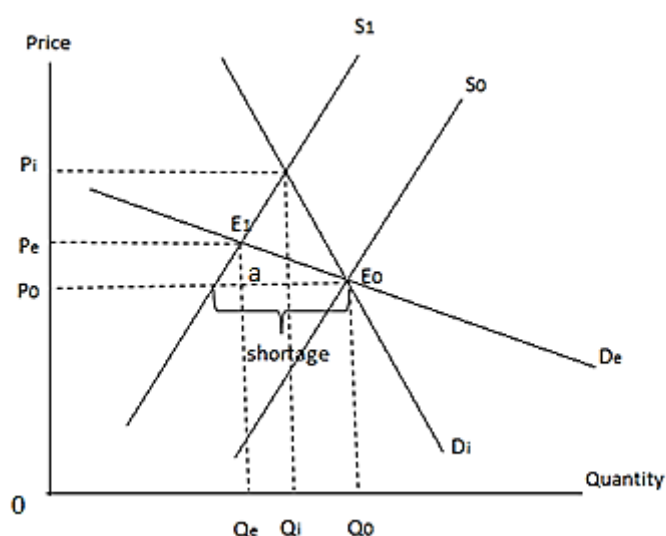


Figure 2: Market for Coffee Beans

Combined effect on coffee beans market:

Overall, the combined effect on the market for coffee beans includes a fall in supply and an increase in demand. This will cause the equilibrium price to rise with the change in quantity being uncertain as this is dependent on the relative extent of change in demand and supply.

Brazil and Vietnam, the world's largest exporters of coffee beans experienced the worst drought/cold weather in decades, thus it is likely to have a significant impact on global supply of coffee beans. On the other hand, the increase in consumer expenditure from an increase in demand is likely to be small given that the YED for necessities such as coffee beans is $0 < YED < 1$, where an increase in income leads to a less than proportionate increase in demand for coffee beans. In this case, the fall in supply will be more than the increase in demand. With reference to Figure 3, there will be an increase in equilibrium price from P_0 to P_1 , and a fall in quantity from Q_0 to Q_1 . Total expenditure could increase, decrease or remain unchanged depending on how much quantity demanded has changed. **The more price inelastic the demand for coffee beans, the more likely that consumer expenditure will increase.** Holding demand constant, a fall in supply of coffee beans brings about an increase in price. If demand for coffee beans is price inelastic i.e. cafes that require coffee beans to make coffee-based beverages, then an increase in price will lead to a less than proportionate fall in quantity demanded, leading to an increase in consumer expenditure/total revenue. Hence, coupled with the rise in demand for coffee beans, consumer expenditure/total revenue will definitely increase.

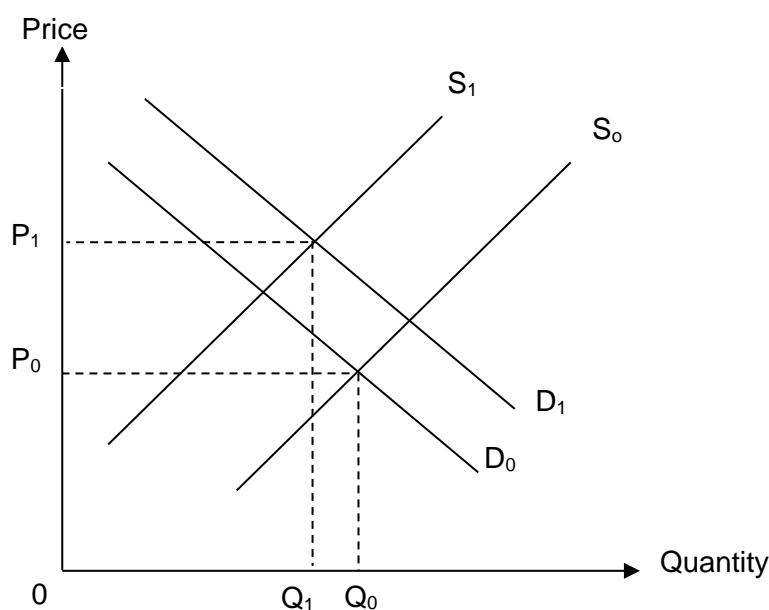


Figure 3: Market for Coffee Beans

Market for Coffee-based beverages

SS factor:

The rise in price of coffee beans, a factor input for making coffee-based beverages means that cafes have to incur a higher cost to produce such beverages. This translates to lower profits, *ceteris paribus*; hence cafes are now less willing and able to produce coffee-based beverages, leading to a fall in supply of the coffee-based beverages.

DD factors:

As explained earlier, the demand for coffee-based beverages will increase due to rising affluence & the growth of the café culture.

Taken together, a fall in supply and an increase in demand for coffee beverages will bring about an increase in price of coffee beverages.

Impact on firms' decisions

1) Application of PED to the firms' decision to change price

Owners of coffee stalls in hawker centres are likely to have a large number of competitors and so the demand curve for individual firms is likely to be **price elastic**. Any increase in prices will result in a more than proportionate fall in quantity demanded, ceteris paribus. Hence the increase in total revenue due to the increase in price will be less than the loss in total revenue due to the fall in quantity demanded, resulting in a net loss in total revenue. This means that there is limited scope for such coffee stalls to increase prices.

However, owners of coffee stalls in hawker centres are not likely to be making excess profits as these coffee stalls are likely to operate in a monopolistic competitive industry. Hence, if their costs rise, they will make short term losses if they do not increase prices.

On the other hand, **large cafes like Starbucks and new coffee joints/ speciality cafes** are likely to have a more price inelastic demand due to a smaller number of competitors and a lack of close substitutes due to the unique beverages sold (speciality coffee) in the short run. Any increase in prices will result in a less than proportionate fall in quantity demanded, ceteris paribus. Hence the increase in total revenue due to the increase in price will be more than the loss in total revenue due to the fall in quantity demanded, resulting in a net increase in total revenue. This means large cafes like Starbucks are likely to increase prices. [** students can also use the concept of price rigidity here – i.e. firms will not increase prices*]

However, large cafes are likely to have large buying powers and be able to limit the rise in price of coffee beans and coffee-based beverages from their suppliers. Moreover, these cafes are likely to operate in an oligopolistic industry; hence they may have excess profits in the past and are able to absorb some of the price rise. *Upon evaluation, it is likely that large cafes like Starbucks would not raise its prices. **These firms usually buy its coffee beans in advance for the year, thus, even if the coffee bean price were to go up, it may not affect Starbucks at all.***

2) Application of YED to the firms' decision to change price & production choices with changing income levels

The income elasticity of demand (YED) is a measure of the responsiveness of demand to changes in income, ceteris paribus. Coffee beverages sold in hawker stalls are deemed as necessities, and owners of such coffee are likely to be serving the lower end of the market. Income elasticity of demand (YED) is likely to be positive but less than one. Hence, an increase in income will result in a less than proportionate increase in demand for its coffee beverages.

In contrast, the specialty coffee beverages sold in large cafes like Starbucks and new coffee joints are deemed to be luxury goods, and these cafes are likely to be serving the luxury end of the market. Income elasticity of demand is likely to be positive and greater than one, hence an increase in income will result in a more than proportionate increase in demand for its coffee beverages. Coupled with the fall in supply of coffee-based beverages, prices of coffee beverages sold by large cafes and speciality coffee joints will experience a larger

increase in price, hence may be more likely to raise prices as compared to coffee stalls at hawker centres. ***This analysis is based on the assumption that the coffee beverages sold in hawker centres is a normal good while coffee beverages sold at large cafes like Starbucks is a luxury good. However, some consumers may deem coffee beverages sold at hawker stalls to be inferior goods. Given an increase in income, demand for such coffee beverages may fall, causing the price of coffee to fall. Whether or not stall owners would decide to change the prices of their coffee beverages will depend on the relative shifts of the demand and supply curves. Ultimately, whether the good is deemed to be an inferior good or a luxury good depends very much on the income of individuals.***

Large cafes like Starbucks and coffee joints may decide to produce luxurious higher end beverages such as specialty coffee, whose demand is income elastic and will see a larger rise in demand as households become more affluent.

In conclusion, whether or not firms would raise prices of their coffee-based beverages would depend on the firms' PED, and the nature of the good produced by these firms (YED). However, there are some limitations of elasticity data. Data reflecting accurate consumers' preferences and responses may be difficult to obtain. Therefore, coffee stalls and café owners can only make rough estimations of various elasticity values of their coffee-based beverages, which relevance and usefulness in helping them make appropriate pricing decisions will be compromised.

Knowledge, Understanding, Application & Analysis		
L3	18-21	<p>For a <i>developed discussion</i> on how consumer expenditure/total revenue is affected in the market for coffee beans. The answer should include a developed analysis of demand and supply factors with the aid of diagrams, accurate application of PED & PES.</p> <p>For a developed analysis on the demand and supply factors affecting the market for coffee-based beverages, and a developed discussion on the application of elasticity concepts (PED & YED) to the firms decision to change price and by how much. The answer should include <i>two different types of firms</i> (coffee stalls in hawker centres/ roadside stalls vs. larger cafes such as Starbucks).</p>
L2	10-17	<p>For a <i>developed explanation</i> on how consumer expenditure/total revenue is affected in <i>either the coffee beans market <u>or</u> the coffee-based beverages market</i>, and an <i>undeveloped explanation for the second market</i>.</p> <p>OR</p> <p>For an <i>undeveloped explanation</i> on how consumer expenditure/total revenue is affected in the <i>coffee beans market <u>and</u> coffee-based beverages market</i>. Such an answer includes an undeveloped analysis of demand and supply, and/or some use of elasticity concepts.</p>

		<p>AND</p> <p>A developed explanation on the application of elasticity concepts (PED & YED) to the firm's decision to change price and by how much. (Note: refer to only one type of firm)</p> <p>OR</p> <p>For an undeveloped explanation on how the events affect the decisions made by <i>different types of firms</i> selling coffee-based beverages. Such an answer includes an undeveloped analysis of demand and supply, and some use of elasticity concepts.</p>
L1	Upper 6-9	<p>For an undeveloped explanation on how consumer expenditure/total revenue is affected only in the market for coffee beans or coffee-based beverages. Such an answer could include an undeveloped demand and supply analysis for this market, and/or some use of elasticity concepts.</p> <p>AND</p> <p>For an undeveloped answer that shows knowledge of factors that might affect pricing decisions.</p>
	Lower 1-5	Smattering of valid points (i.e. answer shows some knowledge of demand and supply with misconceptions).

Evaluation		
E2	For a well-reasoned judgment on the likely effects on expenditure/revenue in the market for coffee beans and an answer that uses analysis to support an evaluative conclusion about the key economic factors that determine the extent of price increases.	3-4
E1	For a generally unexplained judgment on the likely effects on expenditure/revenue in the market for coffee beans and an answer that gives an unsupported evaluative statement about the key economic factors that determine the extent of price increases.	1-2