Q1. Organic food such as fresh fruits, vegetables and dairy products is grown without synthetic pesticides, chemical fertilizers or genetically modified seeds. 2015 was a year of significant growth for the organic food industry despite the continued struggle to meet the seemingly unquenchable consumer demand. There was also an increase in the number of farmers converting to organic farming over time.

Source: Organic Trade Association

Discuss the demand and supply factors that determine the output of organic food and evaluate which is the most important factor. [25]

Introduction

In the farming industry, organic produce has become such an appetite for consumers to the point where the demand cannot be met due to a huge shortage of growers. Producers have responded to this growing demand by making the transition to certified organic food production.

Definition: Market equilibrium occurs when buyers and sellers come together and exchange at a mutually agreeable price and quantity. When the market is in equilibrium, there is no tendency for the price or the quantity exchanged (that is, the quantity bought and sold) to change as quantity demanded equals to the quantity supplied. Demand and supply in the free market will determine the equilibrium output. Hence, changes in the demand and supply will impact the market equilibrium.

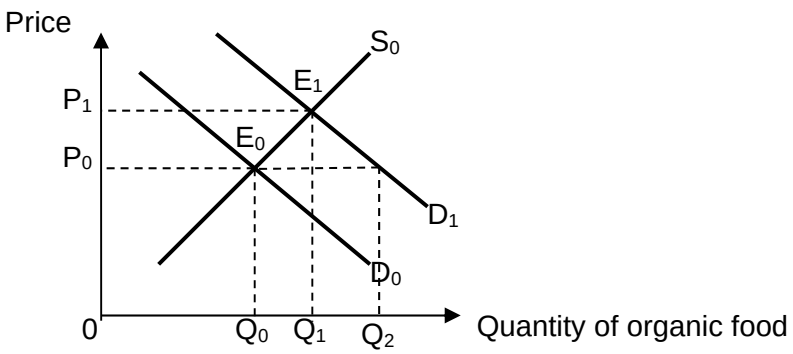
Direction: The factors which determine the output of organic food are technological advancements and economies of scale which affect supply as well as factors such as tastes and preferences, and income level that influence demand.

Body

Selecting food is one of the most common activities that consumers pursue many times each day. But this selection requires taking into account different factors (e.g. price and taste) and may involve a complicated decision-making process in order to satisfy these different factors.

P1: Although the organic food sector comprises only a small percent of all food sales, the perceived environmental and health benefits of organic food have received increasing recognition and broader acceptance among consumers, hence a shift of *taste and preference* from inorganic food to organic food.

As the technology advances, people have easier and more convenient access to Internet and social media to find out more information about the enhanced health benefits of consuming organic food. Furthermore, since society has been adopting health-conscious eating habits and government has been promoting healthy lifestyle, the demand for organic food has only been steadily growing. In the minds of consumers, this trend of “eat good, feel good, look good” is convincing and rapidly growing as it has greatly contributed to why the majority of consumers are choosing organic. Environmentally conscious consumers are willing to pay a much higher price for sustainable products such as organic and locally-produced foods as ethical considerations are becoming important factors in their decision making process. Rise in demand for organic food → rightward shift of DD curve from DD0 to DD1.



➔ Ceteris paribus, at the original price of the organic food 0Po, there is now a shortage of the good Q_0Q_2. The resulting shortage causes the price of the organic food to increase. As the price of the organic food increases, its quantity demanded falls while the quantity supplied increases. These changes are illustrated by a movement up the demand curve D_1 and a movement up the supply curve S_0 respectively.

L1: Price will continue to rise until the market is in equilibrium at price $0P_1$ and there is a rise in equilibrium output of $0Q_1$ of organic food being traded.

P2: The *global economic growth* in the last decade contributed to a rise in demand for organic food.
Since organic food is considered a luxury good, any change in consumer income directly affects the percent change in demand, which will constitute how much consumers are willing and able to spend. If the amount of disposable income increases within consumers, they will feel more confident and compelled to spend those extra dollars towards better quality luxury goods, in this case organic foods. Conversely, the same transpires when there is a decrease in income where consumers will choose inferior food as opposed to purchasing the luxury good. Due to the relatively more rapid growth in emerging markets and developing economies such as India and Philippines, as the income increases, consumers shift their purchases away from higher quantities of food and into higher quality food. This simple analysis of the relationship between income and consumption is crucial for understanding and/or forecasting the likely future of the organic food industry.

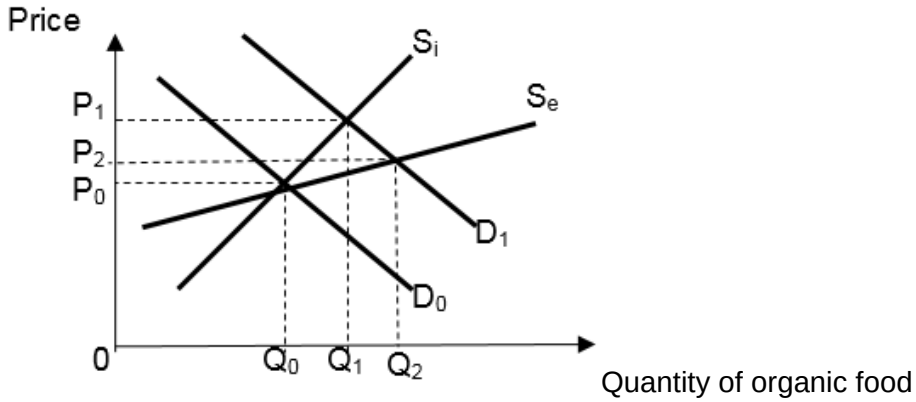
L2: As the standard of living increases, consumers are very likely to purchase more quantity of organic products.

P3: Income growth, and the high standard of living that is enjoyed in the high-income nations of the world, is likely to be the single most important determinant of organic food consumption.
Because any perceived benefits, no matter how small, become affordable to wealthy consumers. Price premiums also become inconsequential to individuals and families with high incomes. As per capita incomes rise, we can expect a shift into organic food. An important implication of this is that low-income individuals in the USA, and low-income nations will be less interested in organic food, if it is more expensive than conventional food. For individuals and nations with low level so purchasing power, the perceived benefits of organic food are unlikely to outweigh the lower prices of conventional food. As incomes increase above subsistence levels, health issues shift from a lack of food and starvation to healthy diets and nutrition. Those who can afford it will purchase products that are perceived to be healthy, including organic food, even if the purchase price is considerably higher than conventional food.

L3: To summarize, market information about the benefits and costs of consuming organic and nonorganic foods will determine the future market shear of organic food in the food and beverage industry.

P4: The price elasticity of supply for organic food is likely to be less than one and hence, the rise in demand due to the 2 factors analysed earlier will likely lead to a mild rise in equilibrium output.
Although retailers have been flocking to the industry to capture the customers' high willingness to pay, farmers have not followed suit. Despite the opportunity to fetch higher prices for their products, farmers have been slow to convert to organics. One reason is the high transition costs (barrier to entry) to be labelled a certified organic producer. In order to be titled a certified organic grower, one must follow and go through a three-year transition period in compliance with organic restrictions and requirements. During this time period farmers experience much lower crop yields making their costs surge; a primary element for

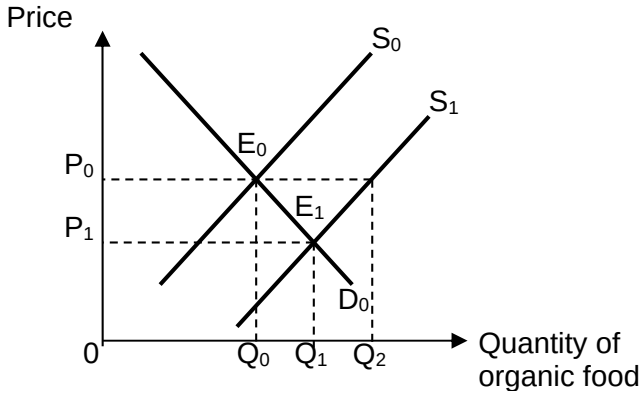
which growers won't go organic. Also, the benefits that come with organic growing such as receiving higher and premium prices for those organic products are not included in this 36-month process, yet another hindrance for farmers to transition to become certified organic producers. Additionally, organic farm operations are subject to added fees and regulations. Organic production practices are often management-intensive, requiring greater managerial time, skill, and decision making. Organic certification requirements can also require that a farmer not use chemicals or synthetic fertilizers for three years prior to the land becoming available for organic food production. Thus, some of the transition costs are incurred prior to reaping the benefits of organic conversion. Hence, the supply of organic food is price inelastic. Farmers are not able to respond easily to a rise in a demand and price by releasing the stocks into the market for sale.



<u>L4: Hence, as seen in the figure above, with the same rise in demand, the extent of rise in equilibrium output for organic food is smaller from Q0 to Q1 rather than from Q0 to Q2.</u>

E5: However, the rapid technological advancement and reaping of more economics of scale may change the outlook of organic food production.
Firstly, the technology of organic food production is changing rapidly, as producers discover more efficient production processes that result in larger quantities and higher qualities of organic food produced at lower costs. Similarly, a cost-saving technological or regulatory change in the processing, transportation, packaging, marketing, advertising, or certification of organic food will also result in larger quantities produced by profit-motivated suppliers.

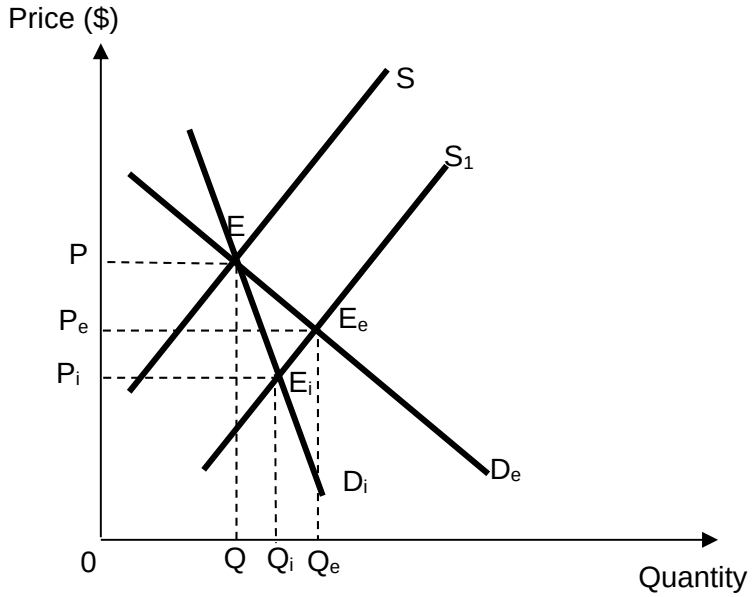
Secondly, as the fledgling organic food industry develops, it will capture economies to scale associated with the growth and development of organic food markets. An example is marketing economies. A large firm can capitalise on its bargaining power to buy its inputs in bulk at favourable rates. Similarly, the organic food of the firm can also be sold in bulk at reduced distribution costs too. For instance, it is more cost efficient for a large firm to transport large quantities using a large truck instead of several small vans. Large firms can also afford to advertise organic food in the national press and other forms of media. Although the advertising expenditure may be substantial, the advertising average cost may be lower than that of a smaller firm because cost of advertising is spread over the larger output level. Specifically, as the infrastructure and institutions for organic food production, processing, and distribution become larger and more established, the per-unit cost of organic food
➔ decline fall in cost of production, assuming total revenue constant
➔ higher profit per unit of computer-based products



➔ rightward shift of the supply curve from S0 to S1
➔ Ceteris paribus, at the initial price $0P_0$, a surplus of Q_0Q_2 arises and this surplus exerts a downward pressure on price. Producers lower the price to get rid of their excess stock. As price falls, producers will reduce their quantity supplied of the good as shown by a movement along the supply curve. Consumers increase their quantity demanded of the good as illustrated by a movement along the demand curve D_0.

L5: Price will continue to fall until a new market equilibrium is established at point E_1. The new equilibrium output of $0Q_1$ is higher than before the increase in supply.

P6: The price elasticity of demand for organic food is likely to be less than one and hence, the rise in supply due to the 2 factors analysed earlier will likely lead to a mild rise in equilibrium output.
Individuals who are committed to the ideals and lifestyle associated with organic food, OR who have high incomes, and are unaware or insensitive to price changes are unlikely to discontinue purchasing organic food. The first group is very unlikely to alter organic food purchases based on price movements, due to strong convictions about the complex interactions between agricultural chemicals, human health, and the environment. The second group of consumers does not alter consumption habits when prices of organic food change, simply because they spend a very small fraction of their income on food. As a result, price increases are unimportant to these individuals, and consumption decisions are unlikely to be affected by price → demand for organic food for these groups of consumers is price inelastic. This means that a rise in price of organic food will lead to a less than proportionate fall in quantity demanded of organic food, ceteris paribus.



L6: Hence, as seen in the figure above, with the same rise in supply, the extent of rise in equilibrium output for organic food is smaller from Q_0 to Q_i rather than from Q_0 to Q_e.

Synthesis
The conclusion is the cost efficiency factor (supply) is more important to determine the output of organic food in the ***short run***. This is because the switching costs are much higher for farmers: regulations, three years of fallow ground, uncertain yields. The price they receive for a single unit of an organic product, therefore, is less valuable if it comes with greater risk and uncertainty. The organic market can only grow as far as farmers are willing to start growing organics.

However, the income factor (demand) will be more important to determine the output of organic food in the ***long run*** because demand for organic food is income elastic. As the affluence level increases, the demand for organic food will increase significantly. Luxury consumer goods such as organic food will continue to replace necessities, as high-income consumers can afford to pay for product attributes that are perceived to be healthy or good for the environment. As a result, many agricultural producers have found organic production practices to be a profitable alternative to conventional crops. Furthermore, though transition costs are high, the cost advantages of eliminating chemical and fertilizer bills, together with crop rotation advantages can contribute to net returns. Therefore, we may see a potential growth of the organic food market.

Conclusion

Consumers' interest in organic food has exhibited continued growth for the past two decades, which has attracted entrepreneurs and corporations seeing a big potential for this industry. This led to the creation of standards and regulations to guide the organic food industry. There are clear challenges on both demand and supply sides. Consumers are becoming more sophisticated in their purchasing decisions of organic food as they become more educated and affluent, and companies are focusing on supply chain management in order to ensure high quality, traceability, and supply continuity. The future extent of the increment in organic food output will depend on the market forces (market value).

Level	Knowledge, Understanding, Application and Analysis	Marks
L3	For a balanced and well-explained answer that uses application and analysis to discuss the importance of demand and supply factors (total 4 factors) in influencing the output of organic food. Good analysis on relative importance of demand and supply factors and PED, PES, IED, CED (any 2) or the relative magnitude of shifts are considered in the given context.	15-20
L2	For a good attempt to discuss the importance of demand and supply factors but limited in analysis. For well-developed one-sided answers OR underdeveloped two-sided answers which did not consider other factors such as elasticities of dd/ss concepts or why the rise in demand is faster than the rise in supply.	9-14
L1	For some knowledge but limited applications of demand and supply factors on how it influence output changes. Answer may be irrelevant.	1-8
Level	**Allow up to 5 additional marks for Evaluation**	**Marks**
E3	For an answer that arrives at an analytically well-reasoned judgement on which factor is more important to determine the output of organic food	4-5
E2	For an answer that makes some attempt at a judgement on which factor is more important to determine the output of organic food	2-3
E1	For an answer that gives an unsupported evaluative statement(s) about the demand and supply factors that determine the output of organic food	1