

2017 RVHS Y6 H2 Econs Prelim II Paper 2 Q1

Just a year ago, anticipation of higher profits prompted cattle farmers in the European Union (EU) to switch to produce dairy, which is a major ingredient of many dairy-based products such as cheese. At the same time, EU abolished dairy production quotas while China, a key importer of EU products, saw slower economic growth.

The Economist, August 2015

Using economic analysis, discuss the impact these events are likely to have had on EU consumers and farmers. [25]

Introduction:

The demand for dairy arises from dairy-based products manufacturers (e.g. the laughing cow) who manufacture and sell cheese. Hence they buy/consume dairy as it is a factor input to produce cheese. On the other hand, supply comes from cattle farmers who produce dairy for sale. The impact of these events on dairy consumers and farmers can be measured via changes in the consumer expenditure and total revenue received by farmers. This will then affect consumer expenditure and total revenue for dairy-based products in a range of markets, such as premium cheese and house brand bread.

① Impact of events on EU consumers and farmers of dairy

Firstly, in the past year, there is an increase in the number of farmers producing dairy. This is due to the anticipation of higher profits to be made in the dairy market, resulting in some farmers switching from rearing cows for beef to dairy. As such, at every price level, there are more farmers willing and able to supply dairy and the supply of dairy increases.

Secondly, the abolishment of dairy production quotas affected the supply of dairy. A dairy quota imposes a physical limit on the quantity of dairy that can be produced within EU in a given period of time. It restricts the supply of dairy to keep prices high. The abolition of production quota will lead to an expansion of EU dairy production, leading to significant increases in EU net exports to the world market, hence supply of dairy increases.

Taken together, the supply of dairy will rise from S_0 to S_1 as shown in Figure 1. This will cause the price of dairy to fall, which is accompanied by a rise in its quantity demanded. The extent of this increase in quantity demanded depends on the price elasticity of demand (PED) for dairy as PED measures the degree of responsiveness of quantity demanded to a change in its price, ceteris paribus.

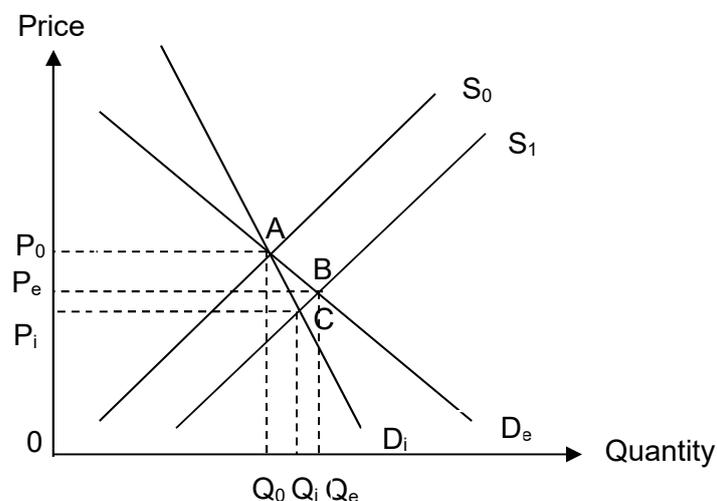


Figure 1: Increase in supply

If the demand for dairy is relatively price inelastic, the fall in price from P_0 to P_i will cause the quantity demanded to rise less than proportionately from Q_0 to Q_i . This will result in a fall in the consumer expenditure/total revenue from $0P_0AQ_0$ to $0P_iCQ_i$. And if the demand for dairy is relatively price elastic, the fall in price from P_0 to P_e will cause the quantity demanded to rise more than proportionately from Q_0 to Q_e . Thus, the consumer expenditure/total revenue will rise from $0P_0AQ_0$ to $0P_eBQ_e$. **In this context, it is more likely that the PED value of dairy is less than one as it is deemed as a necessity for firms (e.g. the laughing cow) that produce cheese as dairy is one of the factor inputs to produce these foods, i.e. $PED < 1$. As such, EU consumers of dairy generally gain from lower prices and higher quantity consumed, while EU farmers lose out, assuming unchanged costs of production.**

At the same time, China, a key importer of EU dairy, saw slower economic growth. The economic slowdown in China implies that income increases at a decreasing rate. An increase in income, albeit at a slower rate has increased consumers' purchasing power. Consumers are now more willing and able to purchase dairy, which is a normal good, i.e. $YED > 0$. Since the demand for dairy is derived from the demand for dairy-based products, demand for dairy increases.

As seen in Figure 2, demand for dairy shifts rightwards from D_0 to D_1 . This will cause the price and quantity of dairy to rise. However, the extent of the increase in price and quantity will depend on the price elasticity of supply of dairy, ceteris paribus. If the supply of dairy is relatively price inelastic, the increase in price from P_0 to P_i will cause the quantity supplied to rise less than proportionately from Q_0 to Q_i . This will result in an increase in consumer expenditure/total revenue from $0P_0AQ_0$ to $0P_iCQ_i$. On the other hand, if the supply of dairy is relatively price elastic, the increase in price from P_0 to P_e will cause the quantity supplied to rise more than proportionately from Q_0 to Q_e . Thus, the consumer expenditure/total revenue will rise from $0P_0AQ_0$ to $0P_eBQ_e$. In other words, in both instances, consumer expenditure/total revenue increases. **In this context, it is more likely that the PES value of dairy is more than one due to the short gestation period as cows typically produce milk for around 9 – 10 months of the year.** Hence, EU farmers receive higher total revenue while EU consumers incur higher consumer expenditure on dairy.

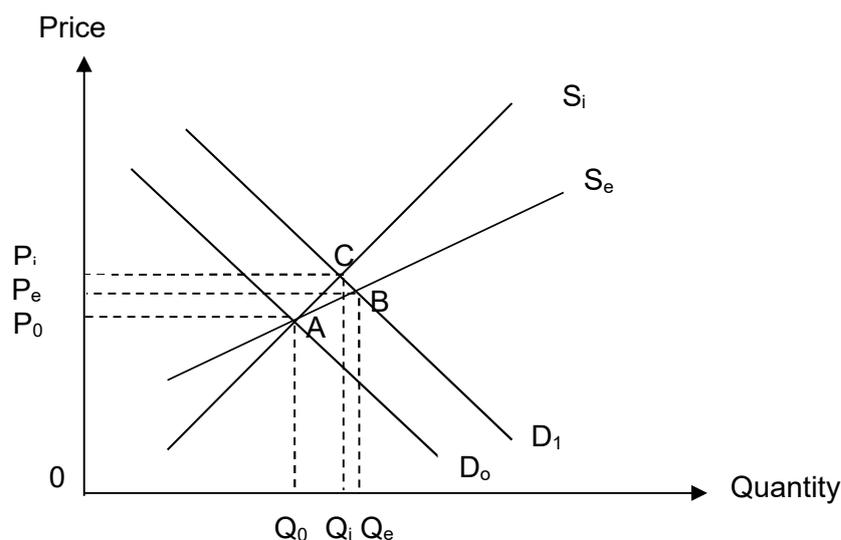


Figure 2: Increase in demand

Combined effect on the market for dairy:

Overall, the combined effect on the market for dairy includes a rise in both its demand and supply. This will cause the equilibrium quantity to rise with the change in price being indeterminate as this is dependent on the extent of change in demand and supply. In this context, due to the economic slowdown in China, it is likely that rise in income may not lead to a substantial increase in demand for dairy. Hence, the increase in supply from S_0 to S_1 is likely to outweigh the increase in demand from D_0 to D_1 . With reference to Figure 3, there will be a fall in equilibrium price from P_0 to P_1 , and an increase in equilibrium quantity from Q_0 to Q_1 . Total expenditure/revenue could increase, decrease or remain unchanged depending on how much price and quantity has changed.

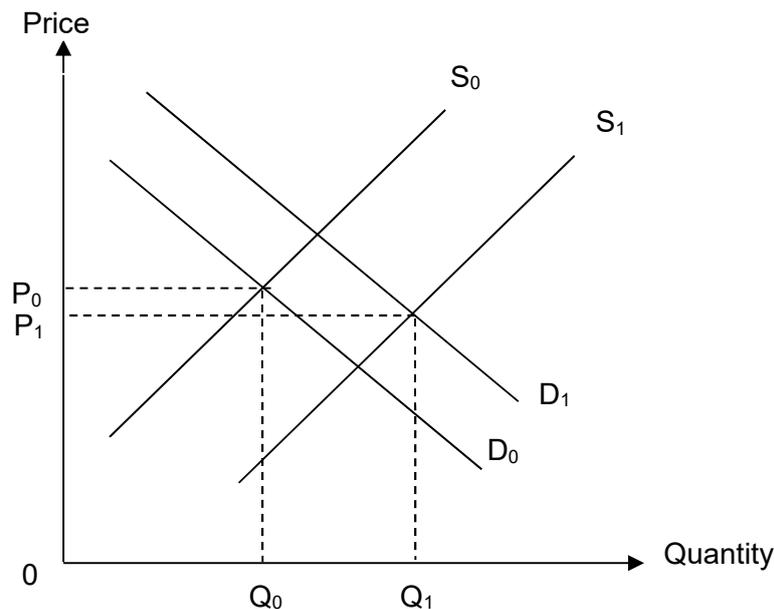


Figure 3: Combined effect of an increase in demand and increase in supply in the dairy market

② Impact of events on EU consumers of dairy-based products such as premium cheese

Turning to the dairy-based products market such as premium cheese, we note that the EU producers of premium cheese are firms such as the laughing cow, while consumers are those who purchase cheese for consumption.

The fall in price of dairy, a factor input for cheese means that cheese producers incur a lower cost to produce cheese. This translates to higher profits, *ceteris paribus*; hence cheese producers are now more willing and able to produce the good, leading to an increase in supply of cheese from S_0 to S_1 as shown in Figure 1. This will cause the price of premium cheese to fall, which is accompanied by a rise in its quantity. The extent of this increase in quantity then depends on the price elasticity of demand (PED) for premium cheese, *ceteris paribus*. ***In this context, it is more likely that the PED value of a typical brand of premium cheese is more than one as there are many substitutes available in the market/ not a necessity to consume premium cheese, i.e. $PED > 1$. Since the demand for premium cheese is likely to be relatively price elastic, the fall in price from P_0 to P_e will cause the quantity demanded to rise more than proportionately from Q_0 to Q_e . Thus, the consumer expenditure/total revenue will rise from $0P_0AQ_0$ to $0P_eBQ_e$, as seen in Figure 1.***

On the other hand, the slowdown in economic growth in China implies that income increases at a decreasing rate. An increase in income, albeit at a slower rate has increased consumers' purchasing power. Consumers are now more willing and able to purchase premium cheese, which is a luxury good, i.e. $YED > 1$. Given the income elastic nature of premium cheese, an increase in income may be expected to bring about a more than proportionate increase in demand for cheese, ceteris paribus. The larger the YED, the larger will be the increase in demand in response to an increase in income. **The degree of income elasticity of demand for cheese may differ across the types of cheese (e.g. premium ones like Old Ford which costs \$50/ pound).** Demand for premium cheese increases, and both equilibrium price and quantity of premium cheese increase. This results in an increase in consumer expenditure and total revenue.

Overall, the combined effect on the market for premium cheese includes an increase in supply from S_0 to S_1 and an increase in demand from D_0 to D_1 as seen in Figure 4. This will cause the equilibrium quantity to rise with the change in price being indeterminate as this is dependent on the extent of change in demand and supply. **The more premium the cheese, the larger the YED value, hence the greater will be the increase in demand as opposed to the increase in supply. As such, both price and quantity will rise, hence total revenue/ consumer expenditure increases from OP_0AQ_0 to OP_1BQ_1 .** As such, EU consumers of cheese incur higher consumer expenditure, while manufacturers of cheese receive higher total revenue.

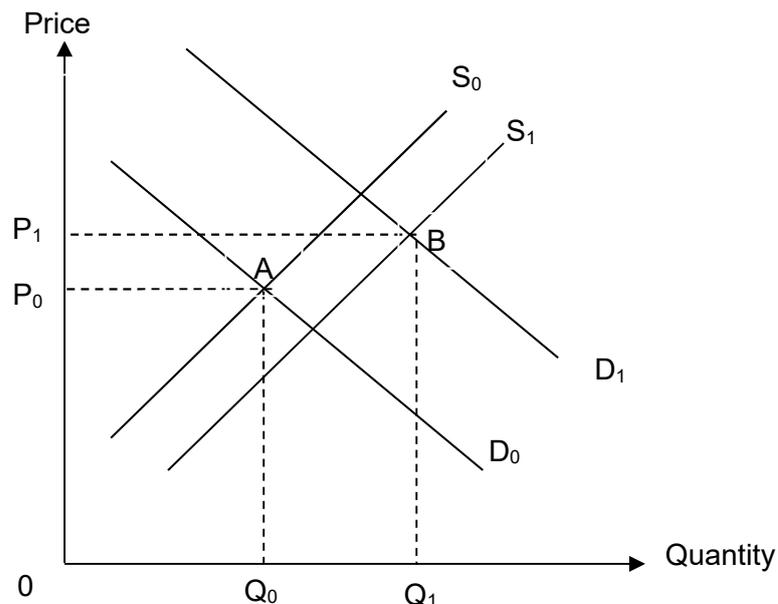


Figure 4: Combined effect of an increase in demand and increase in supply in the premium cheese market

In conclusion, the above analysis only holds true if the ceteris paribus condition is valid. This is because other than the events in the preamble, other factors may affect EU consumers and farmers.

Knowledge, Understanding, Application & Analysis		
L3	Upper 18-20	For a <i>developed discussion</i> on how EU consumers' total expenditure and farmers' total revenue are affected in the dairy and dairy-based product market. The answer should include a developed analysis of the impact of demand and supply on <i>two different types EU consumers (i.e. consumers of dairy = manufacturers of dairy-based products & final consumers of dairy-based products, as well as EU dairy farmers)</i> , accurate application of any two elasticity concepts (PES, PED & YED), and <i>excellent</i> attempts at contextualisation.
	Lower 15-17	For a <i>developed discussion</i> on how total revenue & consumer expenditure are affected in <i>the dairy market and undeveloped discussion on dairy-based product market.</i>
L2	10-14	For a <i>developed explanation</i> on how total revenue & consumer expenditure is affected in <i>either the dairy market or dairy-based product market.</i> OR For an <i>undeveloped discussion</i> on how total revenue & consumer expenditure is affected in the <i>dairy market and dairy-based product market.</i>
		For an <i>undeveloped explanation</i> on how total revenue and consumer expenditure are affected <i>only in the market for dairy/ dairy-based products.</i> Such an answer could include an undeveloped demand and supply analysis for this market, and/or some use of PED/PES/YED and makes no/little attempts at contextualising. OR For an <i>undeveloped explanation</i> on how total revenue & consumer expenditure are affected in the <i>market for dairy and dairy-based products market</i>
L1	Upper 6-9	For an <i>undeveloped explanation</i> on how total revenue and consumer expenditure are affected <i>only in the market for dairy/ dairy-based products.</i> Such an answer could include an undeveloped demand and supply analysis for this market, and/or some use of PED/PES/YED and makes no/little attempts at contextualising. OR For an <i>undeveloped explanation</i> on how total revenue & consumer expenditure are affected in the <i>market for dairy and dairy-based products market</i>
	Lower 1-5	Smattering of valid points.
E3	Builds on an appropriate analysis to evaluate critically to arrive at a well-reasoned judgment and decision	4-5
E2	Some attempt of evaluation or a conclusion that answers the question but doesn't explain the judgement or base it on analysis	2-3
E1	For an unexplained assessment or one that is not supported by analysis.	1