



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TĀEA

Exemplar for Internal Achievement Standard Economics Level 3

This exemplar supports assessment against:

Achievement Standard 91401

Demonstrate understanding of micro-economic concepts

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

	Grade Boundary: Low Excellence
1.	<p>For Excellence, the student needs to demonstrate comprehensive understanding of micro-economic concepts.</p> <p>This involves using a detailed explanation, supported by models and data, and/or information to justify implications of micro-economic concepts for consumer(s), producer(s) and/or government.</p> <p>This student has explained in detail how Diminishing Marginal Returns links to supply, supported by data and an accurate model plotted from the data, and the the supply curve is derived from the MC curve (1).</p> <p>The student has presented changes on economic models, and used them in a detailed explanation to justify the implications of increased costs of production, due to high dairy prices, for a producer of chocolate (2).</p> <p>The student has presented economic information, and used this information to justify the implications of increased costs of production for a producer of chocolate in a detailed explanation (3).</p> <p>For a more secure Excellence, the student could further explain the links between MC and the new supply curve (4).</p> <p>For example, the student could state the marginal cost will increase for each additional unit as greater amounts of dairy cost is needed to produce each additional unit. MC shifts to MC1 due to the higher cost of each unit. Supply would now be the MC1 curve above the shutdown point '<i>Shutdown 1</i>' on the model, so supply has decreased.</p>

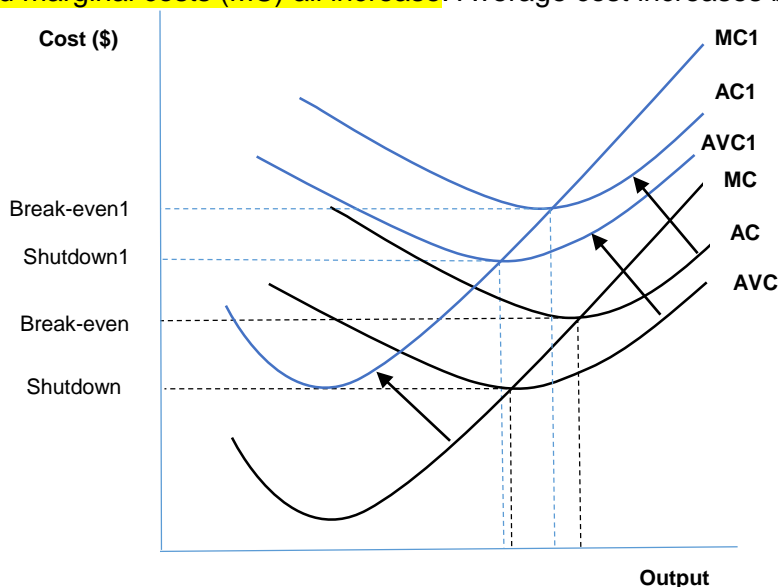
Impact of high dairy prices on chocolate production in the short run

[The concept covered in this exemplar is diminishing returns and supply. The student also explained elasticity of demand in detail and applied the concept to the chocolate market, justifying the implications for consumers and producers using calculated PED co-efficients, XED and YED economic theory and economic models.]

[The student explained in detail how Diminishing Returns leads to the supply curve supported by data and an accurate model plotted from the data.]

①

Milk solids are one of the main ingredients in the production of milk chocolate and account for 28% of the final block of chocolate. High dairy prices (milk products) will increase a chocolate firm's cost of production. As dairy prices rise, the cost of raw materials (dairy products) for chocolate firms will rise and therefore increase the firms total cost of producing chocolate. The increase in costs of production will have many effects on the producer. As their cost of raw materials increases the average costs (AC), average variable costs (AVC) and marginal costs (MC) all increase. Average cost increases because it is measured by



total cost divided by quantity (TC/Q) and as high dairy prices increase costs of production, total cost and therefore AC will increase. This is shown on the graph where AC increases to AC1.

②

AVC is TVC/Q ; because milk/dairy product is a variable input for chocolate producers, an increase in the price of dairy will increase the AVC to AVC1. Marginal

②

cost is the change in total cost (or TVC) that comes from making or producing each additional item (change in the quantity of output) in the short run. As the dairy product is a variable input, if the firm were to produce one extra block of chocolate, the total cost would increase, therefore increasing marginal cost from MC to MC1.

Break-even is the point at which revenue covers all economic costs ($P=AC$). It is the point where marginal cost equals average costs ($MC=AC$) and is labelled Breakeven on the vertical axis. Shutdown point is the price at which revenue just covers variable costs (where $P=AVC$ and $MC=AVC$) and is labelled Shutdown on the vertical axis. Because of the increase in costs, the break-even point increases to Break-even 1 and the shutdown point increases to Shutdown 1.

②

The chocolate firms supply curve can be derived from the marginal cost curve ($MC=S$ above minimum AVC).

①

Supply decreases as shown by the shift left of the MC curve when costs of production increase, and price increases and output decreases.

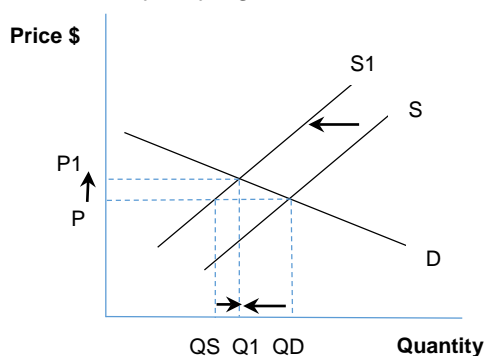
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In the short-run, at least one factor of production is fixed, but many decisions are still made around variable inputs and investment during this period. Therefore, chocolate producers could decide to act in three different ways to an increase in costs of dairy products.

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One way is to decrease production as seen above, and if a firm's MR is greater than MC then this could actually increase profits. Secondly, they could change the variable inputs used in production (reduce the costs of raw materials and labour). Thirdly, achieving economies of scale by increasing production to decrease AFC, and if a firm's MR is less than MC then this would help increase profits.

Chocolate firms could minimise the effects of high dairy prices by taking advantage of economies of scale, when output (Q) increases average costs decrease, because AC is average fixed costs (AFC) + AVC, so while AVC remains constant as output increases AFC decreases, because fixed costs are now spread over more output. Chocolate firms can achieve this by buying in bulk, technical economies can be achieved by investing in the



latest technology or specialised equipment, and managerial economies by using specialisation, and this helps reduce AFC and therefore helps counteract higher dairy prices.

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A decrease in production/supply of chocolate from S to S1 causes a shortage of chocolate at the original price as shown on the model. Market forces means price would increase to P1 as consumers bid up the price and therefore producers will increase the quantity supplied

2

from QS to Q1, and QD decreases to Q1 as other consumers are not willing or able to buy chocolate at the new price, thus creating a new market equilibrium price and quantity (output). Cadbury was able to keep output relatively constant even when the dairy prices rose. This is because they were able to lower other variable costs to counter the rise in dairy prices. During 2007 dairy prices doubled in a little over 6 months, and instead of decreasing output, Cadbury, during this time, decreased the cost of production in other areas of variable costs, like trimming chocolate block sizes by 50g and probably reducing labour costs where possible. Additionally, they admitted in 2009 that they had replaced cocoa butter with cheaper vegetable oils, including environmentally harmful palm oil. These changes reduced the variable input costs of raw materials and therefore they were able to keep sale price constant, and Cadbury thought they could therefore maintain similar profit margins.

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However, these changes to the product came at a cost to the company, as many consumers did not like the new taste, and many consumers and the Auckland Zoo (a retailer) boycotted the product because of the palm oil, and they all switched to a substitute good like Whittaker's Chocolate, which decreased Cadbury's sales, and therefore total revenue and profit. http://www.nzherald.co.nz/element-magazine/news/article.cfm?c_id=1503340&objectid=11382530 When producers decide to change raw materials to lower the variable costs, consumers may react negatively to these changes. Using cheaper, inferior raw materials can lead to real trouble for companies who make an elastic (luxury) product. As in the case of Cadbury, switching to palm oil caused many consumers to boycott their chocolate and cease consumption of their product completely.

3

	Grade Boundary: High Merit
2.	<p>For Merit, the student needs to demonstrate in-depth understanding of micro-economic concepts.</p> <p>This involves:</p> <ul style="list-style-type: none"> • providing a detailed explanation of micro-economic concepts • using an economic model(s) to support detailed explanation • using data or information to support detailed explanation. <p>The student has processed and presented data (utility and demand schedules for Up & Go), and used this data to support a detailed explanation of marginal utility (MU). The link between MU and price is explained using data from the table to support the answer (1).</p> <p>The student has presented and used an economic model, to support a detailed explanation, and linked MU to the Law of Demand using data to support the explanation (2).</p> <p>The student has used the utility-maximising rule (equimarginal principle), demonstrating how H could reach consumer equilibrium, where H's total utility from the consumption of two or more goods is maximised (3).</p> <p>The student has used the processed data from the utility and demand schedules for Up & Go to justify the implications of marginal and total utility for a producer in a detailed explanation (4).</p> <p>To reach Excellence, the student could use processed data from the utility and demand schedules for Up & Go, and an economic model to justify the implications of marginal utility and demand for consumer H.</p>

Student 2: High Merit
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[The concept covered in this exemplar is marginal utility and demand. The student also explained elasticity of demand in detail and applied the concept to a product, using calculated data and changes shown on a total revenue model to support a detailed explanation.]

H's Utility Schedule and Demand Schedule for Up & Go

1

Quantity purchased	Total Utility	Marginal Utility (\$)	Price (\$)	Quantity Demanded
0	0	0	1	4
1	6	6	2	3
2	11	5	3	3
3	14	3	4	2
4	15	1	5	2
5	15	0	6	1
			7	0

Student also drew a Demand Curve for Up & Go from the Demand Schedule.

2

The marginal utility (MU) for H is the amount of satisfaction she will get from the next Up & Go. The optimum purchase rule states that, we will continue to buy as long as the MU is higher than or equal to the price ($MU \geq P$). This is because...

1

The Law of Diminishing MU states that as we consume more of the same product our overall satisfaction (Total Utility) will increase but at a decreasing rate. For H, this means that for each next Up & Go she will get less satisfaction from it than the previous one, which we see in her Utility Schedule. It shows that she gets \$5 worth of satisfaction (or utility) from her second Up & Go, but only \$3 worth from her third.

Her demand curve is downwards sloping to the right because as the Law of Demand states, if price decreases, her quantity demanded for Up & Go increases, ceteris paribus. The data shows this because...

2

H's Utility Schedule for Primo

Quantity purchased	Total Utility	Marginal Utility (\$)
0	0	0
1	4	4
2	7	3
3	8	1
4	8	0

The price of a Primo is \$4 and the price of an Up & Go is \$3.
[Calculations completed.]
Therefore, the Up & Go is better value for the price for H, so she will buy an Up & Go.

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When given the option of an Up & Go or a Primo, and assuming ceteris paribus, H will buy what is the best value for money. This is figured out by calculating the MU divided by the price (MU/P). Consumer equilibrium is when the value for money (MU/P) of one product is

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equal to another product. To reach consumer equilibrium H will buy... (*correct figures provided*).

The MU of a product is important for producers to consider when making pricing decisions, because if consumers' MU is lower than the price then they will not buy the product. Total utility is also important for producers because they may be able to sell more by selling in bulk. This is best when the total utility is enough for the consumer to buy them together, and their MU for the last one is lower than what they would have bought if sold singularly. An example of this is...

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	Grade Boundary: Low Merit
3.	<p>For Merit, the student needs to demonstrate in-depth understanding of micro-economic concepts.</p> <p>This involves:</p> <ul style="list-style-type: none"> • providing a detailed explanation of micro-economic concepts • using an economic model(s) to support detailed explanation • using data or information to support detailed explanation. <p>This student has defined and explained the different features of duopoly, oligopoly and monopolistic competition market structures in detail (1).</p> <p>The student has explained the 'kinked' demand curve of an oligopoly market structure, using an economic model and economic information about the pricing strategies used by the telecommunication firms to support a detailed explanation (2).</p> <p>The student has explained other features of an oligopoly market structure and the firms' preference for using non-price competition (3).</p> <p>For a more secure Merit, the student could add further economic information about the telecommunication industry for a more detailed explanation of non-price competition.</p> <p>For example, the student could add that Vodafone also diversified their mobile service by establishing a nationwide 4G network. Telecom followed on with their own 4G progress and 2degrees will do the same. Telecom established free Wi-Fi hotspots as their non-price method of attracting customers and increasing or retaining their market share.</p>

[The concept covered in this exemplar is market structures. The student also explained marginal utility and demand in detail and applied the concept to coke, lollipops and chips, and used processed data and demand curve models to support the explanation.]

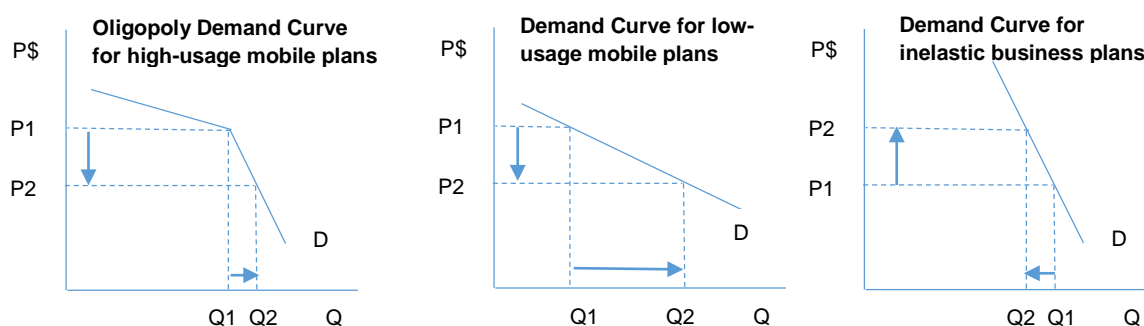
Duopoly, oligopoly, and monopolistic competition were defined and the different features of these market structures explained in an introduction by the student. ①

In 2009, 2degrees entered the market and the New Zealand (NZ) telecommunications market became an oligopoly market structure. The market barriers were strong due to the dominance of Vodafone and Telecom (previously a duopoly market structure), and the geographical challenge of NZ with a relatively small population means it is even more difficult to enter and successfully compete.

An oligopoly market tries to avoid price competition because of the threat of price wars; firms prefer non-price competition whereby they attempt to gain more market share through product variation (i.e. actual changes/differences in the product or service) and product differentiation e.g. advertising, branding, location, etc. ③

An oligopoly market situation can be represented by the kinked demand curve. At the price shown at the 'kink' of the oligopoly demand curve below is the most idealistic market price for the good or service. Any price above (P1) shows a relatively flat curve for a product that is elastic at higher prices, as other firms' may not follow a price increase and therefore consumers would buy from the competition resulting in a fall in revenue. ②

Any price below (P1) show a relatively steep inelastic curve, so if a firm lowers its price the other firms will too, and they will receive a less than proportionate increase in quantity demanded and a fall in total revenue.



The arrival of 2degrees did send the telecommunications market into a price war. Telecommunications Commissioner, **Dr Stephen Gale said**, "It's great to see the benefits of competition in the market place...the arrival of 2 Degrees has delivered great results for users...Prices have steadily been dropping and are below OECD averages." **Users of low-usage prepaid schemes are benefiting the most out of the price war due to the elasticity of low-usage services;** there are substitute products for these consumers like landlines or the internet. **As seen in the model the demand curve is relatively flat and the price decrease has seen a proportionately larger increase in quantity demanded by consumers taking advantage of the price war** between the three firms. ②

However, **those who make the most calls have not benefited from the competition.** A price drop for high-usage mobile plans is not going to result in very many more consumers taking

these type of plans if they do not need this type of plan and so the fall from P1 to P2 results in a less than proportionate increase in QD from Q1 to Q2.

2

Vodafone, Telecom and 2degrees could even push up prices (P1-P2) for inelastic business plans knowing total revenue will still increase as businesses' phones are a necessity, and switching to a cheaper option may not be possible or be a major inconvenience and costly if they lost customers to their competition, so QD would not decrease much at all (Q1-Q2).

The reason why 2degrees was able to break the strong barriers into this market and successfully compete was due to their new innovative way of serving their customers e.g. carry over plans with the ability to share data between accounts at low prices, using product differentiation and variation. Vodafone used product variation by launching the new HD voice addition followed by selling Microsoft Office 365 and an iPad Air as a method of non-price competition.

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It is now easier with the creation of SIM cards for customers to switch networks and keep the same mobile number, so therefore Vodafone and Telecom have had to work extra hard to keep their market share and avoid price wars.

Website sources:

<http://www.scoop.co.nz/stories/HL1311/S00041/editorial-nz-mobile-market-flowers-thanks-to-competition.htm>

<http://www.nbr.co.nz/article/new-zealanders-pay-more-mobile-data-commerce-commission-study-ck-152928>

http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10713109

	Grade Boundary: High Achieved
4.	<p>For Achieved, the student needs to demonstrate understanding of micro-economic concepts.</p> <p>This involves:</p> <ul style="list-style-type: none"> • providing an explanation of micro-economic concepts • using an economic model(s) to illustrate micro-economic concepts • processing and/or presenting data or information related to micro-economic concepts. <p>This student has presented data and economic theory (1), and calculated and interpreted the PED, XED, and YED coefficients to explain elasticity of demand in the context of demand for cow's milk (2).</p> <p>The student has created a demand curve from the data, and used the demand curve to illustrate the price elasticity of demand for cow's milk (3).</p> <p>To reach Merit, the student could use the total revenue model and data to demonstrate in-depth understanding, explaining how this supports the conclusion that the price elasticity of cows' milk is relatively inelastic until price increases to \$4.50, after that it becomes relatively elastic.</p> <p>For example, the student could explain when price increases from \$3.00 to \$4.50, total revenue increases from \$529.50 to \$596.25. Prices above \$4.50 lead to a decrease in total revenue, indicating that at prices exceeding \$4.50 cows' milk becomes relatively elastic.</p>

Student 4: High Achieved
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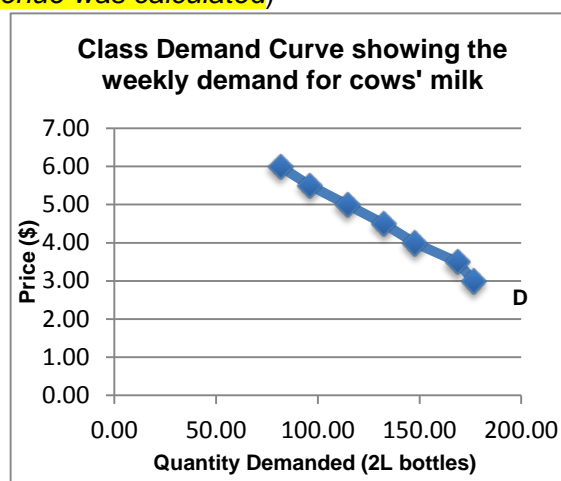
[The concept covered in this exemplar is elasticity of demand. The student also explained elasticity of supply, calculating and interpreting PES coefficients from published information, used the S/D model to illustrate the concept, and applied the concept to the domestic supply of fresh cow's milk.]

Elasticity of Demand

There are a number of factors to consider, and a range of different techniques used when determining the elasticity of cows' milk such as price elasticity, income elasticity and cross elasticity of demand. I will investigate these different aspects of elasticity of demand, and discuss whether cows' milk is elastic or inelastic, using the information from the consumers we surveyed.

Price elasticity of demand measures the extent of change in quantity demanded as a response to a change in price of the good. If cows' milk were elastic, an increase in its price would cause a proportionally larger decrease in quantity demanded. If cows' milk is said to be inelastic, then an increase in its price will lead to a proportionally smaller decrease in quantity demanded. Below is a table showing the price elasticity of cows' milk as price increases (derived using the midpoint method and total revenue was calculated)

Class Demand for cows' milk (2L bottle) per week			
Price (\$)	Quantity Demanded (2L)	Total Revenue (PxQ)	Price Elasticity
3.00	176.50	529.50	
3.50	168.50	589.75	-0.30
4.00	147.50	590.00	-0.99
4.50	132.50	596.25	-0.91
5.00	114.50	572.50	-1.38
5.50	96.00	528.00	-1.84
6.00	81.50	489.00	-1.87



According to the values I calculated for price elasticity of demand using the midpoint method, cows' milk starts relatively inelastic from \$3.00 to \$4.50 with values of price elasticity ranging from 0.30 to 0.99, and 0.91. According to economic theory, when the value of price elasticity (derived from the midpoint method) is less than one, the good or service is deemed inelastic. These values indicate that the increase in the price of cows' milk is proportionally more than the decrease in quantity demanded. However, when price exceeds \$4.50, cows' milk then becomes elastic, as the values for price elasticity are greater than one.

This means at the new prices (above \$4.50), the decrease in quantity demanded is proportionally more than the increase in price. This suggests that consumers will likely demand significantly less cows' milk as price increases from \$4.50 per 2L onwards.

Although the price elasticity of cows' milk starts out inelastic, the coefficients from \$3.50 to \$4.00 and \$4.00 to \$4.50 are both very close to one. Also seen by the slope of the demand curve above, I can conclude that cows' milk is relatively inelastic at lower prices, and becomes more elastic at higher prices.

In relation to Cross Elasticity of Demand, "Cross elasticity of demand measures the responsiveness of the demand for one good, as a result of a price change in another good." The coefficient of the calculation determines whether it is a substitute or complement good.

The cross elasticity of demand coefficient is calculated by, percentage change in quantity demanded of X divided by the percentage change in the price of Y. This calculation is relevant as it indicates that if milk increases in price and the quantity demanded of a substitute increases then the coefficient will be positive. Between \$3 and \$4.50 the QD of soymilk did not change, but when the price of milk increased from \$4.50 to \$5, QD for soymilk increased from 1 to 4 (XED = 24) and again at \$5.50 the QD for soy milk increased from 4 to 7 (XED = 7.5).

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In the context of cows' milk, 54% of consumers surveyed said that they did not think cows' milk had many substitutes. This means that overall; milk has few substitutes and is a relatively inelastic good for most people. However, of the 46% of consumers who thought that milk did in fact have a number of substitutes (such as soy milk, milk powder, goats milk, almond milk, and water), 99% of them said that they would consider actually foregoing cows' milk for a cheaper substitute if the price of milk reached or exceeded \$5.00.

2

This means that although it is valid to say that cows' milk is relatively inelastic to a point, it still becomes relatively elastic at around the \$5.00 mark as consumers demand for cows' milk will decrease significantly as a response to an increase in price (above \$5.00) and potentially result in an increase in the demand for its substitutes.

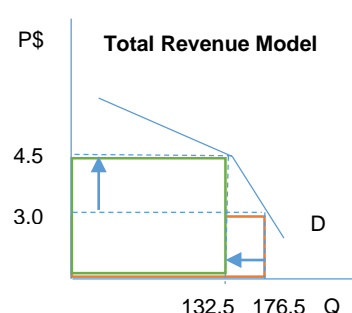
Income elasticity of demand measures the responsiveness of demand for a good or service (in this case cows' milk) relative to an income change.

1

Table showing the weekly demand for 2L milk of 50 respondents at varying prices

1

Price (\$)	Original QD	QD after a 10% income increase	Percentage change	Income elasticity
3.00	176.5	165.5	-6.23	-0.62
3.50	168.5	153.5	-8.90	-0.89
4.00	147.5	139.5	-5.42	-0.54
4.50	132.5	128.5	-3.01	-0.30
5.00	114.5	115.5	0.87	0.09
5.50	96.0	100.5	4.68	0.47
6.00	81.5	92.0	12.88	1.29



The YED co-efficients show us that at \$3.00 - \$4.50 per 2L bottle cow's milk is considered an inferior good e.g. Budget brands, and \$5 - \$5.50 per 2L bottle is considered a normal good, and at \$6.00 per 2L bottle, it is considered a luxury good.

2

Necessities like bread and milk are normal goods and quantity demanded is relatively unresponsive to changes in income. Luxury goods are things we can do without when we do not have the income to support the purchase. Therefore, necessities are inelastic and luxuries are elastic. The proportion of a consumers' income spent on a good also affects its elasticity.

1

Generally, if a good takes up only a small portion of a consumers' income, an increase in the price of the good is not likely to cause a significant decrease in the quantity demanded of the good, and the good therefore tends to be relatively inelastic. In the context of cows' milk, approximately 93% of consumers surveyed said that they spent 3% or less of their weekly income on cows' milk. This is a very small proportion of a consumers' weekly income, therefore an increase in price is not likely to cause a proportionally larger decrease in quantity demanded, so in relation to income proportion, cows' milk is a relatively inelastic good. It is noticeable though that if consumers' income increased they would buy less inferior, cheaper brands of milk, and QD slightly increased for normal goods, and when they considered milk a luxury good.

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	Grade Boundary: Low Achieved
5.	<p>For Achieved, the student needs to demonstrate understanding of micro-economic concepts.</p> <p>This involves:</p> <ul style="list-style-type: none"> • providing an explanation of micro-economic concepts • using an economic model(s) to illustrate micro-economic concepts • processing and/or presenting data or information related to micro-economic concepts. <p>This student has presented and used economic PES theory to explain elasticity of supply in the context of increased milk prices due to the dairy boom (1).</p> <p>The student has used the PPC model to illustrate the elasticity of supply concept (2), and explained elasticity of supply in the momentary, short run and long run periods (3).</p> <p>For a more secure Achieved, the student could use the relevant parts of the presented economic information to calculate and interpret PES coefficients, adding more economic evidence to the explanation of elasticity of supply (4).</p> <p>For example, the student could state that based on a 1% increase in QS, the PES coefficients using the FPI figures, show the supply of fresh milk could range between very inelastic to relatively inelastic within a short run period like a year (a season).</p>

[The concept covered in this exemplar is elasticity of supply. The student also explained elasticity of demand, calculated and interpreted PED, XED and YED coefficients from the class survey, and applied the concept to the domestic demand for fresh cow's milk.]

Elasticity of Supply

Price elasticity of supply (PES) measures responsiveness of quantity supplied (of a good or service) relative to the change in price. For this report, I will be discussing the PES relative to the increased price of milk products due to the dairy boom. One method used to work out the PES of a good is the percentage change method. It is calculated by; (percentage change in quantity supplied / percentage change in price). If the coefficient is less than one ($PES < 1$) then the good is inelastic. If the coefficient is greater than one ($PES > 1$) then the good is elastic. In the report, I will explain the theory of PES to conclude whether cow's milk is elastic or inelastic. From the calculation, we get an idea of what extent high prices for milk will lead to changes in QS thus providing a value for PES so we can conclude if the supply of milk is inelastic or elastic. We can also look at other factors that enable us to decide whether the supply of cow's milk is elastic or inelastic. (Market/Momentary Period was also explained).

1

Goods are relatively inelastic in the short run period. During the short run period, at least one input/resource is fixed. So even when price increases, the producer's ability to increase QS can be limited because they are restricted by the amount of inputs/resources that they can increase, which are variable inputs. Therefore, this means that an increase in QS will be proportionally less than the change in price, and $PES < 1$. In the case of cow's milk, a short run fixed input/resource may include, land space, the number of dairy cows, milking sheds and processing sites, and the current level of technology. In the case of the fixed input, cow's milk production in the short run could be limited by the number of dairy cows that farmers/producers own. With a fixed number of dairy cows, it means that producers/farmers cannot increase their quantity supplied beyond capacity to meet the increased demand in the short run. However, a producer enticed by the higher price for milk products and wanting to increase the amount of milk they supply to the market is limited to increasing such things as working more hours to maximise production with their current level of fixed inputs, such as the level of cowherd or number of milking machines. This is unlikely to produce very much more milk and because milk is a non-durable good, it is easily and quickly perishable within a week or two. Producers cannot stock up on fresh milk by a large quantity as it will go off, which makes the supply of fresh milk inelastic. This will mean that a change in price will cause a less than proportionate change in quantity supplied because the producer is unlikely to have a stockpile of the product to be released when the market price is favourably high. Whereas, milk powder a related good lasts longer so is a more durable good. Milk powder can be stored and has a reasonable shelf life which means producers of milk powder are better able to respond to price changes and more easily increase their quantity supplied which makes milk powder more elastic in terms of PES (as the response to a change in price is larger). A producer like Fonterra could stock up milk powder, and could release more of their stock when the price increases which makes it more elastic than fresh milk, which is a non-durable good.

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In the long run, the PES of goods will be elastic. This is because all resources/inputs are variable in the long-run period. This means that when prices increases, producers have a

greater ability to increase the QS compared to when all or at least one input was fixed, as there are no inputs/resources restricting their ability to increase QS. This will mean that QS is able to increase proportionally more than the increase in price, and $PES > 1$. Over time, supply will be more elastic as producers are able to increase their production level and therefore QS. Firms have a better ability to adapt and produce goods more efficiently and readily in the long run. Existing producers are able to increase the production levels by increasing investment, to expand and buy more land so they can feed a larger herd of cows and build another milking shed, which would assist them in increasing their total output levels and therefore increase QS.

3

New producers will enter the dairy market resulting in further increases in total output levels. An increase in profitability in the dairy industry would lead to other farmers e.g. sheep farmers, converting to dairy farming. In the long run, with new producers in the market increasing output levels further, this will increase the total market supply.

3

A production possibility curve (PPC) is a curve that shows the maximum combinations of two

outputs that can be produced with a given level of resources and technology.

According to the theory, point A inside the PPC curve indicates that there are some resources not being used to full capacity. Because there is spare capacity, it would mean that there is the ability to increase QS. Compared with no spare capacity and all resources being

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used to full capacity (point B), which means increasing QS happens in the long run period.

For example - If dairy farmers had spare capacity like land they were not using, they could purchase more dairy cows to make full use of this space, which may lead to an increase in the output levels of cow's milk. Therefore, with an increased level of output (cow's milk) produced, the greater the ability the farmers/producers have in increasing QS in response to an increase in price. Additionally, dairy farmers may have spare capacity because they could use the current workers, equipment and technology more efficiently or they could invest and get old equipment upgraded. Because these farmers have spare capacity it means they could increase output levels for cow's milk and increase QS in the short run period.

3

Relevant parts of presented economic information

4

"Fonterra controls nearly 90 per cent of the country's raw milk

supply." <http://www.stuff.co.nz/business/farming/7949379/Govt-tightens-Fonterra-raw-milk-rules>

FONTERRA 2014 ANNUAL RESULT (published 24 September 2014)

"Milk collection across New Zealand reached 1,584 million kg MS [milk solids], 8% higher than last season. However, record milk volumes did not fully translate into increased sales volume, as the year began with low inventory levels as a result of the previous season's drought. Total sales volume was up 1% and revenue increased 30% from \$13.9 billion to \$18

billion." <http://www.fonterra.com/global/en/hub/sites/news+and+media/media+releases/fonterra+2014+annual+result/fonterra+2014+annual+result>

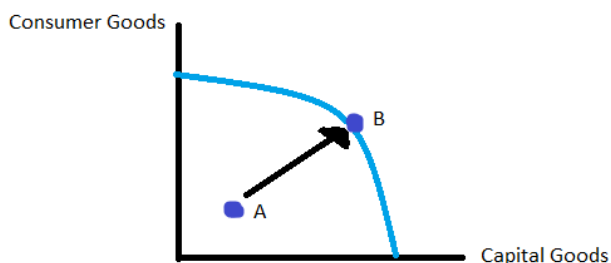
Food Price Index (fpi-dec14-tables.xls)

Percentage change from same month of previous year

Fresh Milk: Aug. 10.6% Sept. 3.2% Oct. 6.2% Nov. 7.6% Dec. 3.0%

http://www.stats.govt.nz/browse_for_stats/economic_indicators/prices_indexes/food-price-index-info-releases.aspx

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	Grade Boundary: High Not Achieved
6.	<p>For Achieved, the student needs to demonstrate understanding of micro-economic concepts. This involves:</p> <ul style="list-style-type: none"> • providing an explanation of micro-economic concepts • using an economic model(s) to illustrate micro-economic concepts • processing and/or presenting data or information related to micro-economic concepts. <p>This student has processed data and presented the economic theory of PED, XED and YED (1).</p> <p>The student has calculated and interpreted the PED coefficients, and partially explained the concept of elasticity of demand using information from the survey (2).</p> <p>To reach Achieved, the student could create a demand curve from the processed data, and use the demand curve to illustrate the price elasticity of demand for cow's milk. Additionally, the XED and YED coefficients could also be calculated and interpreted, adding more economic evidence to the explanation of elasticity of demand.</p>

[The concept covered in this exemplar is elasticity of demand. The student also explained elasticity of supply, calculating and interpreting a PES coefficient from published information, and used supply curves to illustrate the concept.]

Price Elasticity of Demand

Price elasticity of demand measures the extent of change in quantity demanded as a response to a change in the price of a good. If cows' milk were elastic, an increase in its price would cause a proportionally larger decrease in quantity demanded. If cows' milk is said to be inelastic, then an increase in its price will lead to a proportionally smaller decrease in quantity demanded.

According to the values I calculated for price elasticity of demand using the midpoint method, cows' milk starts relatively inelastic from \$3.00 to \$4.50 with values of price elasticity ranging from 0.30 to 0.99, and 0.91. According to economic theory, when the value of price elasticity (derived from the midpoint method) is less than one, the good or service is deemed inelastic. These values indicate that the increase in the price of cows' milk is proportionally more than the decrease in quantity demanded.

Cross Elasticity of Demand

"Cross elasticity of demand measures the responsiveness of the demand for one good, as a result of a price change in another good." The coefficient of the calculation determines whether it is a substitute or complement good. The cross elasticity of demand coefficient is calculated by, percentage change in quantity demanded of X divided by the percentage change in the price of Y.

In the context of cows' milk, 54% of consumers surveyed said that they did not think cows' milk had many substitutes. This means that overall; milk has few substitutes and is a relatively inelastic good for most people. However, of the 46% of consumers who thought that milk did in fact have a number of substitutes (such as soy milk, milk powder, goats milk, almond milk, and water), 99% of them said that they would consider actually foregoing cows' milk for a cheaper substitute if the price of milk reached or exceeded \$5.00. This means that although it is valid to say that cows' milk is relatively inelastic to a point, it still becomes relatively elastic at around the \$5.00 mark as consumers demand for cows' milk will decrease significantly as a response to an increase in price (above \$5.00) and potentially result in an increase in the demand for its substitutes.

Income Elasticity of Demand

Income elasticity of demand measures the responsiveness of demand for a good or service (in this case cows' milk) relative to an income change.

In the context of cows' milk, approximately 93% of consumers surveyed said that they spent 3% or less of their weekly income on cows' milk. This is a very small proportion of a consumers' weekly income, therefore an increase in price is not likely to cause a proportionally larger decrease in quantity demanded, so in relation to income proportion, cows' milk is a relatively inelastic good. It is noticeable though that if consumers' income increased they would buy less inferior, cheaper brands of milk, and QD slightly increased for normal goods, and when they considered milk a luxury good.