

Supervisor's report

The supervisor should complete the report below and then give this cover, enclosing the final version of the extended essay, to the Diploma Programme coordinator. The supervisor must sign this report; otherwise the extended essay will not be assessed and may be returned to the school.

Name of supervisor (CAPITAL letters) _____

Comments

If appropriate, please comment on the candidate's performance, the context in which the candidate undertook the research for the extended essay, any difficulties encountered and how these were overcome. These comments can help the examiner award a level for criterion H. Do not comment on any adverse personal circumstances that may have affected the candidate.

Overall, comprehensive and original selection of economic information. The student has applied significant level of personal engagement, initiative, insight, inventiveness and plan. Holistic judgement is judged to be excellent.

I have read the final version of the extended essay that will be submitted to the examiner.

To the best of my knowledge, the extended essay is the authentic work of the candidate.

I spent hours with the candidate discussing the progress of the extended essay.

Supervisor's signature: _____

Date: 21-08-03

Assessment form (for examiner use only)

Candidate session number	0	0						
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		Achievement level		
		First examiner	maximum	Second examiner
General assessment criteria <i>Refer to the general guidelines.</i>	A Research question	<input type="checkbox"/>	2	<input type="checkbox"/>
	B Approach	<input type="checkbox"/>	3	<input type="checkbox"/>
	C Analysis/interpretation	<input type="checkbox"/>	4	<input type="checkbox"/>
	D Argument/evaluation	<input type="checkbox"/>	4	<input type="checkbox"/>
	E Conclusion	<input type="checkbox"/>	2	<input type="checkbox"/>
	F Abstract	<input type="checkbox"/>	2	<input type="checkbox"/>
	G Formal presentation	<input type="checkbox"/>	3	<input type="checkbox"/>
	H Holistic judgement	<input type="checkbox"/>	4	<input type="checkbox"/>
Subject assessment criteria <i>Refer to the subject guidelines.</i> <i>Not all of the following criteria will apply to all subjects; use only the criteria that apply to the subject of the extended essay.</i>	J	<input type="checkbox"/>		<input type="checkbox"/>
	K	<input type="checkbox"/>		<input type="checkbox"/>
	L	<input type="checkbox"/>		<input type="checkbox"/>
	M	<input type="checkbox"/>		<input type="checkbox"/>
Total out of 36		<input type="checkbox"/>		<input type="checkbox"/>

Name of first examiner: _____
(CAPITAL letters)

Examiner number:

Name of second examiner: _____
(CAPITAL letters)

Examiner number:

I.B. Extended Essay

**How is the price elasticity of demand for sports drinks at
my school affected by
competition and climate?**

Word Count (ca): 3975

Abstract

The price elasticity of demand for sports drinks is influenced by several non-price factors. The purpose of this inquiry is to consider the affect which the level of competition and the climate have on the price elasticity of demand for sports drinks when the product is sold at my school. Then, it will establish the ideal price level and level of competition and, the best climatic conditions whereby maximum revenue may be obtained.

An experiment was undertaken considering the factors “level of competition” and “climate”. The sports drinks were sold in different situations, each time cautiously documenting the selected combination of factors in play. The variable “level of competition” was varied by switching the sale of the drinks from near the school canteen to the far-away sports oval. The climatic conditions were altered by selling the drinks on days where the temperature was “24°C or below”, and on days where it was at “25°C or above”. Data was recorded for the quantity demanded at different price levels – \$2.00, \$2.50 and \$3.00 – for four different scenarios; the experiment took twelve separate school days to complete. Then, the data obtained was examined and, with the knowledge of the concept of price elasticity of demand in mind, conclusions were drawn as to why the data was so.

It was found that the price elasticity of demand for sports drinks decreases as the level of competition decreases and, when the climatic conditions improve – that is, when temperature increases. It was tentatively concluded that the ideal price level for which the sports drinks should be sold is \$2.00; at this price, maximum total revenue will be obtained. The reason for this tentativeness is that there was a major source of error – on one of the days, many year 7-10 students were absent due to interschool sport.

Word Count (Abstract): 297

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Introduction

How is the price elasticity of demand for sports drinks at my school (Australian International Academy) affected by competition and climate?

Demand for a product is influenced by several factors. The purchasing of goods and services is not only affected by price, but also, by other factors such as the level of competition and the climate. Demand for a good may be defined as *the quantity of goods or services that will be bought over a period of time at any given price.*¹ However, price is the most influential determinant of demand. This is shown by the law of demand which states: *other things being equal [ceteris paribus], the higher the price of a good, the lower is the quantity demanded [and vice-versa].*²

The price elasticity of demand (PED) is an economic tool that *measures the responsiveness of the quantity demanded of a good to a change in its price.*³ This essay will inquire into how the level of competition and the climate affect the PED for sports drinks at my school. This will be achieved by changing the price level and analysing the effects that the variables “climate” and “level of competition”, in different combinations, have on the good’s PED.

The purpose of calculating the PED for a product is to give firms an indication of the ideal price level from which maximum revenue will be made. A price level which is too low will increase demand significantly, but at the same time, it will decrease revenue. Similarly, if the price is too high, demand will be very low, and hence revenue will decrease. Thus, if the increase in price leads to a less significant drop in demand, firms should sell their product at this price. The change in total revenue (TR), as a result of this, can be observed from the demand curve. In this essay, I will thus

¹ Alain Anderton, *Economics*, 2nd edn, Causeway Press, Oxford, 1999, p.18

² Douglas McTaggart, Christopher Findlay & Michael Parkin, *Economics*, 4th edn, Addison Wesley, China, 2003, p.48

³ *ibid*, p. 75

comment on the impact of the level of competition and the climate on total revenue (which will be calculated for all scenarios) and subsequently find the ideal price and conditions in which sports drinks should be sold in order to maximise TR.

The reason I chose this topic is that I wanted to see the application of economics in the real world. Because of this, I chose to test out the economic theory of the PED in a place where I spend a lot of my time; at school. I also wanted to see if the economic theory was proved right or wrong by completing the experiment. I chose to sell sports drinks because if I had chosen something unhealthy, the school surely would have declined my proposal to sell a good at the school. I was able to convince the school further by telling them that all the profit made would be given to the canteen owners, so that they would not be inconvenienced.

Initially, the title was going to be the one regarding PED which appears in 'The Extended Essay guide' (*measuring the price elasticity of demand for products in the school shop*), but this would not have worked out because I would surely not have been able to convince the canteen owners to fluctuate their prices for my sake. My second proposal for a topic was similar to the eventual topic, except that there were two extra variables: "temperature of drinks" and "substitutes". However, this would have been impractical as it would have taken too long to complete the experiment. Finally, after refinement and looking at which two of the four potential variables were most significant, a more manageable topic was chosen.

Relevant economic theory

- **Price elasticity of demand**

PED is a measure of how much the quantity demanded will be affected by a change in price. This can be calculated by finding the percentage change in quantity demanded and dividing it by the percentage change in price:

$$\text{PED} = \frac{\% \text{ Change } Q}{\% \text{ Change } P}$$

The law of demand states that quantity demanded is inversely proportional to price. Therefore, because a positive price change can result in a negative change in quantity demanded (and vice-versa), the price elasticity of demand is often negative. However, it is the absolute value of the PED that tells us how responsive – how elastic – demand is.⁴ How elastic (or inelastic) a good is depends on the absolute value of its PED. If the PED is less than one, the good's demand is price inelastic. Similarly, if the PED is greater than one, then the demand of the good is said to be price elastic. Therefore, the larger the PED value, the worse it is for the firm who supplies the good. This can be graphically presented through the following demand curves:

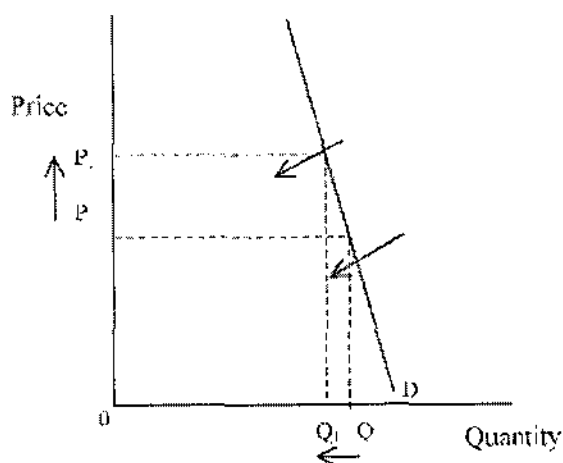


Figure 1: Inelastic PED curve⁵

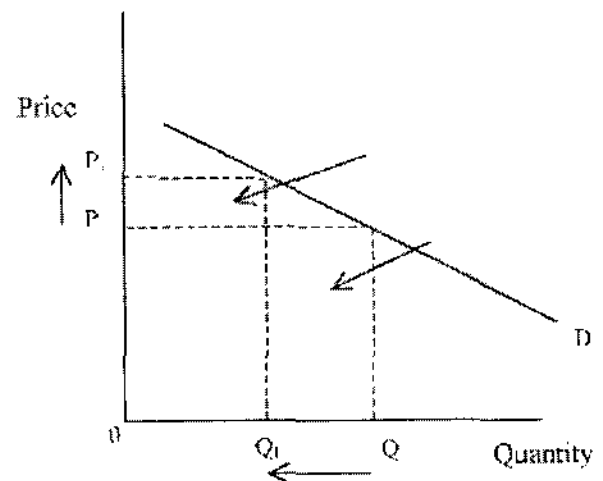


Figure 2: Elastic PED curve⁶

⁴ Douglas McTaggart, Christopher Findlay & Michael Parkin, *Economics*, 4th edn, Addison Wesley, China, 2003, p.77

⁵ <http://www.monash.edu.au/lls/llonline/writing/business-economics/economics/2.4.3.xml>

⁶ *ibid*

Figure 1 shows that as price increased from P to P_1 , demand only decreased from Q to Q_1 . Therefore, since the change in demand was less significant than the price change, the PED is less than one (inelastic). Whereas in figure 2, the price change from P to P_1 caused a greater decrease of demand from Q to Q_1 . Hence, the PED is greater than one (elastic).

Other noteworthy values of PED are one, which indicates unitary elasticity, zero, which refers to perfect (infinite) inelasticity, and infinity, which signifies perfect (infinite) elasticity. These are shown in the figures below:

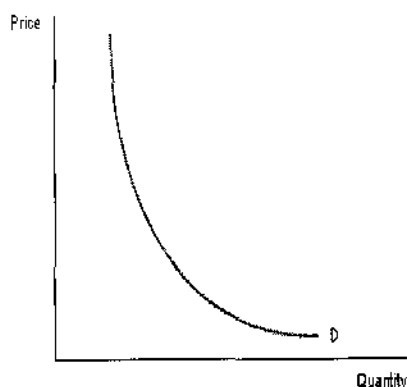


Figure 3: Unitary Elasticity Curve⁷

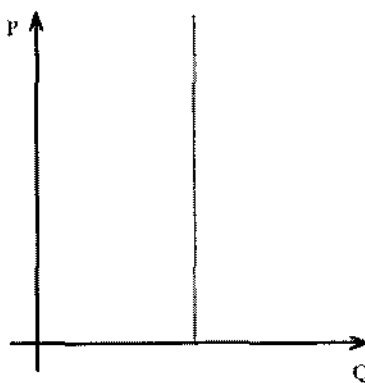


Figure 4: Perfect Inelasticity curve⁸

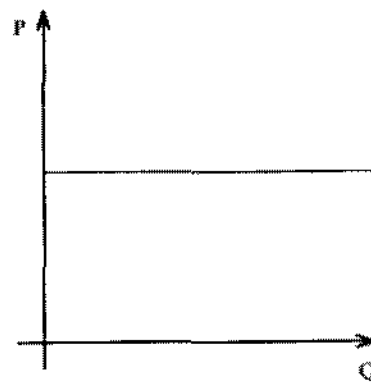


Figure 5: Perfect Elasticity curve⁹

Figure 3 shows that for every 1% that price increases, demand decreases by the same margin. In figure 4, no matter what price the supplier decides to sell the good for, demand will always remain constant, whereas in figure 5, the supplier has no choice of changing the price; it is constant. And at that price level, demand could be any figure. It should be noted that these three situations are only theoretical, and that it is unlikely that they would arise in any economy.

⁷ <http://www.scholarnet.co.nz/demo/eol/shell.php?content=content01.php>

⁸ <http://www.answers.com/topic/elasticity-economics>

⁹ *ibid*

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- **Determinants of price elasticity of demand**

There are several non-price factors which determine the magnitude of the PED, which have to be taken into consideration by a firm when altering their price, and the following are some of the most significant (“level of competition” and “climate” excluded).

- The availability of substitutes:

A substitute is a good which can replace another because they fulfil the same purpose. *The better the substitutes for a product, the higher the price elasticity of demand will tend to be.*¹⁰ If product *A*, a relatively expensive good can be easily substituted by product *B*, a cheaper alternative, then the demand for product *A* will decrease and that of product *B* will increase. Hence, the decrease in quantity demanded will lead to a PED value of greater than one. For instance, if the price of floor boards increased significantly, its demand will decrease. Due to this, more people may now choose to buy laminate flooring or carpet. On the other hand, if a product has very few substitutes available, than it will tend to be price inelastic (i.e. PED is less than one). For example, oil is a commodity whose supply is often restricted by the Organisation of the Petroleum Exporting Countries (OPEC). It is also the most vastly used form of car fuel in the world, due to the fact that most alternatives are more expensive and most cars run on a fuel which contains oil. Furthermore, *the members of...OPEC...hold about two-thirds of the world's oil reserves, allowing them to significantly influence the international price of crude oil.*¹¹ And even if OPEC raises prices, as they have done in recent times, the decrease (if any) in demand will be relatively insignificant. That is why oil is one of the most inelastic goods in the global economy.

¹⁰ Alain Anderton, *Economics*, 2nd edn, Causeway Press, Oxford, 1999, p.44

¹¹ http://en.wikipedia.org/wiki/Oil_reserves

➤ Time:

The PED is also influenced by the amount of time elapsed since a price change. *In general, the greater the lapse of time, the higher the elasticity of demand.*¹² This is linked to the determinant “availability of substitutes”. For instance, if a man lives in a rural area where there are only two convenience stores; one is across the road of his house and the other requires a ten minute drive. If the closer store decides to increase the price of chocolate by 50%, he will not immediately boycott this store to purchase chocolate from the further one. A wise consumer would weigh up how much it would cost him to drive to the further store and compare it to the increased price of the chocolate. To do this, he would have to drive up and back and calculate the total cost (the price of the chocolate plus the cost of the petrol used). Let us say that it is cheaper to drive to the further store and buy the chocolate, than buy it from the neighbouring one. Therefore, it can be said that in the in the short-run, the PED of the chocolate will be inelastic, whereas in the long-run, it will be elastic.

➤ Proportion of income spent on a good:

*Other things being equal, the higher the proportion of income spent on a good, the higher is the elasticity.*¹³ If there is an increase in the price of a product that consumes a small percentage of one’s disposable income, then it is likely that the PED of this good will not be affected greatly. However, if a large proportion of income is spent on a good, then any price increase will lead to an increase in that good’s PED. To illustrate this, consider the budget (\$750 a week) of a twenty year old man who lives alone in a rented flat. Let us say that every week he pays \$300 rent and buys a pizza worth \$10 every Saturday night. If the price of the rent increases by 20%, then he will now have to pay \$360 a week. Similarly, if the price of the pizza increased by 20%, then the new price of the pizza will be \$12. It is likely that the young man (who will not be pleased with either price increase) will stop renting the flat as it is too expensive, whereas, he will continue to buy the pizza,

¹² Douglas McTaggart, Christopher Findlay & Michael Parkin, *Economics*, 4th edn, Addison Wesley, China, 2003, p.83

¹³ McTaggart loc.cit.

as its price only increased by \$2, an insignificant amount. To put this into perspective, \$60 makes up 8% of his income, while \$2 consumes only 0.3% of it. Therefore, the PED for renting flats will increase significantly (as demand decreases), whereas there will be a small increase (if any) in the PED of pizza.

➤ Addiction:

Usually, this factor applies to goods which cause the consumer to become biologically addicted, such as cigarettes, drugs or alcohol. Due to this addiction, a price increase will not lead to a significant drop in demand and thus, such goods are price inelastic.¹⁴

¹⁴ <http://www.bized.co.uk/learn/economics/markets/elasticity/ped/student.htm>

- **The link between total revenue and price elasticity of demand**

The purpose of a firm measuring the PED of its product is to be able to calculate whether total revenue (TR) will increase or decrease with an increase in price. *The total revenue from the sale of a good or service equals the price of the good multiplied by the quantity sold*¹⁵: $TR=P*Q$. To illustrate the importance of PED on revenue, consider the following graphs of an inelastic and elastic product:

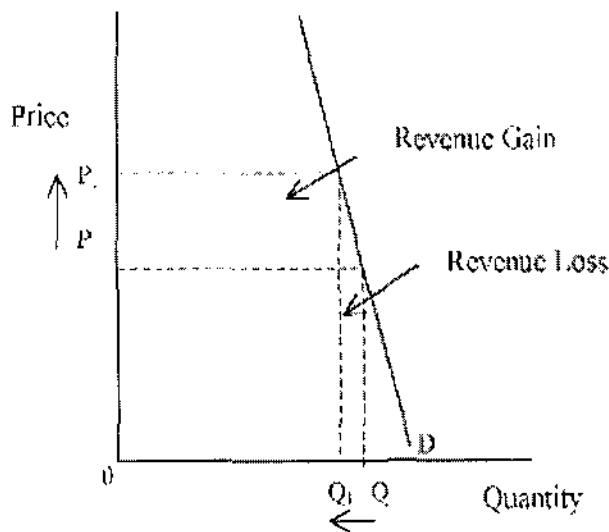


Figure 6: Total revenue for inelastic product¹⁶

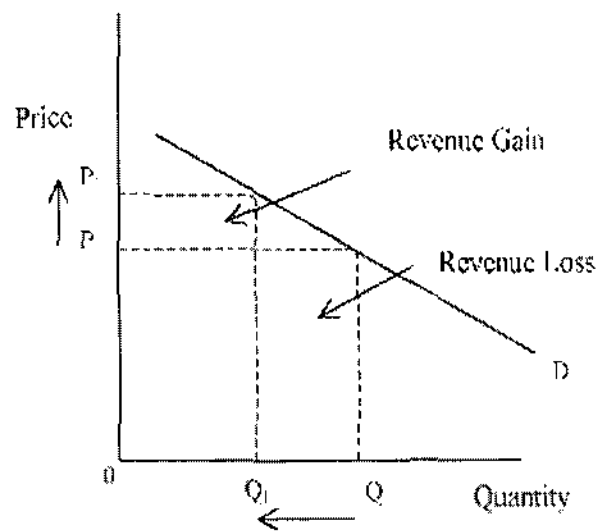


Figure 7: Total Revenue for an elastic product¹⁷

Figure 6 shows that the revenue gained by increasing the price of the product from P to P_1 is greater than the revenue lost because demand decreased from Q to Q_1 , and hence, TR increased. Therefore this product is inelastic, whereas figure 7 shows an elastic product's demand curve where the revenue gained by increasing the price from P to P_1 is less than the revenue lost due to the decrease in demand from Q to Q_1 . Therefore, if a good is price inelastic, an increase in price leads to an increase in TR (and vice-versa), whereas if a good is price elastic, an increase in price will lead to a decrease in TR (and vice-versa).

¹⁵ Douglas McTaggart, Christopher Findlay & Michael Parkin, *Economics*, 4th edn, Addison Wesley, China, 2003, p.74

¹⁶ <http://www.monash.edu.au/lls/llonline/writing/business-economics/economics/2.4.3.xml>

¹⁷ *ibid*

Method

Firstly, an experiment will be undertaken in order to get results for changes in demand and price and thus, the PED of sports drinks will be calculated. The variables “level of competition” and “climate” (and of course price) will be controlled in a purposeful manner. By holding one of these variables constant and changing one (other than price), their impact on the value of PED may be identified and contrasted to the hypothesis and economic theory. PED for sports drinks will also be calculated.

Secondly, the variable ‘level of competition’ will be altered by shifting my position of sale from the school oval to the canteen (which is 312m from the oval).

Thirdly, the variable ‘climate’ will be changed by selling the sports drinks under different conditions. For instance, sales on days where the temperature is 24°C or below will be compared with those on days where the temperature is 25°C or above.

Fourthly, the different price levels of the sports drinks will be \$2.00, \$2.50 and \$3.00 for a bottle (600mL). So that neither party (I nor the canteen) has an unfair advantage, I will be selling the same brand sports drink as is sold at the canteen (“Gatorade”). This is because one brand’s appeal might be higher than the other’s due to the relative level or success of advertisement. Therefore, my products will be homogenous with those of the canteen.

Hypothesis

It would be difficult to predict exact or even approximate values for the PED of a good. It is much simpler to establish relationships between the variables “level of competition” and “climate”, and the PED. Hence, an educated prediction can be made, if all other variables are held constant (implementing *ceteris paribus*), as to whether PED will increase or decrease due to these factors. The trends proposed will be qualitative as opposed to quantitative because it is impossible to calculate PED prior to undertaking the experiment, as PED equals percentage change in demand divided by percentage change in price, and we do not have these values.

- **Effect of change in the level of competition:**

If the level of competition decreases from selling the sports drink right outside the canteen to setting up shop on the distant sports oval, the PED will decrease (become more inelastic) as the consumers on the oval would rather spend more on the drink than walk some 300m. The PED will also increase as competition increases because the consumers will switch to buying from the canteen when the price at which I sell the sports drinks is raised and, because they would rather purchase the good from a seemingly reliable source (the canteen) than from an inexperienced student.

- **Effect of change in the climate:**

Cold drinks are popular on warm-hot days as opposed to cold days. Therefore, as the climate improves (temperature increases), the PED of the sports drinks will decrease (become more inelastic), as its price may be overlooked due to the warmer, more desirable weather from consuming the sports drink.

Data collection

Table 1: Combination of variables

Case	Level of Competition	Climate (Temperature)
A	High	24°C or below
B	Low	24°C or below
C	High	25°C or above
D	Low	25°C or above

Table 2: Demand and price for all cases

Price (\$)	Demand – Case A	Demand – Case B	Demand – Case C	Demand – Case D
2.00	12	13	15	7
2.50	7	9	11	13
3.00	2	3	6	10

Data processing and presentation

- Case A

Graph 1: Demand Curve for Case A

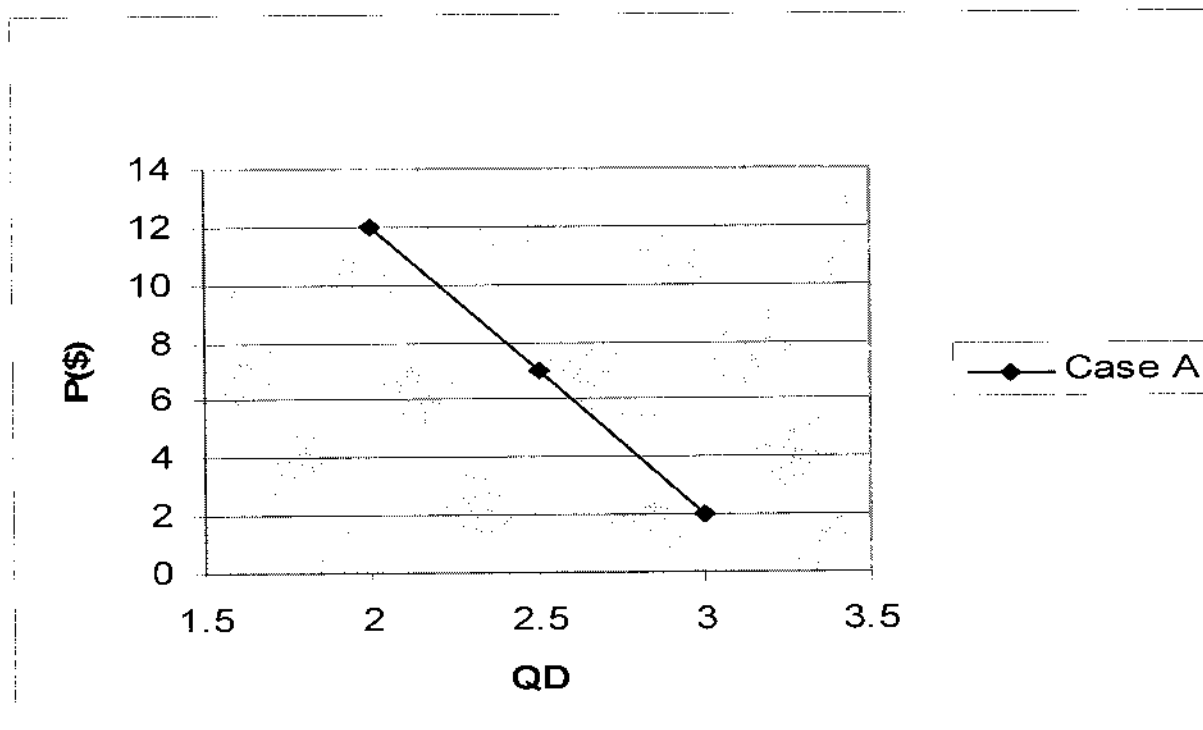


Table 3: PED for Case A

Price Change (\$)	PED
2.00 - 2.50	-1.67
2.50 - 3.00	-3.57

- Case B

Graph 2: Demand Curve for Case B

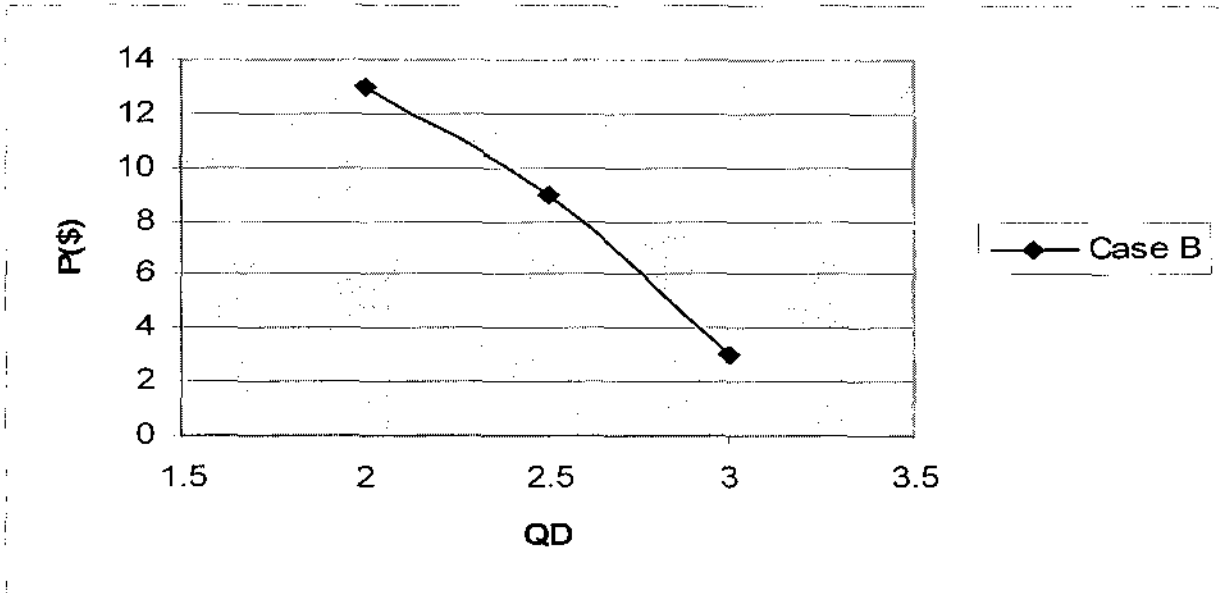


Table 4: PED for Case B

Price Change (\$)	PED
2.00 - 2.50	-1.23
2.50 - 3.00	-3.33

- Case C

Graph 3: Demand Curve for Case C

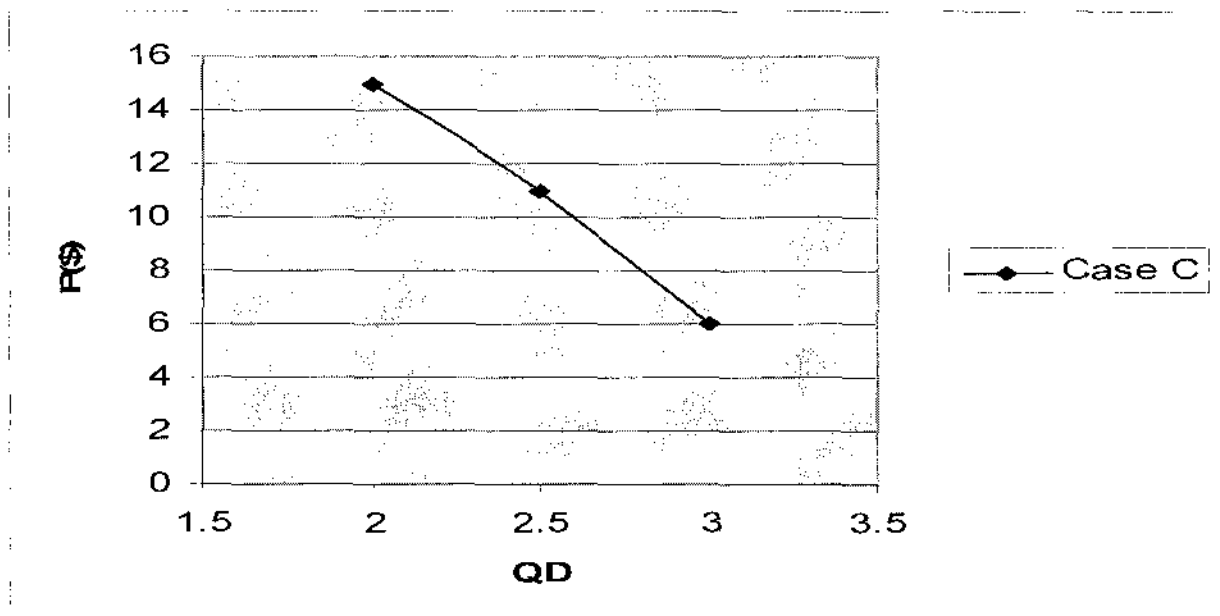


Table 5: PED for Case C

Price Change (\$)	PED
2.00 - 2.50	-1.07
2.50 - 3.00	-2.27

- Case D

Graph 4: Demand Curve for Case D

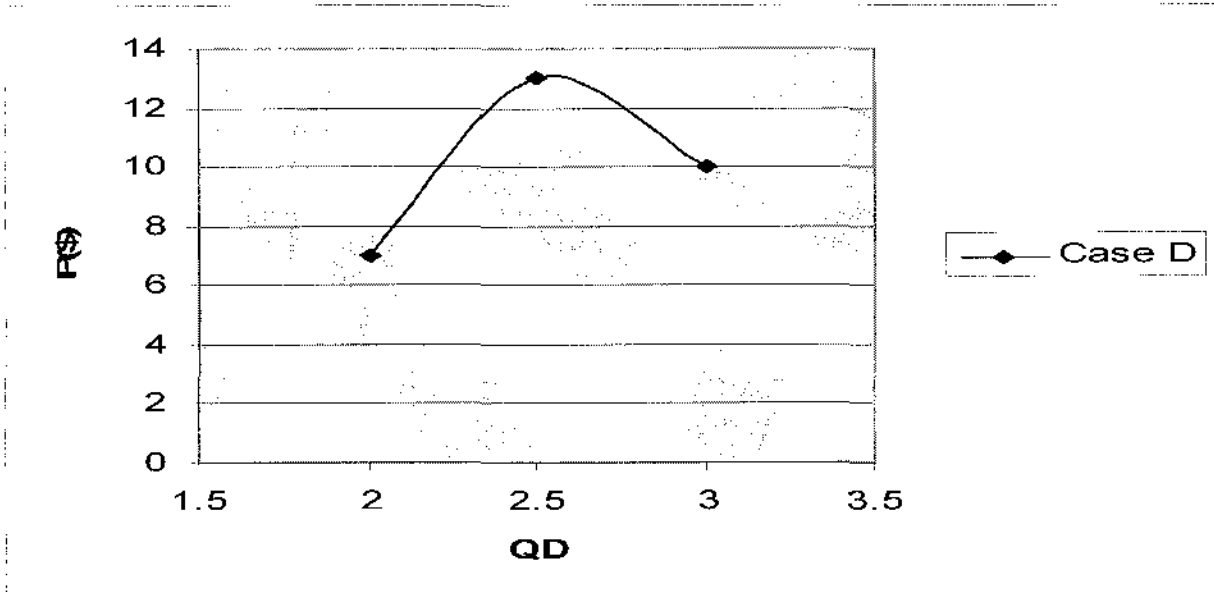


Table 6: PED for Case D

Price Change (\$)	PED
2.00 - 2.50	3.43
2.50 - 3.00	-1.15

- Total revenue (TR)

Table 7: Total revenue and price for all cases

Price (\$)	TR (\$) – Case A	TR (\$) – Case B	TR (\$) – Case C	TR (\$) – Case D
2.00	24.00	26.00	30.00	14.00
2.50	17.50	22.50	27.50	32.50
3.00	6.00	9.00	18.00	30.00

Analysis and Evaluation

- **Effect of level of competition on PED**

As can be seen by comparing case A and B, when the price was increased from \$2.00 to \$2.50, the PED on both occasions was similar: -1.67 in case A and -1.23 in case B. However, as was hypothesised, when the level of competition was decreased (by moving the stall from near the canteen to 312m away from it); the sports drink became more inelastic by 26%. The same can be said about the change in price from \$2.50 to \$3.00. Here, the product became more inelastic by 7%. This was meagre, however, compared to what was expected. It was expected that, in case B, when the price increased from \$2.50 to \$3.00 that the demand would not fall by much and thus the absolute value of the PED would not increase by as much as it did: -1.23 to -3.33 in case B; a 171% increase. Had the decrease in demand been slighter in case B, as predicted, the PED difference between case A and B would have been greater when the price changed from \$2.50 to \$3.00. However, this did not eventuate, and the demand dropped from 9 to 3; a 67% decrease.

One reason that the variance for the PED was minute between case A and B is that the weather was not suitable for drinking the sports drinks: people would prefer to drink such beverages as hot chocolate or coffee on days which are cold, rather than a cool, sports drink. And this is what occurred in case B when the sports drink was sold for \$3.00. The temperature was very low and thus some people decided to buy hot beverages from the canteen. This substitution effect was unforeseen and thus, had the canteen sold no beverage but sports drinks, the impact on the demand would not have been so great.

This unanticipated variable's influence could have been curbed had the temperature increments been smaller. However this would have been logistically a problem as the climate is not controlled by man.

By contrasting case C and D, it is evident that when the price increased from \$2.00 to \$2.50, and the temperature remained constant (at 25°C or above), the affect on PED varied vastly: -1.07 in case C and 3.43 in case D. In case C, when the price was increased from \$2.00 to \$2.50, the PED was almost unitarily elastic. It was expected that the absolute value of the PED would decrease between case C and D. However, the complete opposite happened: the PED increased by 221%.

What is also noteworthy is that, not only did it become more elastic, the value of the PED was positive, indicating that when the price was increased, demand also increased (as can be seen by the up-sloping segment of graph 4). Here, price was proportional to demand, and thus, the law of demand (that price is inversely proportional to demand) was contradicted and the drink behaved as a Veblen Good (a good for which demand increases when price increases).¹⁸

The reason for this economic anomaly, however, is that on the day that the sports drinks were sold for \$2.00 in case D, the year 7, 8, 9 and 10 boys had inter-school sports and thus, very few sports drinks (7) were sold at this low price on a day that was ideal in terms of both climate and competition. To improve the experiment, in future, care will be taken in only setting up shop when all the students are present.

When the price increased from \$2.50 to \$3.00, the change in PED complied with the law of demand and the hypothesis. In case C, the PED was -2.27. When the level of competition decreased, the sports drink became more inelastic by 49%.

¹⁸ <http://www.cr1.dircon.co.uk/TB/1/veblen.htm>

- **Effect of climate on PED**

As can be seen by comparing case A and C, where the level of competition remained constant, at all price level changes, the absolute value of the PED decreased when the climate improved. When the price went from \$2.00 to \$2.50, the difference in PED between case A and C was 36% and, when it increased to \$3.00, the change in PED was also 36%. This shows that both followed the law of demand and complied with what was hypothesised, as the changes in PED were the same. The reason for the minuteness of the PED on hot days is that consumers want to buy the sports drink, regardless of the high price (\$3.00) because it becomes more pleasurable in hot weather, and despite the fact that sports drinks are not addictive, as the climate improves, the drink assumes the characteristics an addictive product and therefore, its PED decreases.

However, by comparing case B and D, it can be seen that when the price changed from \$2.00 to \$2.50, the absolute value of the PED increased by 179%, as it went from -1.23 to 3.43. This obviously contradicts what was hypothesised – that when the climate improved, the sports drink would become more inelastic. And, as was earlier mentioned, this is due to an unforeseen source of error.

The error's affect is clearly shown when the price changed from \$2.50 to \$3.00: the PED decreased, as expected, by 65%. This compliance with the law of demand and the hypothesis shows that had it not been for the error when the price changed from \$2.00 to \$2.50, the hypothesis for that situation would have also been correct.

- **Effect of level of competition and climate on TR**

As can be seen in table 7, TR ranged between \$6.00 (case A, \$3.00) and \$32.50 (case D, \$2.50); a variance of 442%. However, this was achieved at different price levels. If we compare case A with D, there is an obvious trend recurring: when the level of competition decreases and the climate improves, the TR increases at all price levels except \$2.00, which is an outlier caused by a coincidental error. This increase in TR is greater when we compare case A with B, and case A with C. This proves that, in order to achieve maximum TR by selling sports drinks, the level of competitions should be lower and the temperature should be higher.

In order to maximise TR, one must use the PED when setting the price. However, it is harder to recognise it due to the aforementioned anomaly in case D. If the results are taken at face value, one would conclude that the best selling price is \$2.50, as it achieved the maximum TR of \$32.50. However, because of the outlier in case D, it is almost impossible to judge whether or not TR would have been greater at a selling price of \$2.00. We may tentatively argue that, by comparing case C and D, the ideal selling price is \$2.00 because of the noticeable trend between the two cases. At \$2.50, TR increases by \$5.0 (18%) between case C and D and, by \$12 (67%) at \$3.00, an average increase of 42%. If we take this to be the trend, then, had the year 7-10s been at school in case D on the \$2.00 day, TR would have been approximately \$42.50. Judging by this, the ideal selling price for this experiment was \$2.00. However, this is only a hypothesis and, due to the errors, could in fact be incorrect. To improve the experiment further, the \$2.00 day in case D should be repeated.

Conclusion

How is the price elasticity of demand for sports drinks at my school (Australian International Academy) affected by competition and climate?

It was found that, on average, when the level of competition decreased, the PED also decreased – that is, became more inelastic – and this complied with what was hypothesised. Due to this decrease in elasticity, which was brought about as a result of a decrease in the level of competition, TR, on average, increased, as can be seen by comparing case A with B, and case C with D in table 7, where climatic conditions remained constant. This is due to the fact that the substitution effect was lower in case B and D.

It was also proven that when the climate improved – that is, temperature increased – the sports drinks became more inelastic, which acted in accordance with the hypothesis. This inelasticity caused TR to increase, which is evidenced in table 7 if one compares case A with C, and case B with D, where level of competition remained constant.

One thing which could have contributed to the sports drinks' inelasticity is that, since its price is low (ranging between \$2.00 and \$3.00), the proportion of income spent on the product is not very high and therefore, a price increase may have been overlooked by some consumers.

When conducting economic experiments, it is necessary that *ceteris paribus* is implemented in order to assure faultless results and eliminate any discrepancy. While completing this experiment, there were clearly several external errors which influenced the results. It was difficult to take these in account in the measuring of the PED and this formed a basis for erroneous results. However, overall, the data followed the law of demand, but, there was an anomaly in case D and, since sports

drinks are not Veblen Goods, this was due to external factors. This, however, did not distort the findings too severely as there was a vague trend evident, and this was used in order to calculate the ideal price level and circumstances for attaining maximum TR. Nevertheless, for more accurate results, the aforementioned improvements should be considered and carried out, if possible.

It was established that, in order to achieve maximum TR, one must do so through achieving low elasticity; one should, obviously, sell their sports drinks in a lowly-competitive vicinity when the temperature is quite high, and at a price level of \$2.00.

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