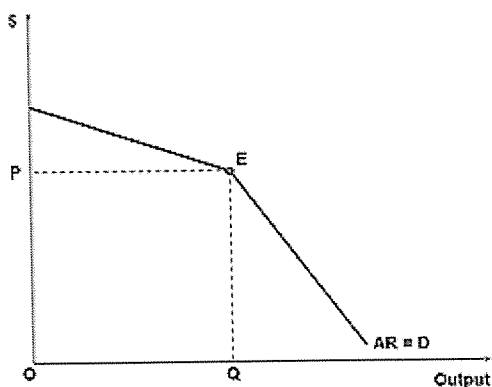


## Economics report Petrol Prices.

The oil industry has an oligopoly market structure. An oligopoly is a market structure where a few firms exert all the control over the market. In an oligopoly there are a few firms that control the market, and each firm is likely to be aware of the actions of the other. Therefore, the decisions of one firm influence and are influenced by the decisions of another so they are interdependent.

Petrol is the fuel on which most of the motorized vehicles run on today, there are no close substitutes in the market today. There are only a few sellers of petrol in the market, Bp, Caltex, Z, and Gull. There is limited competition for these companies as they always tend to be within the same price range. If one petrol company changes their price the other companies will follow as they do not want to lose customers, this can be seen in the petrol prices recorded from Wednesday the 4<sup>th</sup> of September. The price at Gull was \$2.20, Bp was \$2.24, price for Caltex \$2.20 and the price for Z was \$2.20. All these companies try to differentiate their product. For example Bp has wild bean café and their fuel rewards card. Z has a community campaign which supports chosen charities in that community. Caltex claims that their fuel cleans your engine as you drive. Most service stations have some sort of convenience store, car wash and gas refill station for consumer convenience. Most gas stations also have an alliance with food companies for fuel vouchers. This means that consumers will choose to go to one service station over another. There are high start-up costs to creating a service station, e.g. laying the fuel tanks underground and, and inserting pumps. For most service stations there is also the added cost of building and running the convenience store, car wash, and gas refill station. Most oligopolies also run aggressive advertising campaigns, for example Bp has there "be road happy" campaign whilst Z is running their community campaign, pushing New Zealand owned charities, which they are advertising for.

### Oligopoly graph.



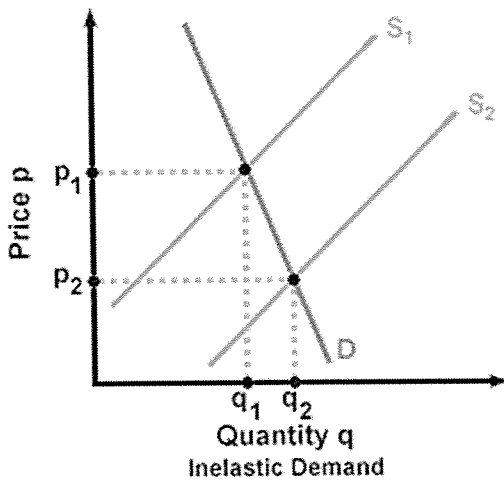
The top half of the demand curve, up to point E, is the most elastic in this market structure. This is because firms are interdependent, they keep a close eye on competition are doing. If an individual firm increases the price, other firms may not follow, and so, a small increase in fuel prices will lead to a large decrease in quantity demanded for fuel, as the consumers will start to go to the competitors firms. Therefore total revenue will decrease.

After point E the market becomes relatively inelastic. If a firm decreases their price, to increase their market share, everyone in the market will be forced to do the same, so the decrease in price does not result in much of an increase in the quantity demanded. This method may only work for a short time, and short term price wars do occur. If a price this type of price competition occurs individual firms will be making a loss, and total revenue will decrease. Oligopolies are price setters rather than price takers; this means that they can determine the price in the market. In order to maximise profit oligopolies will choose to produce where marginal revenue (MR) equals marginal cost (MC) this point is point E on the graph. The market tends to stay at point E as there is no advantage to the firms in increasing or decreasing the price.

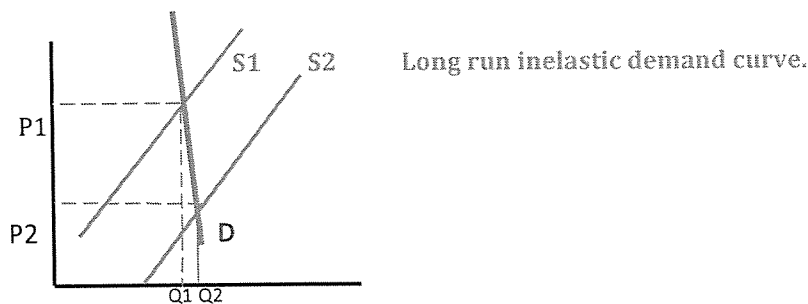
Elasticity of demand measures the responsiveness of the quantity demanded of a commodity to a change in its price. The more elastic a good is the more a change in price will affect the quantity demanded for it. For an inelastic good a change in price will have little effect on the demand of the product. Demand for petrol tends to be inelastic, this means that an increase in the price for petrol will result in a small percentage decrease in the demand for petrol.

Demand for petrol is inelastic as there are no close substitutes to petrol, it is not easy to postpone buying petrol, it has also become a necessity it is difficult for consumers to find other methods of travel that is convenient. Therefore because petrol is inelastic a change in price won't have a great effect on consumer demand.

### Inelastic demand curve



As petrol is inelastic a large change in price will only decrease consumer quantity demanded by a small percentage as seen in the graph above. As the supply curve shifts to the left from  $S_2$  to  $S_1$  because the cost of production has increased due to the increase cost of imported fuel prices, there is an increase in price from  $P_2$  to  $P_1$ , due to an increase in the cost of production as a result of higher petrol prices. The large increase in price ( $P_2$  to  $P_1$ ) resulted in a small decrease in the quantity demanded from  $q_2$  to  $q_1$ , and this is due to the price inelasticity of demand.



There could be a change in consumer demand due to the increase petrol prices from the short run to the long run. In the short run there may be a larger decrease in quantity demanded by the consumers, as in the short run it is easier for consumers to cut down on the consumption of petrol if prices are too high. They can change their habits and start to use public transport, or start cycling, or walking to and from places more. In the long run however consumer will tend to go back to their original habits as using these other methods becomes less convenient, and consume the same amount of petrol as the previously had, but now they will pay the increased price. This will mean the long run demand for petrol will become more inelastic. This can be seen in the report written by Sandra .A.Barns in 2001 at university of Waikato, it showed that price elasticity in the short run is 0.195 and in the long run it is 0.065, so price elasticity for petrol in the long run is

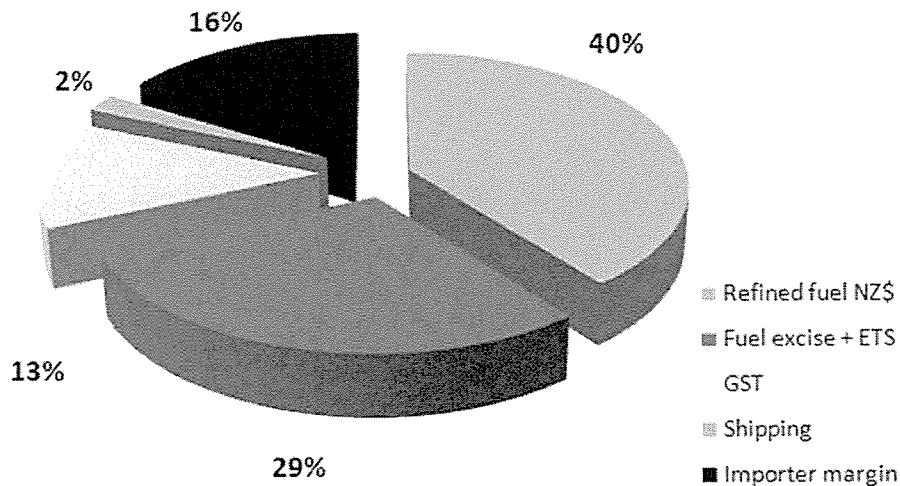
closer to zero showing that price elasticity for petrol is very inelastic. In the graph above price is still at the increased price of  $p_1$  but demand has become more inelastic and the gap between  $q_2$  and  $q_1$  has decreased. The consumer is now paying close to the original price of  $q_2$ . Also according to an Auckland transport study when the price of petrol increased 27% the quantity demanded decreased by 7% proving the price elasticity of demand.

An indirect tax is a tax levied on goods or services rather than on persons or organizations.



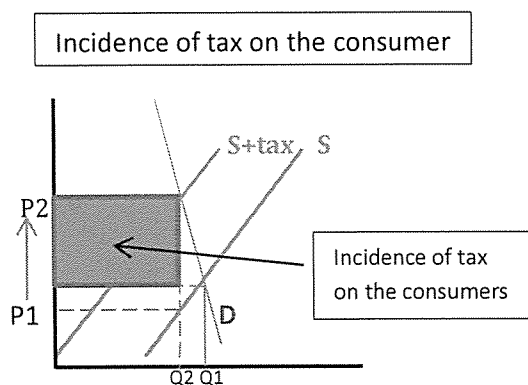
### Price components of a litre of petrol (\$2.22)

as at 11 September 2013



According to the AA website 45% is actual cost of refined petrol and 45% is the tax on petrol. The idea with the large petrol tax is to help rebuild road and to help with other cost. Recently there has been an increase in tax due to carbon emissions. The higher tax was put in place to help discourage consumption. Petrol has tax on a tax as there is the petrol tax and it has the GST on top of that tax.

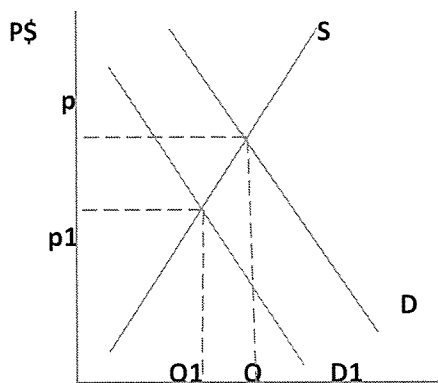
Due to petrol being inelastic the burden of the tax falls more heavily on the consumer as seen in the graph below. As the tax is put in place there is a shift of the supply curve to the left.



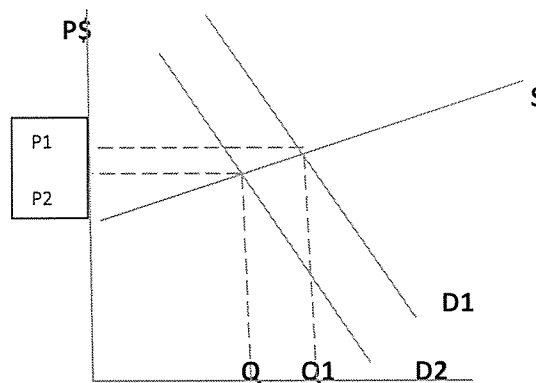
If there is a price increase on petrol a greater percentage of consumer income will be spent on petrol. This will mean that lower income families are especially affected. It also means there is less disposable income to spend on other areas, and less money to save. The decrease in disposable income means that spending in other areas of the economy is likely to decrease. This means that the demand for luxury goods will decrease. The buying of compliment goods such as large cars will decrease with an increase in petrol price and will switch to cars which use less petrol. However demand for lower petrol consuming cars is only affected in the long run as

people won't swap their car within days of an increase in petrol price. A complementary good is a good that are used together. As people trying and sell large cars leads to a surplus in the market, and the price of the cars gets bid down. With the increase in petrol prices the upkeep of large cars becomes more expensive so small cars, another compliment good becomes more popular. In the short run consumers will use substitute goods such as public transport (busses and trains), walking or biking. A substitute good is a good that is used in place of another good. However in the long run the demand for substitute goods decreases as the change in consumer behaviour is short lived, and they will go back to driving personal vehicles.

Graph 1



Graph 2

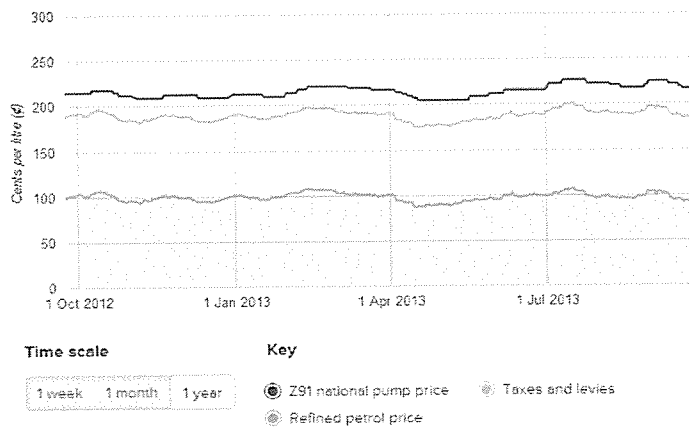


Graph one show the demand for complementary goods of petrol, as price increases, the demand curve shifts to the left and quantity decreases from Q to Q1. While public transport and price of petrol are substitute goods so with an increase in price for petrol demand for public transport like bus trips will increase, graph 2 shows this with elastic supply curve as supply for bus trips is inelastic because it is heavily subsidised, so the price for petrol increases as demand for bus trips will shift to the right and price will only increase by a little from P to P1 as supply is elastic and quantity will increase from Q to Q1.

With an increase in petrol prices, revenue from tax will increase. Because petrol is inelastic the quantity demanded for petrol will not decrease by much, so the government will gain a lot of revenue from the petrol tax. The increased revenue from the tax could be spent on other areas of the economy. However household are worse off as the bare the biggest burden of the tax, as shown on the graph 'incidence of tax on the consumer' above.

How much an increase in fuel price affects the producer effects the producer depends on whether or not they pass the increased cost of production, through increase cost of imported refined oil prices on to the consumers. Because the price of petrol is inelastic consumers are more likely to pass the cost on to consumers. However as petrol is inelastic and considered an necessity producers will easily pass the increased cost on to the consumer. Therefore consumers are worse off with an increased price on petrol. Also producer are effected with increased cost of production because of the increased cost of transport (due to the increased petrol price), this will mean that the cost of production for other good will increase and if these good are not necessities and have an elastic demand curve it will be harder for producers to pass these cost on to consumers.

### Refined petrol price vs Z national pump price



The graph above from the Z website shows the effect of the cost of refined oil. Petrol is controlled by three things: government taxes and levies, cost of oil and refined petrol, and the exchange rate. The difference between the cost price of petrol and the amount the consumers pay at the pump is the gap between the yellow line showing tax and the orange line showing the cost of refined petrol excluding the cost of the emissions trading scheme.

Increase in petrol price will impact spending and saving by households in other areas. An increase in petrol price may lead to a decrease in consumer spending in other areas of the economy especially spending on luxury goods. In the long run the demand for small vehicles is likely to change as people change their habits, to decrease their petrol consumption. Petrol is a major cost of production, because of transport; if the price of petrol increases it will have an impact on other areas and cause the cost of production to increase. This means that the cost of production will increase and if the other goods are not necessities and has an elastic demand curve it will be harder for producers to pass the cost on to consumers.

### Sources:

What happens when petrol goes up or busses go down? By Andrew Macbeth, John Lieswyn, and Brain Horspool

Fuel price and fuel consumption in New Zealand: would a fuel tax reduce consumption? By Sandra A. Barns 2001, from the department of Economics University of Waikato.