Why do consumers spend more on gasoline than they have to?

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Abstract:

This paper aims to explore how economic principles may be applied to develop an understanding of why a consumer would pay more for gasoline from one provider when, often, there is a nearby fuel retailer charging less. Research points out that in our randomly chosen area, the prices of gasoline vary within a distance of five miles. We will analyze gasoline as a commodity and hence a perfect substitute in the context of the different suppliers, applying the appropriate theoretical models such as constructing a budget constraint to find the optimal consumption bundle. In discussing different factors as to why the consumer may achieve a higher utility from choosing the most convenient gasoline retailer instead of the most cost efficient, we are led to the conclusion that the potential saving of costs may not exceed the benefits the consumer achieves from choosing the nearest petrol station.

Imagine that you are in a car driving home from work. You look at the fuel gauge and notice that there is about ¼ gasoline left in the tank. You decide that it is time to refill the tank. Chances are that you, as a consumer of gasoline, drive to the nearest gasoline retailer without finding out if there are any other cheaper gasoline retailers nearby, providing the same gasoline for less. This essay will try to explore why a consumer may not care about different gasoline prices, at different retailers by using the appropriate microeconomic models.

For the simplicity of this essay, the analysis will consider gasoline as a car fuel, and not any other forms for petroleum, due to the word restrictions imposed by the assignment. This essay is based upon data obtained from the area around Edinburgh, West Lothian, which has ten petrol stations within a radius of five miles and gasoline prices which vary from 128.9 (p/l) to 132.9 (p/l) (Petrol prices, 2013). This area is chosen to illustrate a typical medium – high-populated area. If one was to examine the gasoline prices in areas with a smaller population and fewer providers, there may be a whole range of additional factors, which could lead to a different conclusion.

Economic applications:

In economics, the assumption "more is better" is used as a description of how a rational consumer will always maximize his utility by achieving the maximum amount of value, gasoline, out of his budget. We assume that the typical consumer does not choose a petrol retailer on the basis of the additional goods sold at the chosen station, but solely on the basis of gasoline. We can argue that gasoline is a commodity good, as many different companies sell it, and the quality of gasoline does not differ between the different petrol retailers. Hence our consumer may have the option of choosing to buy his fuel from a total of ten different providers. However, for the simplicity of this analysis we will consider the two extreme cases, namely the cheapest and the most expensive retailer, and call them

"Gasoline retailer max" and "Gasoline retailer min" providing the same gasoline but at different prices of 1.329 pounds per liter and 1.289 pounds per liter respectively. We assume that this customer has a budget of 50 pounds, all of which will be spent on filling the tank. We can construct a budget constraint and combine this with indifference curves in a diagram, allowing us to find the optimal choice of consumption for a rational consumer:

Budget constraint:

MAX * Pmax + MIN * Pmin = M   **1.329max + 1.289min = 50 pounds**

Quantity of gasoline bought at Gasoline Retailer Maximum = MAX

Quantity of gasoline bought at Gasoline Retailer Minimum = MIN

Price of gasoline bought at Gasoline Retailer Maximum = Pmax = 1.329

Price of gasoline bought at Gasoline Retailer Minimum = Pmin = 1.289

Figure 1   Optimal Choice

Economic theory about the optimal choice of consumption offers us a solution as to where the consumer would be best off between the two consumption bundles; Gasoline retail max and Gasoline retail min. Gasoline is viewed as a commodity and the consumer is indifferent about which store he chooses to buy from, hence they are treated as substitute goods, the optimum point of consumption should be at GRMIN (38,78), as the pGRMAX > pGRMIN. Since the price of one of the retailers is higher than the other, the budget line will have a flatter slope than the indifference curves. This leads us to the conclusion that a rational consumer would stop buying his gasoline at retailers that charge more, and buy all his consumption of gasoline from the provider who offers the gasoline for less.

Our conclusion from the previous section provides us with an answer that does not hold when it comes to reality, as different retailers in the petroleum market manage to sell petroleum due to consumers consuming the gasoline regardless of the difference in price. To develop an understanding of why our consumer does not always choose "Gasoline Retailer Min" over the more expensive alternative, we may benefit from investigating the price elasticity of demand, defined as: the responsiveness in demand to a change in price (Varian, 2010 pp: 284).

We continue our analysis with the assumption that gasoline sold from one gas station is regarded as a perfect substitute to gasoline sold from a different nearby station, and that the price elasticity of demand should therefore be perfectly elastic. This means that, should an increase in price be carried out by one gasoline retailer, while the other nearby retailers keep their price fixed at the original price level, the demand for the gasoline with the increased price should drop to zero. However, as proved by the real life data, the market for

gasoline as a car fuel cannot face perfectly elastic demand as different retailers operate with different prices. The consumer seems to achieve a higher utility by choosing the most time efficient alternative, over the most cost efficient one. We may assume that the consumer ranks time efficiency over cost efficiency, due to the seemingly low potential cut in costs. Using the prices presented in Figure 1 above, and estimating with an average car fuel tank of 50 liters, we calculate that a consumer saves exactly two pounds if he chooses to buy from the lowest cost gasoline retailer. This implies that the demand for gasoline is not perfectly elastic, as the consumer valuates the benefit from time efficiency to be higher than the potential of saving two pounds per 50-liter refill.

Conclusion:

Identifying factors to develop an understanding of why a consumer chooses to pay potentially more for gasoline from the nearest gasoline retailer has proven to be a complex matter. By constructing a budget constraint using two retailers located within a distance of five miles, we found out that the consumer should always choose the petrol station providing the cheaper gasoline. However, our consumer seems to evaluate the benefits from choosing the most convenient, closest located retailer, to be higher than the benefits from saving costs. One possible factor influencing the decision-making process may be the short-term perspective of the consumer, since saving two pounds when spending fifty pounds may not outweigh the extra effort needed to find the cheapest alternative.

Limitations:

This analysis does not include factors that may add value to the gasoline stations, such as the fact that a consumer may choose a more expensive gasoline retailer based upon the additional goods he may obtain from that petrol station. The consumer analyzed is very generalized, meaning that we excluded the group of consumers who are actually choosing to buy gasoline from the cheapest retailers. As we do not know the exact amount of gasoline demanded, we cannot calculate the exact numbers concerning the elasticity of demand. Due to the length of this paper, we only analyzed gasoline as a commodity and perfect substitute to itself; however, it could be argued that gasoline should be viewed differently.

Technical appendix:

Figure 2   Calculating the optimum choice of consumption

1.329Max + 1.289 Min = 50 Pounds.

$$\frac{50}{1.329\,Max} = 37.62\,litres$$

$$\frac{50}{1.289\,Min} = 38.789\,Litre$$

38.789 – 37.62 = 1.169 litres. Thus the consumer could gain an additional 1.169 litres of

gasoline by choosing the cheaper retailer.

Calculating the potential costs saved

Assuming a 50 litres tank.

1.329 – 1.289 = 0.04

0.04p * 50L = 2 pounds.

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