

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

The study sets out to examine the demand pattern of gasoline in Malaysia - its elasticities and determinant factors in the light of expansion of domestic gasoline market. It is also to review the role and involvement of the government in this oligopolistic market with the aim of establishing the influence of price (with the use of tax instrument) and legislation on demand for gasoline in Malaysia. The hypothesis of this study is : "demand for gasoline in Malaysia is highly influenced by price, income level, vehicle stocks as well as legislation".

Having analysed the economics of gasoline market in Malaysia, the study concluded that the government has great influence in terms of taxation and price control on the demand and supply of gasoline. However, environmental legislation failed to influence the market in a big way like what experienced in developed countries due to lack of legal enforcement. Tax instrument is effective in influencing the demand for gasoline by encouraging substitution of one product to the other.

The long run and short run price, income and stock of vehicles elasticities of gasoline demand in Malaysia have been estimated in this study using linear regression analysis. The results have shown that gasoline demand is inelastic towards price and income for both short and long run. The respective short run and long run income elasticities are 0.537 and 0.745. For price elasticities, they are in the range of -0.363 to -0.245 in short run and long run. Vehicle stock is inelastic at elasticity value of 0.827. In overall, the results are consistent to other literature that studied the demand for gasoline in Malaysia.

This study also differentiates itself from the others in terms of the establishment of individual gasoline models and their cross elasticities. For

unleaded gasoline, it is found that the income elasticities are 0.717 and 0.743 in short and long run respectively. The price elasticities are also inelastic at -0.639 to -0.747. Cross price elasticities are 0.082 and 0.434 in short and long run. In theory, the positive signs for cross price elasticities indicate that leaded and unleaded gasoline are perfect substitute. However, low cross elasticities results by unleaded gasoline model indicate that demand for unleaded gasoline does not respond significantly to any change in price of leaded gasoline. This finding implies that any price increase in leaded gasoline would not influence the demand for unleaded gasoline significantly. To the policy makers, it means that in order to influence the demand for unleaded gasoline, change in price of leaded gasoline may not be an effective solution as unleaded gasoline consumers are less price sensitive. To them, unleaded gasoline is preferred due to higher environmental awareness and technological requirement.

The demand model for leaded gasoline suggests the opposite of the above two models. Although income elasticities are inelastic in both short and long run, they carries opposite signs i.e. negative. Short run income elasticity stands at -0.849 whilst the long run result is -0.667. This finding proves that leaded gasoline is an inferior product according to the theory of Engel Curve. Own price is inelastic with -0.76 in short run but highly elastic at -1.543 in the long term. This study shows that cross elasticity of leaded gasoline to unleaded gasoline is highly elastic and is positive in sign. It concludes that both leaded and unleaded gasoline are perfect substitutes except for cars fitted with catalytic converters. The quantity demanded for leaded gasoline dropped more rapidly when tax for unleaded gasoline was reduced in 1994. Hence, tax incentive is an effective way to promote penetration of unleaded gasoline for the purpose of environmental protection. The leaded gasoline motorists are more inclined to price change for both types of gasoline and also movement in price gap of both fuels .

Qualitative analysis on other determinant factors shows that gasoline consumption is also influenced by consumer preferences and lastly sociological effects like residential and infrastructure development.

In a nutshell, the study contributes to the development of gasoline demand models for the country. The findings accept the null hypothesis that gasoline demand in Malaysia is influenced by price, income level as well as vehicle stocks. This is in line with other literature of similar for example Chee (1981)'s and McRae (1994). Government intervention in price control has great impact on gasoline consumption based on the qualitative analysis. Taxation does influence the demand pattern of gasoline in this country but not environment legislation as yet due to lack of legal enforcement. The findings obtained in the study provide valuable policy level information which lead to recommendations as follows.

Firstly, it is to highlight that this research is conducted in line with other literature with regard to the definition of demand elasticity. As opposed to the definition used here, in theory, price and income elasticity is defined as percentage change in quantity demanded over the percentage change in price and income respectively. Therefore, it is recommended that future study on demand elasticity should be conducted in accordance to the definition in the theory of economics. In order to do so, mean of price and income should be obtained from the frequency analysis. The elasticity can then be calculated by multiplying mean of price or income and subtracting over mean of quantity demanded.

By appreciating that own price is inelastic in gasoline demand model, the study calls for removal of price control in gasoline market. In theory, price elasticity determines the change in total expenditure when price changes. As own price is found inelastic in Malaysia, any increase in price level for gasoline would not results in great reduction in gasoline consumption. The price change is dominant, hence total expenditure and total tax revenue will

change in the same direction as the price changes. To the government, an increase in total tax revenue could be expected by increasing the overall price level of gasoline.

From helicopter point of view, the policy of high ceiling price is undesirable as it will increase total expenditure thus create inflationary pressure to the country. On the other hand, by setting relatively low ceiling prices at current levels, more often than not gasoline is being subsidised rather than taxed especially when product cost increases. As an implication, price control does not make an equitable wealth distribution to the people of middle to low income. Typically, only the rich and famous would own 3 cars for instance and price control over gasoline allows them to enjoy triple benefits at times of subsidy. It is recommended that the price ceiling for gasoline to be lifted off so that the forces of supply and demand could determine the market equilibrium price. As learnt in other deregulated markets, free market competition without price control over gasoline does not guarantee cheaper price than before. There is benefit of higher gasoline price instead. With the stimulus of high gasoline price, it provides to reduce the demand for gasoline (though not very significant). The higher price will lead consumers to change their driving patterns, to moderate their driving speed, to improve the maintenance of their cars and gradually to promote changes in the efficiency of the automobile fleet. In total, it increases the efficiency of the whole society rather than passing on the benefits to the rich only. Should the price direction goes in reverse, competition among the oil companies will ensure price are set at marginal revenue and marginal cost of the company. Hence, it will ensure optimal efficiency of the firm to survive in future. In both directions, free gasoline market price can benefit all parties through equal wealth distribution and increase efficiency in overall.

Thirdly, it is recommended that the use tax incentive to promote cleaner environment can only be regarded as a short term measure. The study concludes that cross elasticity for leaded gasoline in respond to change

in price of unleaded gasoline is highly elastic. The larger the incentive that result in smaller price differential between leaded and unleaded gasoline, the greater the penetration of the former product. On a high side, it seems that the use of unleaded gasoline will help to improve air quality. Unfortunately, this will potentially lead the drivers to undertake more journeys which from environmental point of view may be self defeating. Therefore, tax incentive is only good in short term.

As a long term strategy, the government should fully utilise and enforce the environmental regulations to stimulate desired gasoline consumption pattern. More stringent motor gasoline quality in the aspects of benzene and aromatic reductions, control over volatility rate and etc. should be imposed on gasoline manufacturers to reduce exhaust emissions. On the other hand, non compliance of car manufacturers to the emission standard should be penalised. To the motorists, the authority should put in more enforcement on the need to maintain the vehicles so that exhaust emissions can be reduced. Environmental campaigns driven by the government are highly needed. Through such a forced society learning, the whole economy will be benefited from cleaner air quality. Instead of using taxation to cover externalities like environmental affairs, such an intervention by government can ensure everyone in the chain from the car manufacturers, the refiners, the end-users and the government, are paying to preserve the clean environment. As quoted by the previous Finance Minister, Datuk Seri Anwar Ibrahim in his inaugural Budget speech in 1991 pertaining to issues in gasoline, “...*We need to pay for clean air.....*”.

Fourthly, substitutes for gasoline should be promoted as another long term strategy. Higher price of gasoline would provide leverage for the viability of alternative fuels for motor vehicles. Gasoline price increase by lifting the tax incentive would render alternative fuels to be more competitive. This strategy would have to be carried out gradually to avoid public protest which

could lead to socio-political problems. It is important to keep in mind that the pre-requisite for this strategy is the overall improvement of public transport.

From sustainable development point of view, it is necessary to promote mass transport instead of gasoline consuming personalised passenger transport. Increase in gasoline price can be considered as one of policy options. However, the empirical results of this paper indicate a low price elasticity even in the long run. This means that over-pricing gasoline as a policy instrument is not likely to be very influential on future gasoline demand in Malaysia. Hence, other policy options such as emphasis on clean fuels substitutes and energy conservation will be needed.

Finally, although conservation of energy in Malaysia particularly for gasoline is still at very early stage as compared to other developed countries, its potential cannot be ignored. The people must be made aware of the real cost of energy and the implication of conservation to the nation. Peak hour rush in urban areas could be reduced by staggered working hours and reducing working days for a week. Campaign to reduce recreational driving and to improve the load factor of automobile would be necessary to ensure the smooth future of the conservation measures.

All the above recommendations are made with sustainable development in mind. Equitable wealth distribution, clean environment as well as energy conservation are rather long term strategies to ensure continuous survival of future generations.