Forum

Canadian and American Gasoline Prices: Reviewing the Issues

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The Canadian Oil Markets and Trade Division (OMTD) of the Federal Ministry of Energy, Mines and Resources (EMR) collects, analyses and disseminates specialized data on the refining and marketing sectors of the Canadian oil industry. These data are an indispensable aid to researchers and observers of oil refining and marketing in Canada. Occasionally OMTD publishes its analysis. One such welcome contribution is the recent *Review of Gasoline Retailing: Canada vs United States, 1973-1987* (EMR/OMTD, pp.20, June 1989), hereafter called the *Review*. In it EMR recognises that public attention has often focused on the disparity between US and Canadian prices and sets out to quantify some differences in the two markets which could account for part of that price disparity.

The quantification of structural and other differences responsible for market price differentials is a useful though complicated task. A complete approach to it would normally involve three steps:

- the identification and quantification of differences;
- the formulation and testing of plausible hypotheses to explain these differences; and
- the formulation of arguments from these results regarding

causation and, if the current situation is considered unsatisfactory, the discussion of policy measures.

Obviously the nature of the policy measures can be materially influenced by the perceived causes of the price differentials that come out of the above analysis. For example, if external factors beyond the control of firms (such as population numbers, dispersion, preferences, climate, social infrastructure and the like) force higher costs and perhaps relative inefficiency on a market, a proposed policy (if any is called for) must be different from a case in which higher prices are brought about by market structure or discretionary behavior on the part of firms selling gasoline.

The *Review* appears to concentrate on the first step in the above process. It identifies and quantifies some structural and other differences which would appear to account for about one-third of the retail gasoline price-differential between Canada and the US (the remaining two-thirds being due to higher consumption taxes in Canada).[1] However, it stops short of a fuller development of hypotheses directed at identifying the reasons for the price differentials in more detail and does not discuss the scope for corrective policies.

Moreover, most of the structural and other differences identified by the *Review* are presented as external to the firms and beyond their control. Examples are the economies of scale that favour US marketers, different product slates and quality differences. Because there is no attempt to go beyond these distinctions between the Canadian and US markets, readers of the OMTD/EMR report may be left with the impression that neither further research nor policy measures are needed, that the differential is unavoidable and nothing can or should be done about it.

Defining the research agenda to determine factors behind gasoline price differentials

The purpose of this comment is to outline the research agenda that would be necessary to determine, in a more definite manner, the factors behind retail price-differentials in gasoline between the two countries. For easy reference, the organization of this note parallels that of the *Review*.

Economies of Scale

According to the *Review* the larger size of the US market gives American retailers a cost advantage over those in Canada. This advantage works through a lower number of retail outlets per capita and a higher rate of growth of US gasoline demand, both of which entail a larger volume of sales per outlet.[2]

Data from the *Review* show that the US population is 9.5 times that of Canada, passenger vehicles 12 times those of Canada, and total demand for motor gasoline (in 1987) about 12.5 times that of Canada (p.4). Despite these ratios, the US has only 6 times more

1/ P.19. (All page references refer to the *Review*.)

Ratios of cars and sales per retail outlet in the US have consistently been double those in Canada

gasoline outlets (116,000) than does Canada (19,000). Consequently, the ratios of cars per outlet and annual sales per outlet in the US have consistently been double those of Canada over the time period considered, although the rate of reduction in the number of outlets has been comparable in the two countries.[3]

The *Review* concludes that "economies of scale in the form of higher throughputs per outlet, more customers per outlet and larger increases in gasoline demand, all favour US marketers" (p.19). No further analysis or discussion is offered on this question, thus leaving the impression that lower sales per outlet and higher retail prices are inevitable for Canadian marketers.

What prevents Canadian marketers from reducing the number of retail outlets, so as to increase sales volumes per outlet? Is it so much more difficult to service the population of smaller cities that the numbers of retail outlets have to be high, with consequent lower throughputs? Or is it the case that monopolistic competition[4] for market share among the larger participants creates excess capacity in retail outlets?

A relatively larger number of retail outlets might be socially desirable for Canada if it was based on the need to serve a more highly dispersed population. This question requires at least a comparison of the geographical dispersion of population and retail outlets among urban areas, and between urban and rural areas, in Canada and the US. One must also investigate whether various aspects of city size (car ownership, population density, configuration of city-centres and suburbs) affect the quality of service that can be offered by a given number of gasoline outlets or just the chances that integrated oil companies will be able to maintain their market shares. If the former is the case, it may be desirable to accept lower throughputs and higher unit costs. If the latter is true, there may be a case to make for a policy action.

As this kind of analysis is not offered in the *Review*, the conclusion drawn should be qualified pending further research.

2/ The claim that US gasoline demand is growing faster than Canadian demand is based on the observation of low or negative growth in Canadian demand from 1980 to 1987, in contrast to positive growth in the US since 1983. Because this short-term observation is not a sufficient reason to assume long-term differences in demand trends, this matter will not be dealt with here. Under this heading the *Review* also brings in differences in the leaded/unleaded gasoline mix sold in the US and Canada. Since this is not a matter of returns to scale it will be treated in the section on market structure.

3/ For 1987, cars per outlet were 1200 for the US and 600 for Canada, while annual sales volumes per outlet were 3650 m^3 in the US and 1700 m^3 in Canada.

4/ Monopolistic competition is competition based on the creation of actual or perceived differences in products or services in a market with a large number of sellers. In gasoline retailing it is likely to be based on locational advantages, brand-name promotional campaigns, etc.

Market Structures

In regard to the structure of demand, the *Review* suggests that differences in the sales mix of petroleum products (the "product slate") and differences in product quality have adverse effects on the revenues and costs of Canadian refiners, so that higher prices for their products are necessary in Canada.

US refiners sell a higher proportion of lighter, higher-priced products (such as motor gasoline and aviation fuel) and less of usually lower-priced middle distillates and heavy fuel oil (see Fig. 1). From this observation the *Review* concludes that US refiners can afford to sell the lighter products at lower prices than Canadian refiners. This conclusion needs both clarification and qualification.

First, a product slate weighted more heavily towards middle distillates and heavy fuel oil can be produced from heavier crude, which would involve some cost savings.

1987 data indicate that Canadian refiners collect about $8 more per barrel refined

Second, the argument suggests that Canadian refiners have to price their light products higher than their American counterparts just to collect the same revenue from each barrel they refine. But 1987 data indicate that, when the revenue from the whole barrel is examined, Canadian refiners actually collect approximately 5 ¢/l more than US refiners, or about $8 more per barrel refined.[5] In the light of this result it is difficult to see how one could explain away lower US wholesale gasoline prices by referring only to the composition of Canadian petroleum product sales and ignoring the prices of other products in the barrel.

It remains true, of course, that price comparisons for single products, such as gasoline, must be adjusted for differences in the product slate. This argument implies, however, that such comparisons should also take into account price differences for each of the rest of the products of the refining process.

In summary, the proper comparison is not between gasoline or other single oil product prices, but between average revenues collected from a barrel of crude or from a litre of composite product.[6] Moreover, such a comparison should extend over a period sufficiently long to account for differences in cyclical and seasonal patterns. To advocate different slates as a stand-alone reason for lower US gasoline prices is to ignore these other factors. If, for example, Canadian refiners were found to enjoy higher prices for middle distillates and other heavier oil products com-

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5/ All monetary values reported here are in Canadian dollars. Calculations for the US are based on data from *Petroleum Marketing Monthly*, US Energy Information Administration (DOE/EIA-0380), Tables 2-5. Data for Canada are from the EMR Industry Sample.

6/ The composite product in this context would be a notional unit with the same product composition as average sales in each country.

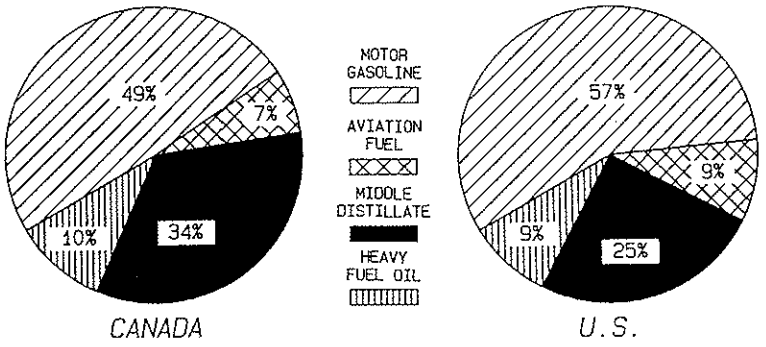

Figure 1: Sales of Main Petroleum Products. (Source: Canada. EMR (1989) *A Review of Gasoline Retailing Canada vs United States 1973-1987*, p. 6.)

pared to their US counterparts, they might not need higher gasoline prices to compensate for slate differences. A cursory look at the data suggests that this may indeed be the case: for example, the average 1987 US refiners' price for no. 2 fuel oil was 18.6 ¢/l, while Canadian refiners sold light heating oil no. 2 for 22.48 ¢/l.[7]

Regarding quality considerations, the *Review* states that "Canadian refiners have found it necessary to produce higher quality gasoline in order to reduce engine knock to the satisfaction of Canadian consumers. However, higher octane levels also increase the cost of producing the gasoline, which is generally reflected in higher retail prices" (p.7). It would be helpful to quantify the effects on cost from the reported higher octane levels. No data are offered in the *Review*.

Retailing Innovations

Retailing innovations have been implemented in different ways and to varying degrees in the two countries

The *Review* provides data on two major retailing innovations, convenience stores and self-serve outlets. Because these innovations have been implemented in different ways and to varying degrees in the two countries, they result in further differences between the two markets. Since both tend to improve profitability in gasoline retailing it is suggested that their slower and different implementation in Canada may be partially responsible for higher Canadian gasoline prices.

Why have such innovations lagged or differed in Canada relative to the US? Unless Canadian implementation lags can be ascribed to objective market conditions, alternative hypotheses may apply. One such hypothesis is that these lags may be due to procedures of multinational corporations in which a new marketing strategy is tried in one market first, and then adopted

7/ Sources given in note 5 above.

elsewhere. If this hypothesis is correct, higher prices to Canadian consumers from such lags should not be accepted without question. They may be the result of unwillingness on the part of multinational parent companies to give their subsidiaries a free hand in regard to innovation. Since there is a history in Canada of public policy intended to discourage such behavior and to encourage national ownership, corrective policy action could be appropriate.

Pricing Aspects

The *Review* mentions that Canadian retail prices have not always been higher than US prices — they were lower from 1978 to 1982. However, one should add that Canadian prices were subject to government regulation during that period. Therefore not much can be concluded about the competitiveness of the Canadian market from this period.

Consumption taxes are found to account for nearly two-thirds of the differential between Canadian and US retail prices, thus leaving only one-third of the difference to be explained in terms of market phenomena.

The retail price differential has risen from 3.5 ¢/l in 1984 to 6.0 ¢/l in 1988

It is noted in the *Review* that the retail price differential between Canada and the US has risen from 3.5 ¢/l in 1984 to about 6.0 ¢/l (excluding taxes) in 1988. The fact that this has occurred in the period since deregulation of the Canadian oil and oil products industry, following the Western Accord of March 1985, makes further investigation all the more relevant. While some of the factors highlighted in the *Review* are structural characteristics that tend to change only slowly, such rapid change during the period of adjustment to deregulation points to the possibility that discretionary decisions by suppliers are playing a bigger role than had been thought.

Conclusion

It is perfectly possible that such factors as economies of scale in retailing, the oil product sales mix, product quality differences, retailing innovations and different pricing structures may eventually be found to account for most of the non-tax differential in gasoline prices between Canada and the US. It appears, however, that more research is necessary before these results are advanced.