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An Application of Spatial Equilibrium Analysis to the Transport and Processing of Wholemilk in N.S.W.: A Rejoinder

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In critically reviewing our article [4] Codrington [2] appears to have misread the aims of the analysis, and misunderstood the method of analysis and indeed the conclusions.

On no fewer than three occasions Codrington stresses that our article either over-emphasises, or only considers the nature of, transport costs and plant capacity in analysing the transport and processing of wholemilk in N.S.W. It is quite obvious from the title that processing costs are included. Section 3 "The Model" on page 4 of our article sets out quite clearly the objectives of the modified King and Logan/Hurt and Tramel model used in the analysis.

The main thrust of Codrington's criticisms seems to stem from his inability to accept the simplifying assumptions of perfectly inelastic supply and demand functions for wholemilk. These assumptions were made on the basis that:

- (a) Supply was to be treated as an exogenous (rather than endogenous) variable. This decision was made in consultation with the Dairy Industry Authority (D.I.A.) based on existing levels of supply, *i.e.* supply was taken as given.
- (b) Demand was assumed to be reasonably unresponsive to price as is apparent from two sources:
 - (i) the trend of average apparent consumption of wholemilk per capita as shown by the Australian Bureau of Statistics figures, appears reasonably uniform. This trend is over a period of time when wholemilk prices have risen by varying amounts.
 - (ii) the N.S.W. Department of Agriculture has estimated the point price elasticity of demand for wholemilk in the Sydney region to be between -0.26 & -0.40 [6, p. 8] depending on the change in price. In the same publication the author concludes that "However, the fall in consumption is outweighed by the increase in price. The effect of a one to three cent increase in the price of a 600ml bottle of milk is to increase the total revenue available for payment to

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producers, manufacturers and distributors" [6, p. 14]. To us, the evidence above implies that the demand for wholemilk is quite inelastic. We believe that the simplifying assumption of perfectly inelastic demand has not significantly biased the result at all. Further, Codrington, quoting from the same document, seems to confuse the meaning of positive elasticity of supply with perfectly inelastic supply. Also, he has confused inelastic demand with perfectly inelastic demand. It is obvious that demand is inelastic even though it may not be perfectly inelastic [2, p. 335].

Some specific criticisms made by Codrington warrant attention.

Firstly, he seems to completely misunderstand the difference between the shortrun and longrun models used in the analysis [4, pp. 13-16]. This is evidenced by his comment that our recommendations suggest Nowra should supply Canberra with wholemilk, when at present Bega supplies a proportion of the Canberra market. Our recommendation is just that, *i.e.* that Bega, not Nowra, should supply Canberra. In other words, the Longrun Model-Projected Demands case confirms Bega as one of Canberra's suppliers [4, p. 16].

It is the longrun model that allows future policy conclusions to be drawn, not the shortrun model. The shortrun merely indicates what the then current situation *should* have been, *given* the aim of minimising transport, processing and distribution of wholemilk in N.S.W. The Long run Model-Projected Demands was used to indicate the direction that demand was likely to follow and hence, given current supply levels, what supply regions should be encouraged to expand or contract. To suggest that the shortrun model was used to draw such conclusions is quite in error.

Codrington is quite correct when he says we have "... ignored the fact that dairying areas close to the Sydney market have the highest production costs in N.S.W." [2, p. 332]. However, *given* the current D.I.A. policy of paying all dairymen the same price (less transport costs) for their milk, it seems that to search for the distribution of this milk which will minimise the aggregate cost of transport of raw milk to processing centres, of processing and transporting the processed milk to demand centres is a reasonable thing to study. Presumably, the least cost producers will earn an economic rent from their milk sales.

Elsewhere in this issue of the *Review*, [3] the Department of Agriculture issues a note of warning to anyone drawing conclusions from their survey on regional cost differences — "... the reasons for these cost differences have not been investigated" [3, p. 346]. Table 5 of the same article shows that when production and transport costs are added together, several of the regions in fact show no significant difference between these total costs *e.g.* as between Richmond-Tweed (far north coast) and Hunter; Clarence/Hastings and Outer Sydney; Hunter and Lower South Coast. This statistical observation appears at variance with Codrington who says "it is however significantly cheaper to bring milk from the Far North Coast and Far South Coast than to produce it close to Sydney as transport costs are less than the higher production costs in the Sydney area" [2, p. 333]. It is important to realise that processing costs are not included here. It may well be that processing costs are higher in the far north and south coasts as economies of scale may not be currently exploited.

Secondly, we accept the criticism that our source of statistical information was not properly referenced. Our source was the Australian Bureau of Statistics, Canberra — *Milk Statistics, Australia*. The latest issue (May 1978) [1] shows that for 1974-75, 58% of whole milk produced was used principally as fluid milk for domestic purposes. For 1976-77, the figure was 60% and for 1977-78 the provisional figure is 61%. The apparent discrepancy between the D.I.A. and the A.B.S. may be due to the fact that the D.I.A.'s figure is quantity of market milk sold, rather than wholemilk used as an input.

Thirdly, Codrington criticises us for coming to the conclusion that Canberra (and Albury) should supply milk to Parkes even though Canberra supplies only 15% of its own requirements. Further he says: "From the information given in the article, the model itself does not give these conclusions. Rather, these are conclusions which are interpreted from the model's results" [2, p. 335]. It would appear that this last statement is rather axiomatic. Also, Canberra supplies Parkes with packaged milk, not raw wholemilk as Codrington is apparently concluding. (This is made quite clear on page 15 of our original article).

Fourthly, the use of 1971-72 costs in constructing cost curves was justified at the time the initial study was carried out [5]. Sensitivity tests were carried out on the cost curves, which showed that the model solutions were not at all sensitive to changes in costs [5, p. 81].

Finally, Codrington believes we have ignored any social and economic costs which may be incurred as a result of a major structural change becoming necessary. The concluding paragraph of our original article made it clear that we do consider the social and economic costs of structural change.

In conclusion, we believe that our article may have made a contribution to the debate on the rationalisation of wholemilk production in N.S.W. Our conclusions from the model's results must quite obviously be interpreted keeping in mind the assumptions made. Codrington believes some of our assumptions are "false" leading to "absurd" conclusions. Perhaps assumptions may be inappropriate, but hardly false.

References

- [1] AUSTRALIAN BUREAU OF STATISTICS, *Milk Statistics, Australia*, Canberra, May 1978.
- [2] CODRINGTON, S., "A Comment on An Application of Spatial Equilibrium Analysis to the Transport and Processing of Wholemilk in New South Wales", (this *Review*, this issue).
- [3] GRAHAM, M. A., AND HAYWARD, M. A., "Regional Milk Production Costs in N.S.W.: A Note", (this *Review*, this issue).
- [4] MACKAY, D. R., AND TOFT, H. I., "An Application of Spatial Equilibrium Analysis to the Transport and Processing of Wholemilk in N.S.W.", (this *Review*, Vol. 46, No. 1, April 1978).
- [5] MACKAY, D. R., *An Application of Spatial Equilibrium Analysis to the N.S.W. Dairy Industry* (Unpublished Master's Dissertation, University of New England, 1975).
- [6] NEW SOUTH WALES DEPARTMENT OF AGRICULTURE, DIVISION OF MARKETING AND ECONOMICS, *Milk Demand in the Sydney Milk Distribution Region*, Sydney, N.S.W. Department of Agriculture, 1977.