

The Effectiveness of MLC's Beef Promotion During the BSE Crisis

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In the 1990s the meat market has been subjected to several major shocks from the manner in which the BSE crisis has developed. In late 1995 and early 1996 the waves of press publicity about BSE reached unprecedented heights. Shocks to beef consumption and (later in the period) revised promotion campaigns associated with countering negative publicity for beef were experienced in the period November 1995 to the present day. Understanding the impact of these different variables is critical to an understanding of the effectiveness of the Meat and Livestock Commission's (MLC's) beef promotion efforts.

Euro PA was asked to put together a team of experts to examine MLC's promotion efforts. The team presented a preliminary report in March 1997 but updates of the work were generated in June and September 1997. The analysis of MLC's promotion efforts distinguishes between the periods before and after the time when the BSE crisis reached its peak. The work had three key stages:

- Collection and interpretation of meat consumption, advertising and other data
- Econometric modeling
- Interpretation of the extent to which MLC promotional activity increased UK consumer beef expenditure

The Data

AGB household meat consumption data (volumes and sales values) and MLC's advertising expenditure data were the main data sets used in the work. Data on total UK beef consumption, which included processed beef and catering markets, were also examined. These data were obtained from the MLC. Market research data from Millward Brown, MLC's agency, were also re-

viewed. Euro PA constructed a meat scares index (covering BSE and, latterly, e-coli and abattoir hygiene issues) from press reports for 1990-97. Figure 1 overleaf illustrates the pattern of press reporting through the period.

Simple decomposition and time series analysis of the consumption data identified the underlying trends in the meat market. Figures 2 and 3 illustrate the smoothed and deseasonalised data for total beef sales and minced beef sales. In both cases the relevant part of the meat scares index is compared with the sales data and large negative shocks to beef sales are seen in late 1995 and in March 1996.

The AIDS Model

Econometric modeling of demand is frequently undertaken by a procedure commonly known as AIDS modeling. The Almost Ideal Demand System dates from 1980 and has been utilized by many researchers across the world. The basis for an AIDS model of demand is the assumption that consumers allocate parts of their budget to distinct elements or categories of expenditures. Within each category further allocations can be made. Thus the AIDS model can simulate the way in which food expenditures are allocated, and how the share of meat expenditures change between beef, lamb, pork, and poultry meat. The modeling of advertising and promotion expenditures can be incorporated within an AIDS model. Because of the apparently large shock to the demand system it was also crucial to determine the impact of BSE publicity on meat consumption.

Euro PA's analysis of the meat demand situation was broken down into two periods. The first 1990:1 – 1995:11 was identified as being "BSE free" although, of course, at the beginning of this period and at intervals through it, there were significant bouts of publicity about BSE and its connection with CJD. However, in terms of promotion it was felt that the types of advertising and promotion efforts used were not directly concerned with BSE-type issues. The incidence of

This paper is derived from Euro PA's analyses of the effectiveness of MLC's promotions during the period 1990-97. Euro PA's analytical team was composed of Dr. John Strak at Euro PA, www.euro-pa.co.uk, Professor Ron Ward at the University of Florida, Gainesville, USA, and Dr. David Hallam at the University of Reading and the Centre for Agricultural Strategy in England.

some BSE publicity in the first period allowed the estimation to try and capture the "BSE effect" (a negative BSE effect for beef, and positive BSE effects for pork, lamb and poultry meat). The resulting AIDS model of demand for meat generated robust and statistically significant estimates of relative prices and BSE effects.

The Meat Scares Index described earlier was used in this model in a way that tried to mimic the expected decreasing marginal affect of BSE upon consumers' purchasing patterns. Assuming that some "fatigue factor" might enter the consumer's mindset as the BSE story was given more publicity, the Meat Scares Index was finally used in square root form. This simplistic non-linear model of BSE's impact on consumers worked very well in the AIDS model.

The individual BSE effects for the different species are set out in Table 1 below.

Table 1. BSE Effects on Meat Species.

	Beef	Lamb	Pork
Meat Scares Index	-0.004879 (-6.602)	0.002000 (4.122)	0.0009648 (2.763)

t stats in parentheses

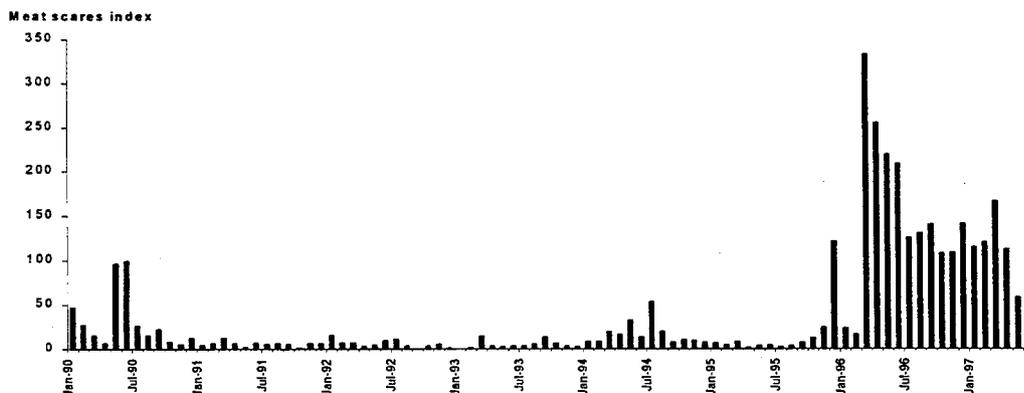
In summary, the message from the estimation of the AIDS model is that beef market share suffered very significantly from BSE publicity whilst pork, lamb and poultry meat gained market share. The AIDS model used to produce the results presented in the previous pages was robust in terms of the statistical significance of its parameter values. It was also robust in terms of its simulation

performance. Figure 4 illustrates the actual and predicted values for beef sales using the AIDS model. The model results track very well and explain the varying behavior of the market share for beef during that period. This is not surprising given the statistical strength of the price and BSE parameters inherent in the model.

The analysis of the period in which BSE publicity reached new heights presented its own problems. Clearly, during this period (which starts from 1995:11 or 1996:3 depending on the view taken about when BSE effects began to show themselves) MLC's advertising and promotion efforts changed markedly. Media plans were initially cancelled. Then new schemes and promotion material to deal with BSE issues were drawn up. The first major promotion activity in the beef recovery program was launched at the end of June 1996.

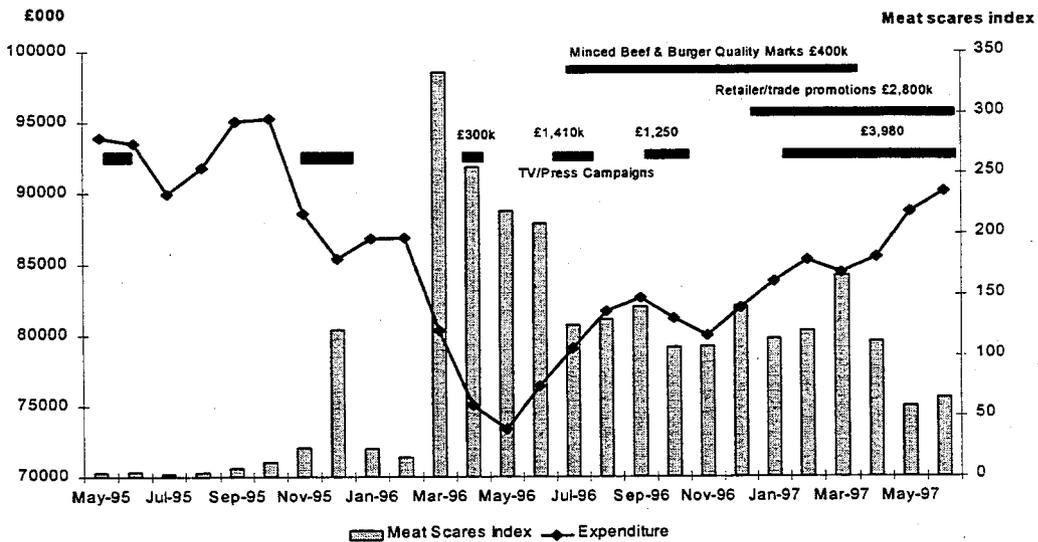
Figures 2 and 3 presented earlier illustrate what is termed the BSE recovery period. There is an indication of the scale and timing of beef recovery promotions, which were put in place specifically to address the negative effect of BSE publicity. The evaluation of the impact of MLC's promotions during the BSE recovery period was examined using the AIDS model. As new data were created for the Meat Scares Index and new sales data were collected from the AGB survey, the AIDS model was used to predict meat market shares. The predicted share for beef was charted and compared with the actual data on household meat expenditures. The results are shown in Figures 4 and 5.

Figure 1. Meat Scares Index.



Source: Euro PA

Figure 2. UK Household Expenditure on Beef During BSE Crisis.^{1,2}



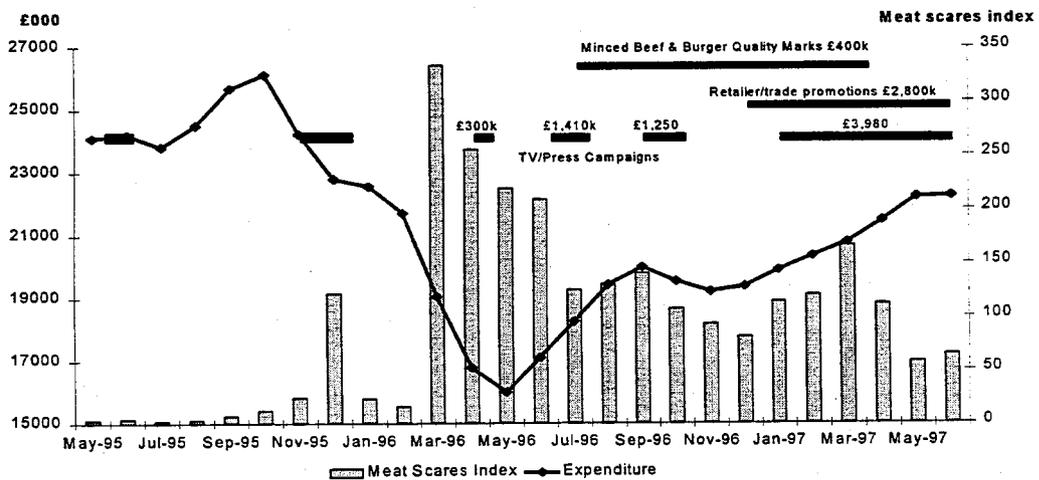
Note: Deseasonalised and smoothed by 3-month moving average.

¹ Household Consumption data from AGB survey.

² Exact costings of individual promotions are not presented but values given indicate the scale of activity.

Source: AGB, Euro PA, MLC

Figure 3. UK Household Expenditure on Minced Beef during BSE Crisis.^{1,2}



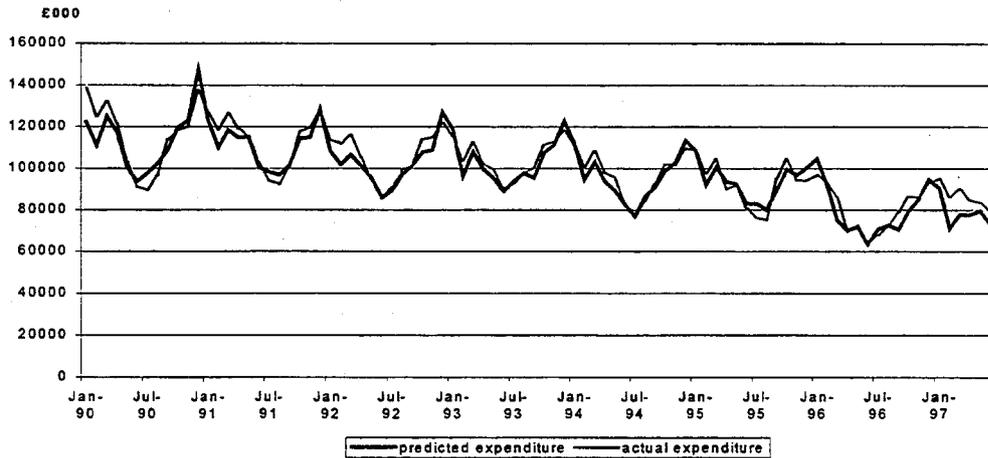
Note: Deseasonalised and smoothed by 3-month moving average.

¹ Household Consumption data from AGB survey.

² Exact costings of individual promotions are not presented but values given indicate the scale of activity.

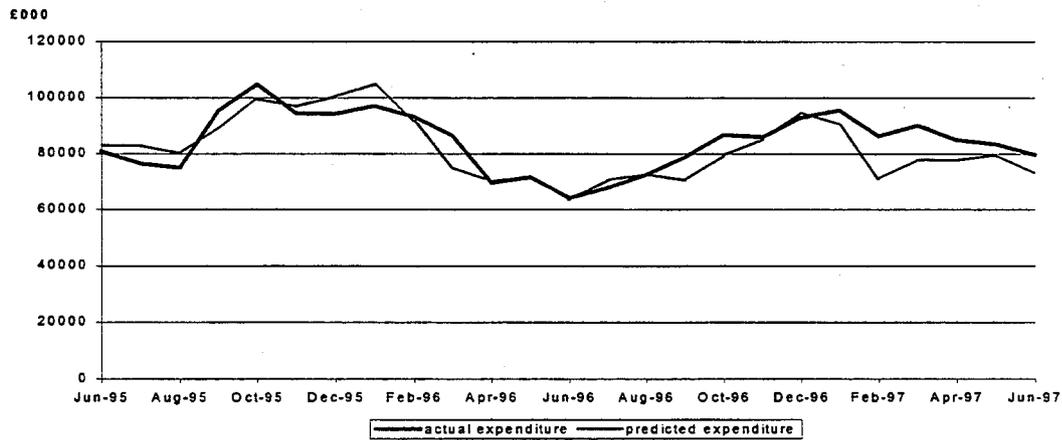
Source: AGB, Euro PA, MLC

Figure 4. AIDS Model Prediction of UK Retail Expenditure on Beef.



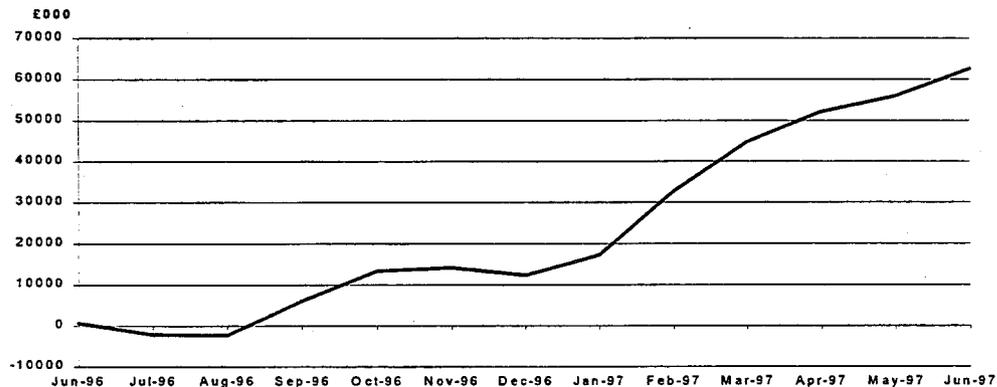
Note: Based on data from 90:1-96:4 and then predicted through 97:6. Source: AGB, Euro PA

Figure 5. Prediction of UK Retail Beef Expenditure during BSE Crisis.



Note: Based on data from 90:1-96:4 and then predicted through 97:6. Source: AGB, Euro PA

Figure 6. Cumulative Beef Sales Effect from MLC Promotions.



Note: Based on data from 90:1-96:4 and then predicted through 97:6. Source: AGB, Euro PA

Beef Industry Benefits from Promotion

The superior performance of the AIDS model in the earlier analytical period allowed the analysis of the BSE recovery period to safely assume that any under prediction of beef expenditures could be attributed to changes in other non-price, non-BSE impacts. The most likely of these was MLC's promotion campaign to counter negative BSE effects. Clearly, supermarket promotion activity and Government pronouncements would also provide relevant information that may mitigate BSE effects, and so would any positive information from the EU or other official bodies.

In fact, the AIDS model was shown to significantly under predict beef market share in the BSE recovery period. Figure 5 illustrates this under prediction. The cumulative effect of this is shown in Figure 6. This increase in share can be interpreted in total sales terms and is valued at c. £62.5 million at the retail level in the period June 1996–June 1997. It can be attributed principally to the only other non-price variable known to be acting in the market throughout the period – MLC's beef market recovery efforts.

Clearly the extent to which MLC promotion activity can be estimated to have influenced the overall beef market recovery depends on a number of additional factors. AGB information only captures just over 50 per cent of UK consumer beef expenditure. Therefore some account should be taken of the effect of promotional activity on the recovery of catering and processed beef sales (out of home expenditure). In addition to this, not all the cumulative additional beef sales will have been due solely to MLC activity. Multiple retailer promotions and other factors will have a bearing on the recovery of expenditure.

On the basis of the best estimates of industry margins available it is reasonable to argue that the beef industry received benefits of around £57 million from an investment of £14.3 million in MLC's beef recovery program. These extra sales are retained by the beef industry. This is a benefit:cost ratio of 3.97:1.

Summary

BSE's impact on the different meat species and meat cuts has varied significantly. BSE

negatively affected total beef sales and positively affected sales of pork, lamb and poultry meat. However, MLC's beef recovery promotion efforts have generated a positive return to the GB beef industry. On the basis of the estimated models and data available to Euro PA it appears that £3.97 of beef sales resulted from every £1 invested in MLC's program in the 13 months to June 1997.

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