3. Impact on the private sector

Assessing the impact on the private sector

3.1 During 1986–96 there was a decline in beef production and consumption in the UK. It is unclear to what extent BSE contributed to this decline, as a variety of factors probably gave rise to an overall downward trend in consumption.

3.2 One approach to assessing the impact of BSE on the private sector is to examine the following areas:

- the fall in beef production;
- the rise in production of substitute products;
- the increases in real resource costs of production; and
- the transitional adjustment costs.\(^9^4\)

3.3 Part 1 examines market trends and movements in the light of the fall in beef production and consumption and the concurrent rise in production and consumption of substitute products.

3.4 Part 2 examines the increases in real resource costs of production and the transitional adjustment costs by focusing on individual sectors of the beef industry.

Part 1: The Market

Introduction: the role of agriculture in the economy

3.5 Dairy and beef farming are important sectors of UK agriculture. Over the past 20 years, the output of finished beef cattle has varied between 15 and 18 per cent of total UK agricultural output, to which it has consistently been the third most important contributor. In 1995 the value of output of finished cattle and calves amounted to £2.6 billion.\(^9^5\) The output of dairy cows has varied between 19 and 22 per cent of total UK agricultural output over the past 20 years, ranking behind only field crops as the prime contributor to agricultural output.

3.6 A regional analysis shows that the beef industry is of greater importance to the economies of Scotland and Northern Ireland than to the UK as a whole. In 1995, for both countries, the industry accounted for about 27 per cent of gross agricultural output.\(^9^6\)

\(^9^4\) This was the approach taken by DTZ Pieda Consulting in a report commissioned by HM Treasury and MAFF in examining the impact of BSE in the period after 1996. We feel their approach was useful and have adopted it here (M11 tab 2)

\(^9^5\) M44 tab 4 p. 9

\(^9^6\) M44 tab 4 p. 9
Beef production

3.7 Statistics about the production of meat cannot be equated with the consumption of meat in the UK. Production of a particular meat may increase while consumption declines, if the surplus is exported. Likewise production can decline but consumption can increase, with the difference being made up by imports. So, when examining the economic condition of the beef and veal industry, it is necessary to look at both production and consumption, but it is important to keep the two concepts separate.

3.8 Over the period 1986–96 beef came from three main sources:

- calves from the dairy herd;
- cull cows (cows that had been utilised for milk production); and
- specialist beef herds.

3.9 In 1995, for example, 41 per cent of beef was from calves from the dairy herd finished as beef cattle, 22 per cent was from cull cows and 36 per cent from specialist beef herds. Adult bulls and imported cattle made up the remainder.97

3.10 Over the first half of the 1980s the volume of beef production generally averaged between 1.0 and 1.2 million tonnes per annum. From the mid-1980s volumes began to decline as the introduction of EU milk quotas led to contractions in the dairy herd, which in turn reduced the supply of calves for beef. The growth in live calf exports further exacerbated the decline. It is unclear whether BSE was a further factor.

3.11 As can be seen in Figure 3.1,98 production levels have generally been below 1 million tonnes per annum since 1988 and were as low as 860,000 tonnes in 1993.99

Figure 3.1: UK volume of beef and veal production, 1986–95

Source: MAFF (M15B)
3.12 The value of beef (which includes subsidies paid to producers) rose slightly during 1986–95. Figure 3.2 illustrates the movements in the value of production over the period. This measure combines the two factors of volume and price. Since the volume of production fell over the same period, it suggests that the price for livestock increased.

**Figure 3.2: UK value of beef and veal production, 1986–95, at cash prices**

![Bar chart showing the value of beef production from 1986 to 1995.](chart)

3.13 However, firstly, the majority of the increase in the cash value of production was associated with increased subsidy, such as the suckler calf premium and beef special premium. And secondly, the rise in value holds good only when measured in cash terms. When measured in real terms, value declined. As is examined in more detail in Chapter 4, both the market price for cattle and the retail price of beef lagged behind the Retail Price Index for all items.

**Production of substitute meat products**

3.14 From 1986 to 1995 there was a significant increase in the volume of poultry meat production. As can be seen in Figure 3.3, production increased from 937,000 tonnes in 1986 to 1,389,000 tonnes in 1995. This represented an increase of approximately 50 per cent in production over the entire period. Year-on-year growth averaged 4 per cent.

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100 Figure 3.2 has been produced from the MAFF Annual Reviews of Agriculture in M15B. The figures used are collated from several of the Reports, and the ways in which they were produced may have varied. (M15B tab 3 p. 37; tab 7 p. 47; tab 10 p. 65)

101 Figure 3.3 has been produced from the MAFF Annual Reviews of Agriculture in M15B. The figures used are collated from several of the Reports, and the ways in which they were produced may have varied. For pigmeat and sheepmeat, the figures do not include meat offal or trade in preserved or manufactured meat products. For sheepmeat, boneless meat has been converted to bone-in weights. (M15B tab 3 pp. 38–40; tab 7 pp. 48–50; tab 10 pp. 67–9)
There were a number of explanations for this increase. One of the main reasons was that there were no quotas or subsidies for poultry production under the Common Agricultural Policy (CAP), and therefore the producers could respond quickly to the increased demand by raising production rather than increasing the price. Furthermore, consumption of white meat rose as it was affected by consumer lifestyle choices and dietary concerns.

Pigmeat production over the same period was relatively constant, hovering around 1 million tonnes a year. Sheepmeat production did, however, experience steady growth before flattening out. As can be seen in Figure 3.3 above, production increased by 30 per cent from 301,000 tonnes in 1986 to 400,000 tonnes in 1995, with a peak of 418,000 tonnes in 1991. As with poultry, the production of sheepmeat was not regulated by the CAP, at least up until 1992, and as demand for the product grew, production increased accordingly.

Despite the increased production of sheepmeat and poultry meat during the period, the UK was, and remained, a net importer of both. In beef and pigmeat, during this period, the UK vacillated between being a net importer to a net exporter from year to year.

Meat consumption and substitution between products

In 1988 consumption of all meat products peaked at 3.834 million tonnes. As can be seen in Table 3.1, consumption was steady over the period 1986–95, though with significant variations among the various meats consumed. In 1995 about 97 per cent of UK consumers ate meat in an increasing variety of forms. 

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102 M15B (MAFF Annual Reviews of Agriculture)  
103 Table 3.1 has been produced from the MLC Yearbooks. The relevant extracts from the Yearbooks can be found in M44A tab 9. The figures used are collated from several of the Yearbooks, so the way that they were produced may have varied.  
104 M11 tab 2 p. 4 (Report by DTZ Pieda Consulting)
Over the period 1986–95, the share of beef and veal within total meat consumption declined from approximately 31 per cent in 1986 to 24 per cent in 1995, being mostly replaced by poultry which increased its share from 27 to 34 per cent. Per capita beef consumption also declined by about 35 per cent, or 6.7 kg per person per year.  

The decline in beef consumption in the UK market was mirrored, but to a lesser degree, by a decline in the EU markets. Beef consumption in the 12 Member States of the EU fell by 2.2 kg per person during the same period. Consumption also declined in the United States, and by 1995 had fallen by approximately 25 per cent from the peak levels of 1976–77. As with the UK, the main loss in market share was to poultry and, to a limited extent, pigmeat.

Factors contributing to the decline in beef consumption

Many factors other than BSE may have contributed to the decline in beef consumption and to its substitution with other products during the period 1986–96, not least the gradual erosion of beef’s position in a competitive market by the relatively cheaper prices for pork and poultry. There were also substantial changes in the socio-economic environment which had an impact, including:

- reductions in the average size of the family unit and the growth of single-person households, leading to fewer traditional family meals based on large amounts of meat;
- growth in the trend towards shopping in large supermarkets that offer the consumer a vast array of attractive products and meal solutions (which tend to incorporate relatively cheaper meats, particularly poultry, in the product);
- growing awareness and interest among consumers in healthy eating and concerns about food safety, the environment and the welfare of animals. The image of beef, perceived as a more fatty and less healthy meat by consumers, has suffered;

Source: MLC Yearbooks (M44A tab 9)
changing work patterns that have resulted in the growth of full-time employment among women. With less time for meal preparation, some of the more traditional cuts of beef, such as the roast, have suffered; and

shifting leisure patterns with less time being spent on formal meals.110

3.22 It is not possible to quantify the extent to which BSE may have had an impact on beef consumption during this period. The basic factors that contributed to the long-term decline in UK beef consumption also apply to other EU countries and the United States.111 The EU had its own health scares, linked particularly to the use of hormone growth-promoters in beef and veal, which may have had some impact on the consumption of beef as well.112

The impact of the media on consumption

3.23 The coverage of BSE in the media, and developing consumer awareness, may have affected consumer demand on several occasions. In May 1990 a spongiform encephalopathy was discovered in a cat. This discovery was the subject of intense media interest and seems to have had an impact on the market.113

3.24 Mr Stephen Wentworth of MAFF’s Meat and Livestock Group, minuted the Parliamentary Secretary, Mr David Curry, on 22 May 1990 briefing him on the state of the beef market and the need for market support measures. He wrote:

The adverse publicity concerning beef and BSE has affected demand both at retail level and at livestock markets. At retail level the impact is varied. The greatest effects seem to be in the South East and Midlands with some retailers reporting reductions in sales by one third to one quarter. However, circumstances clearly vary considerably from retailer to retailer and shop to shop. There are some who report business much as usual. The situation is also complicated by the number of public holidays at this time of year, the warm weather and the impact of high interest rates all of which tend to reduce demand.114

3.25 Figure 3.4 shows the weekly price of clean cattle (ie, cattle that have not been used for breeding) from May to July 1990. As can be seen, there was a small decline in the price in May, although this might not have been as a result of the feline encephalopathy case, since cattle prices tend to fluctuate for a number of reasons.

110 M11 tab 2 p. 5 (Report by DTZ Pieda Consulting)
111 M44 tab 4 p. 22 (Report of the Meat and Livestock Commission)
112 M11 tab 2 p. 5 (Report by DTZ Pieda Consulting)
113 YB90/5.22/3.1–3.5 & M11 tab 2 p. 2
114 YB90/5.22/3.1
3.26 In November and December 1995 there were a number of television programmes which exposed gaps in the integrity of the control of the bans on specified bovine material entering the animal feed chain. This resulted in heightened consumer concern and may have depressed consumption of beef before Christmas 1995 and in early 1996.115

3.27 Studies by Michael Burton and Trevor Young, at the University of Manchester, suggested that publicity surrounding BSE was responsible for a 4.8 per cent decline in the demand for beef over the period 1990–93.116 As with any macroeconomic study, they were not able to hold constant other factors that may also have affected demand, such as increased concern about cholesterol or the use of growth hormones in cattle, which also generated adverse publicity about beef. While the conclusions reached in their studies may well be correct, we view the results only as evidence supporting the general proposition that BSE had an adverse impact on the demand for beef, rather than as a precise quantification of that impact.

Part 2: Impact of BSE on the beef and cattle industry by sector

3.28 It is very difficult to assess the impact of BSE on the beef and cattle industry as a whole during 1986–96. There was a continuing process of consolidation, privatisation,117 integration and rationalisation within the various sectors of the entire industry during this time, which makes it hard to attribute economic effects specifically to BSE. The existence of intervention buying, support prices, milk quotas and compensation schemes also blunted or distorted the impact of BSE and obscured the picture. Lastly, as discussed above, the general decline in demand for beef further clouded the view of the economic impact of BSE on the industry.

3.29 In this section we will examine the various sectors of the beef and cattle industry to see where the costs or losses that are clearly attributable to BSE first
3.30 The key sectors discussed in this section are:

i. farmers;

ii. meat processing industries – slaughterhouses, head boners, mechanically recovered meat (MRM) producers, meat packers, butchers and related trades;

iii. renderers;

iv. knackers;

v. feed manufacturers; and

vi. peripheral industries.

Background

3.31 We do not attempt here to explain in detail the operation and economics of the various sectors, or their interrelationships, but only to look at the impact of BSE on them. Volumes 12 and 13 of this Report give a much fuller account of these industries.

3.32 Volume 12: *Livestock Farming* examines various aspects of farming in the UK, with particular attention to cattle and dairy farming. It includes discussion of subsidies, intervention buying, agricultural practices, and marketing and feeding practices which, taken together, provide a background for understanding the economics of farming.

3.33 Volume 13: *Industry Processes and Controls* examines in detail the operation of slaughterhouses, head boners, MRM producers, knackers, renderers, and animal feed and pet food manufacturers.

3.34 A succession UK Regulations and Orders, as well as EU Directives and Decisions, had immediate and serious economic consequences for the various sectors of this industry, and their implementation was often a watershed economic event. We allude to this legislation throughout but for a full explanation of these Statutory Instruments, we primarily refer the reader to vol. 3: *The Early Years, 1986–88*, vol. 5: *Animal Health, 1989–96*, and vol. 6: *Human Health, 1989–96*.

Farmers

3.35 For farmers, the illness and death of individual animals was the most direct and immediate economic loss attributable to BSE. Until 8 August 1988, there was no compensation scheme, and the loss of the animal was borne entirely by the individual farmer.

3.36 We do not have figures for the number of farmers who suffered such a loss before the introduction of a compensation scheme. However, as at 5 August 1988 there were 767 confirmed cases of BSE,\(^\text{118}\) and this figure provides the basis for...
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calculating the minimum loss. Given that £575\textsuperscript{119} was the average market price per
head of cattle during this period, it would seem that the minimum loss for farmers
collectively was £441,000 before the introduction of the compensation scheme on
8 August 1988.\textsuperscript{120}

3.37 However, these losses would have been spread among 621 different herds.\textsuperscript{121}
That translates into a loss per farm of only about £710.

Compensation schemes

3.38 The Government introduced a compensation scheme in August 1988 (see
paragraph 2.39). Farmers who gave evidence to the Inquiry considered the
compensation – broadly amounting to 50 per cent of the value of the animal when
healthy – was adequate,\textsuperscript{122} although farmers in Wales almost immediately pressed
for 100 per cent compensation for all cattle slaughtered because of BSE.\textsuperscript{123}

3.39 Mr Jim Harrison, a farmer from West Sussex, said in his statement to the
Inquiry that he sent a letter to the Minister complimenting him on the level of
payment for suspects, and that he thought it was on the generous side of fair.
However, he also gave a few instances where valuations of cattle were a problem.
Anyone sending in cows for export, for example, might not be as satisfied. Indeed,
dissatisfaction eventually increased both over the basis and timing of the valuations
and over the level of compensation.\textsuperscript{124}

3.40 Although occasional disagreements over the valuation of animals did occur
early on,\textsuperscript{125} losses were still quite low at this point and were so sporadic that they
were no larger than the occasional losses that farmers always experienced from
disease and accidents. It was still considered to be a part of the normal cost of
operating a farm.\textsuperscript{126}

3.41 Had there been substantial losses within individual herds during this period,
farmers would have suffered from being compensated at only 50 per cent of the
value of the animal. However, the deaths due to BSE in the period from 8 August
1988 to 14 February 1990, when compensation was increased to 100 per cent,
tended to be spread very broadly and thinly, with only a few affected animals within
a herd.

3.42 About 10,700 head of cattle were lost to BSE between August 1988 and
February 1990.\textsuperscript{127} Taking the average market price for cattle during this period of
£645,\textsuperscript{128} a compensation rate of only 50 per cent (ie, £322.50 per cow) instead of
100 per cent suggests that farmers collectively had to bear a loss of £3,450,750.
Since, by the end of 1990, 6,378 herds had suffered a loss, individual farmers with
an infected herd can be estimated to have lost an average of 1.68 head of cattle. This would translate into an average loss of about £542.

3.43 The growing number of deaths attributed to BSE, and public concern that suspects might not always be notified because the compensation was too low, led the Government to increase the basic compensation level to 100 per cent of the market value of the animal. Although there seems to have been a small measure of dissatisfaction with this scheme as well, with some farmers being slightly over-compensated and others under-compensated, any resultant losses at individual farm level cannot be readily quantified.

3.44 In summary, it appears that, collectively, farmers could have suffered uncompensated losses of about £4 million due to the death of infected cattle up to February 1990.

Limitations on the sale of milk

3.45 In December 1988 an Order was made prohibiting the use of milk from suspect cattle for any purpose other than feeding to the cow’s own calf. Farmers would thus have lost the value of the milk produced by the affected cows. However, there was a relatively short period between the date on which an animal was suspected of having BSE and the date on which it was slaughtered, so that the amount of milk produced by such an animal would have been relatively small. Therefore it does not appear that this loss was other than marginal and temporary.

The market price of cattle

3.46 A second way in which BSE hurt farmers was its impact on the market price of cattle. As was discussed in some detail in Part 1 of this chapter, it is impossible to quantify the role that BSE played in the long-term decline of the demand for beef. There were certainly some points at which public pronouncements about BSE and sharp declines in market prices were closely linked in time.

3.47 The export of beef from the UK is discussed in Chapter 6. We mention here that in 1990 the European Union imposed Commission Decision 90/261, which required that all bone-in beef exported by the UK to Member States be ‘fresh bovine meat derived from bovines which are not from holdings in which BSE has been confirmed in the previous two years’. In July 1994 the requirement was increased to six years. It was inevitable that in many cases these measures would mean that cattle which came from a BSE-affected farm ‘suffered a loss in value when they were put through the market’.

3.48 The impact of BSE on the market price of cattle would have been felt both by specialist beef farmers and by dairy farmers. For farmers raising cattle for beef, the market price of the finished animal is the main determinant of profit or loss. So while they may have benefited from the declining cost in purchasing calves for their herds, the declining value of cattle for slaughter had a significant, if difficult to quantify, impact on them.

129 L2 tab 4A (The Bovine Spongiform Encephalopathy Compensation Order 1990)
130 L2 tab 3 (The Bovine Spongiform Encephalopathy (No. 2) Order 1988, article 9)
131 L17 tab 7, article 2A
132 L17 tab 9 (Commission Decision of 27 July 1994 (94/474/EC), article 4)
133 M45 tab 6
3.49 The primary value of a dairy cow is in the milk that it produces and only secondarily its slaughter value at the end of its productive life. Milk prices, because of quotas and price supports, did not react to the emergence of BSE. There does not seem to have been a serious public concern about BSE and milk safety. However, dairy farmers routinely sell their surplus calves either for export to countries where there is a high demand for veal or to specialist beef farmers. The declining price of calves would thus have had a significant impact on dairy farmers.

Increased operating costs

3.50 Farmers faced marginally higher costs for concentrated cattle feed after the ruminant feed ban in July 1988.\[134\] This was because slightly more expensive protein concentrates replaced the meat and bone meal (MBM) that had been used for this purpose before that date.

3.51 However, the impact was minimal. MBM in concentrated cattle feed was seldom more than 5 per cent of a given mix, and the concentrated feeds themselves were only a small part of the animal’s diet. Furthermore, the market price of MBM and other protein concentrates, such as soyabean, was so close that even before the emergence of BSE, feedmills would use them interchangeably depending on the current market price.

3.52 Before the introduction of the BSE compensation schemes from 1988, increased veterinary costs would have been incurred by farmers when they called out veterinarians to diagnose and attempt to treat animals suffering from the disease. After the introduction of compensation, diagnosis was included in the scheme.

3.53 Before the emergence of BSE, knackers would pay farmers a small amount for their fallen cattle.\[135\] After the introduction of a voluntary ban on SBO in animal feed,\[136\] knackers began to charge farmers to remove the fallen animal. Farmers either paid the additional fee or disposed of the carcass by burial on the farm.\[137\]

3.54 Lastly, in response to BSE, farmers were required to keep breeding and movement records for all cattle.\[138\] Although farmers had generally kept such records beforehand, the new legislation required them to keep more detailed records for a longer period of time. This would have imposed a small, unquantifiable, additional operating cost on farmers.

Summary: the effect on farmers

3.55 It is difficult to isolate the overall economic effect BSE had on farmers up to 1996, but on the whole they were mostly cushioned from any direct impact by the compensation schemes.

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\[134\] Introduced as a result of the Bovine Spongiform Encephalopathy Order 1988 (L2 tab 1); see vol. 3: The Early Years, 1986–96

\[135\] Fallen cattle would include seriously ill or injured animals that had to be destroyed as well as animals that had died as a result of illness or accident on the farm.

\[136\] The Bovine Offal (Prohibition) Regulations 1989 banned the sale, supply or use of Specified Bovine Offal (SBO) for human consumption. This led the UK Agricultural Supply Trade Association (UKASTA) to introduce a voluntary ban on SBO in animal feed. In September 1990 the Bovine Spongiform Encephalopathy (No. 2) Amendment Order 1990 banned the sale, supply or use of SBO in animal feed (L2 tabs 3B and 5)

\[137\] S137 Rudman paras 18–19

\[138\] L2 tab 4B (Bovine Animals (Identification, Marking and Breeding Records) Order 1990); L2 tab 11B (Bovine Animals (Records, Identification and Movement) Order 1995)
The meat processing industries

3.56 The meat processing industries incurred additional costs, during 1986–96, as a result of BSE. These included increased processing costs, greater disposal costs and a loss of market for particular products. The following sections address the meat processing industries in turn and examine the individual costs that arose in each. Chapter 4 looks at who actually bore these costs in the end.

Slaughterhouses

3.57 Processing costs. After the introduction of the ban on human consumption of Specified Bovine Offal (SBO) in 1989, slaughterhouses incurred additional handling costs in order to comply with the Regulations. In practice, the slaughterhouse had to remove the SBO from the carcass, separate it from any other material going for human, and later animal, consumption and dispose of it according to the Regulations. Compliance with these Regulations required staff training in the new procedures and increased labour costs for the additional handling.

3.58 Once SBO had been severed from the carcass, it could not be stored in the same room as meat fit for human consumption, unless it had been stained or sterilised. Compliance with these procedures would have resulted in extra costs for slaughterhouses.

3.59 Loss of markets. After the introduction of the voluntary ban on SBO in animal feed, parts of the carcass that once had re-sale value for slaughterhouses increasingly became waste items that they had to pay to have disposed. Mr Brian Rogers, in evidence to the Inquiry on behalf of the United Kingdom Renderers’ Association, said:

The abattoirs [took] material from a pile where they would be paid £20 a ton for it, and put it in a pile where they would be charged £50–£70 a ton [to have it removed].

3.60 There was also a lost market for the disposal by slaughterhouses of bovine heads to head boners, who would remove the head meat. The impact of the SBO Regulations on this market is described in paragraphs 3.68–3.72 below.

3.61 Increased disposal costs. Slaughterhouses were faced with increased disposal costs as a result of the SBO bans. The Regulations provided that SBO material had to be removed in a sealed vehicle or in an impervious container, which was kept locked and sealed at all times and clearly labelled. As noted above, the slaughterhouses were forced to pay for the disposal of materials that they had previously sold.

3.62 An amendment to the SBO Order in late 1995 prohibited the use of the spinal column in the manufacture of mechanically recovered meat (MRM). MAFF estimated that this modification of the Order was likely to cost slaughterhouses an additional £1 million per year in additional disposal costs.

139 T60 p. 94 – Mr Brian Rogers of UKRA
140 L2 tab 3B article 11
141 L2 tab 15A
142 YB95/12.8/1.12
3.63 The Meat and Livestock Commission and MAFF surveys of cost. Both the Meat and Livestock Commission (MLC) and MAFF have estimated the additional costs for slaughterhouses as a result of BSE. In 1995 the MLC conducted a survey of eight cattle slaughterhouses in England and Scotland. The sample was chosen to reflect slaughterhouses of different sizes, and accounted for about 20 per cent of throughput in Great Britain.

3.64 The results of the survey formed an estimate of the added cost of BSE to the by-products operations of slaughterhouses since 1988. They produced an overall estimate of £7 per animal. On the basis of the number of animals expected to be slaughtered in 1995, the financial loss to the industry was estimated to be approximately £23.1 million for that year. It was expected that this cost would continue for as long as the BSE legislative measures were in place.

3.65 The division of the £7 cost by the MLC was as follows:

- loss in value of SBO products – £3.50 per beast;
- loss in value of non-SBO products – 50 pence per beast;
- removal costs of SBO – £2.50 per beast; and
- staining and additional labour costs – 50 pence per beast.

3.66 MAFF also assessed the added costs of BSE to the by-product operations of slaughterhouses. This was done in the context of a cost compliance assessment for the Specified Bovine Offal Order 1995. MAFF found that the recurring costs to a medium-sized abattoir (8,000 cattle a year) of complying with the Order would be £28,525 a year. This was equivalent to £3.56 for each animal. A division of the costs identified by MAFF was as follows:

- loss of value of head bones – 10 pence per beast;
- removal costs of heads – 46 pence per beast;
- removal costs of SBO – £2.40; and
- cost of staining SBO – 50 pence.

3.67 These estimates differ because the MLC survey assesses a broader range of costs including loss of value for SBO other than heads and the loss of value of non-SBO.

Head boners

3.68 Before the introduction of the human SBO ban, head boners had purchased heads from slaughterhouses and removed the head meat. The recovered meat was sold for inclusion in economy meat products. The brain was generally not recovered, and the heads, usually containing the brain, were sold on to renderers (see vol. 13: Industry Processes and Controls for further details).
3.69 When the 1989 Regulations designated the brain as SBO, head boners were faced with two, more costly, alternatives. They could, after the head meat was removed, send the intact head to the renderers as they previously had done. However, since these heads contained SBO, the head boners had to pay the renderers to take the heads rather than selling them to the renderers as had previously been the practice.

3.70 Alternatively, the head boners could open the head and remove the brain. The head could then be sold to the renderer as before. However, the head boners would still have to pay the renderers to take the brains, which were SBO, and they incurred additional labour costs in splitting the skulls and removing the brains. This alternative was removed by the 1995 SBO Order, which obliged head boners to treat the main portion of the skull (after removal of head meat) as SBO.

3.71 Before the 1989 Regulations, head boners received about £25 per tonne from renderers for the heads after the head meat had been removed. After the introduction of the Regulations, renderers were charging up to £80 per tonne for the removal of SBO.

3.72 After the 1989 SBO Regulations came into force, the demand for head meat started to decline. There were suspicions that blood from around the brain could infect head meat and many people became wary of using the meat at all.

Mechanically recovered meat (MRM) producers

3.73 The manufacture of MRM is a mechanised process of recovering the residual meat from bones after the saleable cuts have been removed from the carcass. Bovine MRM used to be included in a range of processed meat products for human consumption.

3.74 The human SBO ban in 1989 had little effect on MRM producers, since only the spinal cord (which was to be removed at the slaughterhouse), and not the spinal column, was classified as SBO.

3.75 A damaging setback for the producers of MRM occurred in 1995. The SBO ban was modified and the new legislation prohibited the use of the whole bovine vertebral column in MRM. One of the concerns leading to this decision was that spinal cord was not always fully removed from the vertebrae and could therefore contaminate MRM. The vertebral column was very important in the production of MRM, as it was the source of about 80 per cent of the mechanically recoverable meat from bovine waste. Indeed, it was so essential to economic production that a report prepared for MAFF in 1997 concluded that the ban on the use of vertebral column effectively brought an end to the production of MRM from cattle.

3.76 MAFF prepared a compliance cost assessment of the impact of this ban on MRM producers when it was introduced. It estimated that:

146 Volume 6: Human Health, 1989–96 describes MAFF guidance and the eventual legislative requirement that brain removal should occur only after harvesting head meat
147 Specified Bovine Offal Order 1995 (L2 tab 13)
148 IBD1 tab 7 p. 117 (House of Commons Agriculture Committee Fifth Report)
149 IBD 5 tab 17 p. 12 (The Leatherhead Report: Audit of Bovine and Ovine Slaughter and By-Products Sector)
. . . a typical production level [of a single processing plant] would appear to be around 450 tonnes per annum. The product has an average sale value of around 80p per kilogram, putting the value of the typical production [at] around £360,000 per annum.\(^{150}\)

3.77 The assessment concluded that, for the whole MRM industry, the lost sales could total about £4 million per annum.\(^{151}\) On this basis the lost sales between the end of 1995 and 20 March 1996 may have been £1 million.

3.78 Some producers of MRM were more dependent on bovine materials than others, but we have no evidence to indicate to what extent. In the industry as a whole only 5 per cent of MRM was derived from bovine material, so the impact on MRM manufacturers from the loss of cattle production was limited. Most MRM production was from poultry sources.\(^{152}\) It can therefore be seen that although part of the industry suffered as a result of BSE, it remained viable.

**Meat-packers/butchers**

3.79 Those involved in converting the dressed carcasses produced by the slaughterhouse into retail cuts of meat are a diverse group. Some meat-packers are independent but others are owned by supermarket chains. In some instances, slaughterhouses are also engaged in the value-adding process of meat-cutting. Some meat-packers tend to specialise while others handle a variety of meats. The high street butcher may run a one-man operation while a large meat-packer may employ hundreds of people in a number of processing plants. Because this group is so diverse, it makes it more difficult, in some respects, to generalise about it.

3.80 Meat-packers, as a group, did not incur additional costs as a result of BSE. The SBO ban required the slaughterhouse to remove the SBO material before transfer of the carcass to meat-packers, so they incurred neither the additional handling costs nor the disposal costs that had so deeply affected other related industries.

3.81 **Substitution of products.** Meat-packing operations specialising in beef would have felt the impact of declining demand for their product, and some of the drop in that demand, as previously noted, was probably due to BSE. But most meat-packers and virtually all butchers deal with a variety of meats, and overall consumer demand for meat increased during the time that the demand for beef decreased.\(^{153}\) The consumers’ decision to substitute other meats for beef more than offset the decline in demand and buffered meat-packers and butchers, as a whole, from any adverse impact of BSE.

**Renderers**

**Processing costs**

3.82 Rendering is the process of crushing and heating the waste from animal carcasses to extract tallow. When the tallow is removed, a high-protein solid, known as greaves, remains. As a result of further processing, greaves are shaped into

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150 YB95/12.8/1.11
151 YB95/12.8/1.11–1.12
152 YB95/11.27/7.2
153 See Table 3.1 in Part 1 of this chapter
powder meal or pellets and incorporated into animal feed as ‘meat and bone meal’ (MBM).

3.83 After the introduction of the animal feed SBO ban in 1990, renderers were faced with new handling costs, because they could no longer include SBO when producing MBM for consumption by animals.\textsuperscript{154} In fact these extra handling costs began to arise after the introduction of the 1989 ban on SBO for human consumption, because the UK Agricultural Supply Trade Association (UKASTA) introduced a voluntary ban on SBO in animal feed in November 1989. As a result, most renderers were forced to start treating SBO separately at this stage.\textsuperscript{155} The voluntary ban became compulsory in September 1990.\textsuperscript{156}

3.84 In order to make the ban effective, renderers had to prevent SBO (and material derived from it) from contaminating other material before, during and after the rendering process. A code of good practice was eventually introduced, and this was strengthened by the SBO Order 1995.

3.85 Restrictions on the use of SBO in the production of MBM were extended when the incorporation of SBO-derived MBM in feedstuffs for export to EU Member States, and later for export to third countries, and the incorporation of SBO in MBM for fertiliser were successively banned in 1990 and 1991.\textsuperscript{157}

3.86 During the period 1989–95, a number of different approaches were taken to the separation of SBO, including dedicated SBO processing plants, dedicated SBO and non-SBO processing lines within a single plant, and separate batching of SBO and non-SBO wastes. This last approach, required under the code of good practice, imposed extra costs because of the need to purge the system with non-SBO materials.\textsuperscript{158} The 1995 Order required that SBO could only be rendered on a separate line dedicated to that purpose.

3.87 In January 1993 the Animal By-Products Order 1992\textsuperscript{159} came into effect, implementing Council Directive 90/667/EEC.\textsuperscript{160} The Order required that if by-products fell within any of a list of categories of material suspected of presenting serious health risks to animals or man and if the by-products were disposed of by rendering, they had to be subjected to a temperature of at least 133°C for 20 minutes at a pressure of 3 bar (that is, 2.961 atmospheres), or to any of the various rendering systems specified in Commission Decision 92/562/EEC (a).\textsuperscript{161} The resultant product had to be free of heat-resistant pathogenic bacteria spores and salmonella. During the period to 20 March 1996 SBO was within these categories.

3.88 The operational changes in respect of handling SBO material and implementing the Animal By-Products Order 1992 will have given rise to additional labour costs, and one-off costs of planning and retraining, as well as the extra transportation and storage costs inherent in maintaining the segregation of materials both before and after processing.

\textsuperscript{154} S37C Foxcroft para. 4.8
\textsuperscript{155} S33B Rogers para. 4.5
\textsuperscript{156} L2 tab 5
\textsuperscript{157} Bovine Spongiform Encephalopathy (No. 2) Amendment Order 1990 (L2 tab 5: Export to EC Member States), Export of Goods (Control) (Amendment No. 7) Order 1991 (L2 tab 6: Export to non-Member States), and Bovine Spongiform Encephalopathy Order 1991 (L2 tab 7: restriction on use in fertilisers achieved via licensing requirements for disposal of SBO-derived MBM)
\textsuperscript{158} S33B Rogers para. 4.6
\textsuperscript{159} L1 tab 10
\textsuperscript{160} L4 tab 1
\textsuperscript{161} L4 tab 2
3.89 Some consideration was given to refitting plants so that the rendering process would inactivate the BSE agent. However, the temperatures thought likely to achieve this would have destroyed much of the nutritional value of the resultant MBM and would also have discoloured the tallow. One of the leading renderers, Prosper De Mulder, incurred costs funding research into possible inactivation procedures.

**Loss of the meat and bone meal (MBM) market**

3.90 The ruminant feed ban had a relatively limited effect on demand for MBM, since only some 10 to 15 per cent of production had been sold for incorporation into ruminant feed.162

**Disposal costs**

3.91 As a result of the restrictions described above, the greaves (or MBM) generated by the rendering of SBO materials were no longer a saleable commodity but an undesirable waste product.

**Knackers**

**Disposal costs**

3.92 Knackers collected dead or diseased animals from farms. Once such animals reached the knacker’s yard they could not be used for human consumption. Knackers processed the carcass, selling the meat to kennels, for example, or as pet food,163 and the hides to tanners. The remaining wastes went to renderers.

3.93 Before the SBO Regulations, knackers would pay farmers for fallen stock,164 and then receive payment for the processed carcasses and residual waste. After the voluntary and eventual legislative ban on SBO in animal feed, renderers began charging knackers for accepting SBO and knacker waste generally. The legislative ban was originally confined to SBO from animals ‘slaughtered’ in the UK, and thus did not apply to fallen stock. This oversight was corrected in 1991.165 It is unclear whether it was exploited to any significant degree.

3.94 The 1992 Animal By-Products Order required knackers to dispose of certain classes of potentially hazardous animal by-products by rendering in approved premises, incineration or burial.166 As a result of this Order, knackers were faced with higher disposal costs.

**Processing costs**

3.95 From 15 August 1995 SBO at knacker’s yards had to be stained blue (a different colour from that normally used by knackers), kept free from contact with

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162 S33B Rogers para. 2.7
163 In 1991 an estimate that each knacker sold an average of half a ton a week was described as 'possibly on the high side' (see vol. 13: Industry Processes and Controls, which deals with the supply of knacker meat to retailers and members of the public for pet food)
164 T34 p. 132
165 L2 tab 7, article 4, ‘definition: specified bovine offal.’
166 L1 tab 10 (Animal By-Products Order 1992, article 5)
other animal material, and disposed of in accordance with the SBO Order 1995.\textsuperscript{167} Extra costs, similar to those illustrated for slaughterhouses above, would have been incurred by much smaller operations that were less able to meet them.

\textbf{Loss of market}

\textbf{3.96} The main loss of market for knackers came with the introduction of the voluntary ban on SBO in animal feed. As renderers began to treat knacker waste generally as SBO, from March 1990 they started charging knackers instead of paying them for its removal from the knacker’s yards.\textsuperscript{168} In MAFF’s summaries of returns on the disposal of carcasses and waste from knacker’s yards and hunt kennels in 1991, reports were noted of renderers charging between £40 and £200 per tonne of knacker waste, depending on the renderer and whether it was SBO or not.\textsuperscript{169} Volume 13: \textit{Industry Processes and Controls} describes how this led knackers to introduce charges for the removal of cattle carcasses from farms, which in turn caused a decrease in throughput with reports of knackers closing down.

\textbf{3.97} Several knackers also sold meat from fallen stock for use by other industries. It is suspected, but not confirmed, that most of these sales were to pet food manufacturers. However, both Pedigree Masterfoods and Spillers Petfoods, two of the largest pet food manufacturers in the country, said in submissions to the Inquiry that they only used raw materials derived from carcasses passed as fit for human consumption, and therefore did not source their raw materials from knackers. Pedigree Masterfoods said that it had maintained this policy since the 1970s, while Spillers Petfoods had never purchased raw materials from knackers.\textsuperscript{170} Although it is unknown how much knacker material entered the pet food market, with the introduction of the various BSE-related Regulations and Orders, that market appears to have dried up.

\textbf{Feed manufacturers}

\textbf{Loss of raw material}

\textbf{3.98} The financial impact of BSE on animal feed manufacturers came early on with the introduction of the ruminant feed ban in 1988. Manufacturers that had previously used MBM in compound feeds for cattle and sheep had to substitute other sources of concentrated protein in their mix. They were free to continue to use MBM in pig and chicken feed.

\textbf{3.99} MBM was included at rates of 2 to 5 per cent in compound feeds, and at higher rates in protein supplements. An important factor affecting the amount of MBM in animal feed was its price in comparison with alternatives such as soyabean. One of the major compounders described the economic effect on the industry of the ruminant feed ban as follows:

\begin{quote}
The use of MBM in Bibby ruminant compounds, not ruminant protein concentrates, was typically 2%. It is difficult to say 10 years hence precisely what the ruminant MBM ban cost the industry. In raw material cost terms,
\end{quote}

\textsuperscript{167} L2 tab 13
\textsuperscript{168} YB80/2.13/5.1
\textsuperscript{169} YB91/8.23/1.1
\textsuperscript{170} S163 Malin para 17 & S168 Plant para. 3
one can estimate the impact by assuming that MBM was always some £25 per tonne cheaper than soya bean meal. Hence, as they have virtually the same protein content, the cost effect for this reason alone is 2% of £25, ie, 50 pence per tonne. However, this ignores the higher UDP [undegraded protein] and mineral content of MBM. Thus we recall costs increasing by some 50 pence in lower specification feeds and up to £1.50 in higher specification feeds. The timing of the ban in relation to the seasonality of ruminant feeding was helpful, to an extent, in recovering these costs in that Bibby would have been launching new products and issuing new price lists in late summer in advance of its winter dairy sales campaign. This price review would have accommodated many of the price differences. Moreover as all compounders had to remove MBM the effect was universal, ie, a level playing field.

With regard to protein concentrates, within which the inclusion level of MBM was much higher, the cost penalties would have been more significant. However, feed suppliers would have attempted to minimise these through re-formulation so making use of alternative protein sources and, again, the level playing field arguments applied.171

3.100 The same compounder described the impact of the voluntary ban on SBO in animal feed:

On 15 November 1989 Bibby wrote to all of its MBM suppliers stating that MBM supplies must not contain any SBO material or fallen animals as from 1 December 1989 . . . MBM supplies were audited by Bibby staff and action taken if appropriate, eg, removal from the approved supplier list if SBOs were not adequately segregated. In addition, MBM suppliers were asked to confirm abattoir audits especially with regard to removal of SBOs. The economic impact was insignificant and was probably lost amongst the usual market fluctuations in price. There was no market disadvantage to this action as it was universal amongst UKASTA members.172

3.101 The ruminant feed ban was extended on 29 March 1996 to prohibit the use of all mammalian meat and bone meal in feed for all farm animals.173 The consequential impact on feed manufacturers was much more substantial than any of the BSE measures taken during the period covered by the Inquiry’s terms of reference.

Processing costs

3.102 The precautions taken against cross-contamination of feedstuffs in feedmills are described in vol. 13: Industry Processes and Controls. These and other measures increasing the cost of production began to be introduced in 1994 onwards as concerns grew about cross-contamination and progress was made with development of an ELISA test for ruminant protein.

171 S154 Raine and Marsden paras 23 and 24
172 S154 Raine and Marsden paras 42–4
173 The Bovine Spongiform Encephalopathy (Amendment) Order 1996 (L2 tab 17)
Peripheral industries

3.103 Many other businesses have some tangential relationship to the beef and cattle industry, including pet food manufacturers, grocery retailers, tanners and leather goods manufacturers, pharmaceutical producers, auctioneers, specialist hauliers, waste disposal site operators, veterinarians and meat inspectors.

3.104 One peripheral industry that was substantially affected by BSE was gelatine manufacture. As news of the disease spread, customers began insisting on gelatine derived from bovine by-products of non-UK origin. In order to meet this requirement, manufacturers were forced to import their raw materials from countries not affected by BSE. Since there is a global market for gelatine, the manufacturers were unable to pass on these additional importation costs to their customers. The major UK manufacturer of gelatine, Croda Colloids, estimated its additional annual costs to be in excess of £500,000 per year during 1991–95. The impact after March 1996 was much more severe but is outside the scope of the report.

3.105 However, with isolated exceptions, none of the actors in these industries suffered any serious economic impact as the result of the emergence of BSE. Some businesses, such as pharmaceutical manufacturers, looked to foreign suppliers for raw materials (such as tallow and gelatine) with virtually no disruption. Other industries related to the beef and cattle industry, such as retailers, offset the drop in beef sales with increased sales of other meats. Some, such as pet food manufacturers, anticipated restrictions and shifted to using alternative protein sources even before they were required to do so by government regulation.

3.106 Some sectors actually gained from the emergence of BSE. Research projects employed scientists, and new Regulations resulted in a greater role for meat inspectors and veterinarians.

Summary: effects of BSE on the private sector

3.107 While Chapter 4 attempts to ascertain where the main economic impact finally fell, Table 3.2 has been constructed as an overview of the economic implications for each of the private sector industries affected by BSE. In many instances it has not been possible to quantify the effects. In these cases we have identified the likelihood of additional costs, without giving a figure. Where we have been able to isolate an amount, many of these figures are estimates.
Table 3.2: Summary of effects of BSE on the private sector, 1986–96, cash prices

<table>
<thead>
<tr>
<th>Sector</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farmers</strong></td>
<td></td>
</tr>
<tr>
<td>– uncompensated losses</td>
<td>£4.0 million</td>
</tr>
<tr>
<td>– limitations of sale of milk from suspect cattle</td>
<td>marginal, temporary</td>
</tr>
<tr>
<td>– market prices – dairy cattle</td>
<td>milk prices unaffected, reduced price for calves</td>
</tr>
<tr>
<td>– market prices – beef cattle</td>
<td>unquantified, significant impact</td>
</tr>
<tr>
<td>– increased operating costs</td>
<td>some, not significant</td>
</tr>
<tr>
<td><strong>Meat processing industries:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Slaughterhouses</strong></td>
<td></td>
</tr>
<tr>
<td>– increased disposal costs</td>
<td>handling and storage costs</td>
</tr>
<tr>
<td>– loss of markets</td>
<td>loss of market for re-sale of part of carcass</td>
</tr>
<tr>
<td>– increased disposal costs</td>
<td>£3.50–£7 per animal</td>
</tr>
<tr>
<td><strong>Head boners</strong></td>
<td></td>
</tr>
<tr>
<td>– increased disposal costs</td>
<td>previously received £25 per tonne, now paying £80 per tonne</td>
</tr>
<tr>
<td>– loss of market</td>
<td>decline from 1989 onwards</td>
</tr>
<tr>
<td><strong>Mechanically recovered meat producers</strong></td>
<td>Lost sales of approximately £1.0 million from end-1995 to 20 March 1996</td>
</tr>
<tr>
<td><strong>Meat packers/butchers</strong></td>
<td></td>
</tr>
<tr>
<td>– additional costs</td>
<td>no additional costs</td>
</tr>
<tr>
<td>– loss of markets</td>
<td>substituted other meats to offset reduced beef demand</td>
</tr>
<tr>
<td><strong>Renderers</strong></td>
<td></td>
</tr>
<tr>
<td>– additional processing costs</td>
<td>labour, storage and processing costs</td>
</tr>
<tr>
<td>– loss of market</td>
<td>loss of MBM in animal feed market</td>
</tr>
<tr>
<td>– disposal costs</td>
<td>previous saleable material now a waste</td>
</tr>
<tr>
<td><strong>Knackers</strong></td>
<td></td>
</tr>
<tr>
<td>– disposal costs</td>
<td>increased costs</td>
</tr>
<tr>
<td>– processing costs</td>
<td>similar to slaughterhouses</td>
</tr>
<tr>
<td>– loss of market</td>
<td>previous saleable material now a waste</td>
</tr>
<tr>
<td><strong>Animal feed manufacturers</strong></td>
<td></td>
</tr>
<tr>
<td>– loss of raw material</td>
<td>use of higher cost materials</td>
</tr>
<tr>
<td>– processing costs</td>
<td>some additional costs</td>
</tr>
<tr>
<td><strong>Peripheral industries:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Gelatine manufacturers</strong></td>
<td>£0.5 million per annum, 1991–95</td>
</tr>
<tr>
<td>Grocery retailers</td>
<td></td>
</tr>
<tr>
<td>Tanners and leather goods</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical producers</td>
<td></td>
</tr>
<tr>
<td>Auctioneers</td>
<td>no serious economic effect</td>
</tr>
<tr>
<td>Specialist haulers</td>
<td></td>
</tr>
<tr>
<td>Waste disposal sites</td>
<td></td>
</tr>
<tr>
<td>Vets</td>
<td></td>
</tr>
<tr>
<td>Meat inspectors</td>
<td></td>
</tr>
</tbody>
</table>

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