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Exploring the UK Red Meat Supply Chain



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Abstract

There is a diversity of organisations playing a European role and seeking to influence as well as to articulate different knowledge concerning foods, health and ethical issues. Further concerns over safety and quality of red meat have triggered many of the debates and subsequent changes in regulation at the EU and national levels. With this in the background and with the recognition that compliance with European Commission level decisions are beginning to have a strong impact on food safety policies within the UK, this paper attempts to map through the red meat supply chain. As the meat industry is subject to a wide range of regulations; this paper delves in detail the regulations applicable in the red meat industry and the various quality assurance schemes that are operational within the industry and explore the extent to which the various actors are involved in the management of the chain to ensure food quality and safety all along the chain.

About the BRASS Centre

In 2001, Cardiff University won £3.1 million in research funds from the Economic and Social Research Council to develop a Research Centre for Business Relationships, Accountability, Sustainability and Society (BRASS). The Centre is a joint venture between the University's Schools of Business, City & Regional Planning and Law. It brings together the three Schools' existing research expertise on issues of sustainability, business ethics, company law, corporate reporting and business communication.

The Centre started work in October 2001 under the leadership of Professor Ken Peattie of the Business School, Professor Terry Marsden of the Department of City and Regional Planning and Professor Bob Lee of the Law School. The funding of the Centre covers an initial five-year period, but this should just mark the beginning of BRASS' contribution to creating more sustainable and responsible businesses locally, nationally and globally.

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1.0 Introduction: Food policy in the UK and changing governance

In the period prior to the mid 1980s, public and private strategies to manage food risk depended heavily upon science-based, technological approaches. Under the regulatory regime that was in place then, food and agricultural production systems were regarded as being safe unless proven otherwise by technical and quantitative analyses. In this way, the state had a rational and scientific basis on which to rest relevant public health and food quality assurance policies. This time-honoured food regulatory approach, along with periodic on-site monitoring reinforced by a graduated scheme of penalties for breaches, allowed the state to play a key role in the food supply sector (Marsden *et al.* 2000). This conventional food regulatory regime was, for an extended period, successful in addressing food safety and related public health concerns.

Marsden *et al.* (2000) in *Consuming Interests* traced the transformation, since the mid-1980s, in how food risk is perceived and the new regulatory framework that has emerged to mediate new concerns that emerged in relation to food scares and new technological advances. In portraying the evolution that was taking place in food safety assurance strategies in the UK between the 1980s to 1990s, they pointed to a transition from a traditional government-led corporatist regulatory and monitoring model, to a new phase dominated by supply chain management, and food standards strategies, designed and applied by the large multiple food retailers. This phase in the evolution of food regulation in the UK is corporatist in nature, due to the conservative, proof-based approach enforced at the local level by Environmental Health Officers (EHOs) and Trading Standards Officers (TSOs) and this phase was driven primarily by the way food safety issues are perceived by large food retailers; leaving the state to act mainly as auditors rather than standard-setters and enforcers.

The two-tiered approach, where the state-centred system of spatial regulation on the one hand, and a new private-sector regulated supply chain approach operating on the other, became an embedded feature of food regulation in the UK in the mid 1990s. But, despite offering certain clear improvements in food quality assurance, this two-tiered approach allowed corporate retailers to distinguish themselves from their non-corporate competitors, and from each other, on the basis of the assurance of quality that they are able to deliver through stringent supply chain management. However,

because the greater assurance of food quality that the above phase of (private-public) food regulation engenders, it does not encompass the entire food supply chain, and given the continuing diversity and intensity of food risks, the pressure for further changes became apparent.

In response to these set of relationships – another phase in the evolution of food safety regulation started to take shape that saw major institutional changes across various countries in the EU and attempts made to introduce policy-making processes that are more open and consultative.

At the UK level, the creation of the Food Standards Agency (FSA) with an aim to promote food safety and food standards as a non-ministerial department focussing on the protection of consumers and their interests was marked as the emergence of a new phase of food regulation in the UK. One which complemented the private interest model set up by the corporate retailers. The aim was to establish an independent body with the credibility to assure UK consumers that foods available within the national agro-food supply chain were safe (MAFF 1997). Despite the, consumer-led trigger for the establishment of the FSA, there was public unease in relation to the corporatist style of decision-making process (MAFF 1997). As a consequence, the government agreed to remove certain key functions and responsibilities from the MAFF and Department of Health (DoH) and vest them in a FSA with the powers to set stringent food safety standards, as well as to enforce them, and this was followed by the inception of Department of Environment, Fisheries and Rural Affairs (DEFRA) in 2001.

Our earlier research (See Thankappan *et al*, 2004 for more details) assesses some of the key conceptual parameters and dynamics of this *new phase* in the evolution of food safety regulation in the UK, and the powers responsible for shaping this current regulatory framework.

It is recognised that the EU is increasingly the main source of food law that needs to be formulated in the UK. Directives covering food composition, food labelling, food marketing standards, additives, contaminants, nutrition, adulteration and food fraud provide a constant stream of new legislation. The general pattern so far has been one

of a gradually increasing set of rules on how to conduct European business. Thus there has been a proliferation of ‘guidance’, whether through the use of precedents or of codified rules. From our earlier research, we could identify some of the key facets, and more specifically dynamics, of the gradual *Europeanisation* of UK food policy.

There is a diversity of organisations playing a European role and seeking to influence as well as to articulate different knowledge concerning foods, health and ethical issues. For example, animal welfare groups and the consumer groups now have to tackle the intricacies of issues such as the precautionary principle, Genetically Modified Organisms (GMOs) and traceability, whereas in the earlier days it would have been core animal welfare issues. Part of *Europeanisation* now involves accommodating a wider and more disparate range of concerns and interests than those just associated with the quality of foods and safety baseline. Further concerns over safety and quality of red meat have triggered many of the debates and subsequent changes in regulation at the EU and national levels.

It is against this background and with the recognition that compliance with European Commission level decisions are beginning to have a strong impact on food safety policies within the UK, that this paper attempts to map through the red meat supply chain, and explore the extent to which the various actors are involved in the management of the chain to ensure food quality and safety all along the chain.

In 1986, the condition of meat entering the human food chain was regulated in three ways. Firstly, it was an offence for slaughtering to take place on any premises unless these met certain standards of hygiene and had been licensed. Secondly, animals and carcasses whose physical condition did not meet certain standards could not be admitted to a slaughterhouse. Thirdly, the carcasses of slaughtered animals had to be inspected and passed fit for human consumption.

The paper attempts to describe the powers and duties in place at the end of 1986 and chart the impacts these have on the governance system. Section two of the paper discusses the global situation of the red meat industry, giving a brief overview of production and consumption statistics. Section three proceeds to discuss the UK red meat industry. In this section, market statistics, trends in production and consumption

of each type of meat (beef, lamb and pork) are discussed in detail. The structure of the red meat supply chain forms the basis for discussion in the next section in the paper, where the beef, lamb and pork and organic supply chains are analysed in detail. Trade organisations play a key role in the red meat industry; therefore, section five of this paper gives a brief overview of some of the key organisations. The meat industry is subject to a wide range of regulations; the next section of this paper therefore delves in detail the regulations applicable in the red meat industry and the various quality assurance schemes that are operational within the industry. Section seven of the paper deals with traceability in the red meat industry focussing on the private and public initiatives. Finally section eight summaries the observations of the study.

1.1 Global Situation of Red Meat Industry

Many developed countries are witnessing deterioration in their trade balances for food as a result of aggressive competition from the developing world and a slump in global prices for certain commodities as low-cost producers increase their output. Further, outbreaks of disease like the BSE and the Avian flu are increasingly disrupting international trade in meat. The Food and Agriculture Organization (FAO) reports that import bans on meat produced in disease-afflicted countries in early 2004, for example, affected approximately a third of global meat exports, or 6 million tonnes. Although the bans have often been only temporary, the global meat trade, originally forecast to rise in 2004, is now anticipated to decline by 4%, to 18.4 million tonnes. Over the past 4 years, alternating disease outbreaks and recoveries have resulted in rapid shortages and increases in exportable meat supplies, leading to considerable fluctuations in international meat prices.

The global consumption of meat has tripled since 1961 and is continuing to increase rapidly, fuelled by rising living standards in major emerging economies such as India and China. As consumer incomes rise, they tend to buy more meat. Indeed, people in developed countries eat four times as much meat as those in developing countries.

Since 1961, average consumption of meat has risen from 56 kilograms (kg) to 89kg per person per year in Europe, and from 89kg to 124kg per person per year in the US, according to the FAO. In 1961, the Chinese ate only 4kg of meat per person per year, but that figure has now reached 54kg and is still rising. Growing demand for meat in

the developing world is the main factor driving global demand. Average annual consumption in Europe between 1991 and 2002, for example, was 48% higher than between 1971 and 1980, but global consumption rose by 97% over the same period. Consequently, Europe's share of global meat consumption fell from 33% to 25%.

The most significant increases in meat consumption over the past three decades have occurred in Asia (particularly China and the Pacific Rim countries) and in South America. In 1970, according to the FAO, meat consumption in Asia totalled just 13.5 million tonnes, but by the end of the 20th century that figure had risen to 81.5 million tonnes, and it is forecast to increase by a further 50% by 2010. In 1961, 6.5 million tonnes of meat were consumed in South America, but this figure rose to an annual average of 20.6 million tonnes in the period between 1990 and 2002. Over the same period, per capita consumption rose from 37.4kg to 60.9kg per year.

Total global meat production reached around 248 million tonnes in 2003, having risen by 8.3% since 1999.

Table 1: Global Production of Meat and Poultry Meat by Volume (million tonnes), 1999-2003

	1999	2000	2001	2002	2003
Volume (million tonnes)	229	234	238	245	248
% change year-on-year	-	2.2	1.7	2.9	1.2

Source: Key Note, based on figures from the United Nations Food and Agricultural Organization

As regards the consumption of meat, the US has one of the highest levels of meat consumption in the world. In 2002, each person in the US consumed an average of 200 pounds of meat (including red meat, poultry and fish) which is 23 pounds more than in 1970 (USDA).

The figures in Table 2 confirm the high levels of beef consumption in selected countries. The only country with higher per capita consumption levels is Argentina, traditionally a major producer of beef. However, whereas consumption of beef appears to have fallen in advanced economies such as the US and the EU between 1995 and 2003, it is rising rapidly in emerging economies such as China.

Table 2: Per Capita Consumption of Beef in Selected Countries by Volume (kg), 1995 and 2003

	1995	2003
Argentina	60.7	55.1
US	44.6	39.5
Brazil	36.7	37.4
Australia	36.0	34.2
New Zealand	28.5	31.4
Canada	34.1	29.3
Mexico	20.11	22.9
Russia	22.9	21.9
Former Soviet Union	16.9	19.8
European Union	19.9	15.4
South Korea	9.2	14.2
Japan	12.1	12.8
China	3.4	5.5

Source: Key Note, based on figures from the United Nations Food and Agriculture Organization and the US Department of Agriculture

2.0 The UK Red Meat Industry

The red meat industry across Europe has been marked by various incidents like, foot and mouth, Bovine Spongiform Encephalopathy (BSE) and a recession in most economies in EU countries. The latter has perhaps had a greater impact on the industry than the others, even though the foot and mouth and BSE have been high profile and have damaged consumer confidence. However, the tightening of economies has produced lower margins for processors and slaughterers to a degree where some companies have closed altogether and others have joined forces. This consolidation across the industry has been forced on it by external pressures. The demands of the consumer and the supermarket and the foodservice customer for quality control and assurance schemes, for traceability and for consistent production and consistent product have all had a bearing on the way the processors have conducted their business.

The UK farming and meat industries have experienced a number of severe setbacks over the last decade, including the BSE crisis in the 1990s and the outbreak of foot-and-mouth disease in 2001. Since 2002, however, the industry has benefited from a revival in consumer confidence. As a result, the value of UK livestock production increased in 2003 (Table 3).

Table 3: Livestock Production in the UK by Value (£m), 1992/1994, 2002 and 2003

	*1992/1994	2002	2003
Livestock production	6,738	5,751	5,997
Livestock products	3,613	2,966	3,218
Total	10,351	8,717	**9,216

* - averages over the period ** - does not sum due to rounding

Note: 'livestock production' refers to animals that are reared primarily for meat, whereas 'livestock products' refers to foods such as milk and eggs.

Source: Department for the Environment, Food and Rural Affairs

As regards the livestock numbers, the year 2003 saw growth in the UK cattle population for the first time since 1996 (Table 4). The dairy herd continued its long-term decline, with a 1.6% fall in numbers, owing to restrictions on milk production and increasing yields from dairy cows, but the beef breeding herd grew by 2.6% (DEFRA)

The number of sheep and lambs was virtually unchanged between 2002 and 2003, with a marginal fall in the breeding flock being offset by an increase in the number of lambs. Pig numbers fell by 9.7%, continuing the contraction in the breeding herd that has been evident since 1997.

Table 4 : Livestock Numbers in the UK by Type of Animal (000 head), 1992/1994, 2002 and 2003

	*1992/1994	2002	2003
Cattle and calves	11,910	10,345	10,517
Sheep and lambs	44,263	35,834	35,846
Pigs	7,817	5,588	5,047
Fowl	127,530	155,005	165,324

* - averages over the period

Source: Department for the Environment, Food and Rural Affairs

Table 5 offers an analysis of the financial results of the major companies involved in the production of meat and poultry meat products. The figures denote that larger companies enjoy much higher profit margins than smaller.

Table 5: Key Financial Ratios for UK Producers of Meat and Poultry Meat Products* (£000, % and £), 2003/2004

	Lower	Median	Upper
Turnover (£000)	1,045	10,346	35,295
Pre-tax profit (£000)	1	143	613
Pre-tax profit margin (%)	-0.37	1.52	4.59
Turnover per employee (£)	69,123	108,163	188,348
Average remuneration (£)	13,402	15,692	19,003
Working capital/turnover (%)	5.95	0.55	-4.35
Turnover/fixed assets (%)	4.04	6.42	10.47
Total debt/net worth (%)	188.95	65.46	13.88
Current ratio (%)	0.84	1.05	1.60

* based on results for 413 companies

Source: ICC Plum database

According to National Statistics, 905 VAT-registered enterprises were engaged in the production, processing and preserving of meat and meat products in 2004, (Table 6) which is a reduction from 990 enterprises in 2002 and 1,505 in 2000. These figures reflect the restructuring of the meat-processing industry that has taken place over the past 5 years, involving a large number of plant closures. At the same time, businesses are becoming larger as more vertically integrated operations are created.

Table 6: Number of UK VAT-Based Enterprises Engaged in the Production, Processing and Preserving of Meat and Meat Products by Turnover (£000, number and %), 2004

	Number of Enterprises	% of Total
Turnover (£000)		
1-49	45	5.0
50-99	55	6.1
100-249	130	14.4
250-499	95	10.5
500-999	105	11.6
1,000-4,999	245	27.1
5,000+	230	25.4
Total	905	*100.0

*does not sum due to rounding

Source: UK Business: Activity, Size and Location 2004, National Statistics

2.1 Regional Markets and Market Distribution

There are two distinct types of sheep farming in the UK: hill/upland sheep farming and lowland sheep farming. Hill farming is an 'extensive' system of farming, found in

areas such as Dartmoor, parts of Wales, the Lake District and the Yorkshire Dales. Lowland sheep farming is a more intensive system and is found in various parts of the UK. The beef-farming industry is concentrated in the uplands of Britain and the West Country.

The pig farming is concentrated in the south east of England. Some of the largest commercial pig units are located in the Chilterns, Oxfordshire, Berkshire and the Wiltshire border.

Most of the leading meat suppliers have processing plants, cold stores and distribution centres around the UK, but meat-processing plants tend to be located close to the areas where the animals are reared. This is because of the cost of transporting relatively low-value, high-bulk items, as well as the need to meet animal-welfare regulations.

Specialist butchers account for around 15% of meat sales by value (Table 7), but their share of the market is declining (Key Note, 2003). Over the past few decades, the supermarkets have gradually established a stronghold on the food market in the UK. More than 90% of the population use supermarkets as their main place of shopping. As a result, the major multiples have huge bargaining power, which they have used to squeeze the prices they pay food producers and other suppliers (for every pound's worth of food sold by retailers, farmers earn an average of 34 pence, a share that has fallen by 28% since the late 1980s).

Table 7: UK Sales of Meat by Retailer by Value (%), 2003

Major Retailers	Value of Sales (%)
Tesco	23.0
ASDA	15.5
Morrisons	15.0
Specialist butchers	15.0
Sainsbury's	13.5
Marks & Spencer	4.0
Others	14.0
Total	100.0

Source: Key Note

3.0 Market Trends

Meat is an essential part of the UK diet, accounting for 24.2% of household expenditure on food in 2003 (National Statistics). Meat's share of total spending on food rose sharply in 2003, reflecting the increase in the prices of some meats but also an apparent recovery in consumer confidence in meat as memories of the BSE crisis fade. Other key trends affecting meat consumption include increasing demand for convenience foods, such as ready-to-cook meat products and ready meals, and growing concern about the sources of foods, which has helped to fuel demand for organic and free-range produce.

The last three decades have seen increasing demand for convenience products in every sector of the food market, driven by the accelerating pace of life and the growing number of working women. In the red meat industry, this trend initially increased sales of frozen foods such as chicken nuggets. However, chilled products have seen the greatest growth in sales over the past five years. A wide range of ready to cook chilled meat products is now available from supermarkets.

The outbreak of BSE in the 1990s prompted many consumers to reduce their consumption of beef, to switch to other meats (such as poultry) or even to cut meat out of their diets completely. In 2003, the volume of sales of beef increased by around 3% (Key note, 2003) and spending on red meat rose sharply, triggered by the popularity of the Atkins Diet. Consumers also appear to have regained their confidence in beef as the BSE crisis has faded from the public consciousness.

The low-carbohydrate, high-protein diet craze has faded during the past year, and so has demand for beef and pork. The weakening demand however has had little impact because the declines have mobilised food companies to turn things around, meatpacking giants are bringing out new products and convenience items to shore up demand.

Rising incomes and growing demand for convenience foods are driving sales of added-value products. A wide range of cooked meats and ready-to-cook products in sauces are now available in the chilled cabinet, and many supermarkets have introduced take-away-food areas with rotisseries where customers can purchase ready-to-eat chickens, spare ribs and other meat cuts.

The success of added-value products has encouraged suppliers to develop brands in an attempt to de-commoditise the sector. Sainsbury's, for example, has focused on premium opportunities with its Taste the Difference free-range chicken and a breed called Devonshire chicken. In addition, Sainsbury's and other retailers have developed premium brands of sausages and other meat products.

3.1 UK Beef Market Trends

The total volume of meat available for domestic use in the UK declined in 2000 and 2001, but subsequent years saw a recovery from the effects of the foot-and-mouth and BSE crises.

Volume sales of beef rose by around 3% in 2003, and by around 4% in 2004, (Table 8), boosted by the Atkins Diet and by sales of cuts for the barbecue (Key Note, 2003). This growth is significant because beef represents more than half of the red-meat market and because it suggests that UK consumer confidence in beef has finally been restored. Positive growth has been seen in most segments of the beef market (Figures 1 and 2).

Table 8: UK Beef market trends (1990-2004)

Beef Supplies '000 tonnes	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Production	1001	974	702	696	697	678	707	652	692	696	709
Imports ^a	174	173	187	217	160	191	188	256	314	330	343
Exports ^a	124	274	58	0	0	0	0	0	0	10	10
Total consumption	983	901	740	842	874	914	940	922	987	1015	1035
UK Market share %	82	81	75	74	82	79	80	72	68	67	67

^a Carcass weight equivalent

Fig. 1: UK Beef Production trends

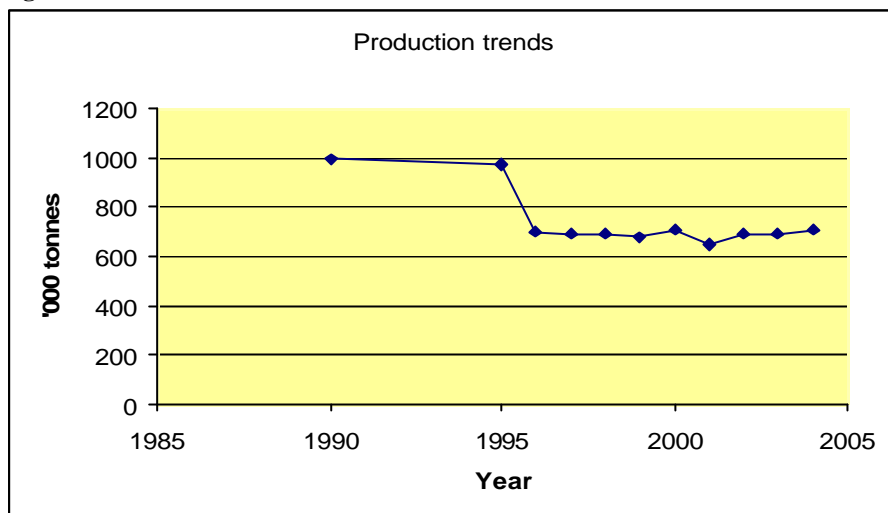
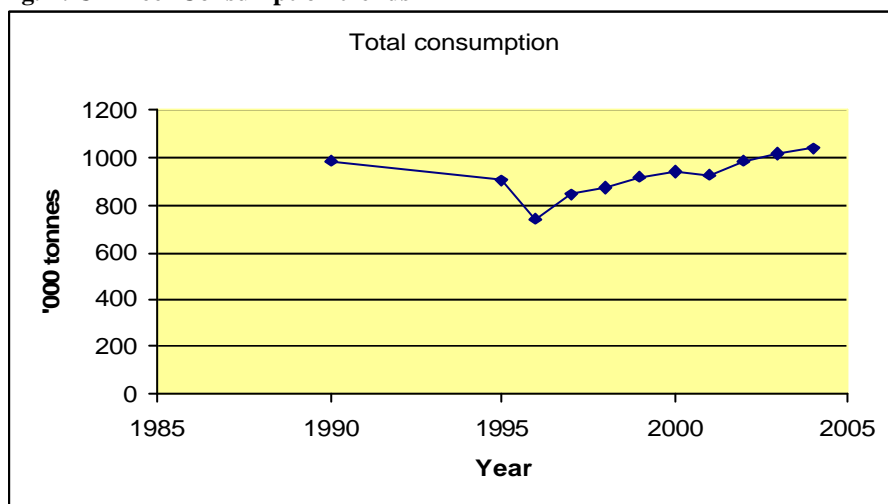


Fig. 2: UK Beef Consumption trends



3.2 Beef Imports and Exports

Table 9: Imports from top 5 countries in the year 2004

Countries	'000 tonnes	Percentage
Ireland	190.6	55.5
Brazil	44.9	13.1
Netherlands	20.6	6.0
Germany	12.5	3.6
Italy	11.7	3.4
Other countries	63.1	18.4
Total	343.4	100

UK imports of meat have risen steadily over the past 5 years (see table 10 below). The growing production of meat in emerging economies such as Brazil has enabled retailers to source lower-cost supplies from overseas, and UK producers, which have much higher costs in terms of land and labour, have struggled to compete. British beef

exporters are hampered by controls introduced as a result of the BSE outbreak in the 1990s: the ban on beef exports ended in 1999, but strict traceability rules mean that only a small amount of British beef goes abroad. The UK no longer has the highest level of BSE infections in Europe, but it is the only country with limitations on its exports.

Table 10: UK imports and exports of Beef from and to EU 24 Countries

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Imports Thousand Tonnes	103.4	91.5	78.9	62.2	94.6	75.6	97.4	104.4	136.2	158.5	204.4
Exports Thousand Tonnes	149.8	203.1	222.6	51.2	5.7	4.7	5.5	5.2	5.3	5.2	5.5

Source: <http://statistics.defra.gov.uk>

3.3 UK eating out market and the beef industry

The total income generated in 2000 from catering services ie, all meals eaten outside the home, was estimated to be £56bn by the Office of National Statistics. The value of restaurant brands was estimated by Mintel at £11.5bn in 2000, rising to £12.2bn in 2001. Growth is set to continue. More and more people are eating out and are becoming more sophisticated in their choices (Tragus, 2004). This makes for a very dynamic and buoyant market. Leisure dining is changing, developing new areas as a restaurant revolution takes place. The UK eating out market is highly dynamic and fast growing. New concepts and formats are emerging all the time whilst sectors that have expanded dynamically over the past decade are now consolidating and their growth rates slowing. The market is now best viewed as a spectrum with concepts incorporating the best elements of each other in order to grab a bigger slice of market share.

The fast food burger market is a well-defined segment of the general eating out food market. In the UK, the major players include McDonalds, Burger King, Whitbread, TDR/Capricorn group and Wimpy. Over the period between 1974, when the

McDonalds chain started in the UK, to 1995, the fast food market grew significantly in the UK at the expense of earlier fast food businesses, primarily fish and chips.

McDonald's is the leading provider of quick service food globally McDonalds owns 27,000 restaurants in 119 countries and is the clear market leader in fast food. In the UK, the company has 1,250 restaurants, around 500 of which are franchised operations. McDonald's is the largest user of beef in Europe. Eight to nine thousand cattle a week are required to satisfy their beef requirement in the UK (FCC, 2003). 14 abattoirs in the UK and Ireland provide all of McDonald's British Isles beef. Forequarter and flank is used to produce the famous hamburger patty. Each abattoir therefore also needs a good outlet for the hindquarter and this is mainly achieved through long term relationships with multiple retailers. Carcase balance is therefore less of a problem for McDonald's suppliers (FCC, 2003). Esca Food Solutions Ltd. (formally known as McKey Food Service Ltd) is the exclusive supplier of beef patties to McDonald's UK.

3.4 UK Lamb Market Trends

Volume sales of lamb, which were hit hard by the foot-and-mouth outbreak in 2001 continued to decline in 2003 but were showing signs of growth by the end of 2004. Tables 11-13 below and figures 3 and 4 highlight the UK lamb market trends.

Table 11: UK Lamb Market Trends

Lamb Supplies '000 tonnes	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Production	370	364	345	321	351	361	361	259	300	300	306
Imports ^a	145	138	149	141	131	127	123	106	115	127	132
Exports ^a	80	147	130	108	109	110	99	31	62	77	74
Total consumption	429	351	366	352	373	380	390	335	353	350	366
UK Market share %	66	61	59	60	65	67	68	68	67	64	64

^a Carcass weight equivalent

Fig. 3: UK Lamb Meat Production trends

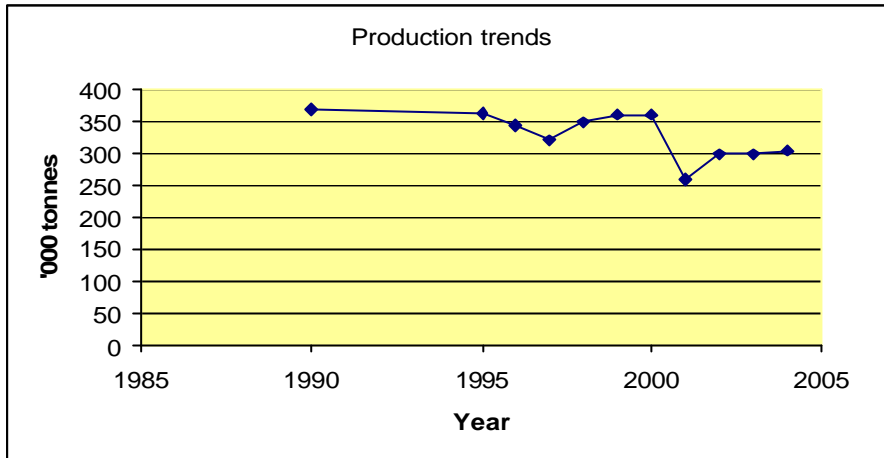


Fig. 4: UK Lamb Meat Consumption trends

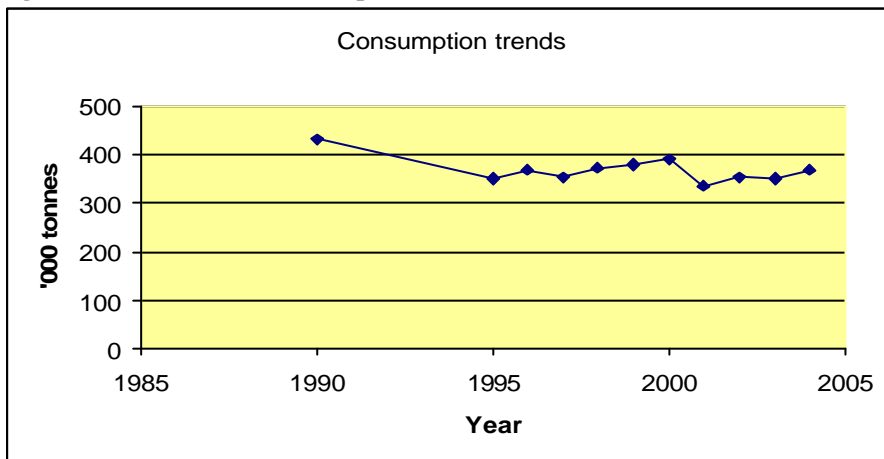


Table 12: Lamb meat Imports from top 5 countries in the year 2004

Countries	'000 tonnes	Percentage
New Zealand	82.3	62.3
Australia	13.8	10.5
Italy	11.9	9.0
Ireland	7.5	5.7
Netherlands	3.5	2.7
Other countries	13.0	9.9
Total	132.1	100

Table 13: Lamb meat Exports to top 5 countries in the year 2004

Countries	'000 tonnes	Percentage
France	55.8	75.6
Belgium	5.2	7.1
Germany	4.0	5.4
Italy	3.1	4.2
Ireland	2.2	2.9
Other countries	3.5	4.8
Total	73.8	100

3.5 UK Pork Market Trends

The bacon and ham sector grew by 6.2% in value terms between 2000 and 2004. Rashers account for around 90% of bacon sales by value, with joints, chops and steaks making up the remainder. Ham accounts for around half of the £1.6bn cooked-meats market in the UK. Demand for convenience foods has boosted sales of both ham and other cooked meats over the past 5 years. Tables 14-16 and figures 5-6 show the market trends in the UK pork sector.

Table 14: UK Pork Market Trends

Pork Supplies * '000 tonnes	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Production	735	759	776	872	920	825	728	606	632	584	590
Imports ^a	85	138	165	161	175	235	266	260	302	418	419
Exports (excl. pork for curing)	73	83	103	104	117	180	213	199	233	311	310
Exports ^a	51	150	156	229	283	235	209	39	95	74	91
Total consumption	757	691	721	744	751	774	740	743	772	822	810
UK Market share %	90	88	86	86	84	77	71	73	70	62	62

^a Carcass weight equivalent

* including processed pig meat

Fig. 5: UK Pork Production trends

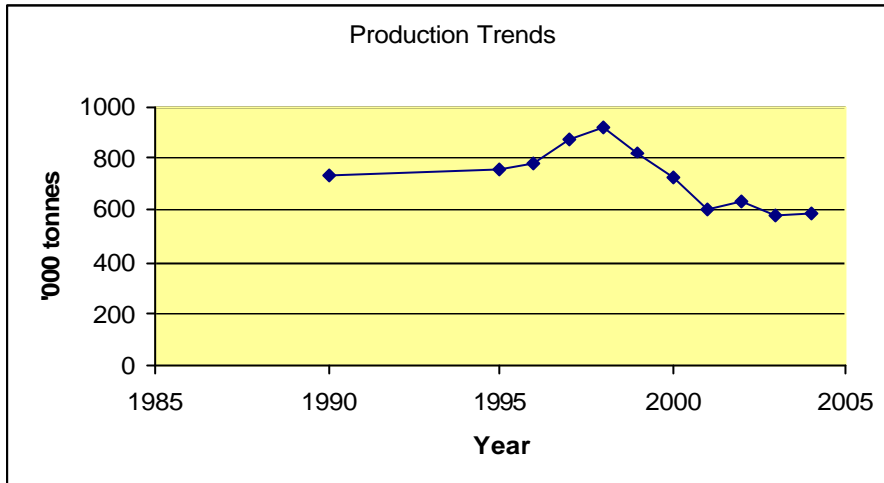


Fig. 6: UK Pork Consumption trends

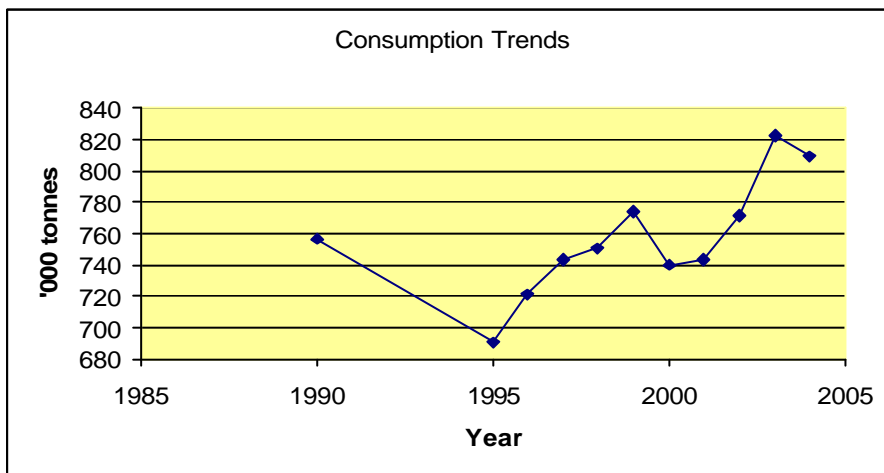


Table 15: Pork Imports from top 5 countries in the year 2004

Countries	'000 tonnes	Percentage
Denmark	147.1	35.1
Netherlands	77.2	18.4
Ireland	49.7	11.9
Germany	45.9	11.0
France	45.6	10.9
Other countries	99.1	23.6
Total	419.0	100

Table 16: Pork Exports to top 5 countries in the year 2004

Countries	'000 tonnes	Percentage
Germany	29.7	32.7
Ireland	18.8	20.7
Netherlands	8.9	9.8
Hong Kong	4.7	5.2
Denmark	4.4	4.9
Other countries	28.8	31.7
Total	90.9	100

4.0 Industry Processes and Controls

4.1 The slaughtering industry

All meat sold in the UK for human consumption comes from a licensed abattoir/slaughterhouse. For this reason, abattoirs have traditionally been a checkpoint for inspecting meat to ensure its fitness and quality, as well as the point at which a body such as the Meat and Livestock Commission (MLC) can conveniently levy its charges on animals. Abattoirs seek to maximise profits by maximising their throughput (the number of animals killed). This results in an emphasis on processing animals quickly, which can conflict with the interests of hygiene. The slaughterhouse depends crucially on those downstream of it, particularly the renderers, to handle the by-products and waste it produces. The Abattoir (Hygiene) Regulations 1977 require that animal by-products be removed from the slaughterhouse within 48 hours of slaughter. While meat is the primary and most valuable product of the slaughterhouses, by-products are also important, as traditionally their sale has covered slaughtering costs, they are often referred to as the 'fifth quarter' of the animal.

Over the last 2- 3 decades the number of Abattoirs has fallen steeply in the UK, as many smaller ones have gone out of business. This decline has been due to a number of factors, including a drive to take advantage of economies of scale, and the need to comply with higher environmental and health standards. The operations of a large slaughterhouse differ markedly from those of small premises, many of which open for a limited period during the week to deal with a few animals. Regulation and enforcement have had to take account of this wide difference in the size and nature of businesses in the industry.

Historically, ownership of slaughterhouses has been split between the private and public sector. The number of publicly owned slaughterhouses declined steadily since 1972, when local authorities were no longer required to provide slaughtering facilities (Harris and Pickard, 1979). Currently, there are virtually no public slaughterhouses in the UK.

Hygienic production of meat in England and Wales was governed by Regulations made under the Slaughterhouses Act 1974, the Food Act 1984 and the Food Safety Act 1990. Before the introduction of a single European standard on 1 January 1993. There was, effectively, a two-tier system of regulation. The Regulations required that every carcass slaughtered in a domestic slaughterhouse be subjected to inspection by a qualified inspector so as to establish the fitness for human consumption of all, or part, of the carcass. The Regulations for export slaughterhouses were largely the same as those for domestic plants with the addition of certain specific requirements relating to the infrastructure of the plant, the dressing procedures and the level of inspection.

The most important differences were in the level of inspection. For instance, in domestic slaughterhouses ante-mortem inspection of animals (i.e, before slaughter) was not required until January 1991¹ and, before 1 January 1993, there was no requirement for veterinary supervision of meat inspection. Inspection procedures are described below. In 1988 about two-thirds of the cattle slaughtered in England and Wales were killed in slaughterhouses which had been approved as exporters to the European Community/Union.

4.1.1 Role of Vets

Each export slaughterhouse had to be supervised by an Official Veterinary Surgeon (OVS) appointed by the local authority, who is responsible for all hygiene and meat inspection. Ministers were responsible for designating individual veterinary surgeons as suitable for OVS work and local authorities could only appoint such designated veterinarians as OVSs.

¹ Except in Scotland, where ante-mortem inspection of every animal slaughtered in both domestic and export market slaughterhouses had been required since 1961

The Official Veterinary Surgeon supervises the Authorised Meat Inspectors (AMIs). If a plant was producing meat for the domestic market for some or all of the time, the OVS could attend for as little as one hour a day and delegate much of the responsibility for hygiene in the plant to the Environmental health Officers (EHO). In those plants producing mainly for export, the OVS would be present most of the time to carry out responsibilities for all hygiene and meat inspection in the plant, and had personally to sign the health certificates to accompany export consignments.

The OVS's responsibility generally ended when the meat left the slaughterhouse: if the meat was for export the OVS checked that the truck was sealed; if it was for the domestic market, it passed into the EHO's sphere of responsibility. However, the OVS was required to provide a 'Health Certificate' to accompany the meat as it was loaded into the means of transport. The certificate stated the name of the exporting country and the relevant Ministry and Department. It also provided details to assist with the identification of the meat; the address of slaughterhouse of origin and address of the OVS; the destination of the meat and means of transport; and the attestation that the meat came entirely from animals slaughtered in an approved slaughterhouse and that they had been inspected in accordance with the relevant intra-Community Directive.

4.2 Meat Processing Industry

Butchers and meat processors take meat that is fit for human consumption and convert it into the forms in which it is purchased and eaten. It is difficult to draw a clear distinction between butchers and manufacturers of processed meat products. These two sectors of the meat industry have never been mutually exclusive, and as the meat products sector has become more diverse and grown in size and market share, large meat processors, independent specialist butchers, supermarket butchers and even some slaughterhouses have all been responsible for the manufacture of some processed meat products. Both butchery and the manufacture of processed meat products are subject to the Food Safety Act 1990, which provides general standards for the preparation and sale of food and similar regulatory controls applied to these sectors of the industry in 1986.

The processed meat and meat products sector includes many different products, such as burgers, sausages, pies and other pastries, canned meats, meat spreads and pâtés, cured and smoked meats, and ready meals and convenience foods. Re-formed meats are used to make many different types of product, including some beef roasts and various 'rolls' of meat. The meat processing industry is largely a product of the post-war era, when consumers began gradually to move away from traditional cuts of meat, while the increased availability of refrigeration allowed the introduction of a greater range of products.

The increased popularity of processed meat products has meant that fresh carcass meat is no longer the largest sector of the meat and meat products market. In 1992, 33.4 % of consumer expenditure on meat was on carcass meat and 34.2 per cent was on meat products (the balance being spent on poultry, bacon and ham). However, by 1997 carcass meat accounted for only 28.5% of expenditure on meat, and expenditure on meat products had risen to 39.1% (Baxter, 1998).

All UK meat processing plants fall under the Meat Hygiene Service (MHS), which is an agency of the Food Standards Agency. They are charged with inspecting all meat processing premises.

When an animal goes for meat, it will first pass through a slaughter house, where MHS staff will ensure that correct practices of welfare and hygiene are followed. Often the carcasses will then move on to a registered cutting plant, where the meat is processed into wholesale or retail packs. Here again, the MHS inspects the operation to ensure that the correct hygiene standards are being adhered to. Both slaughter house and cutting plants are then further sub-divided into full- and low-throughput. There is a volume cut-off point between the two classifications.

In Europe, the Regulations introduced in 2002 require meat plant operators to introduce hygiene procedures based on HACCP principles and to undertake microbiological checks in red meat plants. The Meat (HACCP) Regulations apply to the operators of licensed fresh meat and poultry meat slaughterhouses, cutting plants, cold stores, re-packaging centres and re-wrapping centres.

While these regulations have been accepted and have become common practice in Western European plants, as well as the use of similar systems in the USA and Australia and New Zealand, some parts of the industry in the accession states to the European Union have found it difficult to comply with every part of the regulations. On the other hand, international trade and the demands of the industry and governments of developed countries such as the USA and the EU states, has meant that many of the developing countries reliant on meat exports, have had to adopt EU and US systems to ensure equivalence.

5.0 Structure of the Supply Chains

5.1 Beef Supply Chain

The UK has the third largest cattle herd in the EU, with France and Germany taking the first and second positions respectively. These three countries accounted for 55.5% of the total herd in 1998, and these three countries also have a large part of the total beef production in the EU.

In Europe, beef is produced from two sectors: dairy beef produced as a ‘sideline’ from dairying operations, and specialist beef producers. Beef farms are typically small and specialist beef producers are at the lower end of the income scale of farmers. UK specialist beef farms tend to be of a small size in hilly areas with few alternative enterprises, often in disadvantaged regions.

Four major beef systems can be identified operating at varying levels of intensity (Winter *et al.*, 1998; Entec, 1996). Table 17 illustrates the lowland and upland types of suckler systems operating in the UK. Both of these systems are based on breeding and rearing specifically for beef. Some of these farms proceed to fatten all or a proportion of their own stock. Others sell only store cattle to either of the remaining two systems. There are two systems of purchasing cattle and feeding to slaughter weight. Semi-intensive finishing takes calves from both dairy and suckler herds and relies on outdoor grazing for fattening. In contrast, intensive finishing takes calves predominantly from the dairy herd and requires that the animals are housed and fed controlled rations.

Table 17: Major Beef Production systems in the UK

Beef System	Description
Less favoured areas (LFA) Suckler	Farms with suckler herds (breeding cows and calves) located in the LFAs. Permanent breeding herds produce calves for rearing and finishing. The harsh conditions mean few farms have a finishing enterprise
Non-LFA Suckler	Farms outside LFAs with a suckler herd. Permanent breeding herds produce calves for rearing and finishing. Some of these farms will also finish beef.
Semi-intensive finishing	Buying calves into the farm to 'finish' them for market. This category includes a variety of systems but their key characteristic is the reliance on outdoor grazing (e.g. store beef, 18-month beef and 24-month beef).
Intensive finishing	Stock are bought in, housed indoors and intensively fed (e.g. veal, barley beef and silage beef)

Source: Based on Winter et al. (1998) and Entec (1996).

There are few farm systems that are solely reliant on beef enterprises. In lowland areas, beef herds are established as a secondary enterprise in predominantly arable and dairy systems. In upland areas, beef cattle typically exist alongside sheep.

In the EU, there has been a general trend towards a more concentrated slaughtering industry both in terms of ownership, and in terms of production plants. Over the recent years, there has been a development towards closing small slaughterhouses and moving large slaughterhouses closer to the production areas. In the UK, the number of cattle slaughtering plants has decreased from 1671 in 1971/72, to only 436 in 1994/95 (MLC, 1996). The development has accelerated in recent years due to the requirements of the still larger retail chains and hygiene requirements in the Fresh Meat Directive. The large retail chains use their buying power to demand products and services that meet their pre-specified standards, i.e. descriptions of the various products and services supplied by slaughtering companies (weight of quarters, muscles, packaging, production methods etc.) and they demand these standardised products in large quantities on which they expect discounts and above all they want regularity in the supply. Only large slaughtering companies are able to meet these demands from the large retailers. Therefore, as the concentration increases at the retail level and large retail chains become more important, the concentration at the level of slaughtering companies will have a tendency to increase with it.

The slaughtering companies not only vary in size but also in the wide array of activities they perform. Some smaller companies are involved in slaughtering only, which includes killing the animal and removing what is known as the 'fifth quarter' (skin, liver, kidneys, intestines etc.). Carcasses are sold direct to retailers or through wholesalers or they are sold to the meat products industry. While larger companies perform cutting and boning operations (if demanded) in order to produce muscles ready to be cut by, for example, the retail trade. The operations of the slaughtering company sometimes even include consumer-portion packaging of products. In the United Kingdom, this activity is increasingly practised by the large slaughtering companies, thereby producing a larger share of the value added in the distribution chain.

Slaughterhouses source their cattle from, individuals, farmers, producer groups/co-operatives or cattle markets. The importance of these sources, vary widely across countries. Cattle markets are still an important part of the distribution chain in many countries but their importance is declining. In the United Kingdom, where the role of co-operatives is small especially in beef (only 7% of cattle is supplied to co-operatives), slaughterhouses still purchase 55% (according to industry interview) of their cattle from auction markets where cattle is priced in pence per kilo liveweight, and another 45% are sourced directly from farmers or producer groups and priced in pence per kilo deadweight. Larger slaughterhouses tend to buy more beef on deadweight basis than small ones do. The share of cattle going through cattle markets is declining. The pressure both from private and public sectors for greater traceability and quality assurance guarantees, nationally and at the EU level is likely to increase the monitoring costs that slaughtering companies and retailers incur through auctions and occasional supply relationships (Hobbs, 1996). These costs might become prohibitive and may lead to an increasing pressure from downstream firms to move toward closer forms of vertical co-ordination.

The role of independent wholesalers in the industry is declining as the wholesale and distribution functions are integrated in larger companies, which can be either slaughtering companies or large retail chains via their central buying units. The decreasing sales of beef through butchers, who are the principal customers of many wholesaling companies, put additional pressure on wholesalers. Wholesalers try to

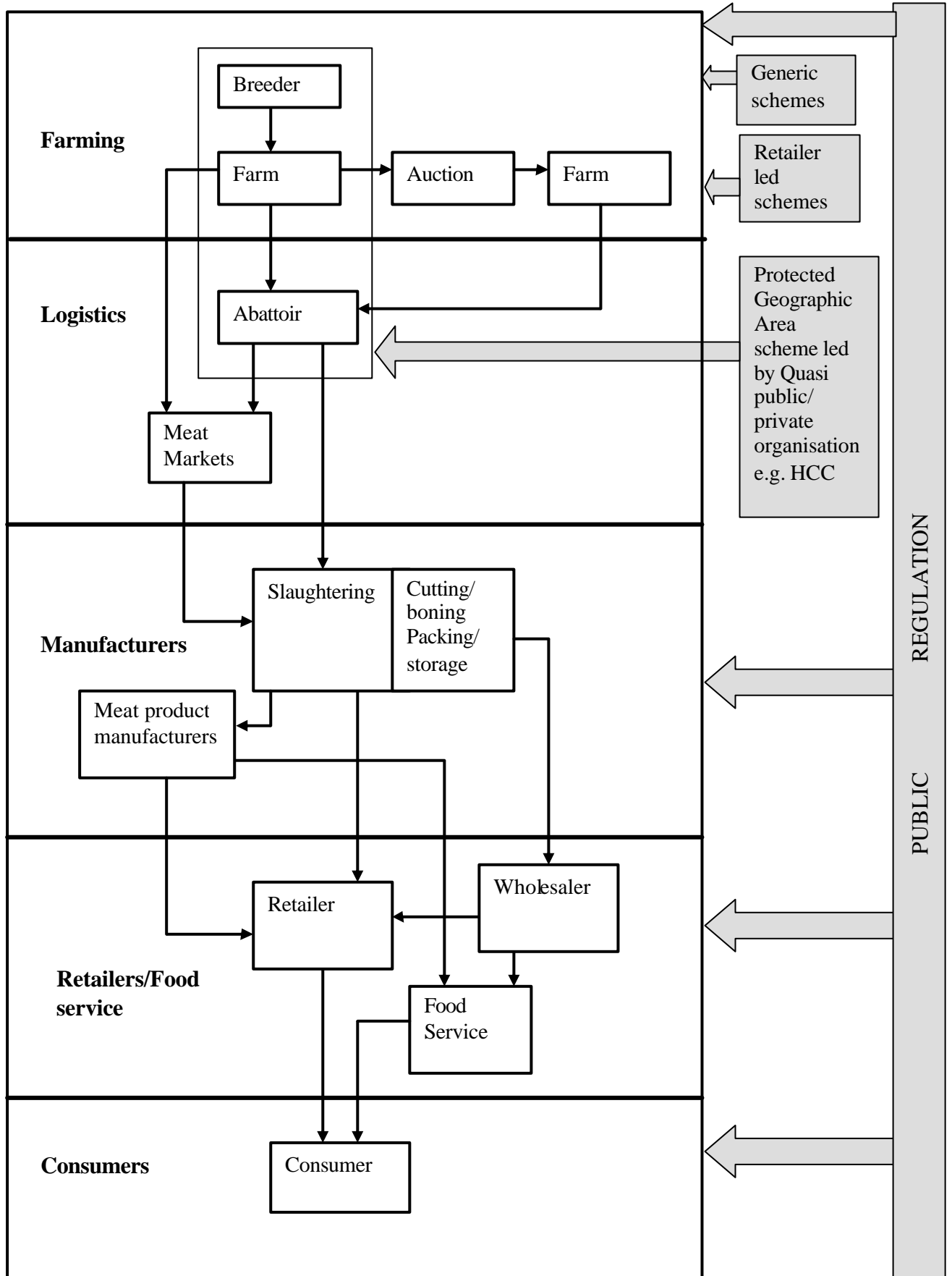
avoid being placed on the fringe by marketing a broader range of products and by taking on processing activities like cutting and consumer packaging and thus increasing the value which they add to the product.

Meat is often perceived as an un-branded commodity which explains that promotional expenditure on meat and meat products in general tends to be extremely low in comparison with most other food markets. Branding does not exist in the beef sector. Promotion, where it is found, is normally carried out by national trade organisations on a generic basis. In the UK, when the beef products are branded they are normally branded with the name of the retail chain that wants to stand as the guarantor of quality for the consumer. The major retail chains all have their own superior quality programme. In some cases a beef product is branded with place of origin, e.g. 'Scottish Beef'. Slaughtering or cutting and boning companies do not sell beef with a manufacturer's trade mark. Some supermarkets try to create their own supreme quality brand of beef by contracting with slaughtering companies and farmers, usually in a specific region, as regards supplying beef that has been treated in a pre-specified way by farmers, slaughterhouses and the retail chain. All the major retail chains in the United Kingdom have established such 'quality assurance schemes', (see table 21) a development which has accelerated since the BSE crisis.

The lack of branding, differences in product quality and new product development in the beef sector has led to competition between both slaughtering companies and retailers to a large extent focusing on price. When the differences in the average quality of the products offered by slaughterhouses and retail chains are small, the competition tends to focus on price.

The demands and preferences of large retail chains often have the power to influence the behaviour and organisation of the links backwards in the distribution chain. In general the relations between retail chains and slaughtering companies are quite informal although long-term. The retail chains are the ones who generally prefer to keep relations informal. They tend to buy their beef from the same suppliers each time they order, but also prefer to be able to switch suppliers because they want to be able to shop around for the most attractive offer. Prices are negotiated each week on the basis of auction prices.

Fig.7: Beef Supply Chain



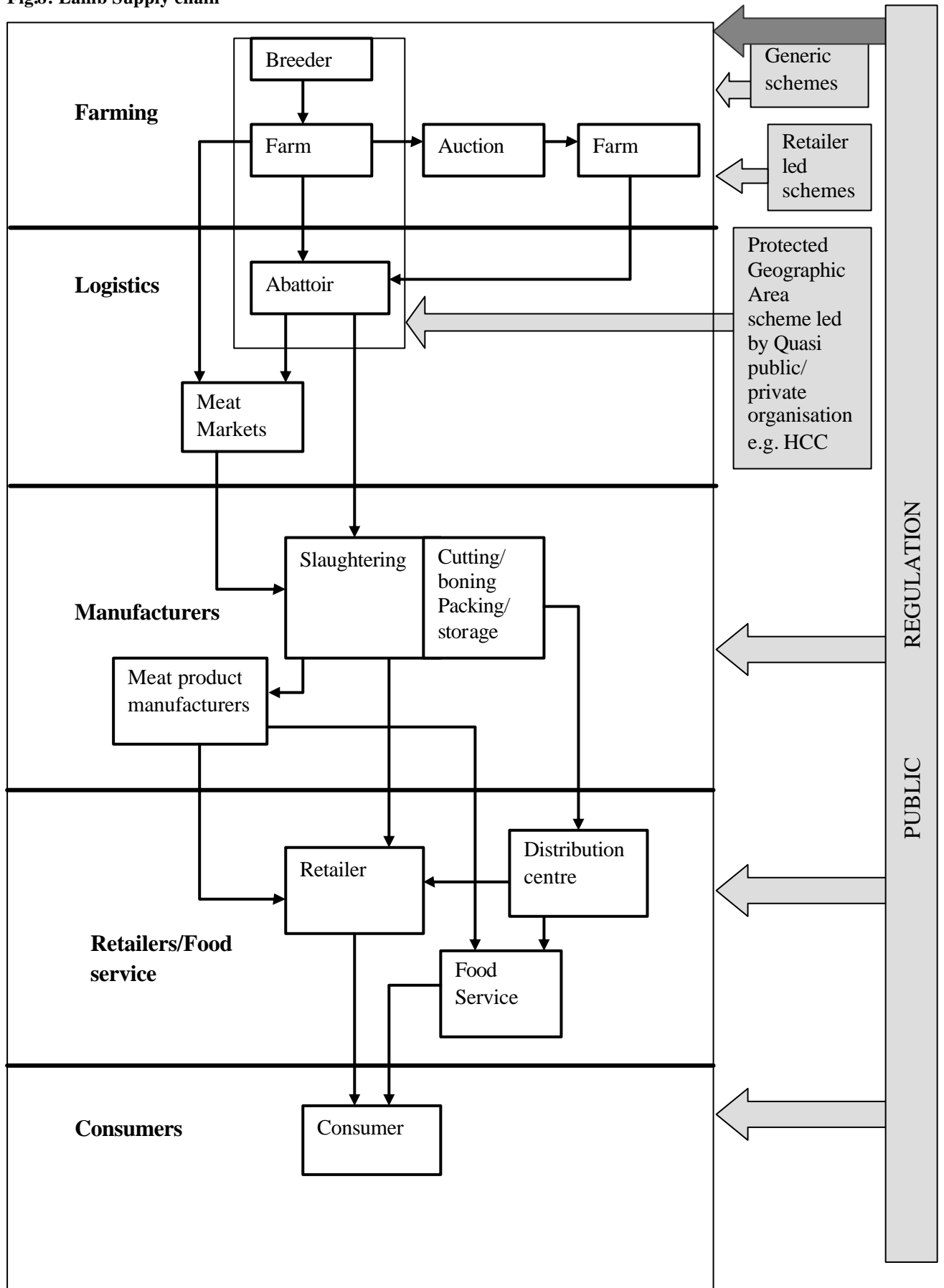
Since the BSE crisis, traceability has become more important. Reliability of delivery and price also seem to be important buying criteria. A number of initiatives have been launched in the EU in the aftermath of the BSE crises, to produce beef under specifications which are set up for all links in the distribution chain. These, schemes have been primarily aimed at assurance of credence characteristics of beef, such as food safety and animal welfare, but are now also being extended to include also important experience quality characteristics like tenderness and taste. Quality control and product development therefore seem to be the keys to differentiate the market and ease the price competition among slaughtering companies and retailers.

5.2 Lamb Supply Chain

Sheep farming is a heavily subsidised sector and has been a significant part of UK (Fogerty *et al.*, 2001). Since the late 1980s, the total size of the UK sheep flock has remained constant at between 42 and 45 million sheep and is the largest in the European Union (Anderson, 2002). The UK lamb supply chain has a traditional system, which links hill and lowland producers. The principle behind the system is the movement of breeding ewes and store lambs from the uplands to the lowlands where they are ultimately fattened ('finished') for sale live at auctions, or to abattoirs and then deadweight, to processors, retailers and food service firms. Owing to the climate and topography of upland Britain, most livestock is 'finished' on the lowland, and this is generally outside the county in which the livestock is initially bred. For example, more than half of Northumberland livestock farmers produce store animals for 'finishing' or rearing elsewhere (Dower, 2002).

The continuity of the system is therefore dependent on animal movements. More recently, the sheep market has become less profitable and this has led to a situation that became apparent during FMD 2001 when some livestock dealers and farmers were buying and selling stock several times within a few days. Farmers also transported sheep to ensure that they filled their quota for the inspection period in February-March (MLC) 2001, in order to obtain optimum support payments.

Fig.8: Lamb Supply chain



Liveweight sales by farmers to abattoirs, processors and retailers (where possible) are the preferred mode of transaction between the live and dead stages of the supply chain: 54% of all lamb sales occur through livestock auctions and 46% of sheep are sold deadweight to abattoirs. This contrasts starkly with the deadweight sales proportion for the cattle and pig sectors, which are 63% and 97%, respectively (MLC, 2001). The above illustrates the relative importance of the livestock auction to the UK lamb supply chain. The auction and abattoir sectors of the UK meat, and lamb, supply chain are nowadays more highly concentrated and large-scale than ever before. Historically, these sectors comprised a high number of different size units and were more evenly distributed throughout the country (Fearne, 1998a). Such centralisation and concentration are due to the need to reduce costs through economies of scale and to regulate the rising costs of hygiene and food safety standards more efficiently. Currently, 37 abattoirs are responsible for 76% of sheep slaughtered, with the top 10 abattoirs accounting for almost 47% of total sheep slaughtered in the UK (MLC, 2001a).

5.3 Pork Supply Chain

The pig industry in the UK has undergone major structural changes over the past quarter of a century. There have been wide changes in the total size, types of systems and the size of the average herds of the industry. A succession of economic and health crises over the past five years is likely to have speeded up the rate of structural changes.

In 1986, 819,000 breeding pigs were kept on 16,600 holdings in the UK, and 4,794,000 fattening pigs were kept on 16,300 holdings. By 1995 there were 742,000 breeding pigs on 9,700 holdings, and 4,626,000 fattening pigs on 10,300 holdings (DEFRA, 1996). The average total herd size peaked at 585 in 1999, 35% more than in 1990 and as much as 140% more than in 1980. Since the peak year of 1999, there has been a major change in the average size of operation. The average number of total pigs fell to 500 in 2003, with the decline being particularly marked between 2001 and 2003 (Fowler, 2004).

The number of pig holdings has declined more or less continuously over the past 25 years (DEFRA). At the same time, average holdings sizes have increased very

substantially as a result of economies of scale and because, on the whole, more small and medium producers have left the industry than large producers. These changes have been far more marked for the pig sector than the cattle or the sheep, as pig producers have not been protected by subsidies from underlying changes in the economy.

The average pig holding size registered a decline in 2002 for the first time since 1970s. This is likely to have been associated with Post-weaning Multi-systemic Wasting Syndrome (PMWS) and reducing stocking densities in an attempt to reduce the incidence of the disease. The number of pig holdings continued to decline in 2002 and was 27% lower than in 1998.

Pig production occurs in most areas but is prevalent in eastern and northern England to take advantage of cereal production, which forms the basis of pig diets. Table 18 below shows the regional distribution of pigs in the year 2002.

Table 18: Distribution of pigs by English regions in 2002

	Breeding Pigs			Total Pigs		
	Numbers	Holdings	Average	Numbers	Holdings	Average
North East	7,010	121	58	78,387	207	379
North West	19,514	353	55	190,552	592	322
Yorkshire/Humberside	143,948	874	165	1,441,176	1,450	994
East Midlands	45,049	429	105	461,016	716	644
West Midlands	27,691	497	56	265,771	806	330
Eastern	116,490	670	174	1,279,642	1,368	935
South East	45,714	582	79	386,797	1,003	386
South West	52,425	1,118	47	526,362	1,965	268
Total	457,841	4,644	99	4,629,703	8,107	571

Source: Fowler 2004

Since the mid-1980s there has been a trend towards concentration of pigs into specialist units and larger herds, separate from other animal rearing systems. For example, the average size of a pig-breeding herd was 49 in 1986, but by 1995 had increased to about 82 (DEFRA,1996).

The distribution of the UK pig industry is very much skewed. Over the years, there has been a considerable increase in the importance of the larger farms and a shift away from small and medium farms.

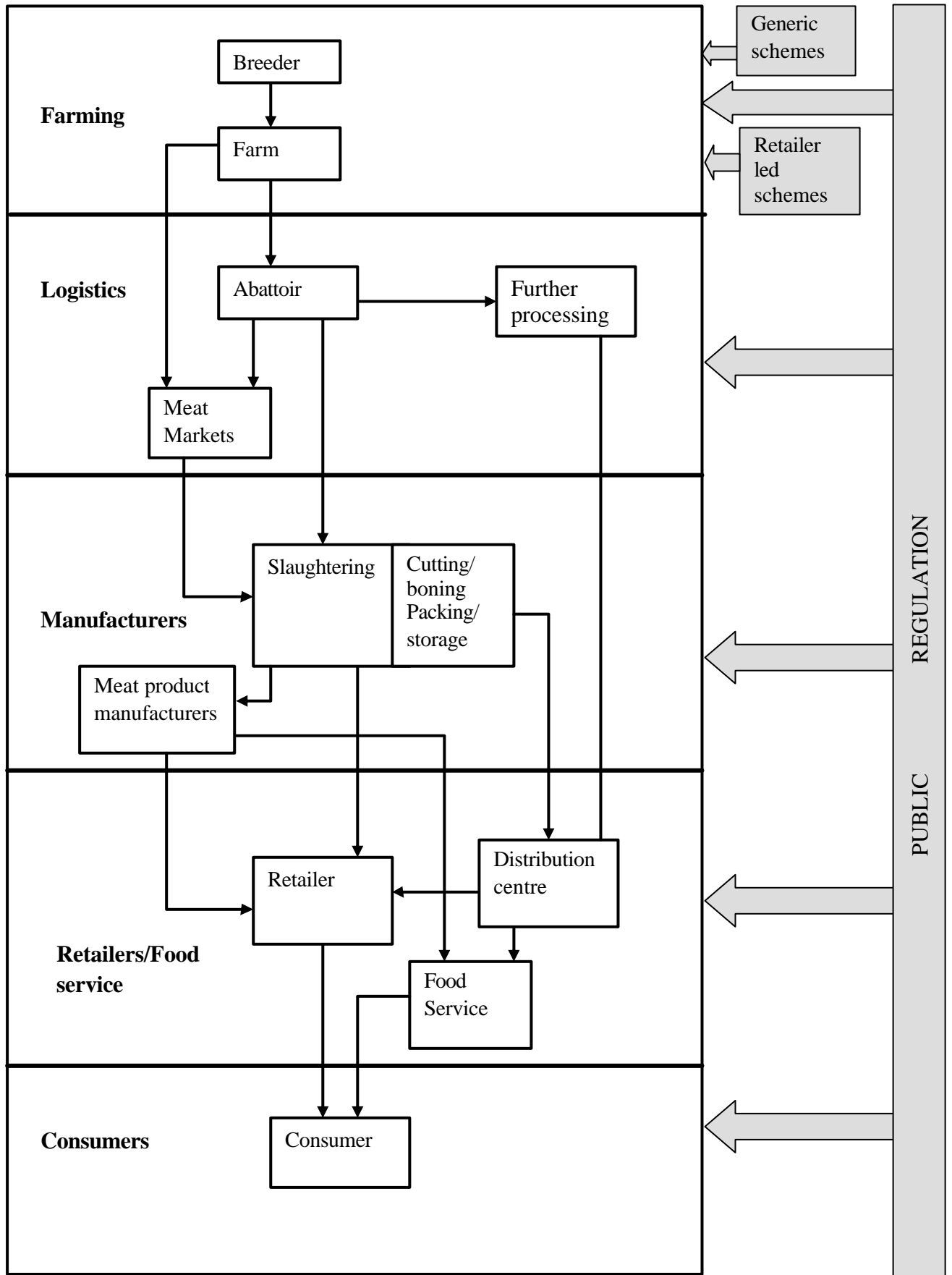
The production of pigs has several stages. Pig production units in the UK may be categorised in terms of output depending on which stage(s) they are involved with:

- piglet (weaner) production takes place in what are termed 'sow herds' or 'breeding herds';
- the production of slaughter pigs produced from purchased piglets takes place in 'fattening herds', 'finishing herds' or 'feeding herds';
- piglets produced and fattened within the same unit are referred to as 'farrow to finish herds' or 'breeding and feeding herds'.

Pregnant sows may also be sent to other farms prior to farrowing (process of giving birth to a litter of piglets). The sows are then returned after weaning to be served again. This system is referred to as a 'sow pool'. Breeding herds generally sell the weaners at between 20kg and 30kg liveweight, approximately 9-12 weeks of age. Slaughter pigs in the UK are usually sold onto the market at around 90kg liveweight. In many other Member States, such as the Netherlands and Belgium, slaughter pigs are sold at 110kg liveweight (reflecting to some extent national consumer preference). Although some piglet production herds breed their own replacement sow stock, it is usual to purchase these animals from specialist breeders. Young females (gilts) and boars are generally bought at between 5 and 6 months of age, although they can be purchased earlier and reared on-farm within the herd. Specialist breeding units are used to provide breeding pairs from which multiplication for production farms takes place.

Larger units generally operate continually, i.e., farrowing, weanings and servicing takes place every week (smaller units will operate sequentially with the production cycles of all sows synchronised). An alternative, and increasingly popular method, involves separating sows into divisions farrowing at three week intervals. This method allows the stockman to concentrate on each stage of production in turn. Large units will keep each division completely separate and will thoroughly clean facilities

Fig.9: Pork Supply chain



between batches to reduce the risk of cross-infection. A further extension of this system is one where each type of pig (sows, weaned piglets and finishing pigs) are kept on different sites to prevent disease transmission between pigs of different ages. These output defined systems may be either indoor or outdoor. The majority of pigs (75-80% in the UK) are kept indoors in intensive units with high capital investment in specialist buildings and equipment. A small, but increasing, proportion of pigs are kept outdoors in low cost units where the selection of breed and stocking density is more important. Sows in outdoor systems have never been kept in stalls or tethers.

The age at slaughter depends on the type of meat being produced, but can vary from 14 to 18 weeks for lean and tender pork, and from 22 to 34 weeks for bacon, ham and inferior pork. The majority of UK pigs are finished indoors in buildings designed for intensive production, but in recent years outdoor herds have also grown, partly in response to new welfare legislation which prohibits the tethering of sows. The average weight of slaughter pigs has progressively increased over the last decade, which has seen pigmeat production increase accordingly.

UK pig slaughterings reached a peak of 16.2 million head in 1998 as a result of breeding pigs being slaughtered to reduce numbers. This total then fell annually to a low of 10.6 million in 2001 and, despite the increase in average carcass weight over this period, net production of meat fell by 32%. Up to 1998, the increase in production of pig meat was for fresh pork and processing as bacon production showed a slight fall. Since 1998, pork production has fallen by 35% and bacon production by 16%.

5.4 Organic Supply Chains

Although organics still account for a relatively small proportion of the market, sales of organic and free-range meats have increased rapidly in recent years. Concern about the sources of foods, following the BSE crisis in 1996 and, more recently, the controversy over genetically modified (GM) foods, as well as an apparent increase in food allergies and growing consumer interest in food and health matters, have helped to fuel this growth.

The organic meat products market is the fastest growing in the UK organic food industry with sales volume expanding by 139% between 2001 and 2004. High growth rates have made the UK organic meat market the second largest in the world. The Soil Association, an organisation that promotes and certifies organic food, reported that total sales of organic food increased by more than 10% in the year ending April 2004. The Association noted that retail sales of organic food were now worth £1.12bn and were growing by £2m a week, which is double the rate of growth in the general grocery market.

Healthy growth rates are envisaged to continue in the coming years as greater volume comes into the market. Apart from the retail trade, there is high demand for organic meats from food processors and the catering sector. The increase in organic food processing has led to a surge in demand from companies making organic sausages, bacon, ready-meals, and baby food. Over a half of British organic pork went to food processors in 2004. There is also rising demand from restaurants, schools, hospitals and government buildings.

Although sales volume has expanded considerably, the market share of organic meats remains below 4% in most retailers. Organic meats are mostly marketed under supermarket private labels, which account for over 80% of fresh cut sales. Brands are more evident on organic processed meats.

Mergers and acquisitions are making the conventional meat industry increasingly concentrated, however the supply-side for organic meats remains fragmented. Supermarket sourcing policies are responsible for conventional meat companies to dominate the supply of organic meats.

6.0 Key Trade Organisations

6.1 British Meat Processors Association (BMPA)

The British Meat Processors Association represents the interests of companies involved in the slaughtering, processing, manufacturing, wholesale distribution and packaging sectors of the meat industry. Membership is open to firms of all sizes, including those supplying multiple retailers, catering services and family-run

businesses.

6.2 Red Meat Industry Forum (RMIF)

The Red Meat Industry Forum was established in June 2001, in the middle of the foot and mouth epidemic, to assist livestock farmers and meat processors. Its immediate objective was to restore the image and consumption of red meat, and its second was to improve the performance and profitability of the UK meat and livestock sector.

The Forum is managed by representatives from DEFRA, the MLC, farmers, processors, retailers, trade unions and other bodies.

6.3 Meat and Livestock Commission (MLC)

The Meat and Livestock Commission (MLC) was set up under the Agriculture Act 1967 to maintain and improve the competitiveness of the livestock industry while taking into account the needs of consumers. Its income comes from a levy on producers and abattoirs.

The Commission's work includes research, forecasting, economics, new product development, marketing and the provision of information.

The MLC's promotional activities have now been devolved to four separate bodies, which actively promote the meats for which they are responsible. These bodies are:

- British Pig Executive (BPEX)
- English Beef and Lamb Executive (EBLEX)
- Hybu Cig Cymru/Meat Promotion Wales (HCC)
- Quality Meat Scotland (QMS).

6.3.1 British Pig Executive (BPEX)

BPEX operates with maximum autonomy within MLC's statutory responsibilities and comprises leading individuals across the British pig industry. BPEX determines MLC's Pig Strategy and ensures that pig levy payers' money is efficiently deployed in line with that strategy. The objective of the British Pig Executive (BPEX) is to determine the MLC's Pig Strategy and to ensure that GB pig levy payers' money is

efficiently deployed in line with this strategy. BPEX will operate with maximum autonomy, subject to MLC's statutory responsibilities.

6.3.2 English Beef and Lamb Executive (EBLEX)

EBLEX was established as an executive of the MLC, with an objective towards contributing to the improved efficiency in the English beef and lamb sectors and indirectly to the improved efficiency in the British meat and Livestock industry. The EBLEX aims to achieve its objectives through:

- stimulating demand for beef and lamb and their products in England and English products abroad.
- understand the needs of both consumers and the English beef and lamb industry and communicate effectively with both.

EBLEX plays a major role to deliver a range of products, services and information that can help businesses improve either their competitiveness or the quality of their products. The 'Better returns' project is one such initiative, which provides every sheep farmer in England, the information, knowledge and skills that will allow them to secure better market returns for their lamb.

6.3.3 Hybu Cig Cymru/Meat Promotion Wales (HCC)

Hybu Cig Cymru/Meat Promotion Wales (HCC) was established in April 2003 and is the strategic body for the promotion and development of the Welsh red meat industry. Its mission is to develop profitable and sustainable markets for the benefit of all stakeholders in the supply chain. It brought together the red meat activities of three organisations, namely the Meat and Livestock Commission in Wales (MLC Cymru), Welsh Development Agency and Welsh Lamb and Beef Promotions Ltd. Each organisation was responsible for different aspects of red meat activity, which have now been integrated into HCC's work. HCC is now the sole body for the promotion and development in Wales.

Hybu Cig Cymru (HCC) or Meat Promotion Wales is the industry-led red meat authority for Wales. It seeks to develop profitable and sustainable markets for Welsh red meat for the benefit of all stakeholders in the supply chain. Hybu Cig Cymru is a

new organisation formed with the objective of promoting Welsh red meat to international markets. The other prime aim of the organisation is the support and development of the supply chain in Wales. The provision of information to stakeholders to assist them to develop their businesses and create profitable and sustainable markets is vitally important.

Since its official launch in April 2003, it has successfully brought together the strengths of the various, successful but separate industry support organisations into an all Wales strategic body that has developed profitable and sustainable markets for Welsh red meat for the benefit of stakeholders in the supply chain and made substantial savings in doing so.

6.3.4 Quality Meat Scotland (QMS)

Quality Meat Scotland is a private, non profit making company. QMS was established jointly by NFU Scotland, the Scottish Association of Meat Wholesalers and the Meat and Livestock Commission. By virtue of the Agriculture Act 1967 and the Delegation of Functions to the QMS Direction 2004, MLC functions in Scotland have been delegated to QMS, who now have responsibility for a range of activities relating to the development of the red meat sector in Scotland. These activities are funded through a para-fiscal levy authorised by Ministers in accordance with the Agriculture Act 1967. This money is collected by the Meat and Livestock Commission and passed to QMS via the Scottish Executive.

The overarching aim of this activity is to help improve the efficiency and profitability of the Scottish red meat industry, increasing its contribution to the Scottish economy, and ensuring value for money for the levy collected. In particular Section 1 of the 1967 Act states the purpose:-

“To promote greater efficiency in the livestock industry and the livestock products industry, whilst having regard to the interests of consumers [and] of the livestock industry and the livestock products industry.”

The QMS Board is accountable to Scottish Ministers and, in turn, the Scottish Parliament for its use of public funds and must have regard to certain requirements and standards applicable to public bodies. The Board includes representatives of its

main stakeholders NFU Scotland, the Scottish Association of Meat Wholesalers and MLC, as well as other individuals appointed for their knowledge and experience in other areas of the red meat sector, including auction companies, butchers, consumers and retailers. In addition, a network of engagement is in place to ensure that the Board is fully aware of the views of levy payers and that levy payers know how their funds are being spent.

The organisational aims of the QMS are:

1. be the first port of call in Scotland for positive and authoritative information about the red meat industry.
2. be a catalyst for adoption of best practice throughout the red meat chain.
3. build on existing consumer confidence and preference for the Scotch product by maintaining its integrity and continuing to reflect consumer attitudes through the assurance schemes.
4. agree and undertake a marketing strategy with the industry, based on clear focused targeting, product/brand integrity and simplicity.
5. help enhance the culture of trust throughout the red meat supply and demand chain.

6.3.5 Meat Hygiene Service (MHS)

Until April 1995, the enforcement of hygiene, welfare and inspection regulations in abattoirs, cutting plants and cold stores in the UK, was the responsibility of approximately 300 local authorities, mainly district councils. They had a statutory duty to provide meat inspection services, the costs of which were charged to the industry. The licensing of premises was also carried out by some local authorities. Premises were monitored by the State Veterinary Service (SVS) which offered advice on standards and interpretation of the rules to local authority staff.

The requirement for all premises to comply with EC rules on hygiene and inspection under European Single Market legislation implemented from 1993, led Ministers to decide that the licensing of all such premises should become the responsibility of the Agriculture Departments from that date. Following a detailed study of alternative methods of providing day to day meat inspection and hygiene control in fresh meat, poultry and game plants, Ministers announced in March 1992 that they had concluded

that the interests of the meat industry, consumers and overseas customers would be best served by the creation of a national meat hygiene service.

The Meat Hygiene Service (MHS) was therefore launched in April 1995. It took over from the local authorities responsibility for enforcing meat hygiene, inspection and animal welfare and slaughter legislation in 1,875 licensed fresh meat premises in England, Scotland and Wales. Public health and animal welfare are safeguarded in plants by Official Veterinary Surgeons and Meat Inspectors working as inspection teams. With the formation of the Food Standards Agency in April 2000, the MHS was incorporated as an 'executive agency' within the FSA structure.

7.0 Regulations in the Red Meat Industry

The meat industry is subject to a wide range of regulations covering issues such as planning, the environment, animal health and welfare, animal feed, slaughtering, processing, packaging and labelling, distribution, and health and safety. Some key recent regulations are listed in Table 19.

7.1 The Common Agricultural Policy

The Common Agricultural Policy (CAP) is the main regulating mechanism affecting agricultural markets in the EU, and beef is no exception. One of the prime objectives, which has driven CAP regulations, is to secure a satisfactory and equitable income for farmers. Until the CAP reform in 1992 market price support systems formed the basis of national agricultural policy in the six founding members of the EC, and market support systems remained the predominant policy instrument from 1962, after the establishment of CAP.

7.2 The EUROP classification system

When an animal arrives at the slaughterhouse in the EU, it is slaughtered and first cut into two half carcasses. At this point the animal is classified according to a standard obligatory classification system called EUROP. The criteria for classifying cattle into the EUROP classes are specified in EU directives supplemented by national regulations. There are five main classes in the EUROP standard ranging from E (the best class) to P, and there are a number of sub-classes within each main class. The classification is based on a visual inspection of the carcass, where shape (the

distribution of meat on the carcass), and fatness of the meat are judged by a certified cattle-classifier. The classifier is employed by the slaughterhouse and the classification is controlled by national authorities. The EUROP standard is used in the settling of payments with farmers. Some slaughterhouses have developed their own additional criteria for sorting the meat including, for example, colour and veterinary history.

Table 19 : Examples of Recent Legislation and Regulations Affecting the Meat and Meat Products Industry, 2004

Area	Legislation/Regulations
Feed	Welfare of Farmed Animals (England) Regulations 2000.
	Feeding stuffs Regulations 1998 (Amended 1998).
Health	Poultry Breeding and Hatcheries Order 1993.
	Diseases of Poultry Order 1994.
	Diseases of Poultry (Amendment) Order 1997.
Labelling	Meat Products Regulations 2003*
Processing	Food Safety Act 1990.
Waste	The Waste Management Licensing Regulations 1994.
	Producer Responsibility Obligations (Packaging Waste) Regulations 1997.
Welfare	Welfare of Farmed Animals (England) Regulations 2000.

* strengthened the controls on what can be called meat and set limits on the amount of fat and gristle included in products

Source: Key Note

7.3 EU feed and food controls regulation

The basic principles relating to the responsibilities of EU Member State authorities are set out in *Regulation No. 178/2002*, laying down the general principles of food law and establishing the European Food Safety Authority (EFSA). The Regulation on official food and feed controls describes in more detail how these basic principles shall be interpreted and implemented. The new law came into force on 1 January 2006. The Regulation aims:

- To improve the efficiency of Member State control services through the introduction of performance criteria for the competent authorities, a better definition of tasks, harmonisation of the role of control services and integration of controls across the entire food and feed chain (“the farm to fork” principle);
- To improve the efficiency of the Commission control services by developing a more transparent, strategic and integrated approach to controls;

- To provide for administrative enforcement measures for Member States to address particular problems of non-compliance as well as enforcement measures at EU level;
- To establish a common regime for control of food and feed imports, basing the nature and frequency of controls on risk.
- To assist developing countries in meeting import requirements.

The Regulation provides for new general rules applicable to all food and feed production whether produced within the EU or imported. However, specific controls that have already been established in order to deal with particular situations (e.g. residues, pesticides, BSE) will be kept in place. The Regulation does not rule out the development of more specific rules to deal with any additional problems that may arise in the future. The following rules that are currently in place will be repealed and replaced by the provisions of the new Regulation: rules on sampling and analysis for the official control of feeding stuffs (*Council Directive 70/373/EEC*); rules on official inspections in the field of animal nutrition (*Council Directive 95/53/EEC*) and on the Official Control of Foodstuffs (*Council Directives 89/379/EEC and 93/99/EC*).

The Regulation fills a number of loopholes that exist in current legislation. For example it introduces a common approach for imports on food of non-animal origin such as fruit and vegetables. It also introduces a general requirement for official laboratories to be accredited and rules for the delegation of control tasks to non-governmental bodies. There will be the requirement to present and report on a multi-annual control plan. The Regulation provides also for an integrated regime on food import from third countries.

7.4 The Fresh Meat Directive

Apart from these major trade regulations the increased demands by consumers for food safety fuelled by the various food crises, a number of mandatory and voluntary food safety regulations, quality controls and assurance schemes have developed in the UK.

Directive 93/43 EEC (OJ No. L175, 19.7.93, p.1) on the hygiene of foodstuffs lays down general rules of hygiene and procedures for verification of compliance with these rules. The Directive covers the preparation, processing, manufacturing,

packaging, storing, transportation, distribution, handling and offering for sale or supply of foodstuffs not covered elsewhere by product-specific hygiene Directives. It also covers gaps in the product-specific hygiene Directives. For example, few of these Directives cover the sale or supply of their foodstuffs, and where they do not then *Directive 93/43* does.

Directive 96/3/EC grants a derogation from certain dedicated transport provisions of *Directive 93/43* above, as regards the transport of bulk liquid oils and fats by sea. *Commission Directive 98/28/EC* grants a derogation from certain dedicated transport provisions of *Directive 93/43*, as regards the bulk transport of raw sugar by sea.

1995 No 1763 the food safety (general Food Hygiene) Regulations 1995 - implement *Directive 93/43/EEC* into Great Britain. These regulations place obligations on food business proprietors to ensure their activities are carried out in a hygienic way. The Regulations also implement *Council Directive 80/778/EEC* (OJ No. L229, 30.8.80, p.11) on the quality of water for human consumption, where it relates to water used in food production.

1995 No 2200 The Food Safety (Temperature Control) Regulations 1995 implement in Great Britain, part of *Directive 93/43* as well as containing certain national provisions relating to food temperature control. These regulations require food business proprietors to observe certain temperature controls on the holding of food; where otherwise there would be a risk to health.

1997 No 2537 The Imported Food Regulations 1997, regulation 10, schedule 2 amends The General Food Hygiene Regulations 1995- implement in Great Britain *Commission Directive 96/3/EC* which grants a derogation from certain provisions of *Council Directive 93/43/EEC* as regards the transport of bulk liquid oils and fats by sea.

1999 No 1360 The Food safety (General Food Hygiene) (Amendment) Regulations 1999- implements *Commission Directive 98/28 EC* which grants a derogation from certain dedicated transport provisions of *Council Directive 93/43EEC*. These Regulations permit, subject to certain conditions, the bulk transport of raw sugar by

sea in receptacles, containers or tankers that are not exclusively for the transport of foodstuffs.

2000 No 930 the Food Safety (General Food Hygiene) (Butchers' Shops) Amendment Regulations 2000-These Regulations amend the Food Safety General Food Hygiene Regulations 1995 in relation to England only. They introduce a requirement for premises of butcher's shops to be licensed by food authorities. They make provisions for applications for licences and provide that a charge of £100 is payable in respect of the issue of a licence.

7.5 Regulation of the rendering sector

New blood regulations were introduced in May 2003, which prohibit spreading blood to land and require the complete containment and treatment of blood. Filtration techniques have been developed, which should allow abattoirs to use an inexpensive treatment method for blood waste, allowing only the protein to be sent for rendering and disposing of the liquid in a more conventional manner. Table 19 includes a list of all the current regulation on the meat processing sector.

7.6 The Labelling Regulation

The EU Commission issued Council Regulation 820/97, in 1997, whose primary purpose is to provide EU consumers with reliable labelling information about beef purchased at the retail level, giving traceable information from the animal's birth to the retail shop. The intent of the regulation was to restore consumer confidence in beef.

The regulation covers all fresh, frozen, and minced beef and veal. From March 31, 1998, any voluntary claims on labels involving the country of origin of the beef or method of animal production requires approval by the EU Commission and member state authorities.

From January 1, 2000, all beef sold in the EU were required to be labelled by country (or countries) of origin. To achieve this, the EU Commission put down a requirement, that all EU cattle should be tracked from birth to slaughter by means of individual animal passports and ear tags; the passports should contain identification information

to be entered into a database system. The Regulations were enforced by the local authority, the Minister for Agriculture.

7.7 Quality Assurance Schemes

Various quality assurance schemes have arisen in response to several developments in the EU/UK food sector, e.g. UK Food Safety Act of 1990, BSE, food borne illnesses and contaminants, animal welfare and the environment. The UK food safety Act required retailers and other actors in the supply chain to exercise 'due diligence' in ensuring that the food they sold were safe. In effect, risk management and the vertical coordination between the various actors in the supply chain spurred the development of quality assurance schemes in the UK.

The basic aim of many of the quality assurance schemes is to communicate to the consumers that the supply of assured produce contains all attributes that the scheme seeks to affect, for example, improved animal welfare, improved traceability and elimination of objectionable feedstuff.

The development of integrated assurance along the meat supply chain has been weighted down with difficulties. On one hand there is reluctance on the part of farmers to face further controls and they are unable to absorb higher costs. On the other hand, retailers believe in the concept of meat assurance, but have doubts over whether it will work. In response to these problems, the Meat and Livestock Commission (MLC) sponsored the establishment of an industry owned company under the name Assured British Meat Ltd. (ABM) that was established in May 1997, and controlled by a Board of Directors from industry nominated bodies (e.g. the NFU, MLC, British Retail Consortium, National Association of Catering Butchers etc.). One of ABM's aims is to restore confidence and trust in the industry through becoming both an umbrella organisation and a certification body.

As the meat supply chain is relatively complex, ABM aims to develop one scheme with a range of sectoral elements where each sector specifies that the preceding sector will need to be certified. Inspection bodies will be appointed by ABM and their

activities will be audited by United Kingdom Accreditation Service (UKAS)² to ensure independence, impartiality and competence. ABM assurance at the primary producer level takes account of the range of meat assurance schemes already established. In terms of beef and sheep production the schemes include Farm Assured British Beef and Lamb and Farm Assured Welsh Lamb. The Scottish Quality Beef & Lamb Association is independent to ABM and effectively performs the dual functions of ABM and Farm Assured British Beef and Lamb (FABBL)/Farm Assured Welsh Livestock (FAWL). As regards the Pig meat sector, 80% of producers are members of the Farm Assured British Pigs scheme or the Scottish Pig Industry Initiative.

Quality assurance schemes are particularly prevalent at the production stage of the chain; these are commonly called the 'farm assurance schemes'. They cover all major species of livestock in addition to arable crops, milk and other fresh produce. Further up the chain, processor level schemes cover meat from major livestock species as well as processed organic products (Bredahl *et al.* 2001). The farm level assurance schemes include both generic schemes (see table 20 below) that have been developed with broad public participation and private schemes operated by retailers.

Generic farm level schemes may extend beyond farm level to specify welfare and traceability while transporting animals to slaughter. Process-level schemes often include animal welfare practices and provisions for the slaughter and processing of meat. The privately-led quality assurance schemes (see table 21) used often in the production of own label products require their members to be a member of one of the generic farm level schemes but specify a variety of additional requirements e.g. carcass specifications, age limits, breed etc.

² The United Kingdom Accreditation Service (UKAS) is the sole national accreditation body recognised by government to assess, against internationally agreed standards, organisations that provide certification, testing, and inspection and calibration services. UKAS is a non-profit-distributing company, limited by guarantee, and operates under a Memorandum of Understanding with the Government through the Secretary of State for Trade and Industry.

Table 20: Generic farm quality assurance schemes in the Livestock sector in UK

Scheme	Region	Type of livestock	Date started	No. of members (1999-2000)
Farm assured British Beef and Lamb (FABBL)	England and Wales	Cattle and Sheep	1992	18,000
Scotch Quality Beef and Lamb Assurance (SQBLA)	Scotland	Cattle and Sheep	1990	6500
Farm assured Welsh Lamb (FAWL)	Wales	Cattle and Sheep	1992	6700
Northern Ireland farm Quality Assurance (NIFQAS)	Northern Ireland	Cattle and Sheep	1991	7000
Farm Assured British Pigs (FABPIGS)	England and Wales	Pigs	1996	2700
Scottish Pig Industry Initiative (SPII)	Scotland	Pigs	1990	200
Northern Ireland Pig Assurance Scheme (NIPAS)	Northern Ireland	Pigs	1999	n.a.

Source: Northen (2000)

There are numerous reasons why the retailers have their own private standards apart from the generic schemes:

- The generic schemes' requirements do not fully meet the due diligence position of the retailers
- Retailers are able to gain competitive advantage by developing additional quality requirements
- Closer cooperation with both the processor and farmer guarantees the retailer a more consistent and stable meat supply.

Bredahl *et al.* (2001) attributes the benefits of joining one of these schemes by the farmers to be either a premium for the farmer's stock, a more stable price and for a steady supply channel. Table 21 below gives a brief overview of some of the schemes' requirements for Beef, for five UK food retailers.

Table 21 : Private quality assurance standards in the UK beef sector, 1998

Scheme criteria	Tesco <i>Producer clubs</i>	Sainsbury <i>Traditional beef partnership</i>	Marks & Spencer <i>Select scheme</i>	Asda <i>Beef Bond</i>	Waitrose <i>Beef Scheme</i>
Carcass specification	270-360 Kg specified carcass requirement	280-380 Kg specified carcass requirements.	270-350 Kg Specified carcass requirement	240-350 Kg specified carcass requirements.	230-360 Kg specified carcass requirements
Target animals	Steers, heifers, bulls. 12-30 months	Steers, heifers under 30 months	Suckler bred. Steers only. 18-26 months	Steers, heifers, bulls. Bulls<14 months. Steers, heifers<18 months.	Sucklers, steers, heifers only. 15-29 months
Breeds accepted	All breeds	Sire: recognised beef breed; no restriction on dam	Sire: Charolais Simmental, Limousin Scotch Angus Dam: > 50% beef	Three-quarter beef, single suckled	Sire: Aberdeen Angus Dam: any breed
Members	1500 registered. Target 2000	1200	1500 registered	40. Target 100-126	400
Banned feeds	Growth promoters	Fishmeal; growth promoters; growth enhancers	Fishmeal; growth promoters; growth enhancers	Meat/bonemeal, blood based fertilisers on pastures.	Fishmeal; GM corn; growth promoters; digestive enhancers
Farm assurance	All national schemes recognised	Farm Assured British Beef and Lamb (FABBL) approved	None recognised	FABBL and Asda approved	FABBL,SQBLA or FAWL members
Traceability	Farm of birth; producer database	Cattle born on finishing farms; farm of birth	Farm of birth; producer database	Farm of birth	Farm of birth; producer database

Source: Bredahl et al., (2001)

8.0 Traceability: Public and Private

Currently, improving the traceability of agricultural products is considered a fundamental element of quality management systems in the food sector (Beers 2002). This trend can be observed in many sectors of agribusiness, but it is prominent in the red meat sector, where several incidents like BSE and foot-and-mouth disease have caused a previous massive loss of consumer trust in the quality and safety of products. The EU White Paper on Food Safety, in January 2000, contained the road map for the approach to food safety and new European legislation. This document considered the sharing of information in a transparent, global and integrated, way along the food chain and between different member states to be a primary means of regaining consumer confidence. Following the White Paper proposals, legislation on beef safety

was issued in the July 2000: Regulation (EC) 1760/2000 of the European Parliament and of the Council on July 17th and Commission Regulation (EC) 1825/2000 on August 25th. Both regulations came into effect from September 1, 2000. Regulation (EC) 1760/2000 establishes a system to identify, register, and label bovines and beef products. The objectives of this regulation are: 1) to establish an efficient system of identification and registration of bovines at the production stage and 2) to define a common European labelling scheme in the beef sector based on objective criteria at the marketing stage of the food chain.

Under the first objective, a mandatory system of animal identification is detailed using two individual ear tags, animal passports, and computerized databases in each member state to establish links between farms and abattoirs where animals are slaughtered. All records must be kept for at least three years, with records in the databases being kept and verified by designated national authorities e.g. DEFRA in the UK. Hence, the system allows for a high level of precision in tracing any problem identified in post-mortem inspections.

Under the second objective, two labelling schemes are defined to assure traceability from slaughterhouse to retail. Section I, defines the “Compulsory Community Beef Labelling System”. Section II the general rules of the “Voluntary Labelling System” allowing producers to extend the level of information provided to consumers.

Compulsory beef labelling in the EU applies to all fresh and frozen beef and veal at all stages of the production chain from slaughterhouse to retailer. This system supplements the voluntary beef labelling system that has been in force since 1998. European Parliament and Council Regulation 1760/2000 govern both elements of the beef labelling system. Local authorities and government inspectors enforce the labelling rules in England. The second stage of the compulsory system, introduced in two stages, came into force on 1 January 2002.

Under this compulsory system, operators and organisations marketing beef should, in addition, indicate on the label information concerning origin, in particular where the animal or animals from which the beef was derived were born, fattened and slaughtered. The compulsory system requires that each beef label must include a reference number or code, to ensure a clear link between meat and animal or groups

of animals. Labels must also show the approval number and nationality of the slaughterhouse where the animal or animals were slaughtered. If the carcass or group(s) of carcasses is further processed, labels must indicate where those operations occurred. The regulation includes specifics on the labelling of these diverse situations.

Compulsory indications are:

- a reference number or code linking meat on sale to the original animal or group of animals from which the meat was derived
- the country of birth* and the country of rearing*
- the country of slaughter with plant licence number
- the country of cutting with plant licence number(s)

*if both country of birth and rearing are the same as country of slaughter then these additional requirements could be replaced with the indication “Origin” (name of country)

The voluntary Beef Labelling Scheme, complements the above compulsory labelling. The purpose of this EU scheme is to provide consumers with reliable information about the beef they buy. Retailers giving consumers anything more than the compulsory information about beef must get prior approval from DEFRA. Approval is given only if arrangements have been put in place to guarantee that the beef is what the label says it is. To do this, an independent third party assessor must be employed and a certificate of conformity issued.

Until January 2002, claims about origin, e.g. “UK/British”, remained subject to approval and verification under the Scheme. After that date, they became subject to the compulsory Origin Labelling Scheme.

Labelling information, such as the following, requires approval under the Scheme:

- Region, e.g. English, local
- Method of slaughter, e.g. kosher, halal
- Breed
- Date of slaughter
- Age
- Method or length of maturation

- Method of production, e.g. grass-fed

The Beef Labelling Scheme controls the voluntary labelling of operators at all levels of the supply chain from abattoir to retailer. All non-compulsory information about the origin, method of production or characteristics of beef, or animal from which it is derived, requires Government approval under the Beef Labelling Scheme. The Scheme requires operators to establish a traceability system and to employ a Government-recognised independent third party to verify the information on the label. Traceability is the key requirement of the Scheme. It is an express requirement of the regulations that a Government-recognised body verify the system of records used by operators selling beef to ensure that their labelling information is true. There are currently five verification bodies operating under European Standard EN/45011. There is a cost to the operator who must employ a verifier to check their non-compulsory claims. However, there is competition amongst the verifiers which helps to keep the price lower.

The European Commission Regulation 1825/2000, the other regulation on beef safety issued in 2000, laid down detailed rules for the application of Reg. (EC) 1760/2000 in regard to compulsory and voluntary labelling schemes for beef and beef products. This regulation defines traceability as an identification system held by all groups of operators in the same or different parts of the beef supply chain, such that it allows for the establishment of links between meat and an animal or animals. The regulation also defines the required reliability of information contained on labels and in all types of registers and establishes sanctions for non-compliance, which may include removal of beef from the market.

The development and speed of traceability programs for red meat is different across various countries in the world. The reason for this is that different incentives have existed in different locations to implement traceability. In the EU, traceability programs assumed importance in reaction to the many food scares. European consumers believed they were given slow and in some cases incorrect information about the potential dangers posed to them. Table 22 provides information collected by Liddell on pork market certifications in selected countries (the beef market is also similar). A “High” rating in Table 22 indicates a large level of involvement for certifying that pork meets certain food safety or quality assurance standards.

Table 22: Food Safety and Quality Assurance Certifications in Selected Countries

Food Characteristics	Private certification	Public certification
Food safety (a non competitive issue)	UK- High USA- Low Denmark- High Canada- Moderate	UK- High USA- Low Denmark- High Canada- Moderate
Quality assurance (a competitive issue)	UK- High USA- Low Denmark- Moderate Canada- Low	UK- Moderate USA- Moderate Denmark- High Canada- Moderate

Source: Liddell, 2000.

An interesting picture emerges from the above table; which illustrates the fact that there is a higher level of involvement on the part of the private sector in the UK and Denmark in certifying food safety and quality assurance characteristics. However when it comes to a competitive issue like quality assurance UK fares well compared to Denmark, probably due to a major role played by retailers in the UK. In the UK, retailers are attempting to position themselves continuously and carefully as custodians of the consumer, distinguishing themselves from both the producer and food manufacturing interests. As the increasingly integrated European food market continues to show major food safety problems, the retailers have taken the opportunity to further embed retailer-led supply chain management. Retailers are a dominant force in the food chain, reflecting the level of consolidation in this sector. They in turn compete to meet the changing needs of consumers. The processors, and ultimately farmers have to respond to the needs of consumers through the retailers.

Supply chain partnerships delivering traceability have emerged in the UK meat industry, largely as a result of the loss in consumer trust following the Bovine BSE crisis. A very good example of private sector initiative in delivering traceability in the beef sector is that of 'Tracesafe', a small farmer-owned UK company, which has developed a network of cattle breeders and finishers who rear cattle to specific production guidelines. The production protocols specify the purchase of feed from a set of contracted feed mills and include an extensive system of on-farm record keeping. 'Tracesafe' differentiates its beef on the basis of its ability to trace the history of individual meat cuts to the animal of origin, with an implied safety

assurance. The beef is sold in specialist retail outlets and restaurants under the 'Tracesafe' brand name (Fearne, 1998).

Private sector traceability initiatives are a result of pressure from downstream food retailers. This is motivated by a desire to reduce risk exposure or to reduce the transaction costs of monitoring product quality or downstream production methods. UK supermarkets require their beef suppliers to be members of accredited quality assurance programs. While traceability back to the farm may not be an explicit requirement, it can be a necessary condition for providing information on production and processing methods (Hobbs, 1996; Fearne, 1998). The UK cattle passport system requires producers to register all cattle movements on or off a farm with the national identification agency. The unique animal ID number would enable immediate identification of all farms on which the cattle have been located.

While all food products are covered by safety and quality guarantees, organic farming must fulfil additional production and processing criteria. Special importance is attached to protection of the environment and, in the case of livestock farming, to animal welfare.

Beef that carries the EU logo for organic farming is guaranteed to have been produced in accordance with strict standards laid down by the European Commission.

The EU's rules relate to the time the animal must spend in the fattening phase (a minimum of 12 months) and what it is fed, a maximum of pasture and, for young animals, natural milk, preferably from its own mother. The rules encourage rearing practices that safeguard the health and welfare of the animals. These must be allowed to circulate freely, ensuring they get plenty of exercise. While density is low, the animals are kept in groups, in respect of their natural preference.

The treatment of illnesses has as much as possible to rely on natural substances (phytotherapeutic and homeopathic products), and the use of growth-promoting hormones is categorically prohibited. Surgical operations, such as the removal of horns, must be limited to those which are essential to the animal's well-being.

Checks are carried out by an appointed public authority or by an inspection body

recognised in each Member State to ensure that standards are being met. They span the entire production process from the farming to the labelling stage, including every aspect of processing and packaging.

9.0 Relationship between the different actors in the Red Meat Supply Chain

Our earlier research (Smith *et al.*, 2004, and Thankappan *et al.*, 2004) indicated that retailers are becoming more influential in food policy-making in the UK and EU, in the name of the consumer and public interest. Consumers are increasingly influencing the food system by selection or rejection of food considered healthy or hazardous; and large-scale retailer's organisations acting as intermediaries between the production and consumption are both very sensitive to these issues and attempt to shape consumers' preferences. This represents the development of a more complex public/private set of relationships, which now embodies new public institutions (like the EFSA and the UK FSA) and a greater competitiveness to react to consumer and media concerns.

The strategic collaboration of different actors in the supply chain for the purpose of meeting specific market objectives over the long term and for the mutual benefit of all 'links' of the chain has been termed "value chains". The emergence of value chains as an organisational structure reflects a continued evolution of the market economy. In essence, value chains respond to the demands of the customer more effectively and efficiently. They do so by building collaborative management structures as well as information systems that enable each link in the chain to work together.

As regards the development of partnerships among the various actors in the Red Meat supply chain, the increased emphasis on supermarket own label products has led to the proliferation of very distinctive suppliers and competition between supply chains than within supply chains. This increased competition has been a major factor driving partnerships between retailers, abattoirs and producers (Fearne, 1998). The competition between major UK food retailers involves emphasis on elements like product quality and high service standards offered by different retailers. This differentiation has been a key factor in development of retailer own brand products (Shaw *et al.*, 1992); and almost the whole of red meat is exclusively own label (Supermarketing, 1998).

Over the recent years there has been a concerted move towards fewer and more co-operative relationships as retailers attempt to gain control over their supply chains to ensure the quality and safety of their own label products (Duffy et al., 2005). Alliances and direct contracting between input suppliers, processor-suppliers and retailers are compressing the red meat supply chains. According to Vorley (1999), this vertical coordination is driven by the need for traceability and 'due diligence', consistency of product, assurance of supply and contamination by pathogens (e.g. BSE, *E. coli*).

Producer clubs are a good example of dedicated producer partnerships that has developed over the recent years in the red meat supply chain. These producer clubs aims to ensure traceability and quality of production and also partnership relationships between the farmers, processor and the supermarket. Major processors like St Merryns Meats (now part of Grampian country foods) who supply to Tesco, ABP (supplier to Asda and Sainsbury's), Foyle (supplier to Tesco and Albert heijn) have producer clubs.

Sturgeon (2000), points out the fact that very close buyer-supplier linkages can undermine efficiency, as mutual dependence would make switching suppliers or customers a costly affair. Major processors, like ABP, Kepak and Dawn Meats handle about 25% of the UK meat processing; hence they hold a very influential supply position because of their close links with major retailers. Firms therefore are looking for greater flexibility, where buyers maintain a small interchangeable pool of suppliers, switching competitively between them depending on price (Vorley, 2004).

10.0 Conclusion

In this paper, the case of the red meat sector is used to explore the hybrid model which is playing a pivotal role in reshaping the UK food policy. This paper has sought to provide an overview of the market trends of the different kinds of meat in the red meat industry. In exploring the red meat supply chain this paper focussed on the various industry processes and controls, and mapped through the structure of the beef, lamb and pork supply chains.

As meat is often perceived as an un-branded commodity, branding does not exist in the beef sector, promotion, is normally carried out by national trade organisations on a

generic basis. In some cases a beef product is branded with place of origin, e.g. 'Scottish Beef'. Some supermarkets try to create their own supreme quality brand of beef by contracting with slaughtering companies and farmers, usually in a specific region, as regards supplying beef that has been treated in a pre-specified way by farmers, slaughterhouses and the retail chain. All the major retail chains in the UK have established such 'quality assurance schemes', a development which has accelerated since the BSE crisis. The lamb and beef supply chains are very similar in their nature and performance however; the pork supply chain has a higher degree of vertical co-ordination and concentration of supply than the beef and lamb industry.

Hence, traceability is relatively easier and thus there is a reduced need for specific schemes to improve traceability.

The period between 1986-1996 legislation controlling the production of meat was largely directed towards the reduction of the risk to humans from diseases or organisms carried in animals. It tended to concentrate on the reduction of salmonella and similar organisms in meat and meat products, and therefore attempted to anticipate the routes by which meat could potentially be contaminated by such organisms.

Meat hygiene and inspection Regulations provided for the processes of slaughter and cutting of carcasses to be supervised by authorised officers of the local authority trained for the purpose. The Regulations were directed to the identification before slaughter of sick or distressed animals or animals which might be suffering from a disease which would render their meat unfit for human consumption. These measures were intended to prevent so far as possible animals entering the slaughterhouse if it could be seen in advance that their meat would not be fit for human consumption;

Due to the nature of the red meat industry as regards the food safety and hygiene requirements, public regulations have been in place in this sector in the EU and in the UK. The BSE crises however had contributed towards tightening of various loopholes existent in the regulatory framework.

Gordon (1998) for example, writes, with respect to food:

“The UK was the first European country to receive (or suffer) the impact of the Industrial Revolution and ‘cheap food for the labour classes’ became a necessity from the mid-nineteenth century onwards... The result: very little attachment to the soil, destruction of food culture, low value attachment to bread, regional cheeses and fresh fruit and vegetables” (1998, p. 93).

The recent multiplication of assurance and certification schemes in the UK suggests that this historic distinction is beginning to weaken as consumer demands shift. The British, notion of quality increasingly encompasses a different set of characteristics, notably consumer health, animal welfare and the environmental impact of production methods. More recently, new conceptualisations are emerging such as, most notably, ‘functional foods’ that claim to offer additional health benefits to their standard nutritional value.

Large, multiple-retailers tend to have national coverage and higher levels of vertical coordination, buying power and control over the supply chain; they are, therefore, more able to dictate policy to the supply chain. Hence, it is more likely that retailers will be in a position to create their own quality assurance schemes and impose these conditions on their suppliers. This ability is especially important in the UK where ‘due diligence’ requires retailers to take all reasonable steps in ensuring that the own-branded food they sell is safe.

It appears that the earlier schemes were created primarily due to marketing concerns, whereas more recent schemes have been introduced in response to general hygiene, traceability and quality assurance concerns in the European Union meat sector. This is especially true to those national quality assurance schemes found in the UK.

The majority of quality schemes in each country set product and/or process standards in the areas of animal welfare, safety and eating quality. Differences between schemes and countries occur in the specificity of standards for particular areas of welfare and safety. It has also to be noted that a consequence of attaining a certain standard in one area may be the improvement of standards in another area - for example, animal welfare standards affecting eating quality.

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