Collaboration in the Red Meat Industry: Understanding Power, Demand and Supply Characteristics in Beef Supply Chains

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Abstract

Collaboration, it would seem has become the 'hot topic' over the last ten years and this way of thinking about how organisations should interact is now influencing practitioners, industry and government bodies about the way supply chains should be coordinated in the red meat industry. This paper considers this 'new way of thinking' in the light of significant, unparalleled changes currently facing, more specifically the UK beef industry. Although there has been significant academic debate concerning how collaboration can improve the sustainability, competitiveness and the profitability of the UK beef industry, what is less prominent in much of the literature is how collaboration will reduce uncertainty and who will benefit from these collaborative relationships. In order to better understand why collaboration may not be possible, nor desirable, in particular within supply chains with a dominant buyer- such as the multiple retail chain- the Power Regimes Methodology has been introduced. The methodology highlighted within this paper provides a more detailed commercial analysis of relationships within beef supply chains and enables a more complete picture of the unique power, demand and supply characteristics of these chains to be depicted.

Key Words: Lean Production, Effective Supply Chain Management, Demand and Supply Management

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INTRODUCTION

Collaboration, it would seem has become the 'hot topic' over the last ten years and this way of thinking about how organisations should interact is now influencing practitioners, industry and government bodies about the way supply chains should be coordinated in the red meat industry. This paper considers this 'new way of thinking' in the light of significant, unparalleled changes currently facing, more specifically the UK beef industry. In the context of this period of change, research presented within the paper will argue that the increased emphasis placed upon collaboration within the beef supply chain may be a rational response to a series of highly publicised food scares (BSE, Foot & Mouth etc.) and increased global competition, but current normative thinking does not consider the unique and powerful position of the multiple retailers within the UK beef supply chain. Up until the recent lifting of the ban on British beef exports (March 2006), UK beef producers have had ten years of difficult trading, without the previously healthy export market to balance the power of the multiple retailers. Nor, does current work in this area fully consider that there are is not one generic beef supply chain, but complex and varied beef supply chains with varying power, demand and supply characteristics.

The paper argues that although many authors (Drabenstott and Barkema, 1995; Fearne, 1998; Spriggs, Hobbs and Fearne, 2000; Fearne, Hornibrook and Dedman 2001; Kularatna, Spriggs and Storey, 2001; Hornibrook and Fearne, 2001; Curry, 2002; Harvey, 2004; Cox, Chicksand and Palmer, 2005) have explored the potential reasons behind why the beef industry has been driven to co-ordinate itself differently (both horizontally and vertically through strategic alliances, traceability programs and agricultural co-operatives), there has been less emphasis place upon understanding the suitability and viability of these strategies for all players in the various beef supply chains (Cox and Chicksand, 2004; 2005a; 2005b; Hingley, 2005).

In order to better understand why collaboration may not be possible, nor desirable, in particular within supply chains with a dominant buyer- such as the multiple retail chain- the Power Regimes Methodology has been introduced. The methodology highlighted within this paper provides a more detailed commercial analysis of relationships within beef supply chains and enables a more complete picture of the unique power, demand and supply characteristics of these chains to be depicted.

THE RED MEAT INDUSTRY TODAY

Although change within the global beef industry has been considerable the UK has faced quite distinct and unprecedented change. Structural changes (including a significant consolidation at all stages of the beef supply) to the UK beef industry have been driven by a number of factors: food safety issues such as Bovine Spongiform Encephalopathy (BSE) and Foot and Mouth Disease (FMD) have excluded UK beef products from previously lucrative export markets; changing consumer preferences, such as the long-term decline in consumer demand for red meat has also been an important influence; reforms to the CAP subsidies (decoupling) will have a potentially significant, but yet unknown impact on the supply market, possibly further encouraging more beef farmers to exit the market; finally, the concentration of market power in the hands of food retailers (75% of fresh and frozen beef is sold through retailers in the UK)[1] (Cox and Chicksand 2005a; Simmonds, Francis, Bourlakis and Fearne, 2003), with the resultant power imbalance within the UK retail market (more pronounced than most other world retail markets) will have a considerable impact upon the dynamics of the UK beef industry.

Our research and subsequent analysis based upon a robust and analytical understanding of power, demand and supply characteristics within the beef industry leads us to believe that the commercial outcomes of relationships based increasingly upon collaboration, within the context of this unique and changing industry has not been fully explored.

[1] MLC- 2002 figures.

INDUSTRY RESPONSE TO STRUCTURAL CHANGE

The primary response to these structural changes within the UK red meat industry has been for writers, government think tanks and some practitioners to emphasise the need to focus upon increased vertical integration and collaboration within the beef industry. At the heart of this 'new way of thinking' was a report prepared by the "Policy Commission on the Future of Farming and Food" chaired by Sir Donald Curry (2002) and the subsequently devised 'Agricultural Strategy' (DEFRA, 2002). Thus, the general consensus of support was for the adoption of increased vertical integration, co-operation and collaboration as the only logical response to increased global competition and to provide a means to combat other structural changes within the industry. Increased vertical integration and collaboration, it has been argued, will reduce risk and uncertainty and develop an atmosphere whereby innovation and further value creation can flourish. (Van Der Vorst, Beulens, De Wit and Beek, 1998; Fearn, 1998; Katz and Boland, 2000; Palmer, 1996.)

Companies operating within the various red meat supply chains have also received a plethora of advice from academics and industry bodies detailing how to adapt to structural changes within their industries and how to improve the sustainability, competitiveness and profitability of the UK beef industry. These strategies and approaches include: collaborative "lean thinking" and Value Chain Analysis (Curry, 2002; Simmons, Francis, Bourlakis and Fearne, 2003; Francis, 2004; Cox and Chicksand, 2005c; Simmons and Zokaei, 2005); vertical integration, collaboration and coordination (Shaw and Gibbs, 1995; Palmer, 1996; Fearne, 1998; Van Der Vorst, Beulens, De Wit and Beek, 1998; Katz and Boland, 2000; Curry, 2002; Hornibrook and Fearne, 2003; Fearne, Duffy and Hornibrook, 2004; Cox, Chicksand and Yang, 2006a); horizontal cooperation and collaboration (Hind, 1997; Hendrickson, Heffernan, Howard and Heffernan, 2001; Curry, 2002; DEFRA, 2002; EFFP, 2004; Cox, Chicksand and Palmer, 2005); and the establishment of alternative supply chains such as farm shop, export and food service supply chains (Curry, 2002; Cox, Chicksand and Yang, 2006b).

There is insufficient space to consider all of the above mentioned strategies and approaches, therefore collaboration - the theoretical driver behind much of the work emulating from the Curry Report (2002) – will be considered in more detail. Collaboration, the cornerstone of lean thinking has received considerable attention as a strategic approach for companies to follow to achieve sustainable success in the UK beef supply chain. This approach seeks to find ways to deliver exceptional value to end customers by finding ways to eradicating waste and inefficiency throughout the supply chain (Womack and Jones, 1996; Hines, Lamming, Jones, Cousins and Rich, 2000). The VCA work carried out by Cardiff Business School (1996-present) highlights considerable success in identifying the sources of waste, (within various agricultural supply chains, including beef) and improving companies' internal production performance. However, the attempt to establish collaborative intra-company teams to generate 'win-win' integrated supply chain improvements has reportedly been less successful. (Simmons, Francis, Bourlakis and Fearne, 2003).

Although a complex issue, Cox and Chicksand (2004; 2005b) emphasise that the unique nature of supply and demand in the UK beef industry is not fully considered by proponents of collaborative 'win-win' supply chain management (SCM) strategies. The importance of understanding supply and demand within the beef industry is illustrated in more details elsewhere (Cox and Chicksand, 2004; 2005b), yet it is important to emphasise that the characteristics (production processes, demand and supply etc.) of the beef industry is quite different from process-based industries, (such as the automotive) in which collaborative lean and SCM thinking was pioneered. Cox and Chicksand (2005d) go onto explain that a further key reason for the unsuccessful adoption of lean principles and vertical collaboration in many agri-supply chains has been the difficulty of achieving the desired levels of trust between participants in the chain. The traditional way of life and thinking of producers is often a real and powerful barrier to achieving SCM throughout the beef industry.

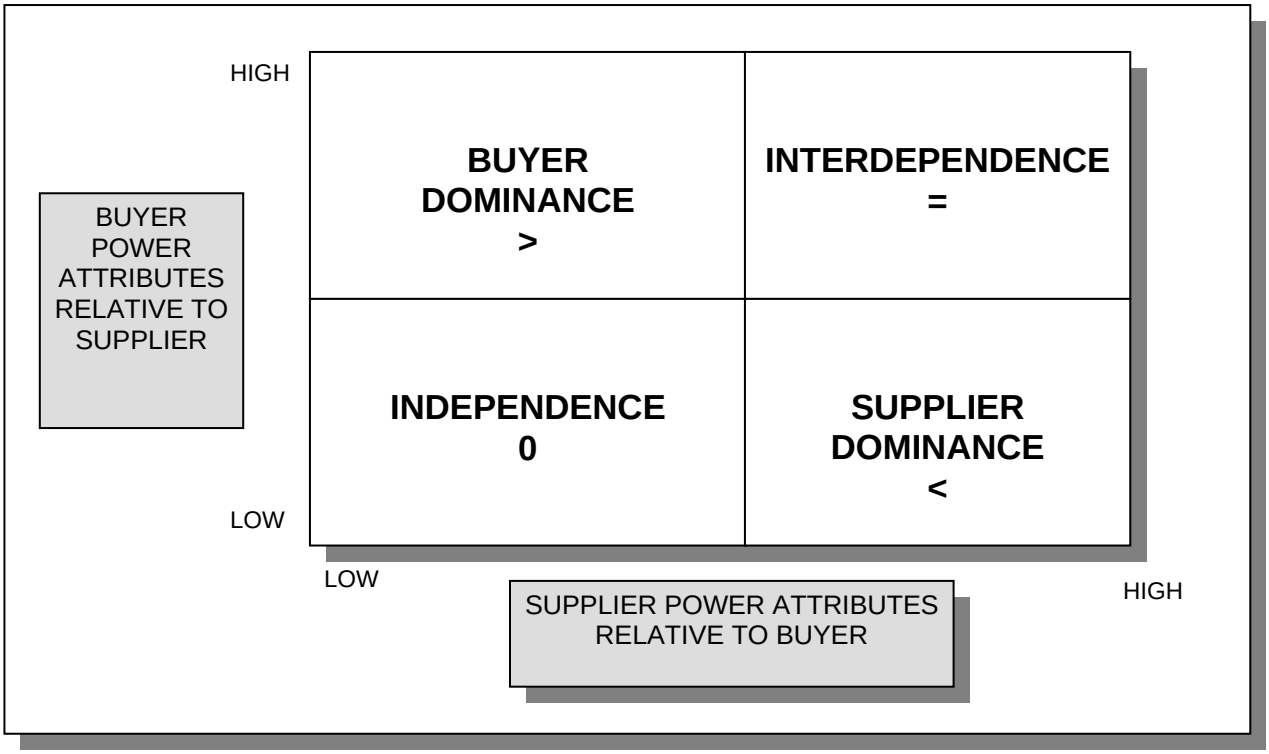
Furthermore, there has been very little detailed analysis of the benefits (financial) and potential pitfalls of collaboration. It is important to understand that collaborative ways of working will not necessarily be able to improve businesses' profit level unless collaboration is accompanied by strategies that can generate power resources and improve a firms' power position within the supply chain. In the UK beef supply chain, the adoption of collaborative supply chain management souring and lean principles may in fact result in a high level of dependency on buyers and to low or declining levels of profitability (Cox and Chicksand, 2005d). Recent research and a more robust understanding of the beef industry makes it clear that there is a need for business managers to understand how to appropriately choose and use

supply chain sourcing approaches, not just simply grab a random principle from a disparate industry and adopt it into their practice.

THE POWER REGIMES METHODOLOGY

The Power School have developed the 'Power Matrix', which is built around the concept that all buyer and supplier relationships are predicted on the relative utility and relative scarcity of the resources that are exchanged between the two parties (Cox, 1997; Cox, Sanderson and Watson, 2000). There is not sufficient space here to consider the theoretical justifications for this approach, however within the power matrix (see figure 1) a buyer can be located in one of four basic power positions: Buyer Dominance (>), Interdependence (=), Independence (0) and Supplier Dominance (<). These four positions are explained in considerable detail elsewhere (Cox and Townsend, 1998; Cox, 2001a; 2001b; 2004a; 2004b; 2004c;Cox, Ireland, Lonsdale, Sanderson and Watson, 2002; Cox, Lonsdale, Sanderson and Watson; 2004). What is important to understand is that under specific power and leverage circumstances, different relationship management approaches (collaborative versus arms length) may be more appropriate than others. What is also crucial to appreciate is that there are specific supply chain power circumstances (buyer dominance and interdependence) in which collaboration (or co-ordination), beyond the boundary of the firm, are more likely to succeed.

Figure 1- The Power Matrix



RESEARCH PROJECT METHODOLOGY

The findings outlined within the next section of this paper are part of an ongoing 30 month research project sponsored by the EPSRC, North West Development Agency, North West Food Alliance and the Red Meat Industry Forum. The research methodology was inductive and qualitative, drawing upon multiple cases at multiple sites. Organisations with different sizes and business ethos were interviewed using a semi-structured questionnaire to lend a degree of comparability befitting a multi-case approach. The semi-structured questionnaire (completed by several people within each organisation to allow for triangulation), coupled with input from MLC experts (industry statistics & reports etc.) enabled the researchers to isolate the power and resource attributes between dyadic relationships in the chains analysed.

FINDINGS: BEEF SUPPLY CHAINS

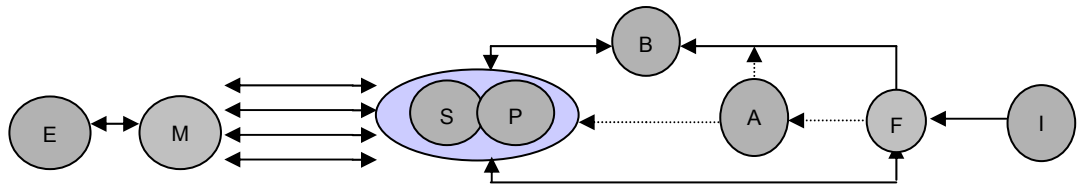
There is insufficient space here to cover many aspects of the findings from this detailed and ongoing research project however analysis presented within this section of the paper demonstrates that the UK beef supply chain cannot be described as one because it is in fact made up by many different supply chains. Figure 2 provides an overview of seven (although not all) of the sub-supply chains that characterise the generic UK beef supply chain. This paper advocates that the UK beef supply chain as a whole is quite varied in the structure and number of routes to market and that the chains described will have significant variations in power, demand and supply circumstances.

Figure 2: SEVEN BEEF SUPPLY CHAINS

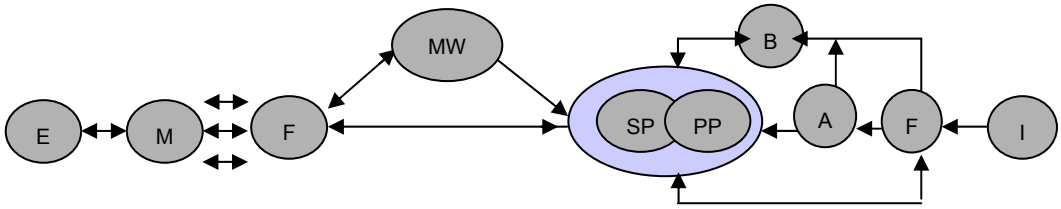
Key:

EC = End Customer	M = Multiple Retailers	SP & PP = Sec & Prim. Processors
B = Agent/dealer	A = Auction	F = Farmer
M = Marketing Group	I = Input suppliers	FM = Farmers Market
IB = Independent Butcher	FS = Food Services	R/S = Restaurants
MW = Meat Wholesalers	IR = Independent Retailers	

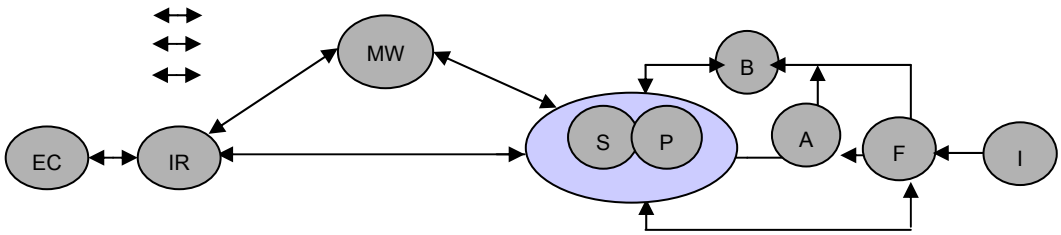
Example 1- Supply Chain for Fresh/Frozen Beef with Multiple Retailer



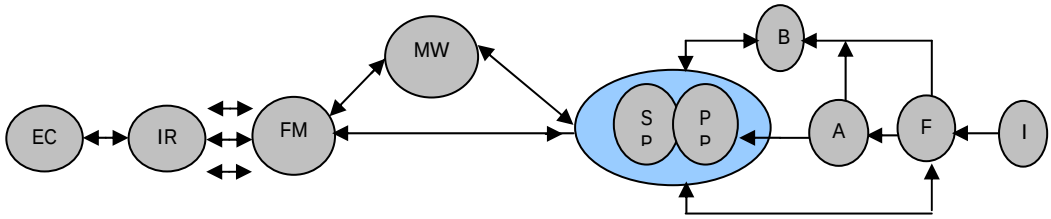
Example 2- Supply Chain for Processed Beef with Multiple Retailer



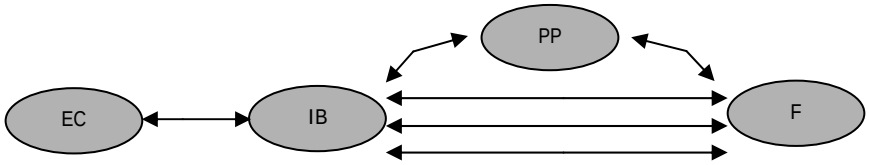
Example 3- Supply Chain for Fresh/Frozen Beef with Ind. Retailer and Int.



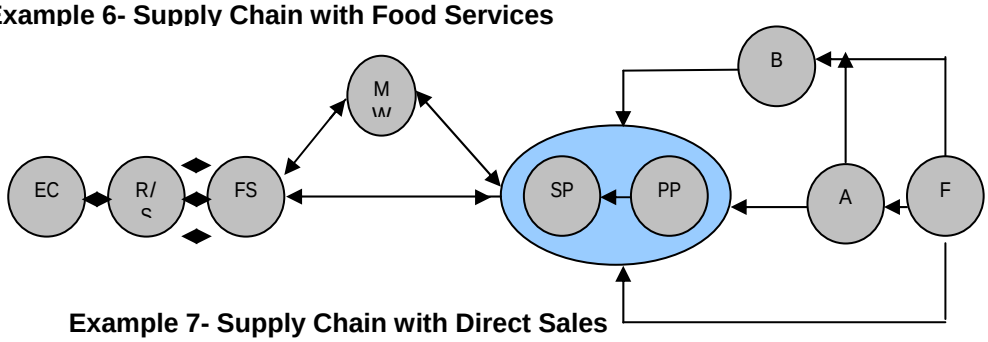
Example 4- Supply Chain for processed Beef with Ind. Retailer and



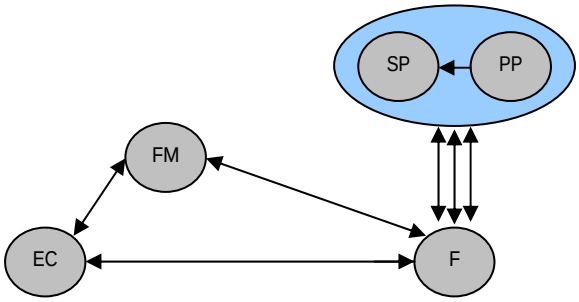
Example 5- Supply Chain with Independent butchers



Example 6- Supply Chain with Food Services



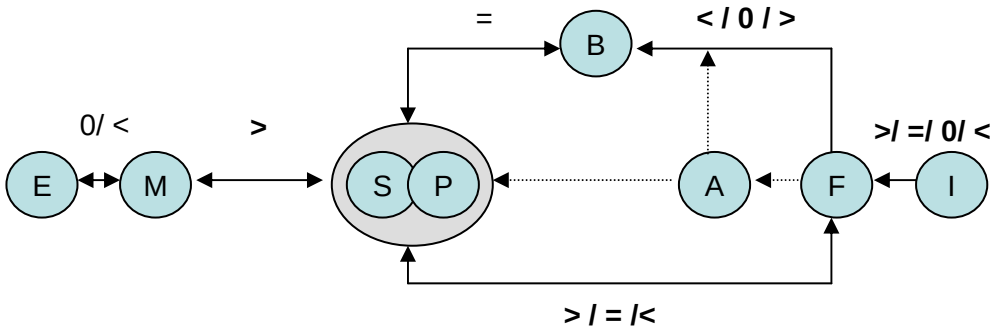
Example 7- Supply Chain with Direct Sales



There is not room here to consider the power, demand and supply characteristic for all potential (but not exhaustive) supply chains highlighted in figure 2, however, in general each supply chain displays both characteristics of fairly regular and standardised process demand and supply for certain products, but they also exhibit tremendous irregularity and uncertainty of demand and supply for other products and services, all of which are derived from the same raw material—a cow.

Having established that it is not possible to view the beef industry as one generic industry with the same characteristics it is also important to note that there are varying power dynamics between the actors within the seven theoretical supply chains. Therefore, the second focus of the research was to analyse the power relationships between actors within the various beef supply chains (shown in figure 2). Without sufficient scope to consider the power relationships within each of the chains described, figure 3 focuses upon the power dynamics within the key supply chain for fresh/frozen beef; namely the multiple retailer driven supply chain.

Figure 3- The Frozen/Fresh Beef Power Regime with Multiple Retailers and integrated Processors



Key:
EC = End Customers MR = Multiple Retailers SP = Secondary Processors
PP = Primary Processors B =Buying Agents
A= Auctions (Not Officially Used) F = Farmers I = Input Suppliers

As Figure 3 indicates the power relationship between the end consumer and the multiple retailers in this chain are characterised by *independence* (0) or *supplier dominance* (<). This means that end consumers have limited power to extract value from multiple retailers. If value improvement occurs (either in the form of lower prices or better quality for particular products) it is normally determined by the supplier in response to competitive pressures in local markets.

This is due to the following major factors:

-the relatively low number of alternative multiple retail suppliers to choose from in specific local markets;
-there are many potential alternative customers;
-the volumes being purchased by consumers are relatively low;
-the switching costs for both the supplier and buyer are low;
-search costs are low for the buyer but bundled supply offerings within particular retail outlets creates lock-in within particular localities; and,
-the products- many are relatively standardised but information asymmetry favours the supplier.

The power structure between the multiple retailers and the integrated food processors (secondary and primary production/abattoirs combined) is normally characterised by *buyer dominance* (>). Multiple retailers normally have *buyer dominance* when they source commoditised products that are to be sold on a price basis relative to a given quality standard. This is because they have the following key power levers over suppliers:

-Few buyers, with many potential suppliers;
-High volume relative to supplier business turnover;
-Supplier switching costs high, those of the buyer relatively low;
-Buyer account is very attractive to suppliers for revenue;
-Supplier offerings are standard and commoditised;
-Buyer search costs low; and,
-Information asymmetry favours the buyer.

Figure 3 also indicates the integrated processors in the chain potentially have upstream relationships with three major suppliers. These are the auctions (A), the buying agents (B) and the farmers (F). However, for fresh/frozen beef there is no direct relationship between the processor and auction markets as traceability, provenance, conformability and animal welfare are critical for the buyer. Processors will, therefore, never (officially) buy beef for multiple retailers from the auction markets, as

typically these customers specify that processors buy direct from farmers or via their own or contracted agents direct from farms. Multiple retailers insist beef is sourced from either the National Farm Assured Programme (Red Tractor) or from their own supply programmes. Auctions are avoided as an unnecessary link and for animal welfare reasons.

Farmers in general, whether they are supplying through agents or auctions, experience value erosion in favour of those further downstream. This is demonstrated by the fact that average farm price for beef in the 3rd quarter of 2004 was 193 pence per kg against 419 pence per kg once retailed. The price spread between farm and retail price has also significantly widened from 40% in 1993 to 54% in 2004 (Meat and Livestock Commission, 2005). There are also many other suppliers in the chain providing supply inputs (I) for farmers. These relationships are not discussed in detail here because, whatever power and leverage farmers have over their supply inputs the power structures vary (>/=/0/<) based on the scale and size of the farmers being serviced and the particular products and services being sourced.

Buying agents play an important, if often overlooked, role within the beef supply chain. They are the interface between the producers and the processors and are highly skilled individuals with the ability to determine the quality of beasts from visual inspections on the farm. Processors, therefore, rely on agents to procure the right quality beasts from the market place. Agents or buyers have varying power resources depending upon the type of relationship they have with the processor and who the end customer is. When buying on behalf of processors for the multiple retailers the relationship is normally one of *interdependence* (=). This is because the buying agent works predominantly with one processor (or a small number of clients) as a contract buyer. Their relationship is very close and collaborative.

In the case of a contract buyer, therefore, the power attributes of the buyer and supplier are as follows:

- Few buyers, with one or more supplier;
-Buyer may have a large, but not necessarily the total, share of market sales for the supplier;
-Supplier and buyer switching costs relatively high (in terms of perceived risks of finding either a new buyer and appropriate supplier);
-Supplier finds buyer's account attractive but buyer highly values the supplier's knowledge and contacts;
-Although search and transactions costs to find alternatives are relatively low for the buyer;
-the supplier has potentially product information asymmetries against the buyer (knowledge of where to source products that conform to end user requirements) and has long-term relationships established with the producers .

The power position between the integrated processors and the farmers is very different. This is because, due to the problem of '*carcass imbalance'*, it can oscillate between *buyer dominance* (>), *interdependence* (=) or *supplier dominance* (>). The power of the farmer vis-a-vis the processors varies depending upon supply scarcity. When a particular quality beef (for instance R4 on the Euro Grid system), as specified by the customer, is in shortage, then farmers in possession of the desired beasts, during a short window of opportunity, may be able to obtain very high returns from *supplier dominance* (<). There can also be *interdependence* (=) power outcomes when long-term collaborative relationships are established between farmers and processors, whereby above normal returns are offered to farmers in return for a greater levels of guaranteed supply. This is an attempt by processors to lock-in opportunistic farmers to ensure supply continuity and conformity and, thereby, reduce supply risk. When there is over-supply farmers tend to become price-takers and processors take advantage of this *buyer dominance* (>) situation.

The power position between the buying agents and the farmers is similar and can be described as oscillating between *buyer dominance* (>), *independence* (0) and *supplier dominance* (>). The reasons for these changing power circumstances can be attributed to the same conditions that operate in the relationship between processors and farmers. In periods of supply shortages the farmer is often in a strong position, and will have the option to sell via a range of marketing routes to obtain the highest returns (for farmers this will include auction markets). Conversely, in some circumstances, the buying agent may find themselves in a strong position due to their position as middlemen, especially during periods of excess supply. With prices depressed, and with high levels of price obscurity, buyers/agents may find themselves in a position to maximise returns. Again, due to the large number of potential buying agents within the market as a whole and the large number of potential suppliers, the relationship is often one of *independence* (0), with the market driving the price. This is similar to the circumstances that exist within a spot market.

CONCLUSIONS

The findings presented within this paper highlight significant aspects which will affect the ability and potential for collaboration between supply chain actors. First, when we talk about supply chain collaboration in the beef industry; which chain are we talking about? As this paper has argued there is not one supply chain with uniform demand, supply and power characteristics. Second, there may not be conducive power dynamics to encourage collaboration throughout a chain and the outcome of collaboration is unlikely to be shared equally. Figure 3 depicts a supply chain dominated by a powerful actor- namely the multiple retailers- however there are varying power structures throughout this chain. This leads us to believe that although collaboration may be possible between the multiple retailers and the processors due to the power position (buyer dominance- >), it may not be possible for the processors to encourage collaboration with all other actors in this chain (due to varying power). Even when collaboration is possible the fact that there are dominant parties in the chain would mean that it is unlikely that the benefits from that collaboration will be shared equally.

As previously argued, in an attempt to improve the sustainability, competitiveness and the profitability of the UK beef industry there has been considerable academic debate concerning the development of collaborative approaches (Cox, 2004a; 2004b; 2004c; Francis, 2004; Cox and Chicksand, 2005c), However, what is less prominent in much of the work detailed thus far is how collaboration will reduce uncertainty and who will benefit from the relationship. Only if collaboration leads to a combination of closer working relationships, improved level of trust and most importantly a guaranteed (contracted) and significant volume of trade is it likely that organisations will be willing to invest in the time and resources necessary for collaboration to work. Without some form of guarantee (in terms of price, volume, regularity and equitable/agreeable sharing of the gains from the relationship) there will be insufficient incentive for organisations to reduce their currently rationally opportunistic behaviour, in particular at the producers' stage.

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