Innovation and Power in Food Supply Chains: The Case of the Potato Sector in the UK

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Paper prepared for presentation at the 131st EAAE Seminar 'Innovation for Agricultural Competitiveness and Sustainability of Rural Areas', Prague, Czech Republic, September 18-19, 2012

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Abstract: This paper deals with innovation in supply chains and discusses the effects that its organisation (e.g., bargaining power along the chain) might bring on innovation and ultimately to the sustainability of the chain. The analysis was carried out considering the case of the UK potato sector and by comparing three case studies: the first two consider the situation of a supply chain that sells fresh potatoes to retailers (one in South England and another in Scotland), whilst the third one consists of a supply chain that produces potatoes to be further processed. The results indicate that the supply chain leader plays an important role in both in the organisation of the chain and in the initialisation, management and success of the innovation.

Key words: Innovation, agri-food supply chains, potato sector, UK agriculture.

1 Introduction

As the Common Agricultural Policy (CAP) evolves towards a model where the broad objectives of sustainable management of natural resources and a more balanced territorial development become as important as the incentive of food production (although viable food production is still envisaged as one of the broad objectives of the future CAP), the sustainability of farming will necessarily become more dependent on the supply chains within which it operates.

Within this context, business decisions, including those relating to innovation, are expected to depend not only on individual factors affecting the willingness to adopt (e.g., see Feder et al., 1985 for a survey of some of the individual factors affecting individual adoption of innovations) but also on the characteristics of the business environment in which farmers operate. The fact that power imbalances in the supply chain may affect the size and distribution of research benefits is not new, it can be found in Alston et al. (1997) who considered a setting where processing firms operated under oligopsony power in buying raw farm products and oligopoly power in selling processed food products.

A recent European Communication on the operation of supply chains (EC, 2009) stated that an important problem in the food supply chain is that relationships between the different actors are sometimes conflicting. A specific feature of food supply in Europe is that it includes very different economic agents: farmers, either independent or in cooperatives; food producers, from SMEs to large international groups; and distributors, from small corner shops to large supermarkets chains. In fact, according to the Communication, “contractual imbalances associated with unequal bargaining power have a negative impact on the competitiveness of the food supply chain as smaller but efficient actors may be obliged to operate under reduced profitability, limiting their ability and incentives to invest in improved product quality and innovation of production processes.” (EC, 2009, p. 6).

In the UK a small number of supermarket chains now provide the primary interface between 60 million consumers and the industry that produces their food (Cabinet Office, 2008). Over time, and with consolidation, power in the food supply chain has shifted towards the small number of major retailers that now account for an estimated two-thirds of all food sales.

Under the described context, the question discussed in this paper is whether the organisation of the supply chains and its characteristics are important for innovation to occur and what the possible effects of imbalances of power in the supply chain may have. We focus the analysis on the potato supply chain in the UK, not only because it is an important crop within the country but because conflicts between retailers and other chain participants have been more visible, and the formers' power has been more explicit than in other chains.

The paper is structured as follows: first we provide a brief overview of innovation in supply chains. Next, we provide a short description of the UK potato sector. This is followed by a description of the three case studies in terms of their background, organisation and innovation. In the next section, we compare the three cases highlighting the relationship between supply chain organisation and innovation. Finally, we present conclusions.

2 Innovation and the food supply chain in the literature

The focus of this paper is on innovation in the food supply chain. The main reason for this, is the acknowledgement that increasingly food is produced within supply chains and less within a sequence of markets ((e.g., producer markets, wholesale markets, retail markets). Innovation also tends to occur in sort of organised way, in many cases being a focal company or the captain of the supply chain the one that initiates the introduction of new products.

Yakovleva and Flynn (2005) the food supply chain is a system of stages, which represent particular sequence of economic activities, through which resources and materials flow downstream for the production of goods and the provision of services for ultimate consumption by the consumer. Thus, a typical food supply chain tends to consist of the following stages: origin of resource, agricultural production, primary processing, further processing, final manufacturing, wholesale, retail, food service and domestic consumption.

The food supply chain is perceived as a network of organisations that have primary economic, but also social relationships with each other that enable the functioning of the supply chain to produce goods and services.

As regards the meaning of innovation used in this paper, as in the case of Omta (2002), we use the broad definition describing it as the creation of new combinations. These new combinations can be a new product, a new technology for an existing application, a new application of a technology, the development or opening of new markets, or the introduction of new organisational forms or strategies to improve results. This means that an innovation can be not only a new product, but a new production process, a far-reaching re-organisation of production and distribution, or even an improved way to achieve innovations, for example by means of venture capitalism (Omta, p. 73).

It is in the context of a supply chain (or a network) that a successful innovation entails not only a new product, but the satisfaction of new demands on quality, quantity, transparency with regard to the origin of natural resources (the suppliers), timeliness (logistics and distribution) and the availability of the product (e.g. at the supermarket).

According to Omta (2002) the success of innovations in the chain depends on three related elements, namely the context, cooperation characteristics, and the critical success factors for innovation at company level. However, the aspect that we want to highlight in this paper is the importance of balance of power between suppliers and buyers (Porter, 1985) and its interrelation with leadership in a supply chain (Little, 1970). These factors have effects on innovation as a supply chain where the power relationships are balanced; the leader can play the role of facilitator identifying innovation opportunities, organising it along the chain, and sharing the gains and losses with the other participants in a way that they find it fair. This behaviour feedback of the chain increasing the trust and commitment of the participants, which increases the uptake of innovations.

In the next section we aim to study the interaction of these factors on the UK spotato supply chain.

3 The UK potato sector

The purpose of this section is to present some trends of the UK potato market in England and Wales and Scotland with the purpose of providing a context where for the supply chains studied in the paper operate.

Figures 1 to 4 present key variables of the potato production in Great Britain. As shown in Figure 1, the area under potatoes in England and Wales has been decreasing since 1982, whilst in Scotland it has been growing at slow pace. This is reflection of the elimination of the potato supply quotas. The total number of hectares was in 2010 about 126 thousand hectares of which 110 thousand hectares were planted in England and Wales.

Figure 2 show the potato yields in England and Wales and in Scotland. Although cyclical, the yields, which are close all over Great Britain, have kept an increasing trend, which have compensated the decrease in area and kept the volume of main crop potatoes relatively stable in 5,793 thousand tonnes in 2010. Domestic prices for mainware potatoes (see Figure 4) show a slightly increasing trend although with similar cycles as observed in yields (109 £/tonne in Scotland and 139 £/tonne in 2010).

As pointed out in Yakovleva and Flynn (2005) as regards the potato varieties, the most popular one is planted in Great Britain is Maris Piper, which is a main crop variety and it accounted for almost one quarter of the total planted area of potatoes in Great Britain in 2003. It is considered to produce the higher quality chips than other potato varieties. Estima, which is an early crop variety, is the second most popular variety grown and accounted for 8.8 per cent of the total planted area of potatoes, Lady Rosetta is the third (4.8 per cent), closely followed by Maris Peers (4.7 per cent).

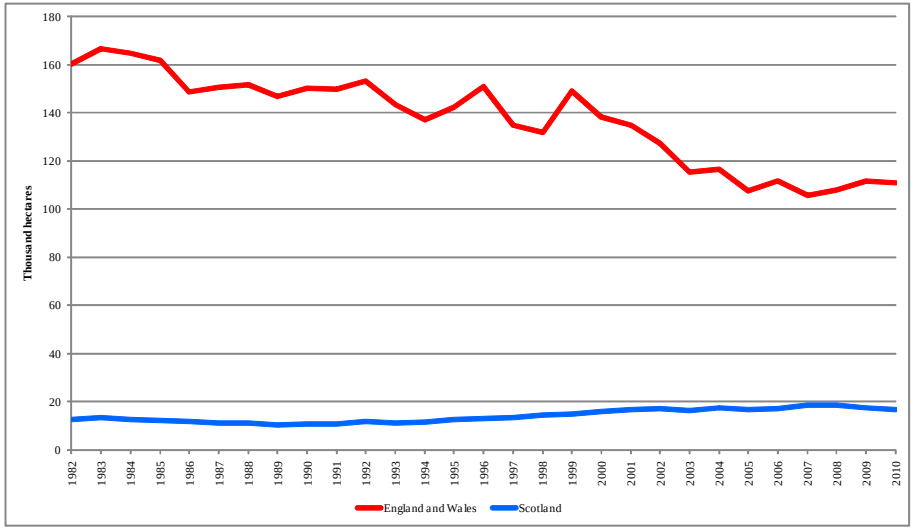

Figure 1: Main crop potato area - England and Wales and Scotland

Source: Agriculture in the UK and Economic Report on Scottish Agriculture

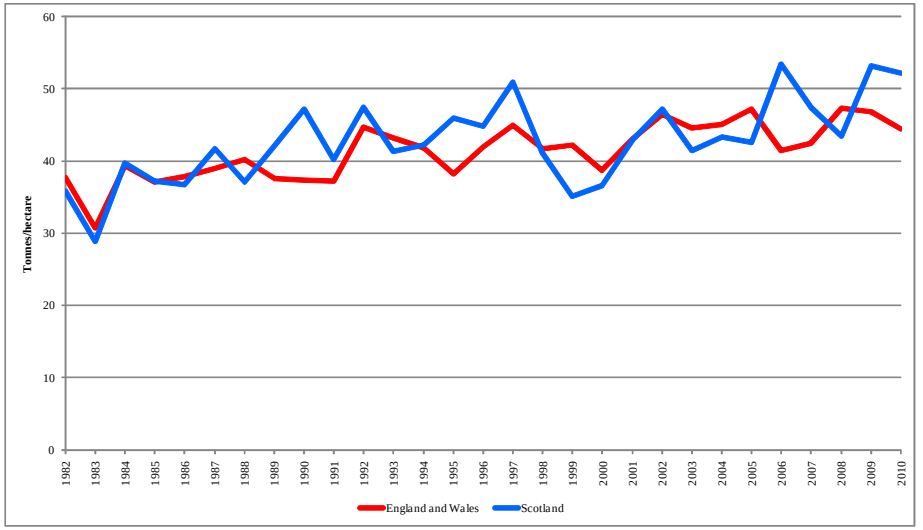

Figure 2: England and Wales and Scotland potato main crop yields

Source: Agriculture in the UK and Economic Report on Scottish Agriculture

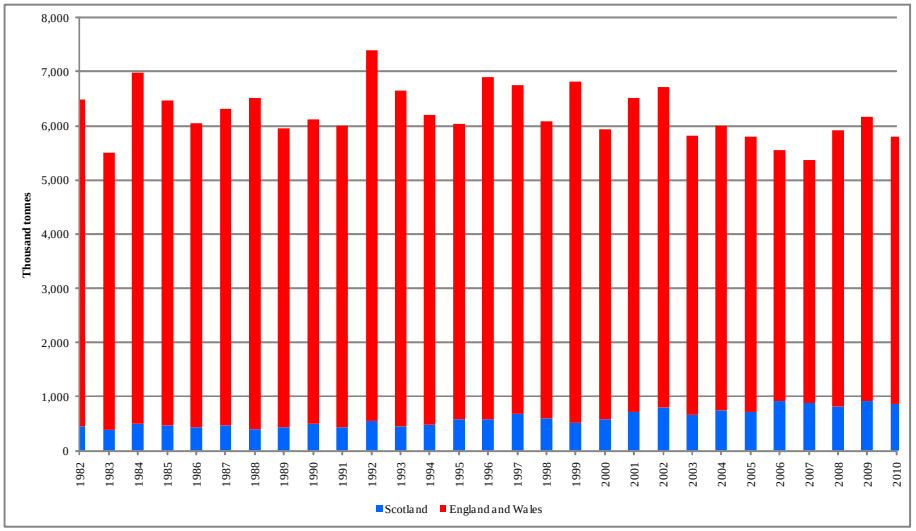

Figure 3: Main crop potato - Total volume (England and Wales and Scotland)

Source: Agriculture in the UK and Economic Report on Scottish Agriculture

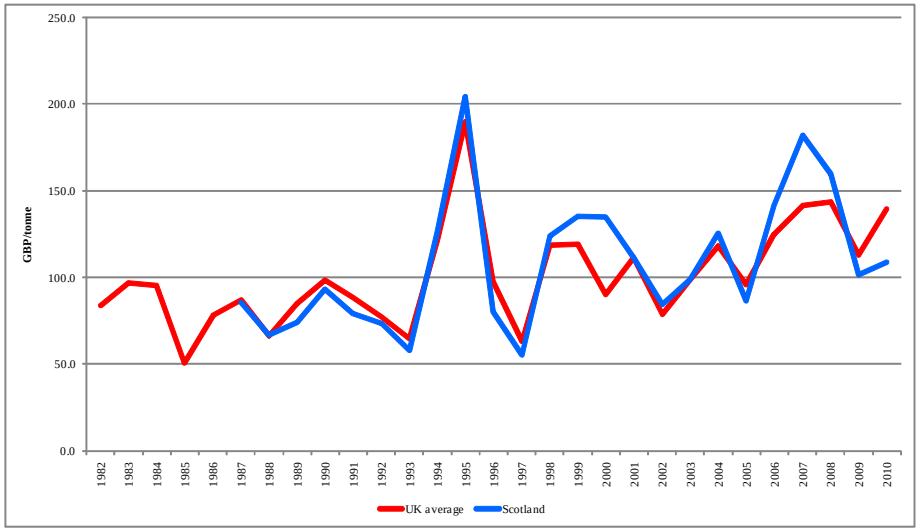

Figure 4: UK average and Scottish potato main crop producer prices 1/

Source: Agriculture in the UK and Economic Report on Scottish Agriculture

Notes

1/ Average price paid to registered producers.

Maris Piper, which is the most popular variety used for home cooking and by chip fryers, is the most planted potato variety; hence this could indicate that the most popular processing of potatoes in Britain is chip frying. According to the information from British Potato Council, However, Maris Piper is very susceptible to diseases and pests, therefore is very rarely grown extensively in organic production. Maris Piper exists only in the form of a conventional potato.

As shown in Figure 5, most of the domestic consumption of potatoes is domestically supplied. Imports of potatoes to the UK have grown over time and they constitute approximately 29 per cent of the consumption for human purposes. The major suppliers of potatoes from abroad are France, Germany, Israel, the Netherlands, Egypt, Spain and Cyprus.

Figure 6 shows the disposition of potatoes destined through retailers and food service. The majority of harvested potatoes are sold on the fresh produce market, however, over 2 million tonnes of potatoes (approximately 30 per cent of the UK annual harvest) are sent for processing (Yakovleva and Flynn, 2005). Within potato processing industry, the production of frozen and chilled potato products has steadily increased over the last decade (see Figure 6).

As pointed out by Yakovleva and Flynn (2005) the market for canned and dehydrated potatoes has remained stable. It is important to note that the UK potato market is not only supplied by domestic potato processors, but also by processors from abroad, which have been increasing at a fast pace. The majority of imports are frozen and chilled potatoes.

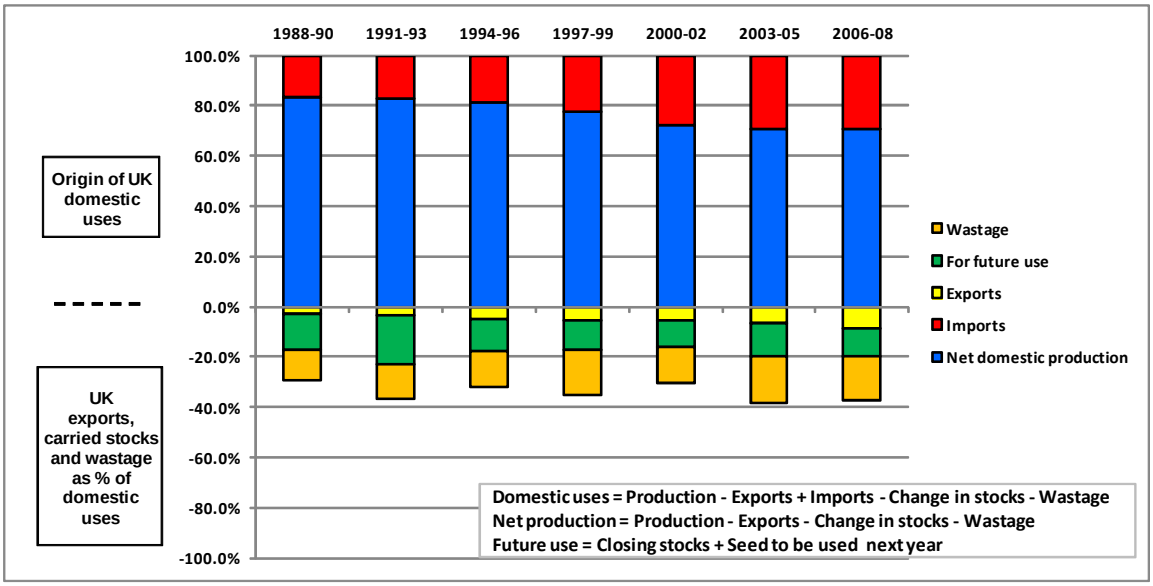

Figure 5: Origin of UK potato domestic uses 1/
Source: Based on AHDB data.
Note:
1/ Underlying data corresponds to the seasons from 1st June of year shown to 31st May of following year.

As shown in Figure 6, there is decreasing trend in the consumption of fresh potatoes, compensated by the consumption of processed potatoes.

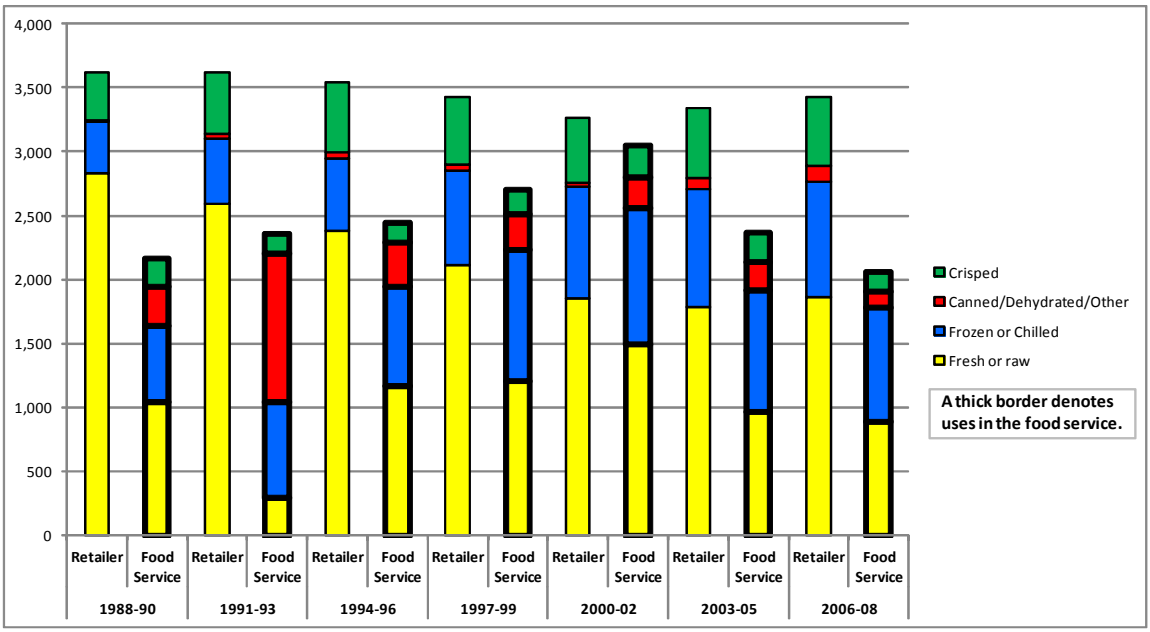

Figure 6: UK disposition of potatoes 1988-2008 through retailers or food service
Source: AHDB.

4 Empirical work

4.1 Methodology

The methodological approach, in the absence of detailed statistical data, comprised two elements: first, to present three case studies: (1) the relationship between a Scottish processor (who also fronts a group of producers) and a multiple retailer, and (2) that between a processor in Southern England and a leading multiple retailer and (3) a supply chain where the focal company is potato processor. Three aspects are analysed in each chain, based on secondary information publicly available in newspaper and journals, namely: the business history, the organisation of the supply chain and the innovation related activities.

The second aspect of the methodology consists first, a theoretical analysis of the different elements that comprise a collaborative supply chain, as in our view, this is key for the development of innovations along the chain. Second, aspects of this collaborative supply chain are compared with the three case studies in order to extract lessons.

4.2 Case studies

This section comprises the description of three case studies. Two of the case studies correspond to fresh potato supply chains whilst the third one is of a processed potato supply chain. It should be noted that the first two cases are of interest because the relationships between processors and retailers were not very successful. Therefore, they can provide lessons as regards elements that are important when establishing a relationship with a powerful agent, within which investments will be made. In addition, they are both cases where the weaker party made investments over time; therefore, despite the imbalanced power situation innovation still took place. In contrast, the third case is a successful case where the power is more balanced and the processor behaves as the captain of the supply chain organising it and proposing and developing innovations.

4.2.1 Scottish case study

Business history

In the 1980s, there was a move from buying potatoes unwashed in bulk to the washed, pre-packed form as buyers wanted even more convenience and new ideas. This meant even more challenges for the declining number of potato growers, pre-packers and processors aggravated by the increasing demand for pasta and rice-based meals. Marketing developments led to the disappearance of traditional grades and the emergence of user-friendly tags. This reinforced the decline in demand for fresh potatoes, but led to the growth of the added-value market, such as prepared mash potatoes.

The company that is centre of this case, Taypack, began in 1986 when Russell Taylor and his son, George, diversified into supplying washing quality potatoes to local packers, who then supplied supermarkets. In 1993 they shortened the supply chain and installed their own washing line at Moncur, packing baking potatoes for the Scandinavian market. Two years later George Taylor established the grower group Taygrow Produce, with 15 members and 1,000 acres. At the same time a new grading system was installed as well as two new washing lines. Contracts were established with supermarkets and in 1998 Taypack bought out Stokes Bomford in Fife, which was packing for Asda's distribution depot in Grangemouth. The business was brought to Moncur and the company handled most of the production from 8,000 acres of potatoes in Perthshire, Angus and Fife, supplying Asda depots at Grangemouth, Washington and Wigan, which collectively service 94 stores from Elgin in the north to mid-Wales.

In 2008 Taypack Potatoes, after several years supplying ASDA, decided to end their agreement with it in an attempt to protect the long-term future of the company and its growers. It is believed Taypack's misgivings over the contract began some time ago but came to a head recently when Asda, which paid the company around 180 per tonne, demanded more potatoes were supplied, forcing the growers to buy in potatoes at 230-300 a tonne. Growers also pointed to two fuel rise prices over the past 12 months and a threefold increase in fertiliser, which had not been acknowledged by the supermarkets.

George Taylor, chief executive of Taypack, presented a two-year proposal, based on the true cost of production, which was not accepted by ASDA, which was reluctant a sustainable price in a year when uncontracted supplies of potatoes are trading at a substantial premium. ASDA moved to replace the 80,000 tonnes a year of potatoes with produce from other suppliers.

The aftermath was that Taypack's plant was bought by QV Foods, based in East Anglia. The deal, meant an increase in production, to create more than 100 jobs and safeguard hundreds of others in the Scottish potato-growing sector. Taypack continues growing, sourcing and procuring potatoes to supply the Inchture packing facility, as well as other processing facilities, and has also benefited from the increased distribution opportunities in the South arising from the new venture with QV Foods. The supermarkets being supplied by QV in

Scotland includes Asda. It also supplies Aldi, Lidl, Iceland, Morrisons, Co-operative shops and Spar shops.

Organisation of the chain

The “Taypack supply chain” comprised a group of 100 growers from East of Scotland, which produce about 100,000 tons of potatoes that are packed each year at the packer plant. Of those growers, 50 were committed to Taypack exclusively and within that number 26 were members of Taygrow, a growers co-operative set up specifically to supply the Inchture packhouse. This cooperative provides 1,900 ha of the 3,000 ha required.

The packing plant used to employ 220 people at its base at Inchture, Perth. Its business represented 9 per cent of the UK's annual 1.5-million-tonne fresh potato market. Asda was the major customer of the firm, taking about 80 per cent of the 100,000 tonnes of the product for distribution to its stores in Scotland and the north of England (40 per cent of Asda's UK fresh potato business).

In addition to Asda, Taypack used to supplies supermarkets and wholesale customers in Europe and Scandinavia. Aldi's Scottish fresh potato business which remains unaffected. Taypack in 2007 acquired a 25 per cent shareholding in a Ukraine-based farming company. 700 ha of potatoes were planted in Ukraine in spring 2007.

Innovation related activities

Three innovation or improvement in the supply chain can be found: First, the establishment of a modern packing plant by Taypack; second, a training programme supported by ASDA to strengthen the supply chain and third a potato breeding agreement with the James Hutton Institute (former Scottish Crop Research Institute).

As regards the Taypack plant, this was supported by a £ 500,000 grant from the Scottish Executive’s processing and marketing scheme for agricultural produce and costed a total of £ 3.5 million facility. The plant was built at Moncur Farm, near Inchture (Angus). The plant was described as impressive in terms of quality control, traceability and automation.

The second type of innovation was a national training programme covering 270 fresh produce growers (not only potato growers) throughout Scotland, England and Wales organised by ASDA that started in 2005. This was a £ 350,000 three-year scheme involving the whole supply chain. In Scotland the initiative involved SAC and Taypack Potatoes and around 70 potato producers linked to the Taypack group.

The third innovation is associated to a breeding potato programme associated to the former Scottish Crop Research Institute. It started in 2005 (also as part of the Scottish research Programme). This breeding programme has left a legacy of hundreds of crosses which will be available for further use, but attention has recently focused on an unnamed selection which is very near to commercialisation and is grown on a field scale. The variety coming from the breeding programme was multiplied by the Brown family at West Adamston, near Dundee and is showing good tuber blight and blackleg resistance. It also shows partial resistance to

pallida, a type of potato cyst nematode. There is also good immunity to virus Y and powdery scab.

It should be noted that QV Foods, Pseedco & Taylor Food Group have just signed a five year breeding deal to continue the work with the James Hutton Institute's Mylnefield Research Service (MRS) subsidiary. It is expected that new work will use the latest technological advances, including the recent mapping of the potato genome to develop new varieties from salad potatoes to baking potatoes.

4.2.2 South of England case study

Business history

The Romney Marsh Potato Company was founded in 1950 by Jules Sleap who began serving London greengrocers after reading that housewives had to queue for rationed potatoes. It started to supply Tesco with potatoes since 1959. The family-run Kent company packed potatoes for Tesco for 47 years, when the retailer ended a packing contract with the family-run firm. A total of 81 of the 108 workers at the Romney Marsh Potato Company, in New Romney, Kent, were made redundant.

In words of Peter Thake, Romney Marsh's procurement director: "I can't understand Tesco's thinking. It has admitted we have done everything for it that we should have done, and our quality record and service records are second to none. "This was our total business. We only supplied Tesco, because that's the way they wanted it. We want to find another contract, but these days most supermarkets are reducing their packers rather than looking for extra" (The Grocer, 2005).

From the Tesco's side a spokeswoman for retailer said: "We acknowledge the service of Romney Marsh Potato Company. We remain committed to buying potatoes from Kent and supporting Kentish potato growers." (The Grocer, 2005). The termination of its contract with the Romney Marsh Potato Company was part of Tesco's rationalisation of its potato supply base.

After the end of the contract with Romney Marsh Potato Company, packing companies in Lincolnshire and Somerset (i.e., Premier Foods' Branston, QV Foods, Greenvale AP and St Nicholas Court Farms) were used to pack up potatoes grown in Kent. Branston manages the Tesco potato supply account with QV Foods as well as itself; these two firms now supply Tesco with two-thirds of its fresh potatoes. Tesco will continue to source potatoes from Kent, Sussex and Essex but packing operations have moved to Branton's plant in Lincolnshire. It is interesting to note that another Kent firm, St. Nicholas Court Farms, will have its packing contract with Morrison's cut in July but will continue to pack for Tesco, along with Greenvale AP (Farming News Review - April 2005).

The Romney Marsh Potato Company went out of the potato business and ended up letting their facilities (i.e., their transport fleet and 4,000 tonnes of cold store).

Organisation of the chain

The supply chain involved farmers from Kent selling potatoes to the Romney March Potato Company and this packing them and selling to Tesco.

The relationship between the packer and the retailer was based mostly on a long term informal relationship. As pointed out by Mr Sleap, manager of the packing company, in all those years of business, he could not recall any written agreements with Tesco that could be considered sales contracts. The main paperwork, he said, was a letter sent to Tesco each year agreeing to pay Tesco an "overrider" - a percentage of its turnover. The company never queried the payment, because he believed all his competitors paid it too. In the last year of business Mr Sleap said that the overrider rose from 2 per cent to 3¼ per cent of turnover, though there was no increase in tonnage bought. Such payments were investigated by the Office of Fair Trading (OFT) in its audit of the supermarket code of practice and Tesco was given a clean bill of health.

Tesco said all such payments from the Romney Marsh Potato Company would have been agreed in advance. Safeway, however, was criticised for demanding up to £2.5m in "loyalty" payments from suppliers, in 44 instances, prior to its acquisition by the supermarket Morrisons. Although they were a violation of the code of practice, there was no evidence suppliers had complained about them, the OFT said.

Innovation related activities

The potato company innovation related activities consisted into two: first, an investment in state-of-the-art machinery of £ 2.2 million in the three years before the end of the contract with Tesco. The second activity was the organisation of an agronomic service for the farmers supplying the company.

4.2.3 Potato processor case study

Background

McCain is a privately own Canadian company own by a family that started in 1957. They have fifty five plants in six continents. Great Britain was the first market that the company moved out of Canada first with imports of Canada and in 1968 they built a factory in Scarborough. Now the company has five factories and a potato seed factory in Montrose. Employment in Great Britain reaches 2000 people and turnover of 400 million GBP. The company buys around 13 per cent of the British potato crop.

Organisation of the chain

The company is a leading player in three main channels: retail market, catering or food service marketing, and quick service restaurants. They are best known for their retail business. Since they started in business they build markets, they build categories. According to the McCain CEO Mr. Nick Vermont, the key elements of their strategy as regards their customers consist of:

- **Building markets** – instead of buying businesses the company considers that it is a better strategy to build markets.
- **Diversification by channel and by customer** – As mentioned by the McCain CEO the benefit of a strong relationship is the ability to say "no" when the relationship is not satisfactory. Furthermore, in this way the company dilutes the power exercised by retailers.
- **Relevant differentiation** – The Company puts emphasis in understanding what customers want, as that is the source of value creation and in differentiated their products in the eyes of consumers.
- **Delivering value to customers and consumers** – Whatever they do, it starts with understanding of how consumers shop, how they prepare food, how food fit in their diet. It is important to match the need of their customer (quick service restaurant or the local fish and chips).
- **Innovation on products and processes.**

As regards their supplier the company aims to maintain a long term relationship. The company is organised by growers groups that produce the required varieties for McCain. The latter behaves as a captain of the chain overseeing all the operation and organising all the activities from what consumers want to ways to streamline their suppliers operations.

Innovation related activities

The innovation on the McCain supply chain can be found in two areas: introduction of new products and organisation of the supply chain to support innovation and create value.

As regards the introduction of new products, while the McCain company spends 20 million a year on advertising and it is a top 20 brand; they are keen on keep innovating through the introduction of new products. Examples of innovations in Great Britain and their year of introduction are: oven chips (1978), micro chips (1985), home fries (1997), rustic oven chips (2006), microwavable potato jackets (2012).

With respect to the organisation of the supply chain, the company have maintained the following characteristics:

- **Long term view** – The company has always taken a long term view taken into consideration that there have been a declining number of growers and planted hectares over the last 50 years but yields have compensate production (although they have been stable in the last 5 years).
- **Predominantly forward contract based** – As it buys specialised varieties, the company has used forward contracts to ensure enough supply of potatoes to keep their factory running non-stop.
- **UK sourced**
- **First class food safety and traceability**

- **Managing volatility** – As they contract their potatoes in November-December for planting the following spring and delivering during the following 12 months, the issue of volatility is very important. Management volatility (e.g., spikes in energy, tractor diesel, fertilisers) is important but the key thing is to maintain the stability of supply.
- **Driving economic and environmental sustainability -** This is very important and there has to be value for all the partners. It takes several aspects: their growers have to make money; environmental sustainability (e.g., increasing pressure on water) comes as part of the social corporate responsibility of the company.

As mentioned by McCain CEO, Mr. Nick Vermont, 5 or 6 years ago they were struggling to contract all the potatoes they needed. They felt that they needed to change their contract model. They make their growers change their mind about who their competitor were (i.e., not their neighbour but the European one) and to make the growers to work together.

The company organised McCain grower groups, which are close to a cooperative. This was due to the difficulties in managing 300 individual growers each operating individually. McCain did not force the growers into specific groups, i.e., it did not tell them who to partner with but made clear that if the growers wanted to grow their tonnage, access to new varieties, and access to new investment then they needed to be in grower group. Then you can get the economies of scale that would allow providing the product for McCain at a competitive rate.

The grower groups started in 2003 and they do 20-60 thousand tonnes a year between the 10-25 members self selected. The groups are limited companies. All the farmers are directors and they have one full time coordinator.

An interesting aspect of the chain is the management of price volatility (inputs and outputs) which is based on an indexation model introduced to measure movement of potato growing costs.

5 Discussion

The purpose of this section is to start presenting elements that are important for the functioning of a collaborative supply chain for the development of innovations and ultimately for the sustainability of the chain. Next, we compare the characteristics observed in the above case studies with the framework, in order to extract lessons.

5.1 Elements of a collaborative supply chain

Before discussing the characteristics of the supply chain and their influence on innovation in all the presented case studies, it is important start from a framework that serves as a standard for comparing the cases. The selected framework corresponds to one of the development of collaborative supply chain relationships within which decision making and it is taken from Leat and Revoredo-Giha (2008). This framework is presented in Figure 7.

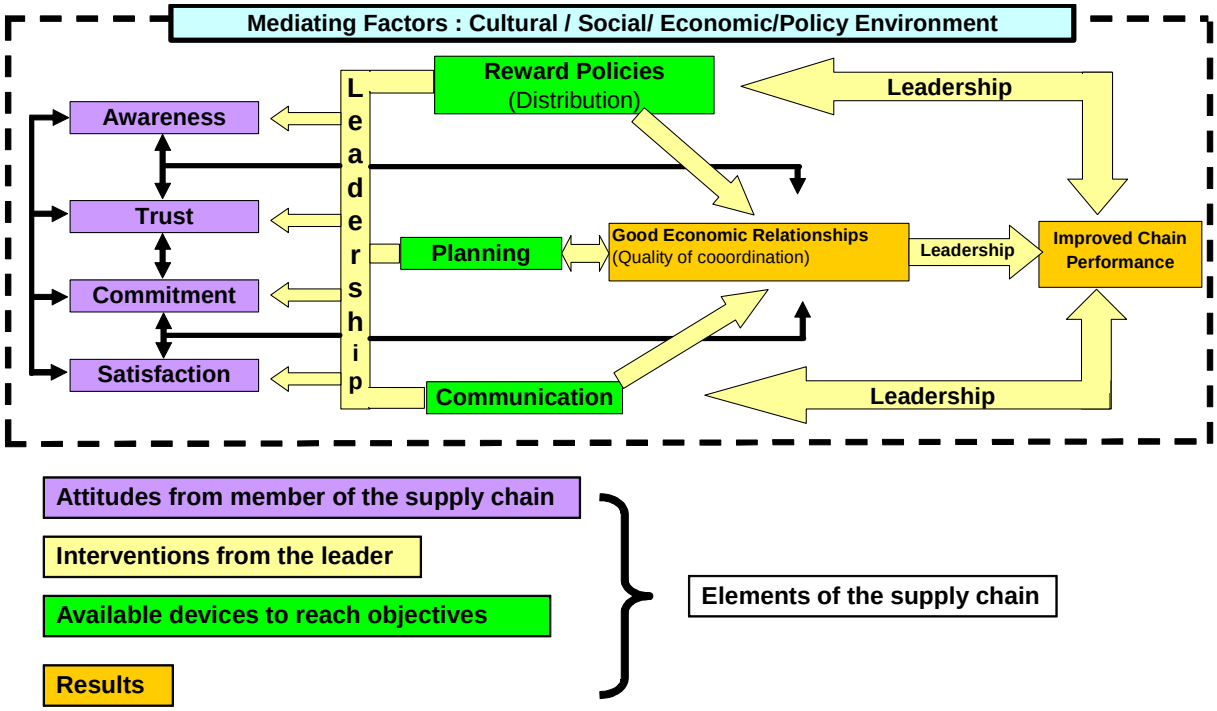

Figure 7. Organisation of a collaborative supply chain

Source: Leat and Revoredo-Giha, 2008.

As shown in the Figure this type of integrated supply chains, invariably involves the development of inter-organisational relationships. Such relationships, if they are to be sustainable, should be stable and mutually beneficial for all the member of the chain and a source source of competitive advantage (e.g. Dyer and Singh, 1998; Sahay, 2003; Power, 2005).

As shown in the Figure, the supply chains are not in vacuum but their relationships take place within a **social, cultural, political and economic environment**. In the wider scope of economic activity - be it production, exchange or consumption - such activity is regarded as "embedded" in patterns of social organisation, relationships and cultural characteristics (Granovetter, 1985). The notion of social embeddedness encapsulates the idea that economic behaviour is embedded in, and mediated by, a complex and extensive web of social relations. In the case of food supply networks or chains, both economic relations (as reflected in prices, costs and markets) and social ones (such as local ties, trust and friendship) are seen as being vital for success (Hinrichs, 2000; Winter, 2003).

A fundamental pre-requisite of good marketing performance is that of **awareness of the customer**, and their needs. Harmsen et al. (2000) note that market orientation involves a focus on, and responsiveness to, customers and competitors, as part of an external orientation. Within the context of supply chains and their performance, this awareness should be extended to embrace the needs of other chain participants as well. Such awareness invariably involves information sharing (Peterson et al., 2000).

Assessing the quality of inter-firm relationships has been the focus of many recent studies. Roberts et al. (2003) reviewed several of them, which along with other studies have illustrated the importance of "soft" factors as indicators of relationship quality. These factors are

satisfaction, commitment and trust. **Satisfaction** (cognitive and affective evaluation based on the personal experience across all episodes within a relationship (Storbacka et al., 1994, p. 25); **commitmen**t (an enduring desire to maintain a valued relationship - Moorman et al. 1992, p. 316), and **trust** ("willingness to rely on an exchange partner in whom one has confidence", Lewin and Johnston, 1997, p.28). It has been suggested that the outcome of trust is "the firm's belief that a partner's company will perform actions that will result in positive outcomes for the firm as well as not take unexpected actions that result in negative outcomes" (Anderson and Narus, 1990, p.45).

Moving away from the attributes of supply chain participants to the mechanisms which can further enhance supply chain relationships and performance, we have communication, sharing rewards and penalties and whole chain planning. **Communication** has emerged as an important factor in achieving successful inter-firm co-operation (e.g. Bleeke and Ernst, 1999; Mohr et al., 1996; Tuten and Urban, 2001). Since communication allows chain participants to learn about and react to changes in the requirements and expectations of other chain participants, superior chain performance, enabled by modern information technologies, is of prime importance to the continued development of inter-firm relationships. The concept of **sharing rewards and penalties** within the chain is a mechanism for driving chain efficiency and unity (Peterson et al., 2000). This might be regarded as particularly important within agri-food chains where the overall supply chain margin is under pressure such as in agrifood. O'Keeffe (1998), in presenting lessons from supply chain partnerships in Australian agribusiness, identifies the importance of rewards being shared equitably for partnership success. Peterson et al., (2000) stress that **whole chain planning** is necessary for whole chain success and all chain members should be involved in the planning process if a chain's potential is to be realised.

An important aspect for the performance of supply chains, and in our view for the success of innovations, is the value of leadership to successful supply chain relationship has been summarised by (Peterson et al., 2000): … "leaderless chains lack vision, direction and unity and are characterised by a high failure rate. The leader's role is to provide the focus and coordination, and to ensure that all participants know, and are committed to, the customer's objectives." (p. 10). Lambert and Cooper (2000), identify the importance of management effort by the focal company, regarding this as a key requirement for supply chain relationships involving managed and monitored supply process links. Furthermore, the quality of leadership within supply chain firms is an important driver of development and improvement as this helps to shape the culture of the firm as well as managing the perceptions held by staff of "us and them" in their alliances (Kidd et al., 2003).

5.2 Fresh potato supply chains

Figure 8 represents the stylised facts of the studied fresh potato supply chains. The focal company is the processor (i.e., the packer), which is the one that coordinates the relationship between retailers and the rest of the chain.

The processor has the role of preferred supplier of the retailer. In the studied cases, the retailers exercise strong power since they could easily replace the processor as a supplier. In addition, the processor does not have a diversified customer base as one retailer is their main client (i.e., Asda in the case of Taypack and Tesco for the Romney Marsh Potato Company).

The effect of this structure is that the returns of any innovation, and in general the margins of production, depend on the negotiation with the retailers, which would take the lion's share.

The described situation limits one of the tools that the captain of the chain has to maintain commitment on the chain and trust, which is the possibility of administering rewards. With tight margins, growers do not necessarily commit their production or they do not necessarily commit to improvement in the chain.

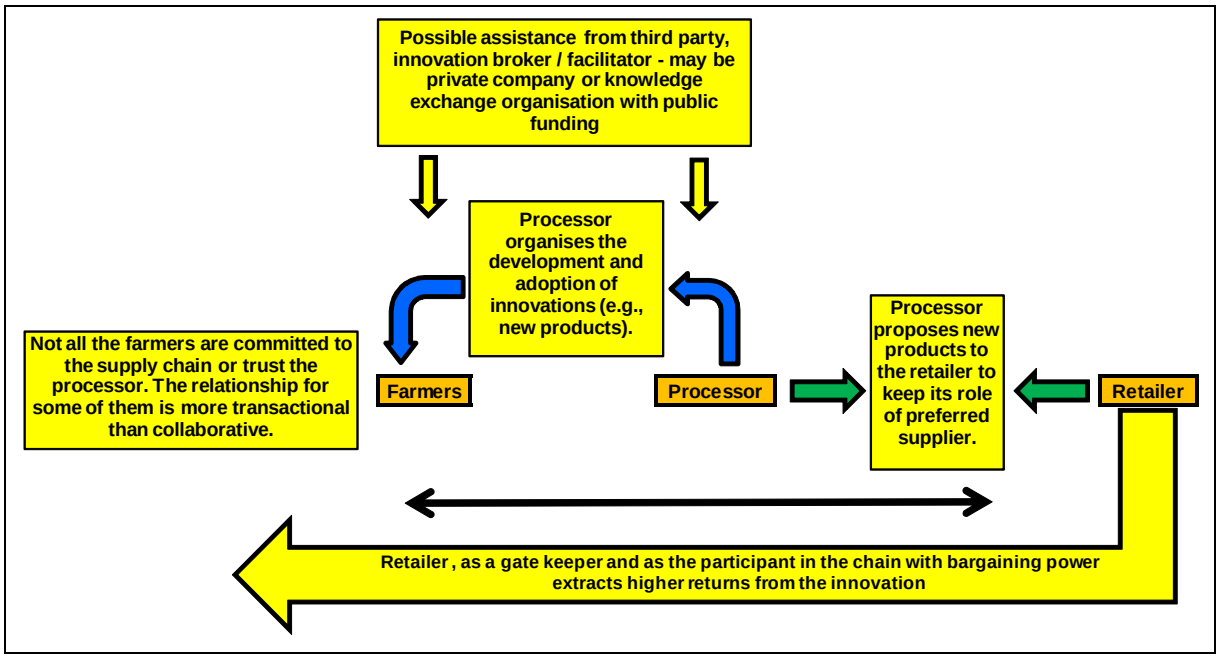

Figure 8: Innovation in a supply chain where retailer has bargaining power

5.3 Processed potato supply chain

Figure 9 portraits the main characteristics of processed potato supply chain. As in the fresh potato chain, it is the processor. The processor is the focal company and captain of the chain. It organizes the innovations and all the improvement along the chain.

An important difference with respect to the fresh potato supply chain is that in this case the processor diversifies customers. This allows it to increase the power and particularly to be able to extract higher returns from retailers. Nevertheless, the competition from products from abroad keeps tight the margins. An important aspect that helps into the cohesion of the chain is the incorporation of a cost index for growers, which allows contracts to be adjusted by changes in the different inputs. Not considering this risk-management factor brought the supply chain Taypack-Asda to an end.

A key aspect is that, in contrast with the fresh potato case, the processor has power within the supply chain. This power, in their relationship with the growers, derives not only that it offers economic conditions that allow every member of the chain to profit of the relationship but also from the fact that the processors oversight the entire supply chain. It collects information from consumers or retailers and passes it to the rest of the supply chain.

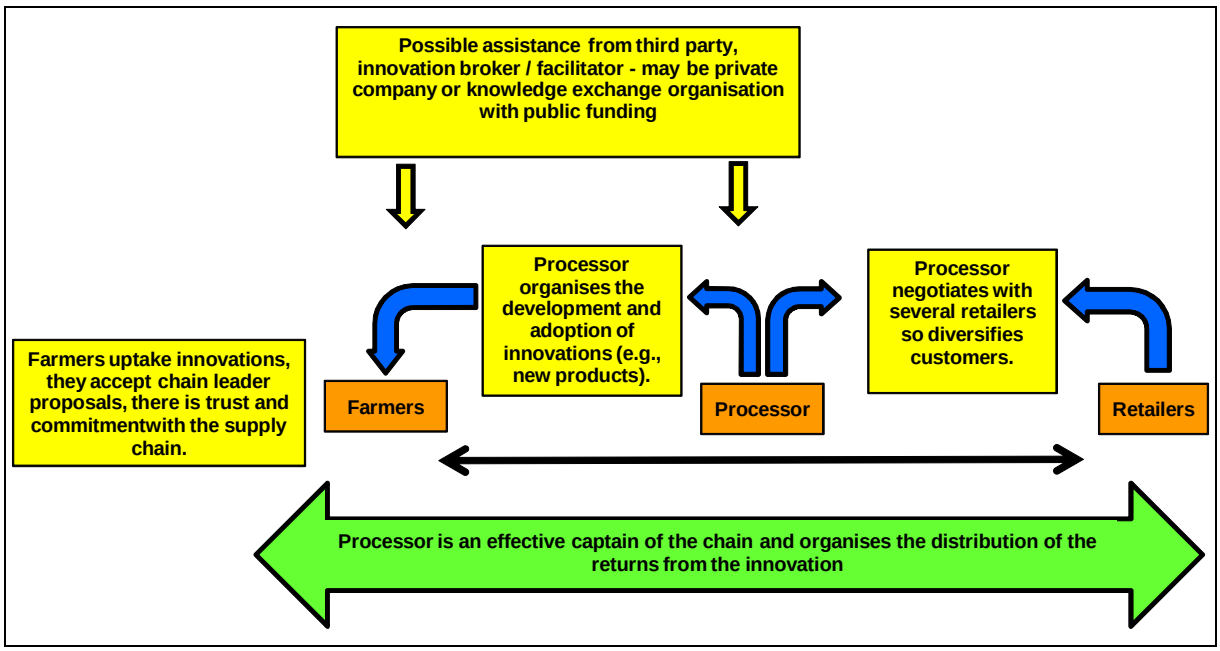

Figure 9: Innovation in a supply chain with an effective leader

6 Conclusions

The main conclusions from the analysis of the case studies are as follows:

- The distribution of power is important for both innovation and sustainability of the supply chain:
    - As regards of the distribution of returns from the innovations as these have effects on the uptake of new technology by different member of the chain.
    - This has implications in terms of trust and commitment to the supply chain leader and to operating within the supply chain.
    - Because the exercise of the power has implications for innovation, it has also effects on the sustainability of the supply chain.

- It is clear from the case studies that for the so called captain of the supply chain to have an active role in promoting innovation, it needs to have power enough to ensure the fair distribution of returns and this might be achieved through diversification of customers (particularly when retailers have so much economic power).

- What about farmers? Because the position they are in the supply chain, operating individually they have little chance to start potentially successful innovations of their own and their best chance is to operate within a supply chain where the chain leader organises growers and proposes innovations that take into consideration what customers and consumers want.

- Furthermore, operating within a supply chain of collaborative characteristics, farmers have the possibility to build in the relationship risk management (like cost adjusted contracts) elements that protect them in times of price volatility.

There are certainly several areas of further research to be considered:

- One is focusing on the relationship between the characteristics of the supply chain and innovation within the agricultural sector. We believe that the food supply chain has peculiar characteristics that make lessons from other sectors of limited interest. One of these is the fact that food supply chain moves from commodities to consumer level products.
- Another is how to create incentives for the creation of collaborative supply chains that bring increasing welfare and sustainability to the farming sector.

Acknowledgements

This paper derives from work funded by the Scottish Government as part of the Research Programme 2011-16 on the area of sustainable food supply chains and domestic food security (Theme 5).

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