EXECUTIVE SUMMARY

1. INTRODUCTION

This report is a key deliverable (D3) of the EU funded research project FOODCOMM, whose overall objective is to analyse the role (prevalence, necessity and significance) of economic relationships and communication in selected European food chains and to identify the economic, social and cultural factors that influence co-ordination within these chains. The report presents the results of research conducted for Workpackage 2 (WP2), one of 7 WPs within FOODCOMM, which used desk research, supplemented by at least three depth-interviews for selected commodity chains, to review the study countries in terms of agri-food production and marketing and the social, cultural, economic and political factors (potentially) influencing economic relationships and communication. In total 13 agri-food chains were examined: 3 cattle to beef (Ireland, Poland and the United Kingdom (UK)), 2 barley to beer (Germany, the UK), 3 cereals to bakery products (Finland, Germany, Spain), and 5 pigs to pigmeat/pigmeat products (Finland, Germany, Ireland, Poland and Spain). A total of 40 expert interviews were conduced using semi-structured interviews, mainly in a face-to-face situation. WP1 (theoretical framework) provided significant input and guidance for WP2 and in turn WP2 is a key input to WP3 (questionnaire development and cross-country survey). Summaries of the data collected are now presented on a country basis followed by a summary of the discussion and conclusions.

2. FINLAND

Finnish agri-food chain is going through many structural changes. Incomes of farms have decreased and thus the amount of farms has declined. However, the average size of farms has grown. Production of rye has decreased but production of pork meat has increased steadily. Feed, bakery, meat, wholesale and trade sectors are concentrated and mostly national, but the market entry of foreign traders and processors has begun. Although large processing companies dominate in the sausage and rye bread markets, the significant majority of companies are small- or medium-sized. Food markets are stable and saturated, taste habits are becoming more uniform with other European consumers' and health issues as well as organic food have become important factors in buying situation. Globalisation and tight competition situation put also pressures on the Finnish agri-food chain. Thus, the Finnish pigmeat sector and bakery sector are relevant study points due to their recent structural changes and present market situation.

Pigmeat to sausage chain in Finland

Structural features: The pigmeat chain has undergone significant structural changes in the past decade. The number of pig farms has declined and the trend is predicted to continue. The number of sows and fattening pigs sold per farm has increased at the same time to achieve greater efficiency. Surplus production is mainly exported, because the pigmeat market in Finland is saturated. The price of the pork meat largely corresponds with the EU average. The processing industry and retail sector are continually seeking greater efficiency, for example, through joint ventures abroad. The primary sector is also seeking routes through which to achieve greater efficiencies due to profitability difficulties.

Economic relationships: Pig producers are generally well organised with strong horizontal and vertical relations. They have horizontal organisations, which represent their interests and raise their professional skills at a national and local level. Producers are owners of three dominant cooperatives who act as intermediaries for the commercialisation of meat between farmers and processors and processors and the retail trade. Also private processors and producers have close and deep relations. In general the relationships are stable and confidential and both are eager to have close relationships to predict production and permit better negotiation with the trade. Also considerable development work, collaborations and integration can be found especially in cooperatives. Furthermore, in horizontal and vertical relations both formal and informal relationships exist. In terms of producers and processors, the relationship includes almost always written and long-term contracts and there is a mutual trust between partners. With processors and retailers, the contracts are also written but with less trust and less balanced negotiation power than in producer – processor relationship. Still, common trust is the important element, although the negotiations have become more complex and price dominates negotiations. However, the relationships are stable because of mutual dependency and quite long-term or at least there is a certainty of continuation.

Communication: Written contracts are common in the Finnish pig chain, personal contacts are appreciated among all partners because of feedback and deep information. The communication is often personal and regular, especially among farmers. Technology is widely used in communication in farms but also in pig houses and business: processors and retailers have electronic data exchange systems and computer handles many routines especially in big enterprises. Information and communication technology (ICT) will be also part of the efficiency strategy, which Finnish sausage chain needs to stay in business.

Influencing factors: The main influencing factors for the Finnish sausage chain are developments towards concentrations in the feed, the processing and the trade sectors. Also structural changes and competitiveness of domestic primary production and reductions of the financial support are very important. However, it is expected that consumers prefer to buy domestic sausage and pig meat in consumer packages from multiple retail chain also in the future, because sausage is important part of Finnish cuisine.

Rye corn to rye bread chain in Finland

Structural features: Rye consumption is the highest in northern growing areas, where rye is used in bread. In Finland rye production has increased slightly in recent years, but over a longer time span it has decreased. Because of low profitability, production is nowadays low compared to consumption. Finnish bakery industry consists of many small local bakeries, few medium-sized and few big bakeries. There are a few nationally known brands or products but people also prefer local products. Processing sector is going through structural changes because of overproduction and efficiency problems. Also the retail sector is suffering from price wars and hard competition, but it has the resources to facilitate large horizontal or vertical collaborations.

Economic relationships: Horizontal relationships among rye producers are strong. The relationship between producers and processor is also personal and stable and there is a certainty of continuation partly because of lack of actors. The power is not always in balance especially in a spot market situation, where more mistrust exists. Usually rye farmers trade with a few malt houses or mills. The rye farmers have quite often written contracts. Contract relationships are often personal, stable and long-term or there is a certainty of continuation. Also mutual trust and collaborations among producers and between producers and processors are common. The relationships between bakery industry and mills can be characterised as stable, long-term, informal, confidential and personal. This might also be because of lack of actors or because of habits and long-term personal contacts. Although producers and mills have a tendency to maintain stable relationships, a competition situation has put pressure on price negotiations. Two big bakeries dominate more than half of the market, although their power is limited. The horizontal cooperation among bakeries is insignificant. However, the relationship between retailers and processors is strong and strategic, for example, information exchange relates to sales, trends and consumer behaviour. Retailers have very stable relations with local bakeries because of mutual dependency. Mutual trust and confidence, for example, in delivery certainty is seen as important elements of the satisfying relationship. Many relationships are long-term, although contracts are not that long lasting. Because of a hard competition situation, the negotiations between processors and retailers are complex, but the situation is the hardest among small local bakeries. The retail sector has the highest negotiation power.

Communication: Written contracts are common in the Finnish rye bread chain, but personal contacts are still appreciated among all partners because of feedback and deep information, for example, in research and development (R&D). The communication is often personal and regular, especially among farmers and between bakeries and retailers. Compared to the pig chain, the information flow is not as efficient and producers need to be more active in the information search. Technology is widely used in communication and manufacturing processes. Processors and retail have electronic data exchange systems and computers handle many routines especially in big enterprises.

Influencing factors: The sustainability of rye production depends on price of rye and on the agricultural support received by farmers. A reduction in support or price will have important consequences for the mill, malt and bakery industries if nearly all raw materials have to be imported. The other threats of the rye-bread sector are a) centralisation of trade, b) hard competition, domestic and imported products, c) high production costs in Finland, d) high costs of raw material and e) decrease of consumption. However, consumers are interested in functional products, health issues and pre-cooked products. This coupled with consumers' predilection to domestic products will be an important competition factor for Finnish rye bread chain.

3. GERMANY

Germany's agri-food sector is internationally and nationally important. It supplies the EU with an ample resource base and accounts for a large part of the country's gross value added (GVA) and employment. A comprehensive share of the overall gross agricultural output (GAO) or the food processing industry's revenues is generated by the production and processing of wheat to bread, barley to beer and pig meat to sausages. In all three reviewed agri-food chains a similar fragmented structure can be identified. In spite of sectoral concentration leading to larger firms, typical firms are still small-to-medium sized enterprises. This has led to a market situation where many different sorts of economic collaboration/exchange co-exist.

Swine to sausage chain in Germany

Structural features of farmers: The majority of German fattening pig farmers are still small-to-medium sized though they only account for a relatively low share of total pig production. The trend is for fewer farms producing more fattening pigs. Additionally, farmers are confronted with an increase of lowly-priced livestock imports thus putting pressure on margins and accelerating concentration in fat pig production.

Structural features of processors: Concentration processes are noticeable in the first and second level of the pig meat processing sector. In spite of concentration processes, small and medium sized enterprises (SMEs) still prevail in both sectors. Due to growth in exports of pigmeat and sausages from 2001 to 2004 revenues have increased while the total domestic pig meat consumption per capita has been fairly constant.

Structural features of distributors: The retail section of the swine-to-sausage chain is heavily concentrated. In German food retailing large shops and discounters generate the highest revenue and have the biggest market share while smaller retailers are becoming less economically viable and are exiting the food market. Compared to other retailers, discounters have become more important as an outlet for sausage producers.

Farmers-processors relationships: Fattening pig farmers conduct less formalised long-term business in spot market environments and communicate mainly face-to-face or via telephone. To a lesser extent, contracts are concluded with soy-feed suppliers and in the form of contract fattening with processors. Stronger co-operation is perceived as important for improving the current economic situation of farmers. However, attempts to intensify co-operation among German farmers have failed in the past as horizontal commitment seems to be weak. Processors are suspicious regarding the quality of delivered fat pigs. Thus, on one hand, processors trade in spot markets with farmers and rural animal traders, on the other hand, contract farming is becoming more important as it gives the processor more security regarding quality and quantity and in the calculation of delivered pigs.

Processors-distributors relationship: Slaughter houses are moving away from short-term contracts and are forward integrating to sausage production in order to exploit margins.

The economic interactions between processors and retailers are more diversified. Business deals are conducted with short-term contracts, annual negotiations and long-term contracts. To a relatively small degree, retailers use spot markets in the form of internet auctions and also produce own brands of sausages (using contract manufacturers).

Communication: In upstream business-to-business (B2B) relationships face-to-face or telephone communication are common. Typical communication content is information regarding prices, quantity and quality. The internet is being used infrequently by farmers. Mostly it is accessed to acquire general information rather than using the internet for business transactions. Exceptions are farmers who have their fattening pig production integrated into the Quality Safety System (QS-System). A wide variety of communication means are used downstream which range from simple face-to-face to e-business. Here, business is executed mostly via (i) phone, (ii) emails or (iii) letters. Additionally, sector-specific fairs and conferences are used as face-to-face communication platforms. While information regarding quantity, prices and delivery are subject to communication with respect to contracts and negotiations, quality aspects are considered more in communication regarding public and private regulations.

Barley to beer chain in Germany

Structural features of farmers: Comparing barley farmers of the New Federal States (NFS) with the ones of the Old Federal States (OFS) reveals great differences regarding barley farm structures and concentration. NFS barley farmers are by far more concentrated and on average larger than the OFS farms. Over-capacities, increasing imports, lower exports and a decline in the demand for malting barley have induced price reductions leading to reduced margins for malting barley farmers.

Structural features of processors: While a persistent number of maltsters have produced more malt and generated higher revenues in recent years, the number of breweries has decreased along with production. In spite of declining domestic beer consumption and reduced beer output, revenue per brewery has increased. As beer exports have increased in value and quantity, rising revenue may be explained by domestic companies focusing more on foreign markets instead of the domestic beer market to safeguard revenues. Despite concentration processes, the brewery sector is still highly fragmented.

Structural features of distributors: Diversification is shown in the assorted outlet channels for beer, encompassing beverage warehouses, caterers, discounters and retailers, with wholesalers having a central role. Concentration in the fragmented beer distribution sector is most prevalent in the wholesale, food retail and discount sector. While the catering sector indicates a shrinking market, many beverage warehouses ("Getränkemärkte") have emerged and have become one of the most important outlets for beer. This development may be influenced by low retail prices, price competition, reduced beer consumption, and international competitors entering the domestic market.

Farmers-processors relationships: Vertical economic relationships between malting barley farmers and rural barley traders or maltsters have by and large spot-market character. They conduct spot-market transactions regularly with the same partner, thus economic relationships are relatively stable. Spot markets are accepted by farmers as they enable more freedom in economic decisions. Economic interactions between malting barley farmers or rural barley traders and maltsters have by and large spot-market character. Today, about 60% of these exchanges are spot-market transactions, 40% are based on up to one-year short-term contracts.

Processors-distributors relationships: Processors prefer economic transactions with large caterers which require high-volumes of beer throughput instead of with small caterers, as it generates more stable revenues for breweries. Economic exchanges in the distribution sector are mainly longer-term oriented. Contracts such as partnership- and beer-delivery contracts run typically more than two years. In a vertical perspective of the chain, wholesalers seem to conduct and be subjected to integration activities at the same time. For instance, they are being integrated by breweries and have integrated retailing by establishing beverage warehouses. The latter are one of the most important outlets for consumers.

Communication: The type of communication means used upstream depends on the size of the interacting firms. While SME's communication means are to a higher degree more personal, e.g. face-to-face or telephone, large firms communicate in general by more anonymous and formalised means. There are however some exceptions. At trade fairs, face-to-face communication is also conducted between large firms. In addition, representatives of the firms have to attend personally at the retailer headquarters for annual product listing negotiations. Generally, communication comprises mostly of business-related information, e.g. price, delivery details and quality. Besides price, quantity and delivery periods, business-related information may consider educational services, e.g. retailers offer further training business skills.

Grain to bread chain in Germany

Structural features of farmers: In German agriculture, there exists a dual structure of agricultural enterprises. In the NFS, enterprises with more than 100 ha cultivate about 90% of the agricultural area. The structure of these large-scale agricultural enterprises is the heritage of the socialist system and its collectivist agriculture. Lower production costs due to economies of scale are the most important factor for the competitive advantage of large-scale agricultural enterprises in Germany. Moreover, increasing processor demands for large and uniform raw material units with a defined quality standard raise the competitive advantage which large-scale agricultural enterprises have over small farmers.

Structural features of processors: Structural change in the German bakery sector is the consequence of fierce competition. There are significant differences in the concentration of the milling industry sector between the federal states. There has been production overcapacity on the German market, which contributes to the ferocity of the sector's competition. In spite of ongoing concentration process, overcapacity remains. Processors have different strategies for improving their competitiveness, e.g. product differentiation, specialisation and niche-product processing.

The craft bakeries compete in bakery production with plant bakeries and in distribution with food retailers. Industrial bakeries try to compete with craft bakeries supplying loose bread and buns through food retailers and by establishing their own shops. The reason for this is commercial pressure and also the price increase of craft products when the Euro was implemented.

Structural features of distributors: Price competition on the German market is fierce, and this influences the food retail structure considerably. Discount chains and supermarkets with more than 800 m^2 display area are the most important players in the German food market, in total controlling 81% of food market turnover.

Farmers-processors relationships: Farmers sell their wheat mostly on spot markets or through short-term contracts, between the milling industry and bakeries long-term contracts prevail. Co-operation on technical questions has increased between mills and bakeries, which allows the co-ordination of production processes and the fulfilment of required qualities. This development is supported by national and EU-policy decisions causing increased food-safety standards and traceability.

Processors-distributors relationships: Relationships between industrial bakeries and retailers are ambivalent. On the one hand, retailers want to remain flexible by choosing suppliers and are not interested in long-term relationships. On the other hand, retailers cannot cancel their cooperation with big bakeries, which produce brands demanded by consumers. Retailers are interested in maintaining the current number of producers and thus the existing competitive environment in the German industrial bakery sector.

Communication: between enterprises is an essential interaction by which information about business conditions and the product itself are exchanged. Moreover, technical (questions) matters must be communicated. Thus, the production plan can be synchronised with the requirements of the business partners in order to produce the demanded quality. Considering the many scandals in the EU agri-food industry, the importance of trustful relationships with suppliers is of great importance. Moreover, building sustainable relationships support the competitiveness of the involved businesses.

To conclude, fierce price competition in the retailing sector has added to the economic pressure of the whole chains leading to integration being most pronounced downstream between processors and distributors in all three agri-food chains. While in the beer chain processors are forward integrating to distribution in order to safeguard outlet channels, in the sausage and bread chain retailers are backward integrating in order to customise their products to their specific needs and to exploit economies of scale thus supplying the market with low priced goods. In addition, international regulations relating to World Trade Organisation (WTO) commitments and the new direction of the Common Agricultural Policy (CAP) implied many changes affecting German agri-food chains, e.g. decoupling of premiums, reduced purchase guarantees and decreased trade barriers leading to market liberalisation. Therefore, firms are becoming more self dependent and responsible for their economic success and in building sustainable relationships. This necessitates according skills, e.g. relationship marketing, ability to communicate with international firms, etc.

4. IRELAND

The agri-food industry is Ireland's largest indigenous industry and contributes significantly to the country's gross domestic product (GDP). The Irish beef sector provides an interesting focus for study due to its high export orientation, its high relative value in EU terms and its historically high dependence on CAP supports. In contrast, the Irish pigmeat sector is a relevant study point due to its low level of CAP support.

Cattle to beef chain in Ireland

Structural features of farmers: Production is largely based on owner-operator farm enterprises, although some beef processors operate feedlots. As beef production is largely grass based, production is often seasonal. CAP reform may mean that a proportion of farmers will move towards more intensive finishing systems reinforcing seasonal production. However, the current market orientation of Irish beef to EU markets requires consistent volumes of supply throughout the year which they may have difficulty satisfying.

Economic relationships between farmers: Sales of unfinished cattle through live auction marts are significant for convenience and price transparency reasons. However inter-farm transfers are also prevalent and offer disease and efficiency benefits.

Structural features of processors: Slaughtering occurs at large scale export approved plants or small scale local abattoirs; the former is significantly more important. Overcapacity exists and the sector is quite concentrated: the top three processors account for over fifty percent of all slaughterings. Added value and further processing is generally limited.

Economic relationships between farmers and processors: Some processors engage in contracts with farmers who rear animals with specific characteristics to target specific markets and ensure security of supply. However such arrangements are not the norm and most transactions between the two sectors occur in the spot market with price the key determinant of exchange.

Structural features of distributors: Irish beef is sold on the domestic market, the EU and third country markets. The Irish foodservice sector is an increasingly important market for Irish beef sector. The retail multiples account the largest proportion of beef retail sales. The retailers' power and influence within the beef industry has lead to increased rationalisation at independent butcher shop level. Political factors are of particular importance in third country markets.

Economic relationships between processors and distributors: Close links exist between the large processing plants and the multiple retailers based on exclusive relationships encompassing long term agreements but no written contracts. Irish beef processors who supply UK multiple retailers have invested in cutting packs in the UK to service these accounts. Strong personal relationship exists in the beef category as beef is a key product in a retail multiple's offering. Price is still a key issue within the relationship due to heavy competition in the retail sector.

Communication: Farmers typically adopt low levels of ICT with face-to-face and telephone communication most common. Typical communication involves pricing and quantity information. Upstream communication becomes more frequent and sophisticated and encompasses elements of quality, forecasting and product management. Electronic data interchange (EDI) is prevalent between processors and retailers. Consumer demand for increased information has accelerated the use of branding and quality assurance messages. Key factors for increased communication through all stages of the chain are traceability and food safety measures facilitated by national schemes and retailer specifications.

Pig to pigmeat chain in Ireland

Structural features of farmers: Pig production is a large scale, specialised and intensive system perused by few farmers. Farms tend to be owner operated, however corporate ownership, largely through backward integration by processors but also through feed suppliers, exists to ensure continuity and consistency of supply. Restructuring and rationalisation at farm level will continue due to increased animal and environmental regulations and reduced market returns.

Economic relationships: Relationships between farmers are positive and tend to be informal and based on social interactions rather than economic exchanges. However economic relationships also feature when for example finishing units purchase weaner pigs from specialised breeding units. Furthermore, contract finishing, with one farmer fattening pigs for another with no change in ownership occurring, is a new feature.

Structural features of processors: There are over 40 plants undertaking pigmeat processing. This number includes plants who undertake slaughtering with minimal processing and further processors who source pigmeat from domestic slaughters and imports to add value. The slaughtering sector is dominated by two large players (>70% of kill), as is the further processing sector. A number of small scale processors are carving a niche by focusing on high quality speciality products.

Economic relationships between farmers and processors: Finishing units have relationships with processors in both Northern Ireland and the Republic. This is strongly influence by the

€/£stg exchange rate. Relationships between farmers and processors tend to be long-term and stable. However, as the sale is arranged in the previous week, it is a discrete event based on expected returns in light of supply conditions with some opportunistic behaviour.

Structural features of distributors: Irish pigmeat is sold on the domestic market, EU and international markets. Similar to the beef chain, the retail multiples account for a large proportion of pigmeat sales. Traditional butchers remain significant for fresh pork sales. The increasing trend for hot food on-the-go has increased the market share of symbol and convenience shops. Imported Danish and Dutch pigmeat products have high market shares, achieved through multiple retail listings and the foodservice sector. Exports account for 50% of the domestic production.

Economic relationships between distributors and processors: All multiples retailers stock the main branded Irish products for cured pork and processed product. Therefore they will have relationships with at least the two main processors. In independent retail shops, intermediaries play a significant role, so there is often no direct relationship between processor and retailer. Large multiple retailers recognise that pigmeat products are major sales items and therefore require suppliers of a certain magnitude and capability. This has created relationships of mutual dependence where the supplier is dependant on the retailer for a secure route to market and the retailer has identified preferred suppliers for safe, timely and reliable deliveries.

Communication: Communication amongst farmers and processors is usually face to face or by telephone. Processors and retailers avail of EDI and personal communication. Information shared usually encompasses price, quality, quantity and sales data. For private label products, information is shared on the retailer's product and quality assurance specifications.

Conclusions and discussion: Both Irish chains are characterised by restructuring at producer and processor level. This trend was strongly influenced by CAP reform in the beef sector whilst market factors were more influential in the pigmeat sector. Most interactions between farmers and processors in both chains occur in the spot market with price the main variable influencing the exchange. Contract production is a minor feature of the beef sector when beef producers produce specific types of animals for a particular market and both sectors have some backward integration by processors, largely as a buffer against significant price variation. These contracts are generally not written but based on trust and specify management issues affecting quality as well as price and scheduling. The power balance in both chains is skewed towards the retail multiples. However, branding in the pigmeat sector is helping to offset the retailers' power over the processor. Branding is not a strong feature of the beef sector due to its commodity orientation. The importance of communication along both chains is increasing as a result of technological, socio-economic and most notably, regulatory factors. Traceability and quality assurance schemes are forcing communication along the chain and help to initiate trust and commitment to strengthen the economic relationships.

5. POLAND

Poland is a major producer of many agricultural, horticultural and animal products. The Polish food market is worth approximately €23 billion and 85 % consists of goods delivered by domestic producers. Meat and meat products constitute 21 percent of the total value of the food processing industry output. Poland's accession to the EU has improved the position and competitiveness of the Polish food and agricultural sector. The full opening of the markets and the removal of customs formalities have resulted in higher demand for products from the Polish agri-food sector, especially meat and meat products. Consequently, both the procurement prices of slaughter animals and prices for processed goods have risen considerably in Poland. However the comparative advantages of the Polish agri-food sector still exist.

Both land and labour resources in Polish farming are favourable and suitable for animal production, especially pigs being fed mainly with Polish grain produced by farmers on arable lands and enriched with industrially produced mixes of high protein concentrates. Many Polish farmers produce pigs, but average production concentration is low. This results in dispersed low-scale production of hogs for slaughter. On the other hand pork and pork products, especially ham, is very important to the national economy considering consumer preferences and export requirements.

Farmer/processor relationships in pig to ham chain: In a typical pig-pork chain (60-70 percent of the sales) a middleman buys pigs for slaughter by going from farmer to farmer. He pays for pigs according to live weight. He then sells pigs to a slaughterhouse and receives a price based on post-slaughter assessment. The price depends on quality, but the premium is captured by middleman, not by farmer. The slaughterhouse sells half-carcasses or conducts further processing (for instance ham). The middleman makes the relationships between farmers and processors indirect and more difficult. Only 30-40 percent of the total procurement of raw material is of pigs purchased directly from farmers on the basis of contracts. These links can be influenced by relationships between farmers and processors.

Cattle production is even more dispersed and fragmented than that of pigs. It is related to large resources of extensively cultivated green lands and a surplus of agricultural labour. The two directions of cattle use, dairy and meat production, has resulted in low quality beef. This in turn has brought about a decline in demand for beef as well as decreasing profitability of cattle production. However, income elasticity of demand for good quality beef is three times higher than that for pork. This means that the domestic market for good quality beef will develop as the income situation of Polish consumers improves.

Farmer/processor relationships in cattle to beef chain: The turnover in cattle for slaughter is shaped by two factors: strong dispersion of production and supply of cattle and fragmented structure of the processing sector. Contracts concern only big cattle farms in which cattle is the main enterprise. The share of contracts in the total cattle market is low, not exceeding 10%. Large and middle slaughterhouses use middlemen when procuring raw materials. The middlemen buy cattle for slaughter from small producers and organise deliveries to slaughterhouses according to the timetable, structure and frequency settled ex ante.

Integration processes in pork and beef processing industry: The development of the meat processing industry, similar to the entire food industry, is correlated with general economic growth rather than with changes in the level of commercial agricultural production. The level of vertical integration of farm production and processing is still low, although growing. However, the impact of the meat industry on livestock producers has increased. This causes changes in production structures in agriculture despite a relatively stable agrarian structure.

Large meat processing plants have started to co-operate with medium and large scale producers of live animals based on long-term contract agreements in order to influence the stability and quality of raw material delivered to them. The process of vertical integration is more advanced in pork than in beef production, because of earlier implementation of the post-slaughter classification system in the pig sector. These are mainly large slaughterhouses and meat processing plants involved in the vertical integration process. Leading firms have their own pig producing units as well, which represent 5-10% of the total supply of raw material. The slaughterhouses intend to increase this share to 30% in order to stabilise prices.

In the long run a decrease in the number of abattoirs with simultaneous concentration of slaughtering can be expected in both pork and beef sectors. This will contribute to tighter links between slaughterhouses and their suppliers and customers. At the moment farmers are not interested in tighter relationships with the industry for they prefer greater flexibility.

Despite some concentration processes taking place also at production level, especially in the pig sector, the meat processing industry will still play a dominating role in the market, using its higher market power acquired during the adjustment phase to EU integration.

Communication: Weak links and economic relationships between farmers as well as farmers and processors do not support communication. Small and dispersed pig producers react irrationally to market signals. There is a lack of proper technical means for modern communication at farm level.

Generally speaking distrust dominates the relationships between farmers and slaughterhouses. There is a conflict of interest. Even the relationships based on contractual agreements are not stable and are often broken. They do not secure long-term co-operation. However, the slight tendency to increase the share and scope of contract agreements in these relationships may occur in future.

The adjustment process to accession to the EU has contributed to some improvement of links between partners in the supply chain. The most important impact on better relationships was exerted by such activities like: veterinary inspection, identification of producers, environment protection and improvements in standards of slaughterhouses, storehouses and farms.

Pork and beef processor/retailer relationships: The structure of the retail trade in meat (also ham) consists of independent grocery outlets (ca 145,000), specialized meat shops (ca 15,000), catering (ca 90,000), big trade networks like super and hypermarkets (ca 1,800). Apart from direct deliveries of meat and meat products to the retail trade units from slaughterhouses and meat processing plants, they are also supplied by wholesalers and importers.

Big retail networks together control ca 40% of the meat market, and this share increases every year. Small shops have rather informal links with their suppliers. Big firms prefer long-term contracts, but with clauses assuring flexibility in deliveries and assortments. They have standards and procedures, which are much more important than personal relations. The procedures replace trust. There is a tendency to establish strategic alliances between independent firms.

In future distribution channels of both livestock and meat are going to be shorter. More direct contacts between partners will support the creation of economic links among farmers, processors and retailers. Economic and market factors are likely to break the unwillingness of firm owners to become less independent, resulting mainly from cultural factors. This will enable creation of more sustainable relationships. Proper relationships between partners will be a pre-condition for better communication within the whole chains, which in turn in the long run will support better and more sustainable relationships.

6. SPAIN

Spain is the eight largest world economy in GDP terms. Since 1995 Spain has grown at an annual average rate of 3.25%, a relatively higher rate than the average Euro area (2% growth). Real GDP per capita gap between Spain and the rest of the Euro area narrowed by more than 7 percentage points in the last decade.

Farming is conditioned by physical factors (soil and climate), demographic and economic pressure on the land, and environmental and sectoral policies, especially CAP. Restructuring of Spanish agriculture accelerated since Spain's accession to the European Union. Over the last decade there has been a strong trend towards the disappearance of smaller farms and their consolidation as larger farms. The most significant changes that have taken place over the last 25 years are:

- Reduction in dry-land farming and increase of cultivation of irrigated lands.
- Increase in the area of rough grazing and upland thicket, mainly due to the erosion and desertification of lands and the declining importance of extensive pasturing.
- Increase of areas not dedicated to agricultural uses as a result of the process of urban development and urbanisation.
- Increase in protected natural spaces as a result of the new environmental and nature conservation policies.

Wheat to bread chain in Spain

Structural features: The sector is very fragmented all along the chain, with a high number of wheat farmers, millers and bakers. In the last decade there has been a concentration trend at different stages of the chain, with a reduction in operating stakeholders and an increase of businesses size.

One of the main characteristics of the wheat market in Spain at the producer level is the lack of a classification system for different wheat qualities. Also, millers do not have enough storage capability, and the product is bought throughout the year as needed, giving a strategic position to those producers and cooperatives with enough storage capability. There is low vertical integration at this level of the chain, and exchanges are mostly spot market transactions.

The processing industry consists of the wheat milling and baking sectors. The milling sector is highly fragmented with more than 200 milling plants. This sector has experienced a restructuring process in the last decade, with concentration by increasing operating size and reducing the number of firms. Due to low profit margins it is expected that concentration will continue and survival of small companies will be dependent on finding market niches.

Economic relationships: Normally bakers are small family firms that have their own sales outlets. There are few big companies with high levels of production. Normally there is no vertical integration of bakeries and millers. Exchanges are done in the open market but there is an increasing tendency to maintain stable relationships with suppliers to assure quality of the flour.

Communication: Communication between farmers and producers becomes difficult due to the small farm size and the high number of farmers. There is an increasing tendency to integrate farmers into cooperatives, where there is more communication. Also, farmer's integration is a way to assure product quality and quantity. Communication and relationships seems to be mostly informal. Personal knowledge and direct contact person-to-person is perceived as a very important factor at this stage of the supply chain.

Traceability and quality assurance schemes encourage communication along the chain. There is more communication between millers and farmers on product quality and product specifications, and also more communication from bakers to the milling plants. Fragmentation of both sectors, milling and bakers, makes personal interaction more important, but more complicated as well. Face-to-face contact determines good businesses deals.

At retailing level, traceability and food quality regulations become very important; there is a trend towards greater vertical coordination from retailers to assure the quality of the product. Relationships are normally stable and always with the same suppliers. Communication between big retailers and suppliers is more formal than in upstream stages of the chain. Large retailers use contracts, therefore personal relationship become less important. The use of new technologies such as the internet is more common than in upstream stages of the chain, but communication is mostly by phone. Communication between traditional stores and small bakeries is more informal. Person to person and phone communication prevail.

The new market orientation of CAP will reduce wheat prices. A reduction in the number of farms and also reallocation of these farms to more productive areas is expected, which will negatively affect other chain members that are located close to the less productive areas and far from the main importing ports.

Pork to cured ham chain in Spain

Economic relationships: In Spain, the pork supply chain has been the subject of extensive vertical integration or vertical coordination initiatives. Delivery of cured ham at the right quality is the result of efficient coordination among many actors and links in the chain and their associated factors. Cured ham is undoubtedly one of the most emblematic food products of Spain.

The increasing importance of the Spanish pork sector can be explained by several underlying factors, many of them related to efforts from local producers to become more competitive by becoming highly efficient in production and implementing innovative approaches to firm organisation and management. The feed sector took the lead in the transformation at producer level. Firms tended to concentrate and consolidate into fewer and larger farms organised either as private corporations or cooperatives. The sector has experienced an important process of vertical integration. One common procedure is that large feeding firms arrange contracts with producers in a way that the feeding firm owns the animals and provides feed, technical assistance, veterinary services, and other inputs (such as financial capital), whereas the producer provides the facilities and raises the animals. This contract integration has become the predominant form of production in Spain. Still there are a significant number of producers that are not vertically integrated, and where integration exists it does not cover many stages of the supply chain.

Structural features of processors: The processing part of the pork-supply chain includes slaughterhouses, cutting plants, and the meat processing industry. The corporate structure of the cured ham sector has little concentration and is largely made up of small and medium sized family companies. The large groups in the sector usually control the whole production chain. There is a dualistic situation in the meat processing sector, with a small group of large firms formed through companies' takeovers and mergers, and an important group of small companies elaborating traditional and artisan products. There are cases of vertical integration of slaughterhouses and producers cooperatives, but normally each activity is independent of the other, and exchanges are done in open market.

Communication: Communication between meat processors and producers is unconstrainted. Relationships are based on mutual trust and normally there is no contractual agreement.

Economic relationships between processors and distributors: In recent years, the processed pork market has experienced a major shift toward quality differentiation. To target demand for higher quality products, processors, together with producers and merchandisers, have started to implement traceability systems through the whole supply chain for pigmeat. Although it is not common, some big corporative groups have integrated all activities, they even have their own retailing stores to promote their brand and obtain direct access to specific markets. In these cases the whole supply chain is vertically integrated. Normally the retailing stage is not vertically integrated with the previous stages. However, the big retailing companies now have strict supply protocols and commercialise some processed meat products with their own brand.

Farmers, food processors, and the retailing sector have shown increasing collaboration on issues of product development, quality assurance, and improved logistics. Spot markets are being replaced by contract-production and supply, and systems of vertical coordination.

7. THE UK

In 2004, the UK's gross agricultural output was about €24,336 million. Overall, the agri-food sector generates about 10% of GDP. However, the UK has a substantial net trade deficit in food and drink (€ 15,924 million in 2003). Increased import levels are associated with the increased influence of multiple retailers and their highly effective international supply chains. Five supermarket companies now account for 80% of food retailing. Although the food manufacturing sector also contains a number of multinational corporations, SMEs remain significant within it, as they do in the farming sector.

The UK agri-food sector faces several challenges. Operation in a global market, and as part of an enlarged EU, is bringing increased competition (e.g. through greater accessibility of imports and competition on export markets, the re-location of food production in low cost areas of production, etc.), to which exchange rate movements add further uncertainty. The power and activities of multiple retailers are widely regarded in the farming community as key factors in depressing farm gate prices, which remain low for much of the industry. But it is recognised that improvements in agri-food supply chain performance, especially through greater integration, are vital to the sector's future success. In addition, policy is increasingly geared to ensuring environmental and social sustainability, not just economic growth. In the agri-food sector, the farming industry is experiencing the effects of this shift keenly, with farmers now receiving support for the delivery of public goods rather than for agricultural production.

The beef and barley to beer chains were chosen for study in the UK because they contain contrasting transaction types. The beef chain is characterised by spot market transactions, but with informal integration arrangements that are usually directed by multiple retailers and operationalised by their chosen processors. In the malting barley to beer chain, by contrast, contractual arrangements from the farm gate through to the retailer are frequent.

Cattle to beef chain in the UK

Farm sector: Beef supply can be divided into that deriving from the dairy herd and that from the specialist suckler beef sector (approximately a 50:50 split in the UK, but with 70% specialist beef in Scotland). In the specialist beef areas of Scotland, Wales and upland England, beef production is embedded economically, culturally and socially, and draws on the distinctive features of these areas and the production methods concerned (e.g. Welsh and Scotch beef). Even in periods of diminished profitability, stock numbers tend to hold up because of the tradition of production within the farming community.

Beef production is highly fragmented and producers face modest prices, increased imports and high levels of concentration in meat retailing, where a handful of retailers have considerable market power. Producers have, in addition, suffered from outbreaks of BSE and, in 2001, FMD. The recent CAP reforms are adding further pressure, and will ultimately lead to a reduction in beef production in marginal areas.

Farmer-processor relationships: Livestock markets have traditionally been a major economic and social phenomenon for beef farmers, who use them for business and social activities. Many farmers like auction markets because of their open bidding system and rapid payment. They also generally have good relationships with local market companies and their officers, and recognise that prices are dependent on numbers of cattle presented for sale, the number of buyers present and their requirements. There are strong 'tradition' and 'loyalty' aspects to the use of livestock auction markets by farmers.

However, auction markets have declined; only 23% of cattle were sold through them in 2004. This decline has been caused, in part, by multiple retailers' refusal to take cattle from live auction markets into their supply chains (largely on animal welfare grounds). Those processors that still use auction markets to procure cattle, largely serve the independent retailing and catering sectors.

There is little security in terms of guaranteed returns for producers, except where direct marketing is employed and particular niches are served. Spot transactions tend to dominate the producer-processor end of the chain, with limited use of other means of market integration, such as contracts or integration through ownership. For the most part, the supply chain integration that does occur flows from the strong market power of multiple retailers and legislative requirements.

Processing sector: There is considerable excess capacity in the meat processing sector and competition is strong for cattle and meat markets. Moreover, plants are small by international standards. Therefore, margins are generally low amongst processors.

Processors' downstream relationships: Slaughterer-processors, which are frequently integrated businesses, tend to have their downstream relationships cast in terms of spot transactions (with limited price guarantees). Their spot market purchases are usually matched by spot market sales that they engineer themselves. Processors have played a major role in either constructing their own supply chains or developing chains to the specification of large customers, although contracts for cattle supply are used only for a very few niche markets. However, contracts are used in connection with the supply of manufacturing meat and are relatively common between processors and the food service sector.

Chain performance: The beef supply chain in the UK has faced considerable challenges in recent years. It has done well to restore domestic consumption and consumer faith in beef in the aftermath of BSE and FMD. However, import penetration has increased markedly, with self-sufficiency falling from 114% in 1995 to 71% in 2004.

It is widely recognised that further improvements could be made throughout the beef supply chain. These have been estimated to be worth between €720 and €1,152 million across the whole red meat chain. At the farm level, there is scope for improvement in production performance, a need for more customer focus, and for a better understanding of market requirements and operation. At the chain level, it is estimated that there is scope to improve profitability by 2-5%.

Communication: The greatest area of weakness in the beef chain is at the interface between farmers and their customers. Farmers often rely on personal contact with their customers' staff. Improved two-way communications, on issues such as farm production costs, performance standards, market conditions, customer requirements, good practice, etc., are widely regarded as important for relationship development and improved chain performance.

Malting barley to beer chain in the UK

Farm sector: Malting barley is grown mainly down the (drier) east side of Britain, with the distilling industry being a major buyer of malt in Scotland and brewers being the main customers in England. Specialist growers in the main production areas produce high quality malting barley, although new varieties have widened the geographical area where malting barley can be successfully grown. However, the recent CAP reforms will probably lead to a reduction in malting barley production in marginal areas and those more distant from customer outlets.

Farmer-maltster relationships: Malting barley is normally purchased from farmers by co-operatives and merchants. Such purchases are usually made using contracts, which may set 'relative' prices (relative to other grain prices) along with conditions relating to quality and service. These contracts tend to be issued by merchants on behalf of Maltsters. They provide maltsters with some predictability regarding prices, quality and service attributes.

While many specialist growers have good relationships with their merchants, a significant proportion fail to meet quality or service requirements. Moreover, the small size of the malting barley premium (usually in years when grain prices are high) can disrupt the spot market, with farmers reluctant to release grain.

Malting sector: The malting sector is generally operating with relatively old plant and is achieving low margins. There is a degree of integration in the upstream part of the chain: some maltsters own, or have a stake in, their merchant suppliers. However, there is little vertical integration through ownership between maltsters and brewers. Only two significant brewers own maltings.

Maltster-brewer relationships:. The contracts issued by a merchant on behalf of a maltster are normally matched by those of brewers for malt purchase. Relationships between maltsters and brewers are well established and close associations have developed. However, UK barley suffers from high drying and storage costs, and price remains a key factor in maltster-brewer relationships.

Brewing sector: The beer brewing sector is generally achieving modest returns. Differentiation within particular segments of the market (e.g. premium lager) is limited, so brand promotion and efficiency in production and cost control are very important for business performance.

The biggest differences in brewers' cost bases occur between the large national brewers and small local and regional breweries. The largest brewers have achieved most of the readily available efficiencies in production and the biggest future improvement in performance appears to be in packaging.

Brewers' downstream relationships: The economic relationships between brewers and major pub chains tend to be based on supply agreements (contracts) of 3-5 years. Brewers also act as wholesalers, selling their own beers and beers and spirits of other producers. Brewers frequently have supply agreements with retailers.

There is a long-term trend away from beer consumption in pubs and clubs (the On-Trade) towards consumption through the Off Trade (e.g. supermarkets and off-licenses). An equal distribution between these two outlet forms may be reached by 2009/10. The growth in the Off Trade is being driven by the volume of beer being sold through the supermarkets. This in turn is being driven by price deflation, as supermarkets reduce prices and squeeze margins throughout the chain. Beer retailing is also under pressure from personal imports, which may account for 8% of UK beer consumption.

Chain performance: The barley to beer chain produces good quality malting barley and malt but is under economic pressure, which stems largely from international competition and challenging domestic demand conditions. Moreover, weaknesses exist in the supply of barley from farms, and in the generally old plant and low margins of the malting sector. Most improvement can probably be achieved through 'vendor assured grain', which should facilitate cost savings further down the chain. However, adoption of this approach will require some of the benefits to be passed back to farmers in enhanced prices.

Communications: The greatest area of weakness in the barley to beer chain is, as with the beef chain, generally at the interface between producers and their customers. Farmers rely on personal contact with the staff of their purchaser (merchant or maltster). Improved two-way communications on issues such as farm production costs, quality and performance standards, market conditions, customer requirements, etc., are widely regarded as important for relationship development and improved chain performance.

8. DISCUSSION AND CONCLUSIONS

The country data highlighted the diversity of relationships and communication in selected agri-food chains across Europe. Relationships range on a continuum from spot market transactions to close vertical integration with a myriad of possibilities in between including somewhat paradoxical relationships involving close, stable spot market exchanges and vertical integration characterised by low levels of trust. Spot markets seem to be of greater significance at the farmer-processor interface than at the processor-retailer interface. This is illustrated in a number of chains including the German beer and sausage chains, along with the UK beef chain. However, where farmers become more specialised and invest in specific assets (e.g. sections of the Irish and Polish beef chains) farmers are willing to engage in contracts, albeit often limited in scope, short-term and informal. This is because transactions involving specific assets leave firms vulnerable to opportunistic behaviour and increase the likelihood of greater co-ordination due to high monitoring and enforcement costs associated with spot markets.

Communication varied from price information exchange encompassing unsophisticated technologies to two-way communication relating to aspects such as quality, forecasting and product management utilising sophisticated ICT. Sophistication in terms of types of media used varied by country, product and stage of chain. However, in general higher levels of sophistication were found downstream. Communication media at farm level usually comprised face-to-face and telephone whilst further downstream email including e-newsletters, internet, extranet, EDI and proprietary software are more prevalent. Greater levels of sophistication are expected in the future, particularly at farm level as new young entrants with higher education and business management skills become involved. Other factors relating to regulations, labelling and traceability will also lead to increased sophistication

The country data also identified a diversity of determinants influencing relationships and communication including economic factors such as concentration rates, socio-cultural factors such as individualism, political factors including the CAP and technological and geographical factors. Whilst this review provided some indications of the nature and extent of this influence, further research is needed to achieve greater understanding. This will be conducted in subsequent workpackages within the overall FOODCOMM project.