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The Danish food marketing chain: developments and policy choices

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Foreword

Interest in the Danish food marketing chain has prompted a number of recent research projects at the Danish Research Institute of Food Economics (FØI). These have focused on the production stage, and on consumer demand. This report initiates the project "Perspektiver for og udviklingen af den danske fødevarekæde" ("Perspectives for development of the Danish food sector") which is funded by the Innovation Fund of the Ministry of Food, Agriculture and Fisheries.

The project is conducted by the Agricultural Policy Research Division of FØI in collaboration with several Danish food industry firms and organizations. Its primary concern is policy toward the food sector in a rapidly-changing commercial and social environment. Its approach features consideration of the entire food marketing chain, and collaboration with industry in analysis and communications. In these ways the research extends FØI's existing areas of research.

This report presents a discussion of issues of food industry development in Denmark. It brings together economic and commercial issues, and their relationship to policy and policy processes. It presents a considerable amount of data from diverse sources, and reviews relevant research and communications from regulatory authorities. The report is written by Derek Baker, who wishes to thank Danmarks Statistik for data assistance, Project Director Søren E. Frandsen and researcher Kenneth Baltzer for their contributions to earlier drafts, and Bente Frandsen for editing the text and diagrams.

Danish Research Institute of Food Economics, September 2003.

Ole P. Kristensen

Copies are available at <http://projectweb.sjfi.dk>
and at the project website www.dfk.foi.dk

1. Introduction

1.1. Purpose

This report addresses organization and conduct in the body of the Danish food marketing chain. It lays the foundation for FØI's 2004-2006 research program "Perspectives for Development of the Danish Food Sector".¹ It provides preliminary findings and motivates future survey, modelling and analytical work.

In past work, FØI has characterized the institutional and technical development of food quality and safety product attributes in Denmark and elsewhere (e.g. Søndergaard and Gravesen, 2003). In addition, FØI has estimated properties of Danish demand that relate to willingness to pay for those attributes (e.g. Baltzer, 2002). The question of funding food safety and quality within the food chain has also been addressed (Christensen and Jensen, 2001). This report expands on these areas and offers insight into policy and commercial issues. Its focus is the food chain, bringing together previous work that addresses individual stages of the chain.

1.2. Objectives

The objectives of the report are:

1. to sketch the horizontal and vertical structure of the Danish food chain, and compare it to that in other countries;
2. to review relevant research on commercial and policy developments;
3. to examine roles of government in the modern food marketing chain; and
4. to identify topics and material for further research.

1.3. Structure

This paper features compilation of data, discussion of policy, presentation of economic concepts, and a review of relevant work by researchers and regulators. As an aid to clarity, conclusions are presented first, in section 2. Section 3 introduces definitions, issues and concepts to be discussed in subsequent sections. Sections 2 and 3 comprise part I of the report.

¹ Funded by the Danish Innovation Fund (details available from the author).

Part II presents and discusses data that are relevant to the concepts defined earlier. Sections 4 and 5 present measures of numbers of enterprises and product flow in Denmark and other European countries, focusing on comparisons between countries and on trends in the period 1995-2000. Limited US data are presented, drawn from a range of sources. Section 6 summarizes value added at stages of the food marketing chain. Again, these measures are presented for European countries and in some cases for the US. Sections 7 and 8 summarize several sources' estimates of food industry concentration, and present discussions of key issues related to policy. Sections 9, 10 and 11 present research findings relevant to demand, new product introductions, and quality. Research is selected on the basis of relevance to Danish food chain development. Section 12 is a discussion of products and markets, highlighting two developments in vertical relationships: Efficient Consumer Response and own-label brands.

Part III addresses analytical models, many of which underlie policy design, implementation and enforcement. Section 13 is a basic review of economic methodology, and section 14 summarises some applications selected for their relevance to the Danish food chain. Section 15 is a set of summaries of studies commissioned by competition and regulatory authorities in the US and UK.

PART I Conclusions and discussion

2. Issues arising

2.1. Overview

There is no universally-accepted definition of the food marketing chain (some alternative views are presented and discussed in section 3). Similarly, food chain performance has not been defined, despite policy and research pre-occupation with the topic. Performance criteria are likely to feature competing claims from food chain participants with divergent, and to some extent competing, interests. This report resorts to economics by stating that an efficient system delivers the right product in the right form, and that it does so at minimal cost. Immediately-obvious rejoinders include some simple questions, to which varying degrees of research effort have been devoted:

- who will dictate the right products and forms;
- how should costs be measured;
- to whom should responsibility for tasks be allocated; and
- whether innovation and search, as well as safety and ethical services, are part of a correctly-defined composite food product.

An array of data is reviewed in this report (see sections 4-10) that demonstrates increased concentration at all stages of the Danish food chain (so-called “food convergence”). This is occurring more noticeably in Denmark than in most other European countries. This report does not examine which model of convergence (“US” or “UK” – see section 3.3) is being followed in Denmark, but many features of both are readily apparent, including:

- seller concentration at retail and processing stages;
- buyer concentration at retail and processing stages;
- penetration by retailers’ own-label brands; and
- a decline in food wholesaling.

There are many possible indicators of food chain development that could not be investigated for Denmark in this report. These include the Danish food chain’s capacity for innovation, and its incentives and mechanisms for new product introduction. The composition of Danish value added, and its trends throughout the marketing chain,

would be of particular interest but are not examined here. Several such topics are embraced for future research (see section 2.4). These address the Danish food chain's unique aspects, including:

- the role played by vertically-integrated co-operatives;
- the demand by Danish consumers for specific attributes of a composite product; and
- the export orientation of major food processing sectors.

Commercial developments (e.g. Efficient Consumer Response (ECR), own-label brands, slotting allowances, cross-border merger) are presented as features of food convergence that have some application in Denmark. Research that investigates their impacts is presented, although little of it was carried out on Danish data (see sections 11 and 12). From foreign sources, government investigations of food chain conduct are used to provide examples of public interest and action (see section 13.3). These were selected for their Danish relevance.

Most policy reviews depict governments' roles in the food chain as antitrust (governing merger), pro-competitive (policing prices and conduct), and featuring isolated regulations (e.g. food safety, regional planning). These address single stages in the food chain, and generally not its internal relationships and incentive structures. Moreover, the narrow range of policies addressed does not reflect the regulatory and legal complexity of modern agribusiness. These limitations are addressed in the proposed research.

Case studies of government investigation of food chain conduct (section 15) recognise that in some cases, government action can incur social costs that exceed those of the identified problem. Several of the research papers reviewed (section 14) recognise the role played by powerful food chain participants in influencing policies that have pre-disposed to food convergence. In the case studies and the research, policy's dynamic aspects are recognised: attempting to solve an existing problem by regulation may entrench the positions of existing firms.

These comments present some difficult tasks for policymakers:

- definition of the extent, scope, function and influence of the food chain is required, so that efficiency can be defined;
- provision of data on food chain features that are confidential;

- discovery of key incentive mechanisms that the research literature is still struggling to understand;
- definition of desirable trends in that data, and the establishment of monitoring procedures;
- establishment of a set of policy instruments that goes beyond export regulation, antitrust and competitiveness; and
- establishment of guidelines for the form, timing and extent of policy intervention.

Notes on data and information issues

Publicly-available data relevant to food convergence are usually aggregated, and are frequently not comparable between countries. While consistent and comparable series are available for Western European countries, these date only from the mid-1990s and are published some years in arrears. Moreover, the data tables are incomplete due to non-provision of data (e.g. Greece) or because concentration renders industry data a threat to firms' confidentiality (particularly in Denmark). Data are rarely available to make comparisons between other countries and Western European countries. Limited firm-level data are available from statistical agencies. Several commercial firms offer market-level product-specific data. Both these data sources are expensive, and subject to compatibility problems across firms and countries.

Data on the life cycle of food products are particularly difficult to obtain. Problems include definitions (e.g. new brands c.f. new products) and registration requirements (e.g. EU- or member-state level). Where addressed through patent offices, award of a patent implies little about its application in any, or many, products. More significantly, product "death" (withdrawal from the retail shelves) goes largely unrecorded. The details of within-chain arrangements for new product introductions (e.g. slotting allowances) remain the subject, largely, of conjecture.

Firms' commercial strategy, and their range and application of competitive actions, remain confidential. Attempts to analyse them on the basis of surveys have revealed strategic types and the strategic orientation of firms, but have not gone so far as to gauge their appreciation of problems and opportunities in the converging food chain, nor predicting their responses. Game theoretic models offer economists an understanding of observed outcomes, but across a limited number of variables and not generally in the context of long-term change. While some initial work has been reported on surveys of firms' strategies regarding innovation and marketing, this has focused on food processors.

Presentation and review of policies affecting the food chain tend to begin with individual regulations, and then propose their role and impact. This report could not locate any examples of firms' having been asked to identify legal and regulatory barriers or benefits. Moreover, no studies have asked firms to identify policy instruments for possible use in the future, based on their perceptions of existing and future problems and opportunities. It is anticipated that firms would identify a range of policy measures beyond antitrust and competition law, including (but not limited to):

- labour regulations;
- taxation;
- copyright and ownership of brands and products;
- trading hours;
- labelling and information provision;
- waste disposal; and
- regional planning.

A similar set of comments applies to definition of the form and impacts of market power in the food chain. Economists' estimates of structure (e.g. CR4,² or estimates of measures of competitiveness) can be supplemented by food chain participants' comments. Some research reviewed in this paper (e.g. measurement of food safety compliance costs) has taken this approach. Government enquiries reviewed in this report tend to underline food chain participants':

- partisan understanding of market power, and their estimates of its extent and costs; and
- reluctance to name offending firms for fear of commercial retaliation.

Gaps in researchers' understanding

In view of the developments, data and research reviewed in this paper, several fundamental gaps can be identified as barriers to increased understanding of the food marketing chain:

- a universally-accepted measure of food chain performance has not appeared. Development of a system that satisfies all sectors of society, and establishing a pol-

² CR4 is the 4-firm concentration ratio: the market share held by the four largest firms in a defined sector. It usually refers to product markets.

icy environment to deliver and sustain it, requires at least a clear definition of agreed performance measures;

- several measures of food chain structure continue to present problems to researchers and to policy analysis. These include the measurement of buyer power, the full definition of prices and costs across categories of retail food products, and the parameters of product life cycle;
- firm- and plant-level data on pricing, product variety, costs, revenues and investment;
- a lack of understanding of the role of economies of scale and scope in pricing, production decisions, long term investment, and risk management;
- definition and measurement of product variety and quality from the point of view of consumer, processor and retailer;
- lack of good measures of the source, extent and allocation of risk within the food chain reduces the inference available from measurement of prices, costs and transactions amongst food chain participants;
- the demand for, and supply of, information amongst food chain participants, and how it varies according to purpose (e.g. investment decisions c.f. promotion intensity) and according to stage in the food chain; and
- a lack of understanding of firms' attitudes and responses to food industry change.

A crucial question in Denmark is the current and future capacity of vertically-integrated farmer co-operatives to continue to meet members' aspirations. A second is the capacity and willingness of Danish food processors to supply concentrated and regulated domestic markets in addition to strongly-established export markets.

2.2. Status of the Danish food marketing chain

Consolidation

The substantial consolidation in the Danish food processing industries in the period 1995-2000 is generally not reflected across Europe, nor in the USA (for the period 1992-97). The reduction in the numbers of Danish food processing enterprises in that period has been greater, and spread across more sectors, than in other countries (see section 4). In food wholesaling Danish consolidation has, similarly, been greater and spread across more sectors, than elsewhere in Europe. An earlier study of European food industry consolidation and size distribution in the 1980s was inconclusive: no clear trends were identified for countries or sectors. No comparable data is available for US food wholesaling.

Danish food retailing has also consolidated in specialist and non-specialist retailing: with the reduction in numbers of small (less than 20 employees) enterprises being particularly striking. The numbers of specialist retailers have declined markedly, particularly in fruits and vegetables, and bread and cakes. These patterns are not generally reflected across Europe, although conclusions are difficult to draw from the available data. In the United States, the numbers of specialist retailers have grown in a comparable period (1992-1997). In Denmark, small firms are still significant in terms of the numbers of enterprises: 60-80% of all food processing firms have less than 50 employees.

Concentration

Observation of limited data reveals that Danish concentration in food processing is comparable to that in most EU countries, but far higher than that in the USA (see sections 7 and 8). This conclusion varies according to commodity sector, as US concentration in beer brewing, for example, is higher than in Denmark. Available measures of concentration in European food processing are of limited use as they are averages across commodity sectors for each country. Studies of US food processors show a 30-year increase in market share for the top 100 firms, but within the top 100 only the top 20 have shown such an increase. The emergence in the US of small firms oriented to retailer demand suggests a bi-modal distribution of concentration and market share. It is not known whether the bi-modal pattern applies in Europe or in Denmark, nor what role the small firms play.

Concentration in Danish food retailing is also high with a CR5 of about 56%, although this figure varies amongst authors' estimates. 56% is close to the value for many EU countries, but far higher than in the USA (CR4 of about 27% at national level). It should be noted that local food retail market concentration levels may be rather higher than national ones, both in the USA and elsewhere. Food retail concentration in Denmark has stayed somewhat static since 1993, whereas in most other EU countries, concentration has fluctuated sharply (e.g. from 11% to 27% in Greece, from 50% to 63% in the UK, and from 93% down to 68% in Finland).

When buying power is also considered, Denmark's effective CR5 has been estimated at over 70%. European countries seem to vary in the way in which buyer power impacts concentration. France, the Netherlands, Spain and Belgium all show (like Denmark) significant increases in concentration according to this measure. No estimates are available for local (as opposed to national) buying power. This is likely to

be a key variable in competitiveness for some Danish food sectors, as well as a key factor in perceived food chain equity.

Sales volumes

Danish food processors showed a limited, but steady, increase in turnover 1995-2000 (see section 5). For many sectors, data are not available on processors' turnover from 1998 onwards. Across Europe, a variety of changes are seen in turnover in food processing during this period. In the USA, food processing turnover rose in most commodity sectors. Although Danish food wholesale enterprises have shown substantial consolidation in 1995-2000, their turnover has risen constantly across most sectors. Few conclusions are possible from the limited, aggregated, data.

Turnover in Danish non-specialized retail enterprises has increased by 50% between 1995 and 2000. Most of this increase took place in 1998, but has been sustained ever since. Most of Denmark's specialist food retailers have seen sales decline (by 10-25% for fruit and vegetable stores and bakeries and other specialist shops) in the same period. Butcheries have maintained turnover throughout the period and fish and beverage stores have seen 10-15% increases. In almost all European countries, turnover in non-specialized food retailers rose, but the pattern amongst specialized retailers differs strongly amongst countries. In the USA, specialized food retailers all showed an increase in turnover. No comparable data are available for US non-specialized retailers.

According to the latest available data (1997), Danish retail food trade is dominated by non-specialized stores, which hold 50-60% of turnover in most commodity groups. However, for several other European countries (Germany, Sweden, France and the UK) this number is much higher (75-90%).

Value added

In the period 1995-2000, value added in the Danish food marketing chains shows a variety of patterns (see section 6). Value added by food wholesalers in almost all sectors fell very sharply (up to 60%), while non-specialized retail stores saw value added rise by 70%. Specialist meat retailers saw a small increase in value added, and specialist fruits and vegetable retailers saw a 15% decline. Specialist retailers of fish, and of alcoholic and non-alcoholic beverages, saw value added rise sharply during 1995-2000.

Across Europe, no clear pattern in value added is apparent for all countries and all commodity sectors for 1995-2000. However, there are many cases of countries' food processing and wholesaling stages experiencing declines in value added. In contrast, the US food processing sectors showed very strong increases in value added for the period 1992-97 in almost all food processing sectors.

In most European countries, value added by non-specialist retailers increased significantly in 1995-2000, although no country's proportional increase was as large as Denmark's. In some European countries, (e.g. Belgium, Portugal, Norway) this was accompanied by declines in value added by specialist retailers. Although data on value-added are not available in a size-disaggregated form, it is likely that consolidation and concentration have resulted in fewer and fewer firms accumulating large shares of value added.

Products, markets and product life cycle

Product definition at the retail level requires consideration beyond individual products, as it is a composite (or bundle) of shopping experiences and nutritional and other demands. Similarly, markets have been difficult to define, with recent attempts involving geographic, product-related and consumer-targeted aspects. As consumers increasingly demonstrate store-loyalty, and convenience plays a larger role in shopping behaviour, product and market definitions have become even more difficult (see sections 10-12). A particularly vexing definitional issue is the treatment of the food service sector, which is clearly in competition with ready-to-eat food sold in retail food stores, but is probably also complementary as meals are eaten during shopping trips.

No data are available on Danish and European food product introductions, while evidence from the US is of substantial declines in the period since 1995. Lengths of food products' lives are apparently not systematically recorded in any country. There is no published research on costs and practicalities of new product development and introduction, and the role of marketing chain relations in that task. Around the world, there is anecdotal evidence of retailers' "gatekeeping" role and a range of poorly-understood payments and other actions in the processor-retailer interface. These have not been investigated in Denmark for their impact on product introductions and product life cycle.

Penetration of Danish food markets by own-label brands is above the EU average at 13%, but far behind that in France, Belgium, the Netherlands and the UK. It is also below the levels seen in the USA. Little is known about Danish food processors' response to own-label: production levels and pricing practices have not been investigated. Research in the USA suggests that a variety of responses are possible, including price increases where demand conditions permit, or where processors' resources allow for sufficient promotion effort. Research into own-label emphasizes three key factors determining its role and impact:

- own-label market penetration and overall level of development in a country or sector;
- consumer attitude to own-label; and
- the role played by own-label in the strategy set of both processors and retailers.

Product variety

Very little research has been conducted to investigate trends and forces in the variety of food products available in Denmark or elsewhere. If food shopping involves a composite good, then variety is one quality attribute of that good. In terms of individual food products, variety is desirable but difficult to define for study: it is not clear whether variety is most valuable within one store, or across a range of stores and store formats. Category management is poorly understood by economic researchers, particularly how it interacts with product variety. Data and methods have not been developed that can address provision of quality, and demand for it, in the context of definition and analysis of policy options.

2.3. Analysis of competition and conduct

Methods

Beyond reported concentration, there appear to have been no investigations of the exercise of market power in the Danish food marketing chain. The concentrated nature of processing and retailing, and the vertically integrated production of leading sectors, probably contribute to a shortage of publicly-available data upon which to base such studies. In a number of other countries, across a range of sectors and stages of the food marketing chain, researchers have investigated the competitive structure of many aspects of the food marketing chain using a variety of techniques (see section 13).

All such analyses confront data limitations and confidentiality, so that compromises, averaging and aggregation are regular features of that work. This pre-disposes to neglect of the role played by economies of scale and scope, which is probably a strong motivating factor in Danish food convergence.

Results

Perhaps surprisingly, there is little research evidence of retailers having used their market power to charge excessively high prices to consumers (section 14). Rather, high prices have tended to be associated with service levels and the costs of operating at specific locations. Where profits have been found to be high, they are to some extent attributable to economies of scale and other efficiencies. Retailers have, however, regularly been found to exploit their market power when dealing with suppliers. From an analytical point of view, these abuses fall into two broad categories, the second of which presents the severest research challenges:

- oligopolistic behaviour measurable using econometric methods; and
- within-chain practices that are rarely observable to the researcher and reported only in some surveys and many anecdotes.

Consumers' divergence (price-conscious vs. convenience-conscious) has been associated with dynamics in shop format. However, the presence of large stores offering intermediate levels of service, variety and low prices has been shown to influence price setting amongst other types of store in the same locality. This externality has not been widely studied. Similarly, the bounds within which store loyalty and brand loyalty each dominate deserve further attention. The proffered insights into pricing and the effectiveness of promotion would yield benefits to all stages of the food marketing chain as well as to government agencies and policy makers.

Food processors have been shown to exploit both buying power and selling power more consistently than have food retailers. Particularly in the US, this has been attributed to their ownership of leading "must-stock" brands. A case-study presented in this report has shown how processors' market power can be exercised through distribution systems (for ready-to-eat ice cream in the UK). Although economies of scale are evident in processing and are reckoned to enable their actions as chain captains, they have not always been shown to account for excessive profit levels. No analyses of the economic performance of food wholesaling and distribution are available.

Models of food convergence

The existence or prevalence of “US” or “UK” models (see section 3.2) of food convergence in any country has not been conclusively demonstrated. However, the factors predisposing to chain captaincy (cost structures, brand strategies) have been identified. For Danish firms, important strategic questions entail:

- the extent to which they, and within-chain rivals, have achieved significant scale (size and how it is utilized) and scope (product range) economies;
- whether these advantages are sustainable or achievable over time;
- what threats are posed by foreign acquisition of retailing and processing capacity; and
- whether existing organisational forms (particularly co-operatives) are appropriate for the future.

Researchers have not generally associated the growth of own-label with other food industry trends. In particular, new product development, product variety and within-chain payments have not been examined for Denmark or other countries. Transactions up and down the marketing chain are increasingly dominated by long-term relationships, and commercial initiatives such as ECR and EUREP GAP have developed as a result. Their emphasis is on information sharing, product specification and delivery conditions. Theoretical research into competition in the food marketing chain repeatedly identifies inefficient or inequitable shifting of risks and appropriation of surplus by one party in a transaction, but empirical studies have been rare. As above, such topics call for specialized data and surveys of industry participants.

Measures of seller concentration

Simple measures of food industry structure have focused on the numbers of firms and their market shares in a single country. Most national and industry-specific statistical agencies collect and publish such data for the retail stage, including Statistik Danmark and Eurostat. These data have several important limitations, including:

- measurement of market share using questionable market definition;
- farm and food product markets may well be regional rather than national;
- firm-level data are often aggregated to enterprise level or to national level;
- firms in the food industry often operate in many countries; and
- EU food retailing is now dominated by stores that sell many non-food items.

Overcoming these limitations, and incorporating scanner data into product and market definition, are major challenges.

Measures of buyer concentration

The growing buying power of retailers is often referred to as significant industry developments, yet rarely measured. It faces the same measurement problems as seller concentration and some additional ones as well. In particular, buying power has been accentuated by formation of co-ordinated buying groups, some of which act internationally. Although researchers have recorded buying group memberships, their impact on food processors and distributors has not been measured.

Risk

ECR and other vertical co-ordination mechanisms in the food marketing chain increasingly involve long term relationships that are founded on large investments. The assumption of risk by the investor (or investors) has been a strong component in research into contracting and vertical integration in the food marketing chain in Denmark and elsewhere. However, modern competitive structures pose new threats, such as de-listing by retailers and switching of suppliers due to merger. While one approach to risk is to quantify and average “required” prices across a range of outcomes, no research has questioned food marketing chain participants about their perceptions of risk and its implications for investment. In addition, food safety regulations and other perceived policy risks have appeared that are new and poorly understood both in terms of their likely cost and their allocation throughout the food marketing chain.

The risks surrounding new product development are well known to food chain participants, and clearly instruments like ECR have the potential to reduce them. However, retailers’ conduct within the food chain may have had the effect of both increasing that risk and reallocating it. The role of various types of risk, and the allocation of that risk in the food chain, have not been examined for their impact on food product development.

Specialization in the food marketing chain has implications for risk management and hence for the incentives necessary within the chain. While food retailing has become less specialized, it is likely that food processing and farming have become more specialized over time. Particularly for farmers, this precludes their conventional means of risk management. Future additional risks, or additional increments of risk being allocated to farmers, may have the effect of increasing diversification with some cost

implications due to economies of scale. These potential impacts have not been studied.

2.4. Research proposed

Policy review

Rather than duplicate existing lists of regulations and legislation relevant to the food industry, it is proposed to ask processors to identify policy problems and opportunities. This would take the form of a survey both of commercial problems encountered, and of legal barriers faced.

It is anticipated that antitrust and competition policy will have been occasionally encountered, and so be assigned a low priority for action. Difficulties encountered in everyday dealings with buyers and sellers, and administrative requirements of transactions, will receive greater emphasis. Food chain participants would also be invited to estimate costs and benefits of policy-related problems, against which food chain models might be calibrated, and past research evaluated.

Definition of performance

Agents within and beyond the food chain have separate commercial and private goals and so are likely to disagree on a definition of the food marketing chain's performance. Existing research has identified the multi-dimensional nature of success and some convergence between countries in weighting of various criteria. However, the measures used have been conceptual rather than indicating efficiency and equity. Moreover, the dynamics of global food markets necessitate a definition of performance based not only on existing product lines but also on the ability of the food chain to identify and serve new markets with new products on a cost-effective basis.

In the absence of other criteria, food chain performance is to be defined in terms of economic efficiency. This requires estimation of alignment between prices and values in the food chain and firms' actions in product attribute provision, investment and innovation. Several analytical tasks are required, including the identification of divergence between social and market valuations of product attributes.

Definition of product attributes

Several researchers have compiled lists of product attributes that, loosely, describe quality. From the point of view of efficiency, equity and policy, such definitions of-

fer little insight into the composite product, to include one-stop convenience, product variety and information provision. Clearer definition of product attributes will benefit chain participants by identifying the costs and benefits of alternative forms and degrees of provision. Government will benefit from recognizing which socially-desirable attributes can be delivered by the food marketing chain and which must become a role of government.

The research task is to define food product attributes and identify the costs and benefits of their provision. Policy analysis then involves examining conditions and scenarios under which private and government providers might act, and to evaluate the economic implications of each. It is proposed to achieve these ends by surveying products directly, identifying the price premiums associated with their attributes, and locating the providers of those attributes. Conditions for costs of providing the attributes, and the conditions and costs for signalling those attributes to the consumer, can then be estimated and compared to price premia.

Modelling the food marketing chain

Most Danish food marketing chains are composed of a series of participants, each with some marketing power. This is a notable departure from many countries' chains at the farm stage, due to the dominance of vertically-integrated co-operatives that are active in processing, as well as product development for both domestic and export markets.

Suitable models can address two classes of problem:

- “internal” food chain problems concerning incentives and relations between and within stages of the Danish food marketing chain;
- “external” challenges such as the balance to be achieved between the domestic requirements of consumer demand and public policy, and the various demands of export markets.

Addressing internal problems requires specification of the costs and benefits of possible changes, and the possible role of policy. Willingness to pay for product attributes, and the costs of providing them, have been under active study at FØI and elsewhere. The modelling task is to put them together. That requires significant contributions both from food chain participants and policy and regulatory bodies, along with the

contributions of economic theory. Several key questions surround the current and future role of the Danish co-operatives in the new food marketing chain environment.

The external challenges carry strategic implications. For example, merger activity by retailers may mean that retailers move into new countries and maintain their original suppliers: this would hurt local farmers and processors. The same process, where Danish firms expand abroad, is an opportunity. An obvious strategic question surrounds the potential for intra-industry trade with second countries, particularly those with very different cost structures such as the Central and Eastern European Countries, both within the EU and outside it.

Several modelling challenges combine internal and external problems. An example is the topic of Danish brands at local, national and international level. If Danish food retailing is offering an increasingly narrow product assortment, and retailers' own-label continues to grow in significance, then local food processors have few options. These problems may be compounded if new product development features significant scale and scope economies, so that development of a few, or highly specialized, brands is financially infeasible. Such features of cost, just like the demand for product variety, have not been quantified but would be valuable contributions to modelling.

A further modelling challenge is the incorporation of the demand and supply of information. While some studies have focused on signalling by certification and branding, they have not posed and answered questions about which food chain participants, or coalition of participants, can most effectively generate signals and other information, and what incentives they require to do so. As an application of investment analysis, the methodology needs to include the extent and allocation of risk, and its impacts on provision.

New product introduction

For the study of product life cycles, there appears to be no alternative to direct surveys of food manufacturers. This survey would address elements of product development and their costs, the time periods involved, and documentation of (as well as definitions of) success and failure.

Costs of new product development would be subdivided into meaningful categories including market data recovery and analysis, food chemistry procedures, testing,

commercial trials, fees and registration, slotting allowances, etc. Limiting factors would be identified and roles examined for:

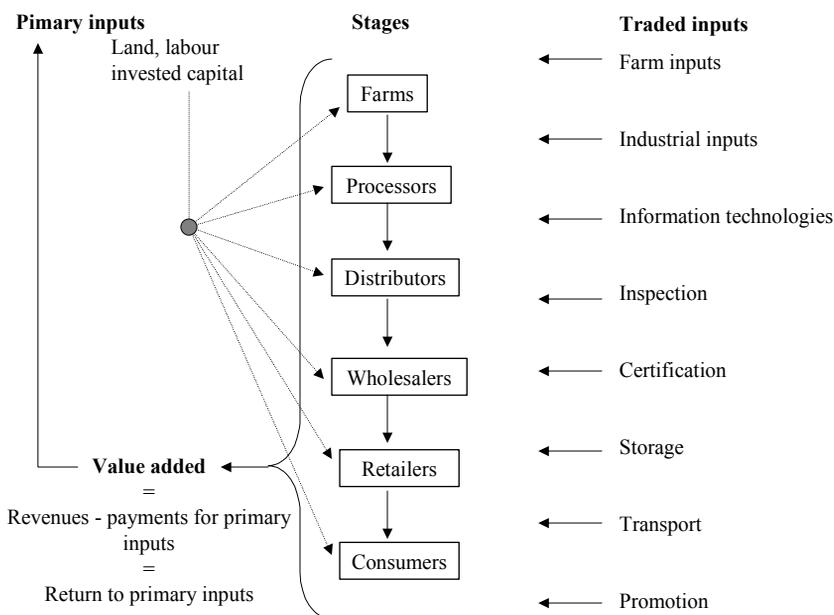
- increased co-ordination and information sharing on the food chain;
- the extent and allocation of risk; and
- government action.

3. Introduction to the food marketing chain

3.1. Interpretations

The food system sequentially adds value as farm commodities are turned into products and consumed.³ One model (figure 1) presents an instantaneous view of a “chain” of participants, referred to by Wright (1996) as a “vertical slice of the economy”.

Figure 1. The food marketing chain



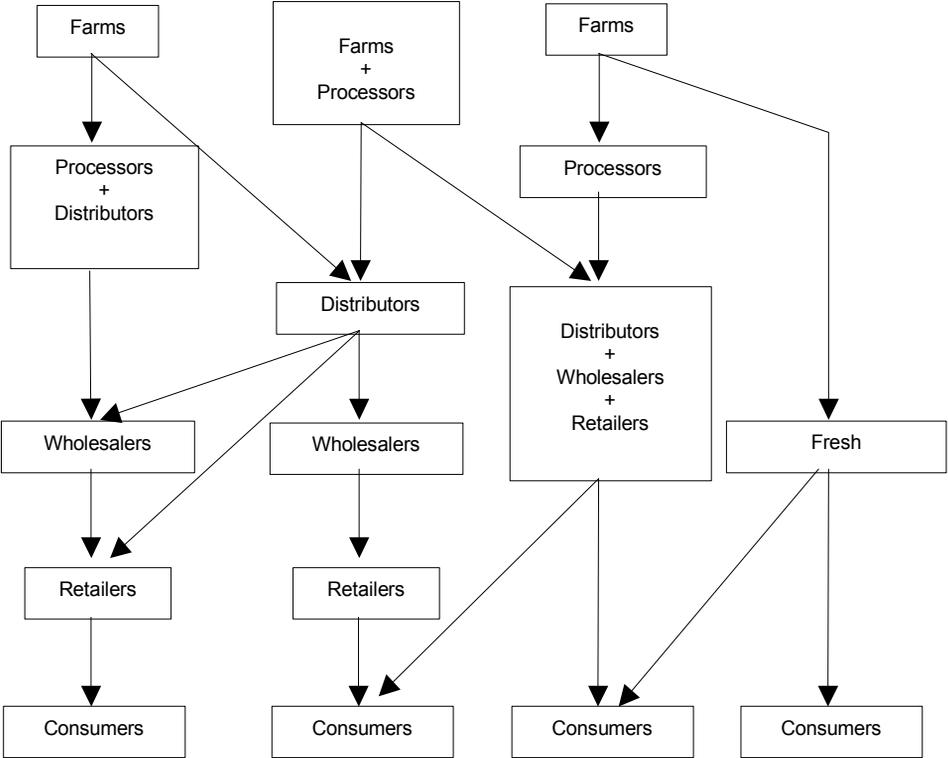
This is a highly stylised view. Kinsey and Senauer (1996) claim that the modern food system “has shifted 180 degrees from being producer-driven to being consumer-driven”, so that arrows between stages in figure 1 may be reversed to indicate that

³ Value-added is defined as the payments made to primary inputs for production. These include land, labor, capital and entrepreneurial skills. Hence, value-added does not include payments for intermediate products. In general, value added is equal to profits, minus payments for salaries and interest on capital.

willingness-to-pay is the driving force, and not product flow. This shift is referred to by Borghesani et al. (1997) as “a reversal of causality in the food industry”. In a further comment on the geometric form of the food industry, Kinsey (2001, 2003) describes it as a “loop” of two opposing flows (supply and demand) with consumers in the middle.

However researchers choose to represent the food system, it is in constant flux. Constant adjustment occurs and stages appear and disappear as consumer demand changes, new technologies and products appear, and participants compete for opportunities for adding value. Consequently the chain lengthens and shortens, and multiple chains exist side-by-side (figure 2), in a “web” rather than a chain.

Figure 2. A food marketing web



This report is concerned with efficiency and equity in the food system. Intuitively, efficiency in the food chain delivers two desirable outcomes:

- that the right products, in the right form, are delivered to consumers; and
- that the food chain delivers these products at minimum cost.

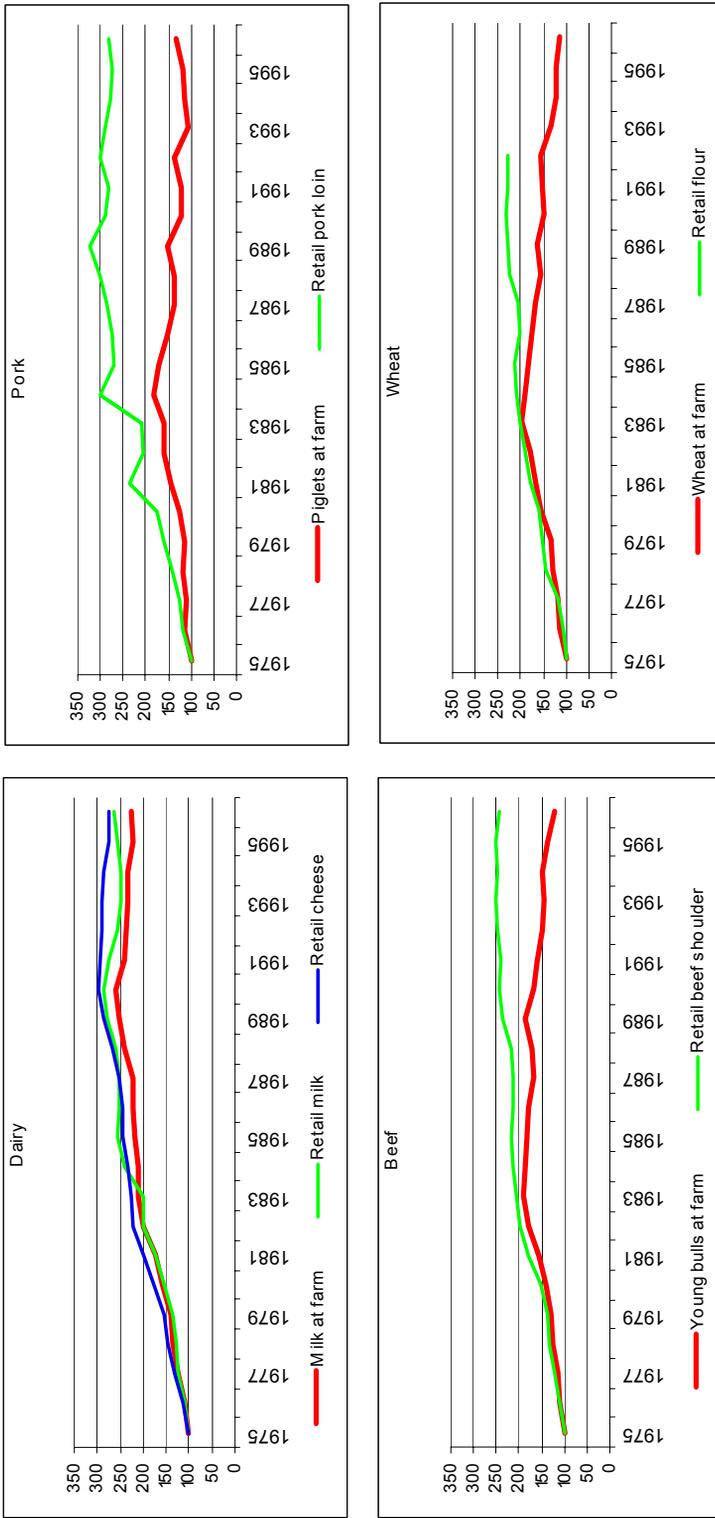
Wright (1996) considers these two efficiency criteria in terms of conventional economics: allocative efficiency (orientation to price signals, based on consumer demand) and technical efficiency (oriented to costs). He points out that they are focused on existing consumer demand as expressed by purchasing behaviour for existing products. He advocates measures of efficiency that take into account the capacity of the food chain to identify and serve future (currently unknown) demand. He interprets the absence of search and diversification activities as a market failure.

Efficiency has a “horizontal” aspect, essentially competitive markets at each stage of the chain. It has a “vertical” aspect that requires effective transmission of incentives between stages of the chain. Both aspects are of interest to economists in terms of the exercise of market power. A key consideration is that agents at each stage in the chain can capture and retain a sufficient share of the value that they add. Figure 3 shows price trends in the Danish food chain: farm prices have lagged behind retail prices for the last three decades and in many cases the gap has widened most markedly in the 1990s. Similarly, US studies have shown that sales at the farm stage represent less than 20% of consumers’ food expenditure, down from 31% in 1980 (USDA, 2003). While increases in value added might explain retail price movements, prices at the farm stage are not reflecting that value added. Research has not fully determined whether this is a consequence of:

- the value being added at stages beyond the farm gate; or
- farmers being unable to retain value added as increased prices.

Policy toward the farm and food industry confronts efficiency in two main ways. First, policymakers and industry participants may disagree on definitions of “the right products” and whether they have the “right form” (Henson and Traill, 1993). In particular, policymakers may feel that consumers’ willingness to pay should not be the sole determinant and target of value-adding activities: “social value” can and should also be added in the food marketing chain. Policy has long addressed equity in the marketing chain by interventions to support farm incomes. Second, the shares of value added accruing to each stage of the chain invokes judgments by policy makers about what is inherently fair. Economists’ reviews of policy toward the food chain have focused on antitrust and competition policy (e.g. Buccirossi et al. 2002). In a commercial environment now characterized by increasingly few (and increasingly powerful) firms, the ability to adapt quickly to change has required an “endogenizing” of policy (Henson et al., 1995). In this view, policy is both a response to developments in the chain and a cause of them.

Figure 3. Indices of price movements in the Danish food chains (1975 = 100)



Source: Eurostat (2003); Danmarks Statistik (2003).

3.2. Issues addressed in this paper

Interest in recent fundamental changes in consumers' food purchasing behaviour is shared by industry participants, who wish to benefit from it, and policy makers, who wish to maximize the social welfare that it generates. The changes include, but are not restricted to: higher consumer incomes; the changing role of women in the family and the workforce; consumer preferences regarding food quality (including food safety); product variety and ethical issues (for a summary see Meulenbergh and Viaene, 2002). Moreover, it appears that consumers are taking a greater overall interest in what goes on in the food marketing chain.

Divergence between private and social values is a conventional justification for action by government. Food industry policy has traditionally targeted farmers and consumers, giving much less emphasis to the food chain. In an increasingly co-ordinated food chain, policy interventions must address the incentives throughout the chain.

While much economic analysis targets participants in the food chain, less consideration has been given to the food marketing chain itself: its structure and the relations between the participants. In particular, efficiency can be improved if tasks can be re-allocated to lower-cost providers in the chain. The product attributes that the consumer demands can, in many cases, be provided at a number of points in the chain or web, and an efficient, equitable outcome requires the correct incentives.

In the food marketing chain, participants have unequal power to influence the flows and attributes of products. Moreover, they have unequal power to retain the value that they add to products. The rise of powerful retail firms has aroused the most comment on this issue. To some commentators, modern food retailing offers massive scale economies in providing products and attributes that are entirely targeted at observed consumer demands. To others, quality and variety have been sacrificed as retailers exploit the rest of the food marketing chain to maximize the profitability of the shelf space they control.

Food chain orientation

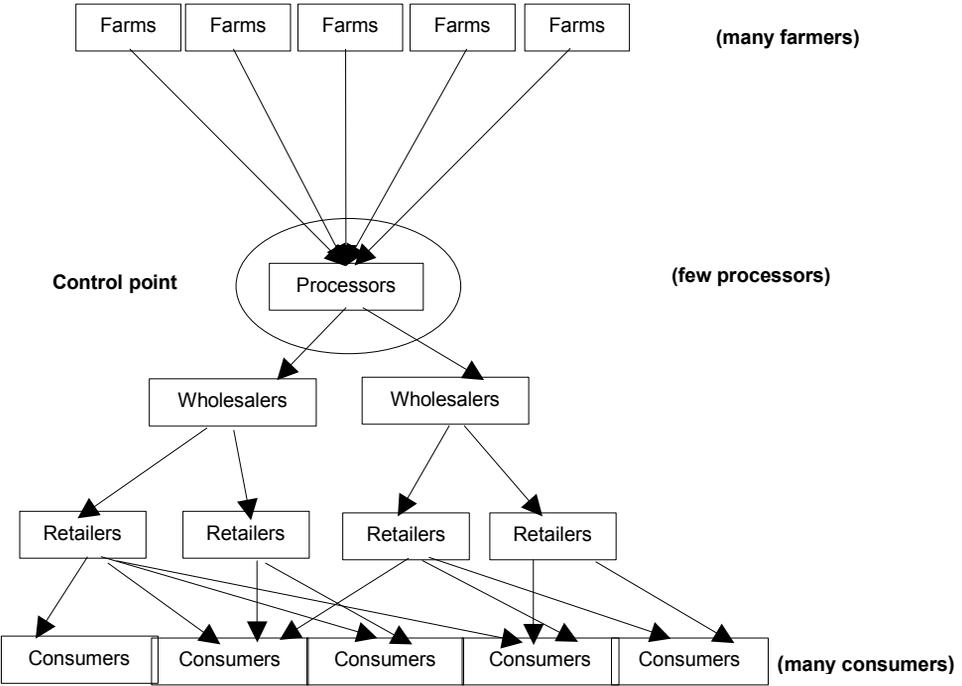
A century of consolidation⁴ has left the Danish food marketing chain with high concentration amongst vertically-integrated co-operative processors. Consolidation and concentration in food retailing has followed (Landbrugsrådet, 2001). There are also

⁴ "Consolidation" is a reduction in the numbers of firms in a business sector. Consolidation generally implies that firms become larger. "Concentration" is the process of larger firms' increasingly dominating market share.

fewer Danish farms in every commodity sector, and those that remain are both more specialized and of larger size. The Danish food marketing chain is therefore an array of large participants using a variety of transactions and business forms.

One example (figure 4) proposes a “control point”, whereby a few dominant firms (so-called “chain captains” (Connor, 2003)) concentrate and control product flows. Cotterill (1997) characterizes the food chains in both the EU and the US as “successive monopoly”. In a food market characterized by very limited volumetric growth (Marsden et al., 1997), the exercise of market power is one possible source of increased revenues. Another view is that value-adding is the real focus of firms’ efforts to increase revenues, perhaps based on quality (Meulenber and Viaenne, 2002), or by exploitation of alternative or new channels (Price, 2002; Hughes, 2002). A third view is that cost savings through economies of scale and scope are the key to increased profits (Morrison Paul, 2001).

Figure 4. Example of a control point in the food marketing chain



Whatever the motivation, we observe a few large and powerful firms in many Danish food marketing chains. Development toward a structure of few, powerful firms has been termed “food convergence” (Cotterill, 1997), and two forms are widely identified:

- the “US model” where powerful food processors with internationally-recognized brands exert vertical control because retailers “must stock”⁵ their brands; and
- the “UK model” where powerful retailers exert vertical control using various instruments of buying power, and “own-label” brands.

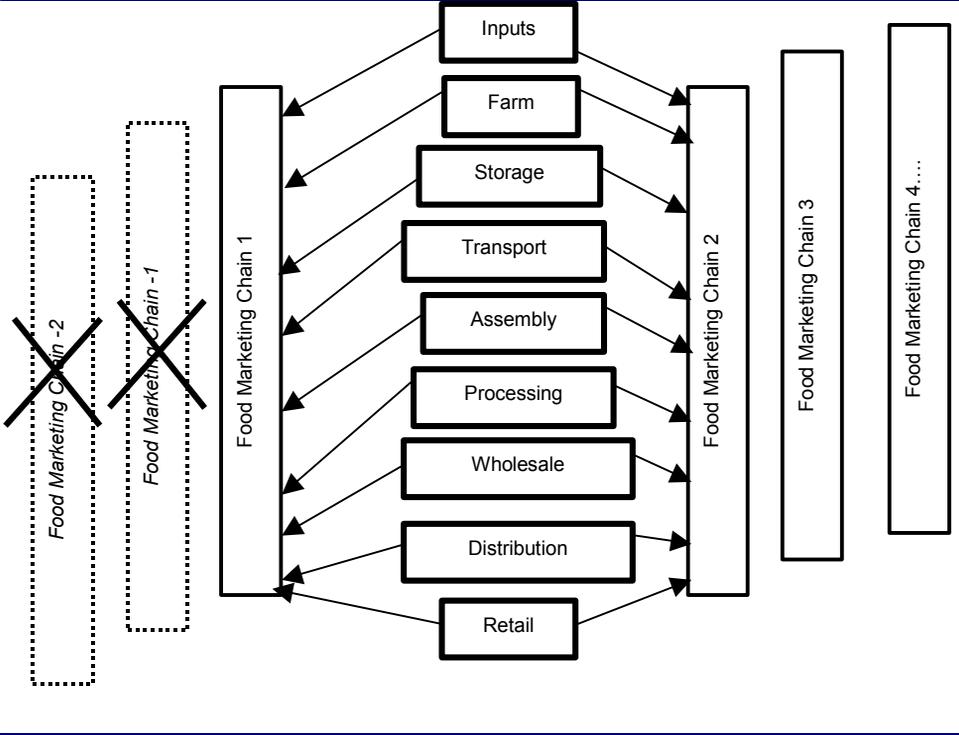
In both models, a “battle for chain control” between processors and retailers is depicted by Cotterill. In such a battle, processors’ weapons are economies of scale and consumers’ loyalty to a brand; retailers’ weaponry involves economies of scope across a vast array of products, and consumers’ loyalty to a store. Both types of arsenal are greatly enabled by new technologies, particularly the recent advent of information technologies (Boehlje and Sonka, 1998). The US model is one in which the processor wins the battle; the UK model features the retailer as a winner. Expert opinion remains divided over which model will become dominant in Europe, and indeed which will prevail in the US and UK (Wrigley, 1997). The roles for government in the different versions of food convergence, and in its future progress and impacts, have not been fully explored, although initial discussions are offered by McCorrison and Sheldon (1997) and Harris (2000). The pattern and trend of Danish food convergence has not been clarified, and is likely to feature market power amongst both retailers and processors.

Another view of the food industry emphasizes convergence through vertical co-ordination: the chain itself as a marketing participant. Boehlje and Sonka (1998) depict competition in the food chain as occurring between chains, rather than firms (figure 5). This view provides for dynamic senescence (chains “-2”, “-1”) and future emergence (chains “3”, “4”) of alternative chains, each supplying a set of product attributes or services. In this case, competing chains are characterized by a high degree of vertical co-ordination amongst agents, for which the efficiency and equity implications have not been fully examined. Hughes (2002) portrays food industry participants as striving to identify “alternative routes to the consumer”: involving both new delivery methods (e.g. meals away from home, ready-to-eat meals and home delivery)

⁵ “must stock” refers to the perceived necessity for a retailer to stock a product, in the face of the risk that a consumer will shop elsewhere.

and new products. Wright (1996) interprets this as innovations in the “product bundle” that arise from constant search and innovation. Such vertical co-ordination provokes new research issues as the transparency of transactions recedes, possibly providing more scope for the exercise of market power.

Figure 5. Sequential adjustment in food marketing chains



PART II Presentation of food industry and related data

4. Numbers of enterprises

The number of farms in Denmark fell by about 30% between 1990 and 2000, entailing falls both in the number with arable land (by 31%) and with livestock (33%) (FØI, 2003). This change was accompanied by changes in structure (farms are becoming larger), specialization and land use, that have been seen in most countries in the EU (for a review see Brouwer and Bijman, 2001).

Less attention has been paid to trends in numbers of enterprises elsewhere in the food marketing chain, although Traill and Gilpin (1994) compiled a dataset on changes in the number and size distribution of food processing firms in Europe for the period 1980-1992. They report substantial difficulties in achieving consistent measures across countries. Their data was sourced from member states. The current study uses standardized data from Eurostat, and refers to the period since 1995. Table 1 shows enterprise numbers⁶ in 1995 and 2000 for major Danish food sectors at processing, wholesale and retail stages. Table 1 indicates significant consolidation at almost all stages and in almost all sectors.

4.1. Food processing

Figure 6 shows a general decline in the numbers of enterprises in the traditional food sectors in the period 1995-2000. In the processing of meat, poultry, dairy products and ice cream, beer, margarine and fruits and vegetables, this decline is constant and has reached a 20-40% reduction from 1995. The numbers of bakeries and fruit juice manufacturers have declined by less (10-20%), and the numbers of enterprises producing confectionery and condiments has remained constant. One of the few sectors showing growth in the number of enterprises is soft drink production (a 50% increase).

The declines in the numbers of Danish livestock processing enterprises are larger and spread across more sectors, than in any other European country (figure 7). The number of ice cream manufacturing enterprises has declined more in Italy, Austria and

⁶ An enterprise is defined as a firm. A firm may operate more than one business unit (plant) in one or more locations.

Norway than in Denmark in this period. In those countries, poultry processing has also shown similar (20-40%) declines to those in Denmark.

The numbers of fruit and vegetable processing enterprises (also figure 7) throughout Europe shows considerable variation in 1995-2000, with Denmark's pattern being somewhat typical. For grain sector processing, the numbers of Danish enterprises have declined more, and across more subsectors, than in any other European country. For grain milling, all countries except Spain showed a decline in the number of enterprises. For hard wheat products and brewing several European countries showed very large increases in the number of enterprises, in contrast to Denmark's strong declines. In the production of mineral water and soft drinks, Denmark was the only European country to increase its number of enterprises.

Traill and Gilpin (1994) present "numbers of reporting units"⁷ aggregated across food and drink manufacturing sectors in the EU-12, for varying periods in the interval 1981-1992. They report that Danish numbers declined 7% in the period 1984-1992, and numbers across the entire EU-12 declined 6%. Most EU-12 countries experienced declines, specifically Ireland (14%), the Netherlands (12%), Spain (13%) and Portugal (13%). Britain showed the only notable increase, at 53%.

In the United States (table 2) the 1992-97 period saw small declines (2-9%) in numbers of food processing establishments in traditional sectors (grain, meat, dairy and oilseeds). There were small (3-9%) increases in the numbers of establishments processing fruits and vegetables, and producing beverages. There was a very large (67%) increase in the number of establishments processing sugar, chocolate and confectionery.

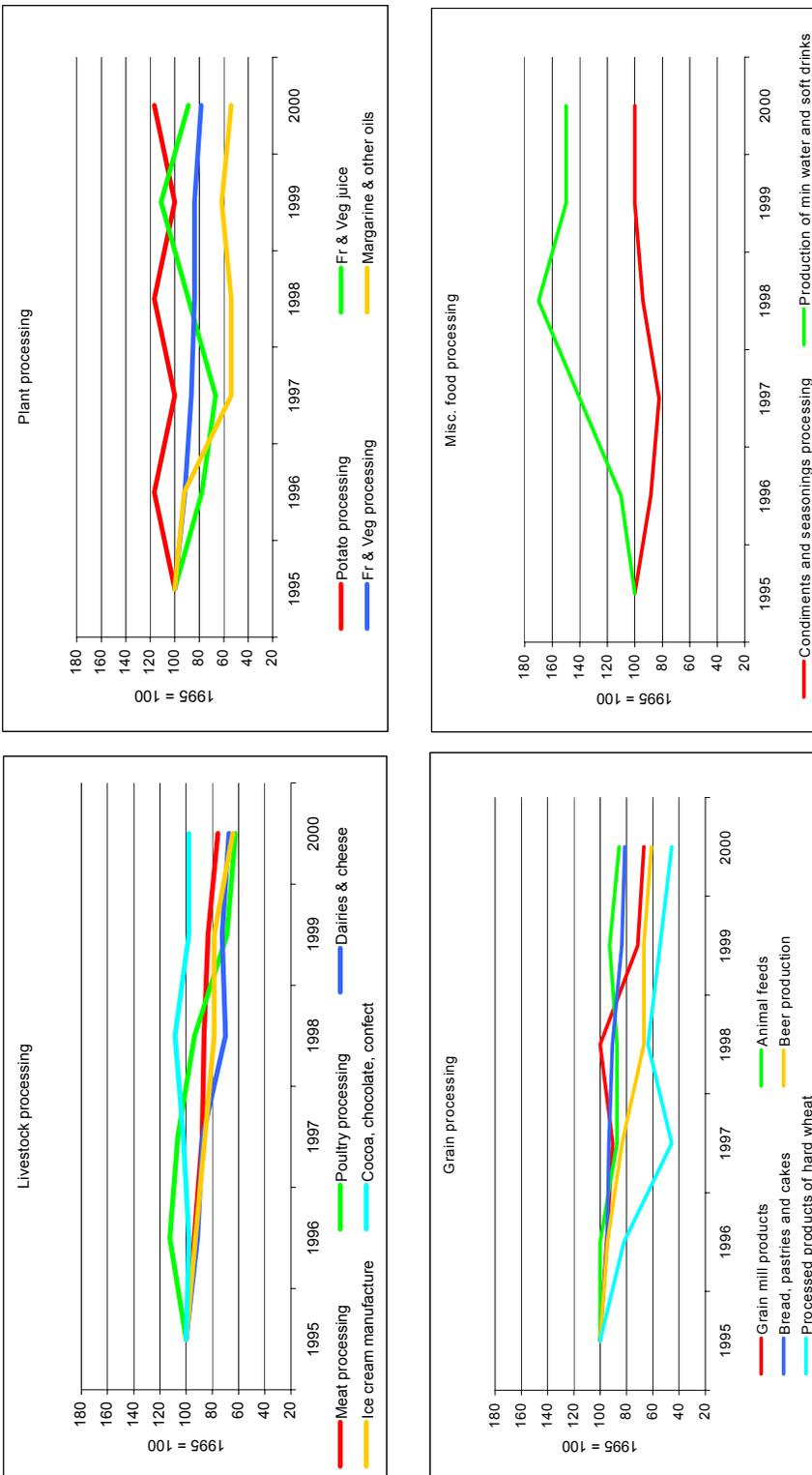
⁷ These are either numbers of enterprises (i.e. firms) or numbers of establishments (i.e. plants), but the measures are consistent within countries.

Table 1. Numbers of enterprises in the Danish food industry

Food processing	1995	2000	change	Food wholesale	1995	2000	change
Meat processing	66	50	-24%	Meat and meat products	468	283	-40%
Poultry processing	16	10	-38%	Live animals	661	224	-66%
Dairies & cheese	80	54	-33%	Dairy, eggs, edible oils and fats	231	128	-45%
Ice cream manufacture	14	9	-36%	Grain, seeds and animal feeds	434	263	-39%
Grain mill products	21	14	-33%	Flowers & plants	374	208	-44%
Animal feeds' processing	55	47	-15%	Fruits & Veg	652	254	-61%
Bread, pastries and cakes	1501	1220	-19%	Sugar, chocolate and confectionery	124	65	-48%
Processed products of hard wheat	11	5	-55%	Agricultural machinery and implements	787	601	-24%
Beer production	18	11	-39%	Food retail	1995	2000	change
Potato processing	6	7	17%	Non-specialized, mainly food, beverages or tobacco	3974	3486	-12%
Fruit & Veg juice	9	8	-11%	Specialist fruit and vegetables	927	595	-36%
Fruit & Veg processing	37	29	-22%	Specialist meat and meat products	1014	814	-20%
Margarine & other oils	13	7	-46%	Specialist fish, crustaceans and molluscs	349	293	-16%
Cocoa, chocolate, confectionery	48	47	-2%	Specialist bread, cakes, and sugar confectionery	689	462	-33%
Confectionery and seasonings processing	17	17	0%	Other specialized stores in food, beverages and tobacco	620	343	-45%
Production of min water and soft drinks	10	15	50%				

Source: Eurostat (2003)

Figure 6. Numbers of enterprises in Danish food processing



Source: Eurostat (2003).

Figure 7. Changes in numbers of food processing enterprises in selected European countries, 1995 - 2000

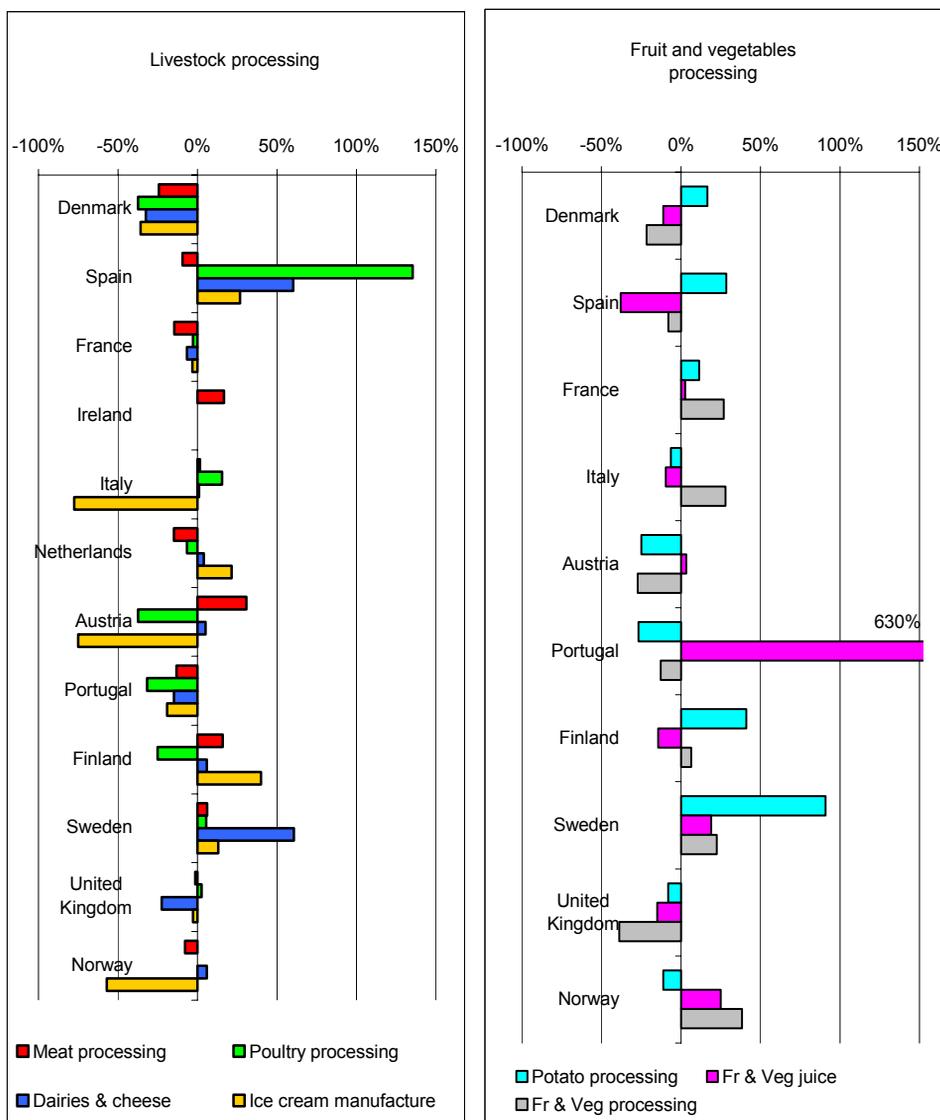
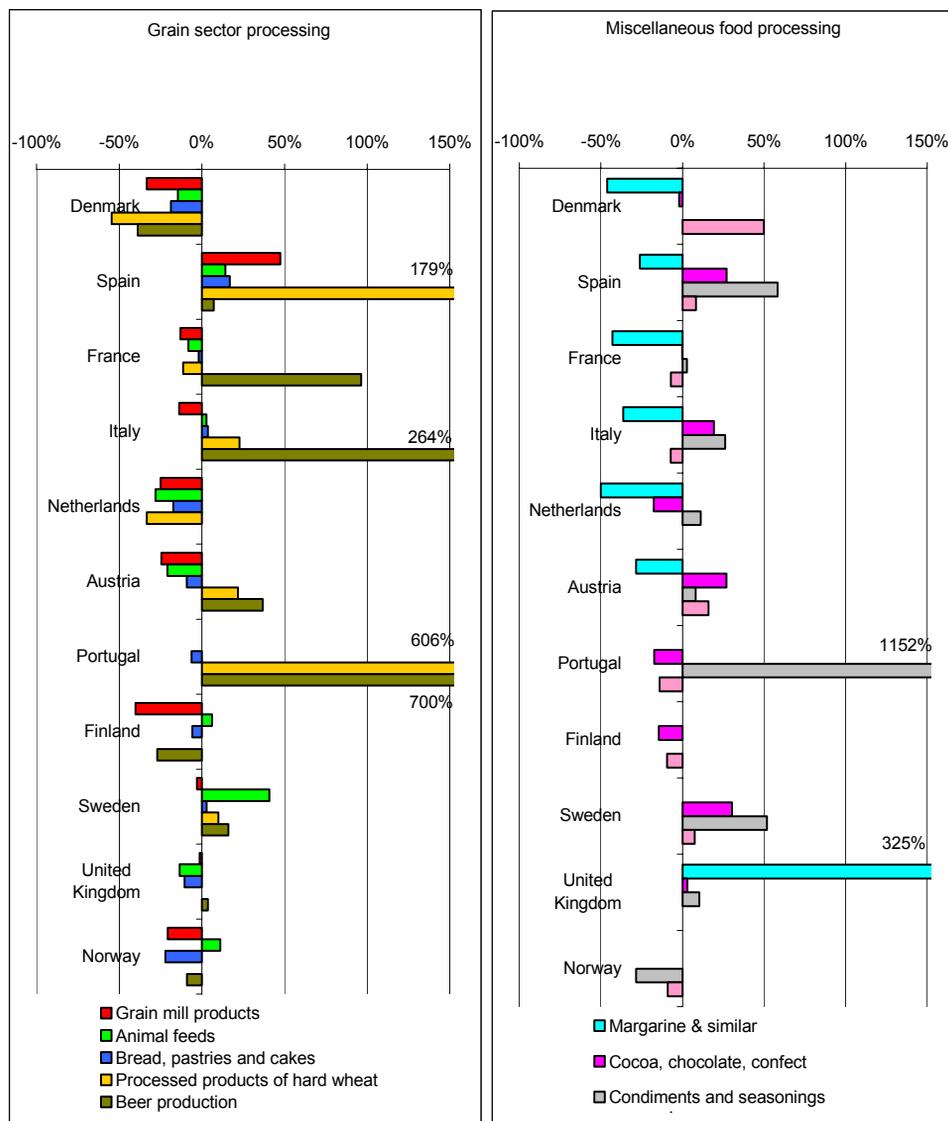


Figure 7. Changes in numbers of food processing enterprises in selected European countries, 1995 -2000 (cont'd)



Source: Eurostat (2003).

Table 2. Change in numbers of establishments in US food processing 1992-1997

Sector	% change in numbers of establishments 1992-97
Meat products	-2
Dairy products	-9
Preserved fruit and vegetables	3
Grain mill products	-3
Bakery products	7
Sugar, chocolate and confectionery	67
Fats and oils	-4
Beverages	9
Miscellaneous foods	4

Source: USDA (2002)

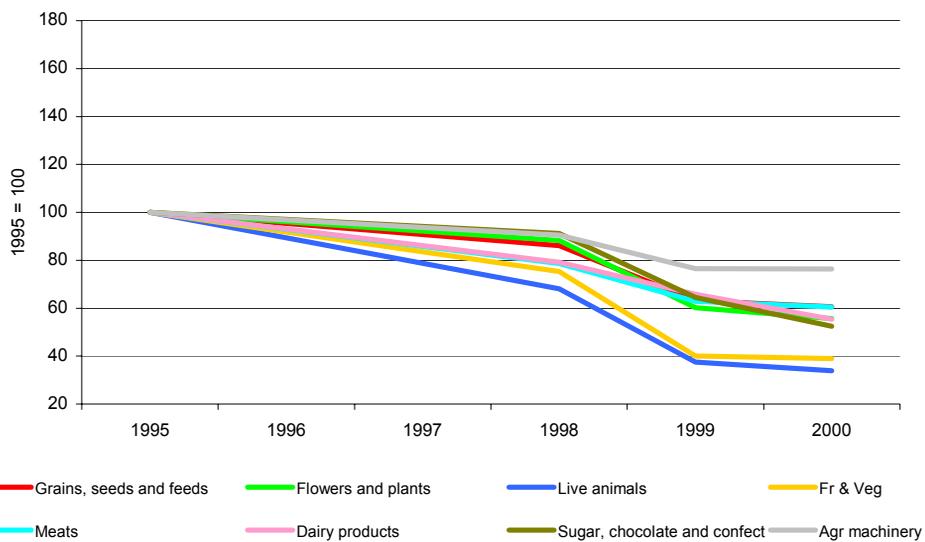
4.2. Food wholesalers

The reduction in numbers of Danish food industry wholesalers in 1995-2000 is both more marked and more widespread across sectors than is the case for food processors.⁸ There are 23% fewer enterprises wholesaling grains, seed and feed (figure 8), but this is the smallest of the declines. For dairy products, meats, confectionery, flowers and agricultural machinery, the decline since 1995 has been around 40%. For fruits and vegetables and live animals, it is over 60%.

Most European countries have experienced a decline in the number of food wholesale enterprises in the period 1995-2000, with Italy, Portugal and Sweden being notable exceptions (figure 9). The Danish decline has been greater, and across more sectors, than that of any other European country. The Netherlands, Norway and Germany have all lost wholesale enterprises across most subsectors, but not to the same extent as has Denmark.

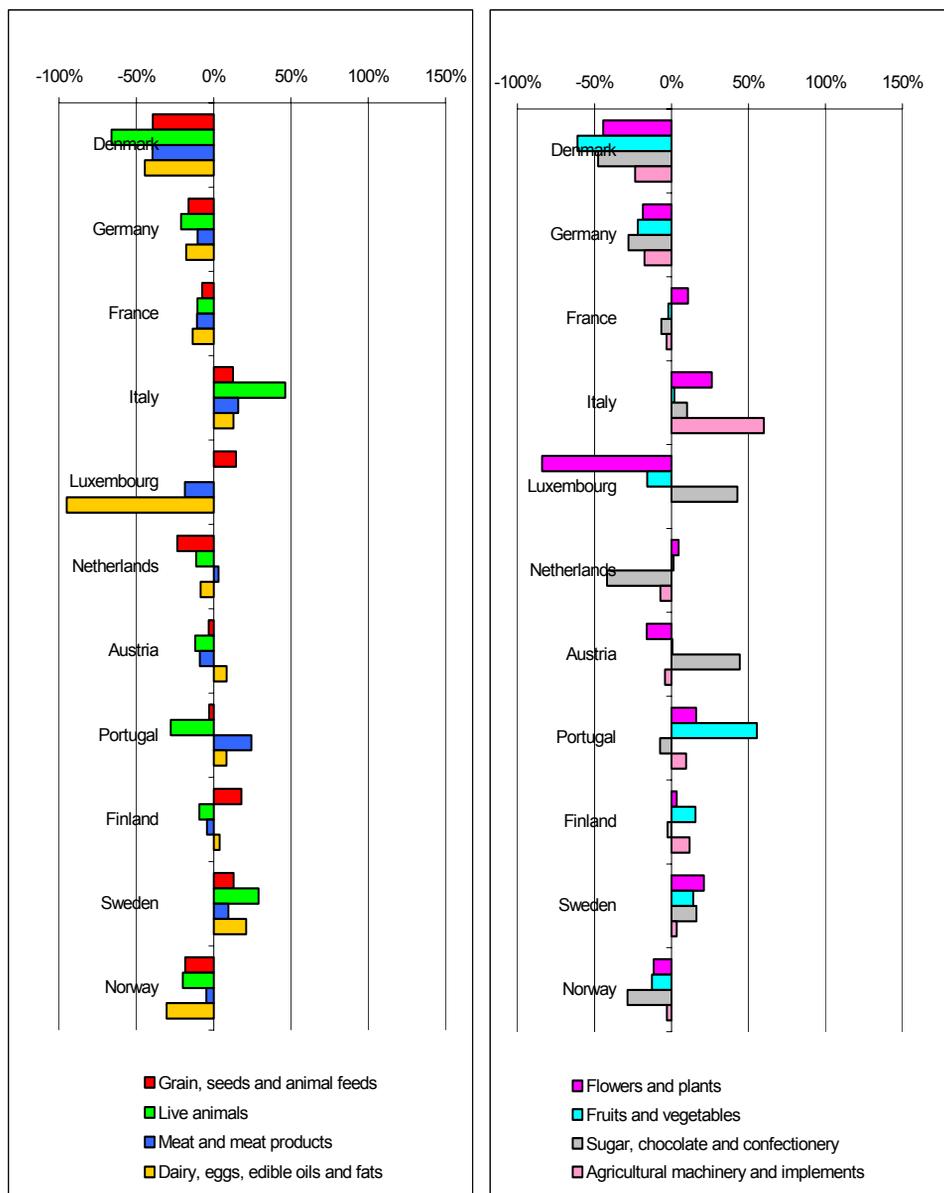
⁸ Figure 8 interpolates the years between 1995 and 1998, for which no data are available.

Figure 8. Numbers of food sector wholesale enterprises in Denmark



Source: Eurostat (2003).

Figure 9. Changes in numbers of food wholesale enterprises in selected European countries, 1995-2000

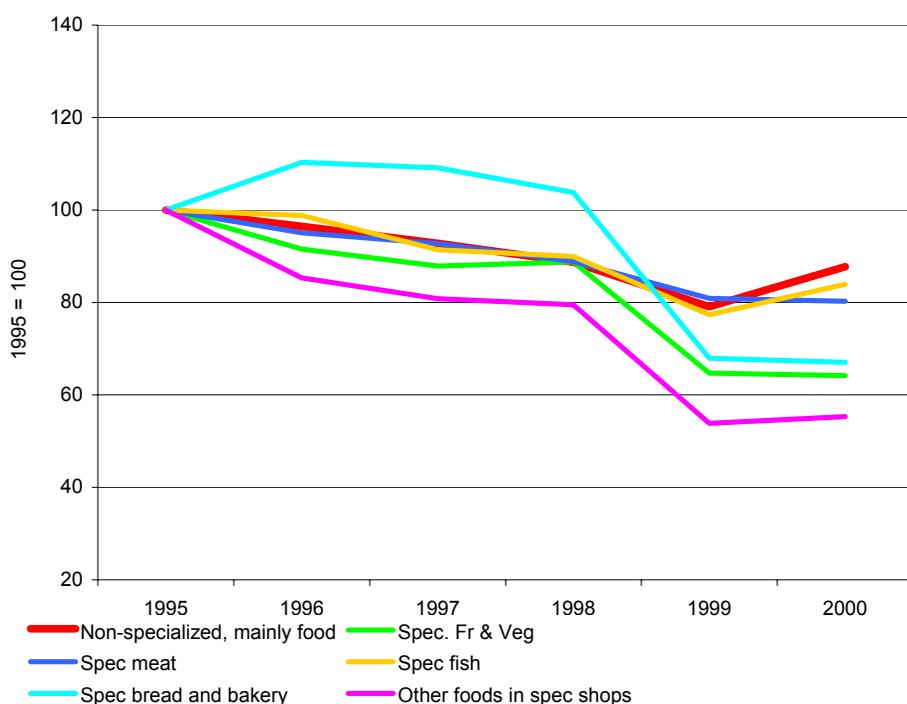


Source: Eurostat (2003).

4.3. Food retailing

The numbers of all types of Danish food retail enterprises have declined in the period 1995-2000, by 15-35% (figure 10). The number of specialist bakeries rose during the first part of the period but declined more recently. The numbers of butchers and fish retail enterprises have fallen by about 20%: the same as for non-specialized retail enterprises that sell mainly food (this includes supermarkets).

Figure 10. Numbers of food retail enterprises in Denmark

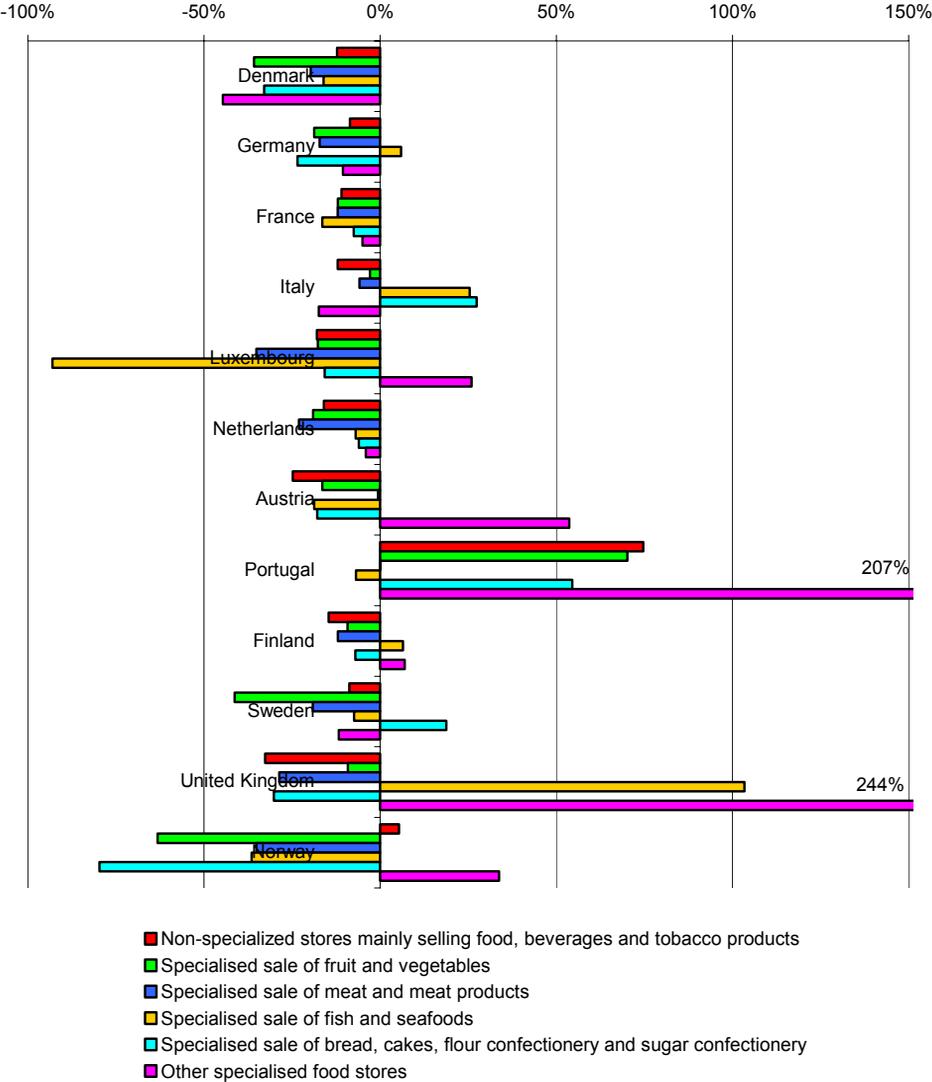


Source: Eurostat (2003).

The same trend has been followed in France and the Netherlands, and most European countries have experienced a decline across most food retail subsectors (figure 11). Portugal and Britain are exceptions in that the number of Portuguese retail food enterprises has increased substantially in all sectors except fish, and in Britain there has

been a substantial increase in both retail fish enterprises and other specialized retail enterprises.

Figure 11. Changes in numbers of food retail enterprises in selected European countries, 1995-2000



Source: Eurostat (2003).

In the United States, declines are seen for specialist retail food shops (table 3) in the period 1992-1997. A notable exception is miscellaneous food shops, which have increased in number by 25%. No US data are available that are directly comparable with Eurostat's definition of "non-specialist retail stores selling mainly food, beverages and tobacco".

Table 3. Change in number of specialist retail food shops in the US: 1992-1997

Sector	% change in number of specialist retail food shops: 1992-97
Meat and fish	-21
Fruit and vegetables	9
Confectionery	-11
Dairy products	-25
Bakeries	-9
Miscellaneous	25

Source: USDA (2002)

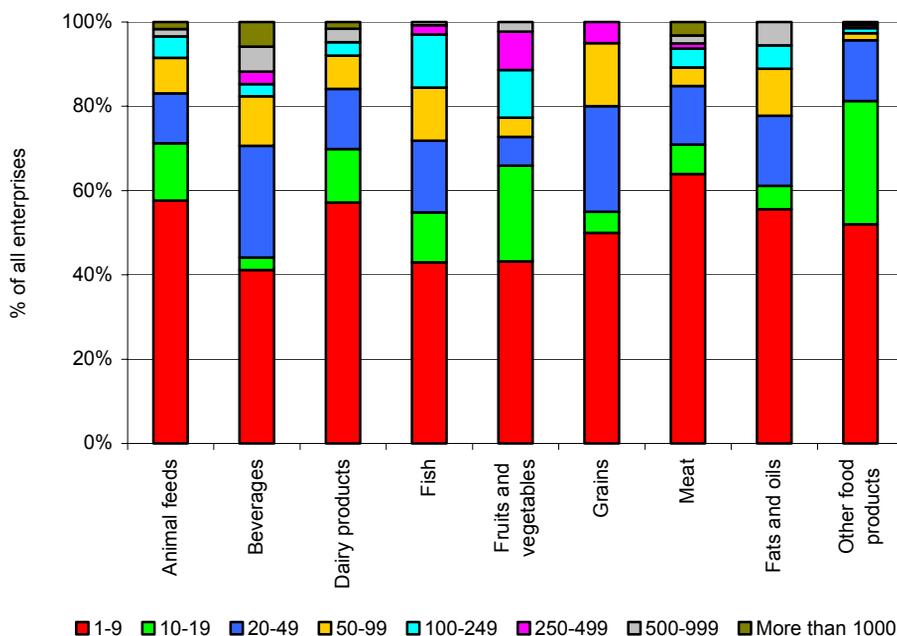
4.4. Enterprise size distribution

40-60% of Danish food processing enterprises have less than 10 employees (figure 12), and most sectors have over 80% of enterprises employing less than 100 people. Traill and Gilpin's (1994) aggregate data show that 95% of Danish food processing enterprises had less than 100 employees in 1990.

The reduction in numbers of Danish food processors in the period 1995-2000 appears to have entailed substantial disappearance of small firms (table 4). For the three smallest size ranges defined by Eurostat (entailing enterprises employing less than 50 staff), numbers were reduced significantly in almost all sectors. However, there is no generalized accompanying increase in the numbers of medium or large firms (500+ staff).

Across all food processing sectors, Traill and Gilpin's (1994) data show a 2% decline in numbers of Danish enterprises with less than 100 employees in the 1980s: the most rapid decline in the EU-12 for the period of their data. Traill and Gilpin demonstrated no particular pattern across Europe, but note that numbers of British firms with less than 100 employees had increased by 6%, against the trend across Europe for the period 1982-1990. In their data, medium (100-500 employees) and large (500+) enterprises show only small changes everywhere except Britain (3% declines in both cases).

Figure 12. Enterprise size distribution in Danish food processing, by number of employees: 2000



Source: Eurostat (2003)

Table 4. Change in numbers of Danish food processing enterprises by size class:1995-2000, pct.

Number of employees	Animal feeds	Dairy products	Fruits and vegetables	Grains	Meat	Beverages	Fish	Animal feeds	Fats and oils	Other food products
	% change									
1-9	-13	-25	-37	-38	-43	-7	-48	-13	-23	-46
10-19	-38	-38	67	-80	-15	0	-43	-38	-50	65
20-49	-30	-25	-57	25	16	0	-38	-30	200	281
50-99	25	-38	0	0	-30	100	31	25	-33	77
100-249	200	-67	-17	0	-22	-50	21	200	*	-6
250-499	0	-100	300	-50	-33	-50	0	0	0	11
500-999	0	0	*	0	-25	100	-50	0	0	25
More than 1000	*	-67	0	0	25	0	*	*	0	150

Source: Eurostat (2003)

* an increase from 0% in 1995.

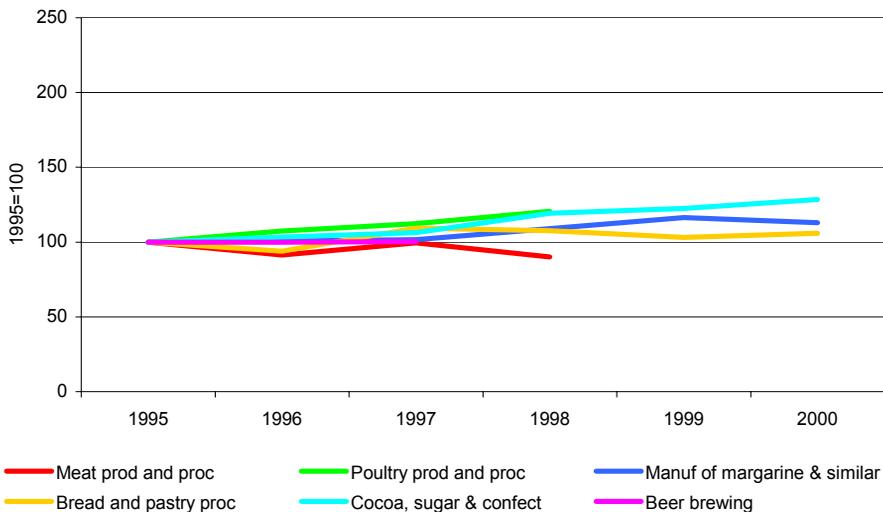
Traill and Gilpin also present 1981-1992 data on changes in aggregate (EU-12) employment and output in each commodity sector for food processing. Few patterns emerge but in general, large and small firms declined while medium-sized firms increased in number. Conversely, two sectors (oils and fats, and fruit and vegetable processing) showed an increase in the numbers of small firms.

5. Product flows

5.1. Turnover

Turnover in Danish food processing has, in general, increased slightly but steadily in the period 1995-2000 (figure 13). Meat processing turnover declined somewhat in 1998 in association with historically low pork prices, and data are not available for the period 1998-2000. No data are available for dairy processing.⁹

Figure 13. Turnover in Danish food processing: 1995-2000

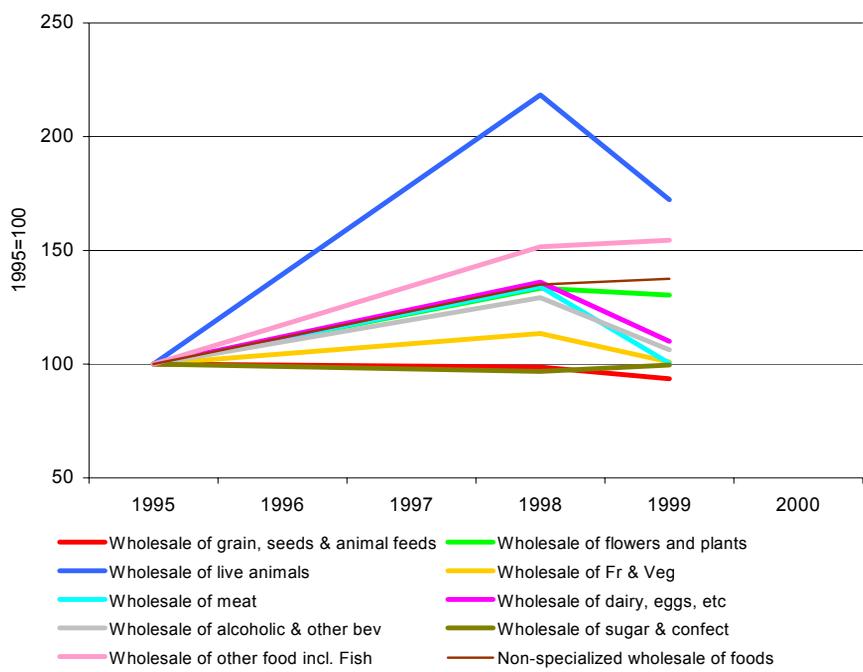


Source: Eurostat (2003)

Data on Danish food wholesale turnover is available only for the years 1995, 1998 and 1999. Turnover in 1999 shows a 0-10% increase for meat, dairy, fruits and vegetables, sugar and confectionery (figure 14). Non-specialized wholesale, fish wholesale and live animal wholesale showed increases of 140-170%.

⁹ Missing data is common where industrial sectors feature very few firms. This protects confidentiality.

Figure 14. Turnover in Danish food wholesale 1995-2000



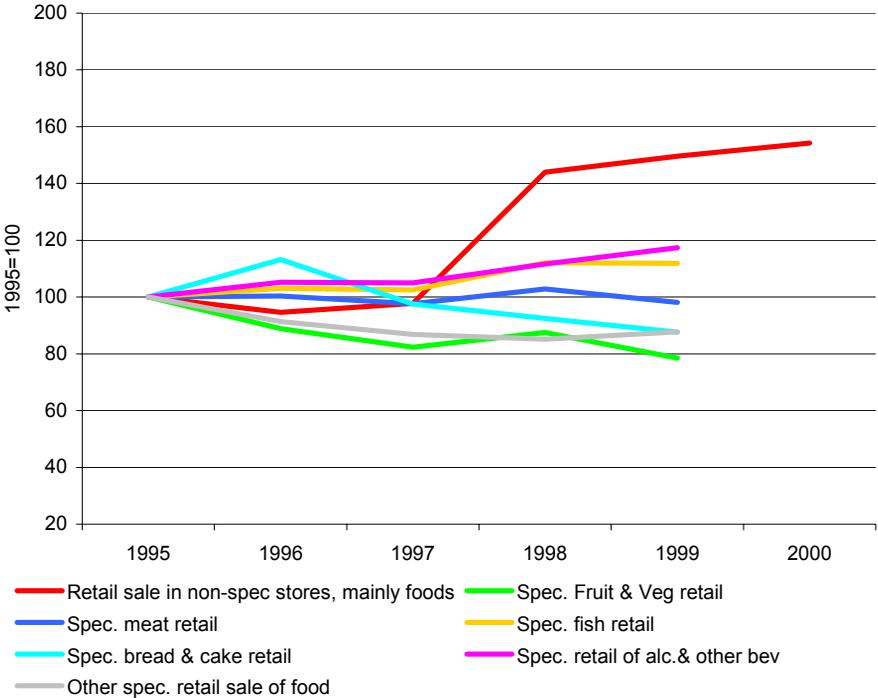
Source: Eurostat (2003)

Turnover in Danish food retailing is dominated by 50%+ increase in turnover by non-specialist retail enterprises selling mainly food and beverages. The turnover profile features particularly strong increases between 1997 and 1998 (figure 15). Specialist retail for fish and for beverages both increased their turnover, while other specialist retail enterprises showed declines of up to 25%. Specialist meat retailers maintained their turnover throughout 1995-1999.

Table 5 presents a summary of changes in turnover in food industry sectors in 15 European countries. In almost all countries, non-specialized food retailers increased turnover in the period 1995-2000: by 50% and more in the UK and Italy. As in Denmark, in most European countries retail turnover in specialist fish, fruit and vegetable and meat enterprises fell. However, there is no obvious consistent pattern amongst countries nor amongst sectors. In France and Britain, turnover rose in all retail food

sectors, while in Belgium, Germany and Portugal the opposite applies. US food processors experienced an increase in turnover in the period 1992-1997 (table 6). The size of the increases (10-30%) are not as extreme as those seen in Sweden, Spain and Italy for the period 1995-1997.

Figure 15. Turnover in Danish food retailing 1995-2000



Source: Eurostat (2003)

Table 5. Changes in turnover in the food industry in selected European countries: 1995—2000

	Belgium	Denmark*	Germany*	Spain	France**	Ireland*	Italy	Luxembourg	Netherlands	Austria	Portugal**	Finland	Sweden**	United Kingdom**	Norway***
	% increase 1995-2000														
Food processing sector															
Meat (excl. poultry)	-21		-21	19	-5	1	17		0	54		-55		32	38
Poultry	41		-19	14	3	36	37		32	-19		13		8	66
Fr & Veg processing				27	35		32		15	20		28	70	-21	198
Margarine & similar				57			156		0						
Dairies and cheese	-5	16		31	-1		1		0			-10		20	13
Grain mill products	54			10	-3		22		-5			-28	31		
Bread and pastry	12	3		21	4		0	6	12	-1		-28	41	48	24
Cocoa, chocolate & confect.	10	23		39	95		25		9	-18		-28		18	2
Beer brewing	-16			10	4			-9		-12				23	156
Food wholesale sector															
Live animals	-6	72	-21		16		105		-8	8	-45	49			-33
Grain, seeds and animal feeds	-19	-6	-9		4	-1	-15	22	-11	3	-31	139	6		-16
Flowers and plants	-21	30	1		20		32	21	45	-19	5	17	23		69
Fruits & veg	-10	1	4		6	30	-7	-28	7	29	-3	-35	-33	84	7
Meat and meat products	1	0	-12		-9	26	52	-5	32	-9	26	-39	13	19	31
Dairy products, eggs etc.	6	10	-33		18	-17	14	9	-9	-81	216	1	1	34	-15
Alc. & other beverages	12	6	-7		12	88	47	48	79	77	16	1469		53	801
Sugar, chocolate & confect.	7	0	-23		3		-2	411	-30	59	-33		-10		-2
Fish	41	55	-2		-13	-1	159	346	47	57	15	169	47	41	66
Non-specialized food wholesale	5	37	-22		25	71	-38	18	31	-3	56	-12	2	63	49
Food retail sector															
Non-specialized, mostly food & bev	32	50	-1		18	30	56		14	0	33	21	28	58	25
Specialist fruit & veg	-26	-21	-28		11	38	9	-48	-16	-21	-15	-5	-47	38	-49
Specialist meat & meat prod.		-2	-32		2	18	-27	1	-11	32	-17	-31	-20	20	-51
Specialist fish	-18	12	-14		6	451	93	-29	10	5	-23	53	2	8	1
Specialist bread, cakes & confect.	5	-12	-19		50		56	41	17	6	-8	43	42	39	-60
Specialist alc. & other bev.	9	17	-8		32		-15	3	22	22	-25			34	37
Other specialist food shops	-13	-12	-2		36		1	-58	3	378	40	5	8	61	112

Source: Eurostat (2003)

1995-1999; *1996-2000 for food processing variables and 1995-2000 otherwise.

Table 6. Change in turnover in US food processing

Sector	% change in turnover 1995-99
Meat products	9
Dairy products	12
Preserved fruit and vegetables	9
Grain mill products	-1
Bakery products	15
Sugar, chocolate and confectionery	21
Fats and oils	0
Beverages	11
Miscellaneous foods	31

Source: USDA (2002)

Specialist food retail stores in the United States display a mixed pattern for growth in turnover in the period 1992-1997 (table 7). For specialist sales of dairy products there has been a 17% decline, but most other sectors have shown strong increases in sales (16% for fruits and vegetables, 24% for confectionery and 4% for bakeries). Specialist butcheries show a small (3%) decline.

Table 7. Change in turnover in specialist retail sales enterprises in the US

Sector	% change in turnover 1992-97
Meat and fish	-3
Fruit and vegetables	16
Confectionery	24
Dairy products	-17
Bakeries	4
Miscellaneous	61

Source: USDA (2002)

5.2. Shares of retail food sales

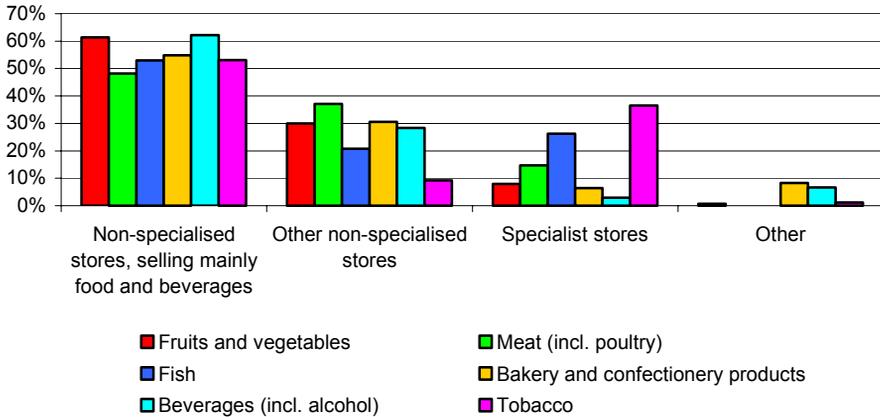
Non-specialized stores dominate Danish retail food sales for most commodities. Figure 16 presents 1997 data, showing that specialist stores have less than 10% of sales for fruits and vegetables, bakery products and beverages (including alcoholic). About 14% of meat is sold in specialist stores, and about 26% of fish.

The dominance of non-specialized stores that sell mainly food and beverage items is even more pronounced in many other European countries (figure 17). Stensrud (1999) has documented a strong trend across the EU toward increased market shares for non-specialised food retailers. For meat, fish, fruits and vegetables and bakery products,

supermarkets dominate retail Danish markets far less than is the case in Sweden, Norway, Germany, Britain, Italy and France.

Figure 16. Shares of the Danish retail markets: 1997

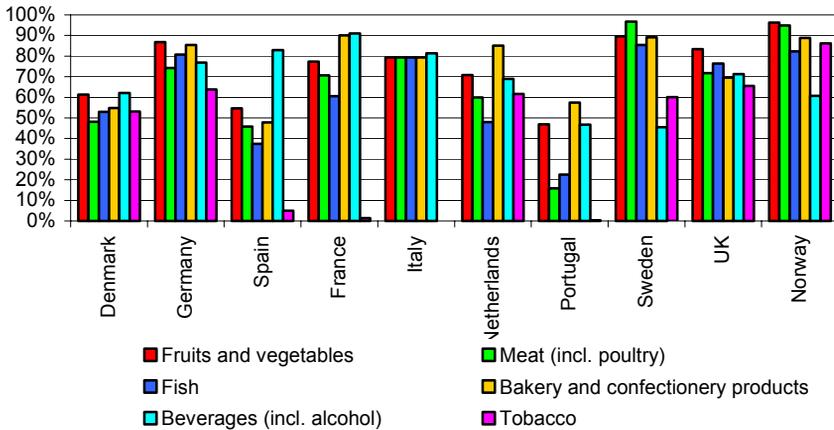
Sales of grocery items in Denmark: shares of sales in each type of store



Source: Eurostat (2003)

Figure 17. Shares of retail food market in selected European countries: 2000

Share of grocery sales in non-specialised stores selling mainly food



Source: Eurostat (2003)

6. Value added

6.1. Food processing

No consistent series of value added data are available for Danish food processing sectors during the period 1995-2000. The same is true for Ireland, Luxembourg, Sweden and Norway. Table 8's data show value added for selected Danish sectors in the latest available year. Each stage of the chain shows one dominant sector, in terms of value adding: meat processing, flower and plant wholesale and non-specialized retail food sales, respectively.

Across Europe, the period 1995-2000 (see table 9) has apparently entailed a general decline in value added in most food processing sectors (see Belgium, Italy, the Netherlands, Austria, Portugal and Finland). Conversely, in Spain and France, most food processing industries have increased their value added in this period. The UK shows a mixed picture, with significant reductions in value added in processing of poultry (-12%) ice cream (-39%), and significant increases in beer brewing (69%), production of condiments and seasonings (120%) and production of fruit and vegetable juices (172%). Observations on table 9 do not reveal any specific pattern amongst food processing sectors. In contrast, data from the USA (table 10) show strong increases in value added for food processing firms across all sectors.

6.2. Food wholesale

In most Danish food sectors value-added by wholesaling enterprises has fallen in the period 1995-2000 by 20-60%, with grains and feeds, dairy products and alcoholic beverages and confectionery showing the greatest declines (see figure 18). The value added by general purpose food wholesalers has declined by around 15% in that period. As a notable exception with no immediate explanation, wholesale of live animals has increased its value added.

Across Europe (see table 9), a pattern similar to Denmark's is revealed only by Belgium. There is substantial variation amongst sectors in almost all countries other than Denmark and Belgium. Ireland, Luxembourg and Finland all exhibit some sectors with large increases in value added. No patterns are apparent amongst commodity sectors. Non-specialized food wholesale services increase value added in all but five countries.

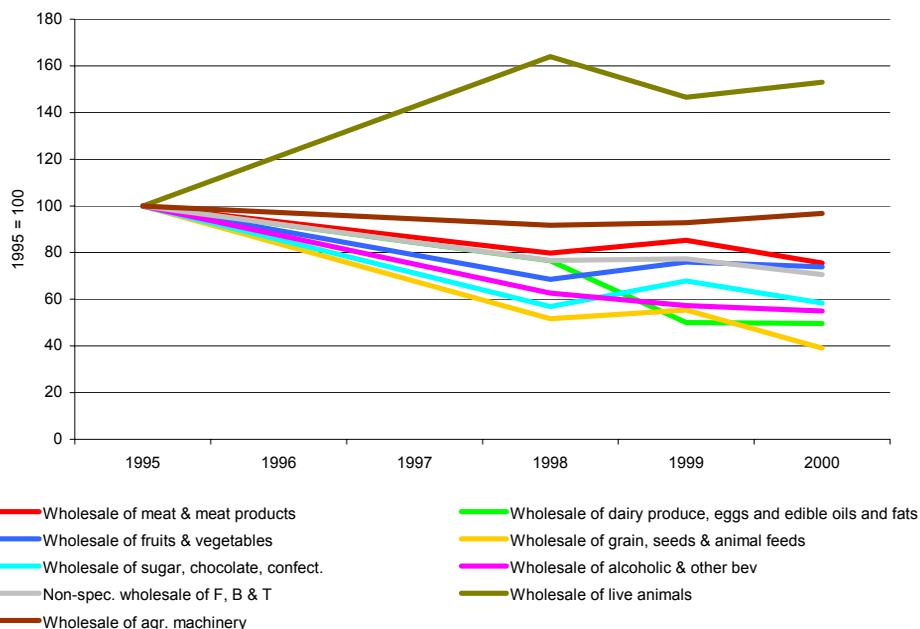
Table 8. Value added in the Danish food sector: 2000 or latest available year

Food processing	Billion DKK	Food wholesale	Billion DKK
Meat processing*	6.423	Meat and meat products	1.126
Poultry processing*	589	Live animals	262
Dairies & cheese	na	Dairy, eggs, edible oils and fats	441
Ice cream manufacture	160	Grain, seeds and animal feeds	2.068
Grain mill products*	220	Flowers & plants**	4.205
Animal feeds' processing*	352	Fruits & Veg	700
Bread, pastries and cakes	3.315	Sugar, chocolate and confectionery	271
Processed products of hard wheat	na	Agricultural machinery and implements	2.003
Potato processing*	259	Non-specific food wholesale	1.920
Fruit & Veg juice	na	Food retail	Billion DKK
Fruit & Veg processing	577	Non-specialized stores, mainly food beverages or tobacco	10.734
Margarine & other oils	124	Specialist fruit and vegetables	187
Cocoa, chocolate, confectionery	1.050	Specialist meat and meat products	730
Condiments and seasonings processing	101	Specialist fish, crustaceans and molluscs	159
Production of min water and soft drinks	842	Specialist bread, cakes, and sugar confectionery	280

*1998, ** 1999

Source: Eurostat (2003).

Figure 18. Value added in Danish wholesale enterprises



Source: Eurostat (2003)

Table 9. Changes in value added in the European food industry: 1995 – 2000

	Belgium	Denmark	Spain	France*	Ireland**	Italy	Luxembourg	Netherlands	Austria	Portugal *	Finland	Sweden	UK *	Norway
Sectors:														
Food processing sector														
Meat (excl. poultry)	-3		54	6	7	-8		-1	42	73	-71		27	
Poultry	43		-4	6	89	61		1	-40	-2	-100		-12	
Potatoes			36	18	-13	-42				16	2		13	
Fruit & veg juice			46	20		4				3	-19		172	
Proc of fruit & veg (excl juice)			18	35		20				-11	20	56	13	
Dairies and cheese	-9		25	18		-7		-10		27	-12		21	
Ice cream manuf.	-34		10	-9		173		-6		-60	-16		-39	
Grain mill products	18		10	1		-2		-11			-48	47		
Animal feeds	-13		30	32	16	-3		-20	3		-34		-3	
Processing of hard wheat	23		-35	-18		56	7	4	-2	16	16	47	46	
Bread and pastry manuf.	-5	9	19	3		-3		7	0	4	16	47	28	
Cocoa, chocolate & confect.	4	27	29	76		31			9	-21	-19	79	120	
Condiments & seasonings	31	9	91	17		33			9	24			69	
Beer brewing	-24		0	1					-21	34				
Min. water and soft drinks	16		24	24		25		-9	-11	49				
Wholesale sector														
Live animals	13	53		23		36		-24	-16	-36	-60			67
Grains, seeds, animal feeds	-19	-61		9	270	-11	-6	11	-10	-6	148	-1		-41
Flowers and plants	-7			32	32	33	40	-26		24	46			
Fruits & veg	-9	-26		5	59	4	-38	13	33	34	5	7		32
Meat & meat products	-9	-24		-7	197	102	-16	38	-11	27	-33	39		-18
Dairy products, eggs etc.	24	-50		17	2	-8	-8	0	-23	365	-4	83		7
Alc. & and other beverages	-12	-45		22	248	16	27	74	193	39	529			104
Sugar, chocolate & confect.	11	-42		-18		49	132	-22	-1	-52	6	56		2
Fish	5	-36		2	61	168	260	25	12	29	236	68		2
Non-specialized food wholesale	-20	-29		35	87	-52	23	55	20	39	33	33		-25
Agricultural machinery	1	-3		16	61	44	-30	28	3	59	-22	7		7
Retail sector														
Non-specialized, mostly food & bev.	27	67		22	61	42	27	19	-13	51	18	36		39
Specialist fruit & veg	-34	-13		14	35	-13	-60	-4	-7	-5	-9	-30		-68
Specialist meat & meat prod.	-19	8		2	48	-8	-18	-13	30	-19	-25	11		-54
Specialist fish	-37	24		-2	192	73	0	5	35	-13	78	37		1
Specialist bread, cakes & confect.	-22	1		83		62	2	39	22	12	74	50		-49
Specialist alc. & other bev.	17	50		40		8	82		79	-32				-1

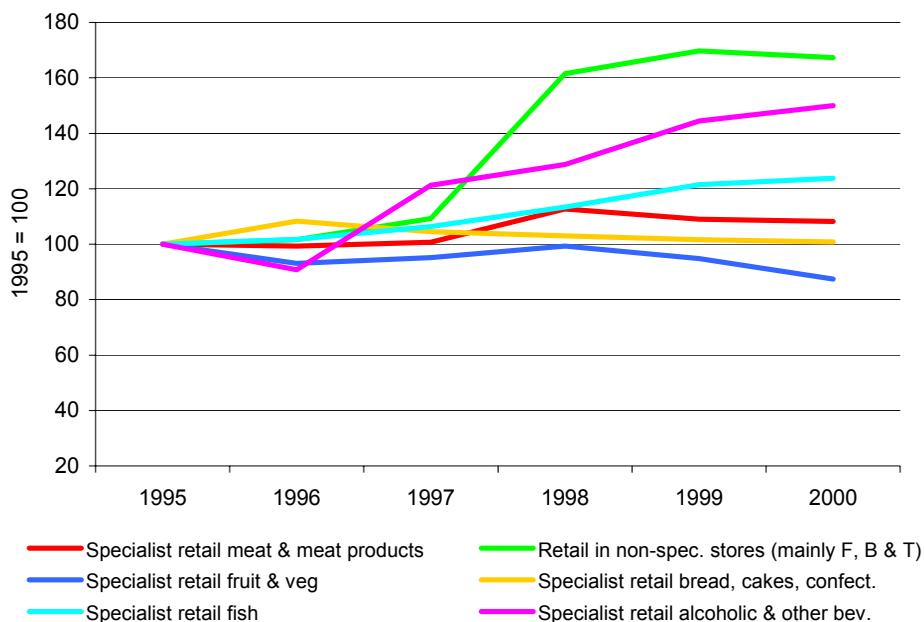
Source: Eurostat (2003)

*uses 1996-2000 comparison; ** uses 1995-1999 comparison.

6.3. Food retail

Value added in Danish food retailing has generally increased in the period 1995-2000 (figure 19). The dominant feature has been the substantial increase in value added by non-specialized stores selling mainly food, beverage and tobacco items: a 60% increase between 1995 and 1997, with a further 10% increase up to 2000. Specialist fish, meat and bakery retailers have seen increases in value added of 1-25%, and specialist drinks retailers (including alcoholic drinks) showing a 45% increase in value added between 1995 and 2000. Value added by specialist fruits and vegetable retailers has declined by about 15% in that period.

Figure 19. Value added in Danish food retail enterprises



Source: Eurostat (2003)

In Belgium, Portugal and Norway, value added by specialist food retailers has declined, and value added by non-specialist food retailers has increased (table 9). In Austria, value added in non-specialist food retailing has declined (the only country to record such a result) and value added in most specialist food retailing has increased

substantially. Amongst sectors, only specialist retailing of fruits and vegetables shows a consistent decline in value added, in almost all countries.

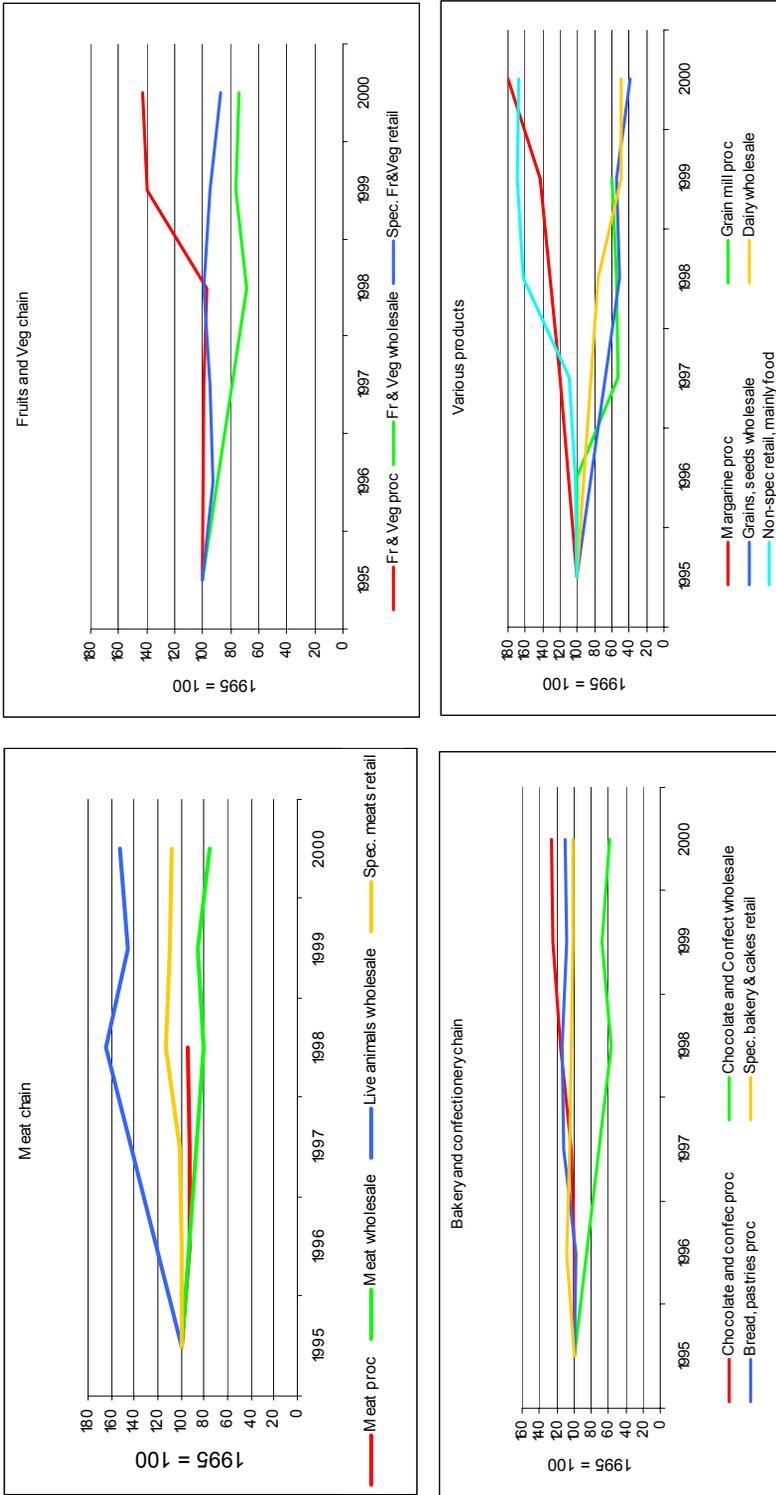
Casual observation on table 9 reveals no specific relationship amongst the patterns of value added in the different stages of the food chain. The available data does not indicate that changes in value added at one stage are associated with a specific change at any other stage. The Danish patterns of value added for 1995-2000, in separate food marketing chains, are presented in figure 20. Food wholesale appears to have been in constant decline over the period, with specialist retailing maintaining its value added.

Table 10. Change in value added in US food processing

	% change in value added 1992-97
Meat products	56
Dairy products	9
Preserved fruit and vegetables	16
Grain mill products	12
Bakery products	22
Sugar, chocolate and confectionery	23
Fats and oils	27
Beverages	18
Miscellaneous foods	30

Source: USDA (2002)

Figure 20. Value added throughout Danish food marketing chains: 1995-2000



Source: Eurostat (2003).

7. Seller concentration

7.1. Food processing

In the meat, dairy and beverages sectors, Danish food processing is dominated by a few large firms (table 11). Comparable European data are available only at the level of an average across sectors (table 12), which show that Danish concentration lies in the middle of the range for 10 European countries. From table 13, it may be seen that Danish concentration is considerably higher than in any comparable US food processing sector, with the exception of beer brewing.

Table 11. Concentration in the Danish food chain: 2000

	CR3	CR5	CR10
Meat processing	72.1	77.9	87.5
Dairy and ice cream manufacture	88.4	90.6	95.0
Other food processing	12.6	18.6	30.5
Beverages manufacture	71.3	82.0	93.8

Source: Danmarks Statistik (2002)

Table 12. Concentration in food processing in selected European countries: 1995

	CR3 (average across sectors)
Denmark	69
Finland	79
France	63
Germany	55
Ireland	89
Italy	67
Spain	61
Sweden	69
UK	56
Norway	79

Source: Cotterill (2000)

Table 13. Concentration in US food processing: 1997

	CR4	CR8
Grain and oilseed milling	45.3	59.1
Sugar and confectionery	41.9	56.4
Preservation of fruits & vegetables	26.6	35.6
Dairy products	16.5	26.0
Meat processing	35.0	47.5
Fish	12.4	20.9
Bakeries	28.6	40.1
Breweries	89.7	93.4
Soft drink	47.2	55.6

Source: USDA (2002)

Over time, Rogers (2001) reports an “unbroken increase” in concentration in US food processing. In the period 1967-1997, the top 10 firms have increased their market share from 51% to 75%. Within that trend, the top 20 firms have shown the only increase (24% to 52%). The top 100 firms now earn almost 70% of food processing value added, of which the majority goes to the top 20 (table 14).

Table 14. Patterns of US food processing concentration: 1967-97

	1967	1997
Market Share (%)		
Top 100 firms	51	75
of which		
Top 20	24	52
21-50	15	15
51-100	12	8
Share of value-added (%)		
Top 100 firms		68.8
of which		
Top 20		44.0
21-50		16.6
51-100		8.2
Top 500+ firms		15.8

Source: Rogers (2001)

Rogers observes a bi-modal structure in US food processing:

- very large companies that continue to grow through merger and acquisition; and
- very small companies, including start-ups, that form to serve niche markets.

7.2. Food retailing

Denmark's largest five food retailing firms serve 56% of the market. This places Denmark near the median level for Europe's retail grocery markets (table 15). It is notable that Danish (and other Nordic) concentration appears to be static, or in any case not growing as quickly as that for the UK, Greece and Spain (see also Competition Commission, 2000). Hughes (2002) presents alternative data for 1999, showing Danish 5-firm concentration ratio (CR5) to be 79% in 1999, ranking it sixth in Europe and much higher than the UK (about 63%).

Table 15. Concentration in European food retailing

	1993	CR5* 1996	1999
Austria	54.2	58.6	60.2
Belgium & Luxembourg	60.2	61.6	60.9
Denmark	54.2	59.5	56.4
Finland	93.5	89.1	68.4
France	47.5	50.6	56.3
Germany	45.1	45.4	44.1
Greece	10.9	25.8	26.8
Ireland	62.6	64.2	58.3
Italy	10.9	11.8	17.6
Netherlands	52.5	50.4	56.2
Portugal	36.5	55.7	63.2
Spain	21.6	32.1	40.3
Sweden	79.3	77.9	78.2
UK	50.2	56.2	63.0

* "% held by top 5 firms in national sales of groceries and daily goods"

Source: Dobson (2003)

Table 16. Concentration in US food retailing

	CR4	CR8	CR20
1995	16.2	25.8	38.4
1996	16.6	27.2	40.1
1997	18.2	29.9	43.9
1998	26.8	37.3	48.2
1999	26.5	38.3	51.9
2000	27.4	40.5	52.0

Source: USDA (2002)

Concentration in the USA, when measured at national level (table 16), is far lower than that observed in Europe. The size and geographic extent of the US retail food market means that local, rather than national measures of concentration may be more

useful. Marsden et al. (1997) estimate state-level US concentration at 40-70%, similar to their estimates of national levels for Denmark, France and the UK.

One factor driving consolidation is merger and acquisition. Merger amongst European retail chains during the 1980s and 1990s is well described (e.g. Competition Commission, 2000; OECD, 2003). Wrigley (2001) examines the “consolidation wave” of mergers in the US food retail industry in the late 1990s that followed a similar process in the UK and Europe in the 1980s and 90s. He rejects the existence of separate US and UK models for food chain structure, but attributes the timing and form of increased US merger activity to a range of factors (changes in the regulatory environment, availability of equity capital, information technologies, and the entry of Wal-mart into food retailing). Wrigley’s study depicts rapidly increasing national-level US food retail concentration in the late 1990s.

Hughes (1994), Dobson (1999) and Marsden et al. (1997) have all reviewed merger activity in the food sector, highlighting the numbers of “cross-border” mergers in Europe. Competition Commission (2000) remarks on three specific developments:

- an increased number of food retail mergers has occurred across Europe since the mid-1990s;
- an increasing number of these mergers are cross-border; and
- the entry of the US retailer Wal-mart.

Wal-mart’s entry to the food industry in the USA was achieved by reformatting of existing retail sites. It exploited demand for 1-stop shopping and cost efficiencies achieved in other retail sectors (Franklin, 2001). In contrast, Wal-mart’s expansion into Europe has been by acquisition.

Marsden et al. (1998) identify a “new retail geography” for the UK food chain. In their model, market structure and power are interdependent with the policy environment. In particular, retailers’ power is defined over space (particularly the key locations which are scarce and subject to a range of policy interventions), sectoral dominance and relations with suppliers. These authors identify a regulatory environment in the UK that has fostered concentration and the exercise of market power. Positions held by individuals both in the regulatory structures and food industry commerce have also been influential in policy (see also Wrigley (2001) and Henson et al. (1995)).

Hallsworth and Taylor (1996) use models of self-reinforcing buying power conduct (see below) by retailers to define “circuits of power”.

Hallsworth et al. (1997) compare British and Canadian responses to “invasion” by US food (retail) discounters in the early 1990s, and conclude that British policy was brought to bear most effectively as a barrier to entry. Of research interest in Denmark are the causes of concentration and the likely impact of further merger (particularly cross-border) and the role played by the regulatory environment. In particular, the current and future roles of sectoral organisations, and those that represent single stages of the food chain, have not been examined for their interaction with policy.

8. Buyer concentration

8.1. The farmer-processor interface

Although consistent series of measures of concentration amongst first buyers of farm produce are not available, isolated observations are common (e.g. Azzam (1996) notes that the US's top 15 beef slaughter firms process 94% of all steers and heifers). Particularly in Europe, the issue has received little research attention. Studies of buyer power in the US have repeatedly addressed the limited number of sales outlets available to beef feedlot owners, finding evidence of monopsony power in that market (e.g. Schroeter, 1988; Schroeter and Azzam, 1990). Danish markets for milk and for fed pigs are even more concentrated, but are characterised by vertically-integrated co-operatives and near-monopoly sales to retailers.

8.2. The retailer-processor interface

Observed concentration of food retailing and processing industries serves to narrow the food chain into control points. The scale achieved and the employment of information technologies have reduced the role of wholesale and other distribution services in Europe (Fearne and Hughes, 2002), as retailers have backward-integrated to perform their own distribution. Both these trends are observed in Denmark (section 4.2).

Food marketing chain logistics have been addressed by retailers both in terms of costs and value added (Boehlje and Sonka, 1998): improved communication of market demand to farmers and processors has been accompanied by increasingly strict product specifications and delivery conditions (Young and Hobbs, 2002). To some extent this shifts certain high-cost or high-risk functions back up the food marketing chain, but it also mobilizes incentives for value-adding and for vertical co-ordination (Hueth and Ligon, 1999).

Alongside monopoly and monopsony considerations, retailer buying practices have caused recent policy concern (e.g. Office of Fair Trading, 1998; Competition Commission, 2000; OECD, 1999, 2003). In negotiating price and delivery conditions for a single product, powerful buyers may pose credible threats to food processors of “de-listing” across a range of products for large volumes sold in large numbers of stores. Policy concerns have also arisen over retailers' charging extraordinary fees to proces-

sors, requiring a range of refunds from them, use of exclusive dealing practices, and generally extracting an unfair share of value-added (Competition Commission, 2000). Theoretical modelling of these practices can identify their potential social costs, but they have proven difficult to observe and measure. One empirical problem is processors' reluctance to identify either practices or level complaints against specific retailers for fear of commercial retaliation (see section 15).

One such transaction at the retailer-processor interface is the "slotting allowance". This is a fee paid by the processor to secure shelf space for a new product. It can take several forms ranging from a single charge, to required expenditures on advertising, through to compensation for failure to meet sales targets. McCorriston and Sheldon (1997) report US industry sources' estimate that such fees account for between one third and one half of processors' expenditures on product promotion.

The incidence and size of slotting allowances remain largely unknown in Europe. There are two intuitively appealing interpretations of slotting allowances, although existing research has not assigned a definitive judgement on them:

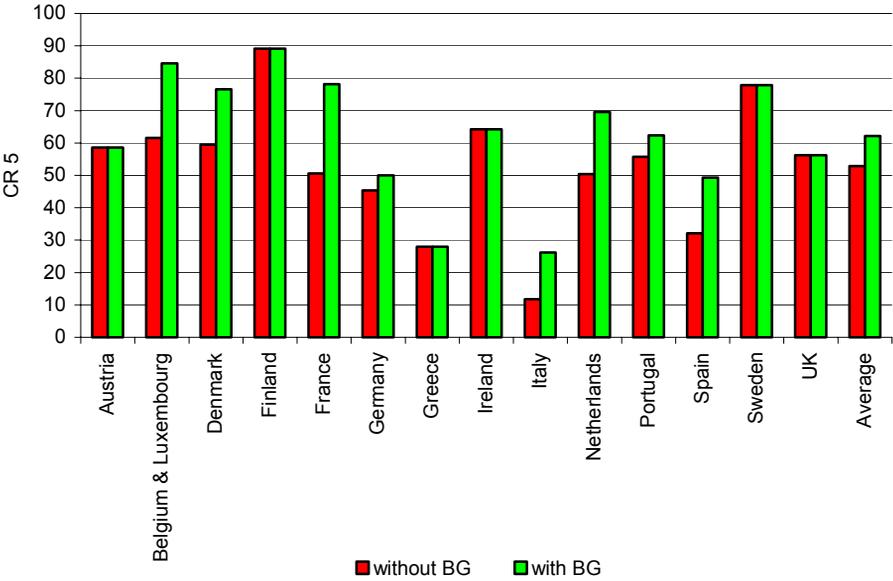
- a tax on innovation and a possible explanation for perceived reductions in product variety. By extension, slotting allowances may have assisted in the perceived displacement of manufacturers' brands by retailers' own-label brands; and
- a rational and efficient means of compensating retailers for the risks they assume when stocking a new product, and allocating scarce shelf space amongst competing processors.

Buying groups

Buyer concentration has been accentuated by formation of buying groups. In a buying group, coalitions of retailers act together to improve the efficiency of deliveries, and possibly to exert cartel-type market power by mimicking monopsony. Effective buyer concentration can exceed seller concentration, as is thought to apply in Denmark, as well as in Belgium, France, Germany, Spain and Portugal (figure 21). Competition Commission (2000) estimates that the EU average buyer concentration exceeds seller concentration by about 10%, on average. The potential impacts of buying groups have been greatly enhanced by recent trends in cross-border alliances amongst buying groups (Davies et al. 1998). Cross-border mergers and acquisitions by retail-

ers could also accentuate the effect, as new owners bring their existing suppliers with them, displacing local suppliers (Collins, 2001).

Figure 21. Impact of Buying Groups on measurement of market concentration in selected European countries: 1997



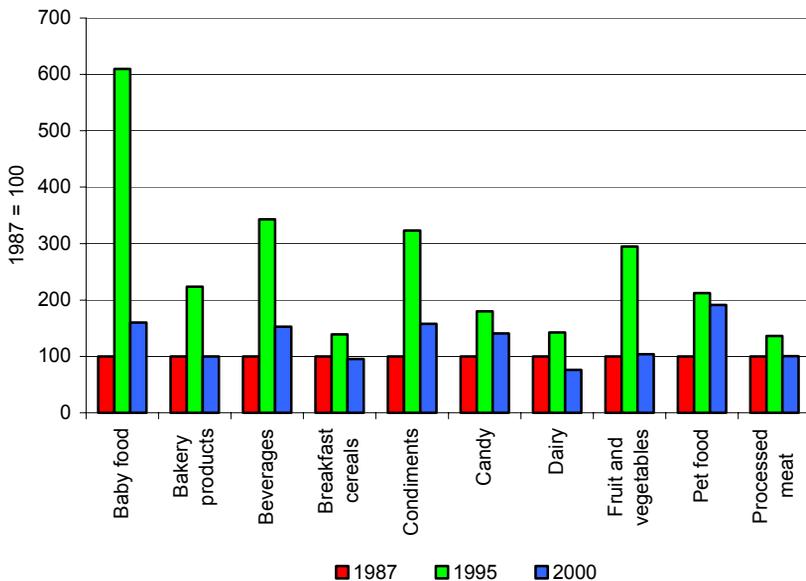
Source: Competition Commission (2000)

9. New food product introductions

9.1. Food product life cycle

No publicly-available data present trends in food product introductions, life spans, and “deaths”. Some limited observations (e.g. Kinsey and Senauer, 1996) are made on the large share of US retailers’ products that are new introductions. Connor (1999) reports that of about 1000 ready-to-eat breakfast cereals products on US grocery shelves, “almost all” are never profitable and/or are withdrawn within 5 years. He notes that new introductions are almost always high-priced. Asplund and Sandin (1999) appear to be the only researchers to study new product survival in a European setting. They draw many parallels between models of firms’ survival and their observations on new product survival. There is also an interaction: new firms that form solely to introduce new products (i.e. innovative start-ups) are obviously more susceptible to the risk of product failure than are more established firms. However, larger firms appear to be associated with shorter product life cycles than are smaller firms.

Figure 22. Numbers of new products introduced in the US food sector



Source: USDA (2002)

US data (figure 22) suggest that, on a national basis, new product introductions in the food sector increased substantially between 1987 and 1995, and then declined sharply in 2000, back to 1987 levels. These comments apply across a variety of product categories. No comparable data are available for European countries, and data on expenditures on Research and Development in the food sector are inconsistent and incomplete. The definition and interpretation of new products face several empirical problems. First, the degree of equivalence of branding, patents and other registrations has not been resolved. Secondly, products enjoy different lengths of life in different retail environments, and so may have intermittent lives rather than distinct life cycles. Harris (2002) suggests several possible explanations for the decline in numbers of new food products in the US:

- that merger and acquisition amongst food manufacturers and retailers has generated duplicate lines of food product to the extent that new introductions have been reduced;
- that food marketing chain co-ordination has enhanced the efficiency of food product introduction, so that even though fewer products are introduced, they are more likely to survive; and
- that food markets are saturated with products, leaving no “space” for new ones.¹⁰

None of these explanations address market power in the food chain. No studies have been carried out on trends in the prominence or survival of “local” or “traditional” brands or products. Asplund and Sandin’s study identifies market share and sales trends as determinants of product withdrawal or survival. If it is the case that larger firms serve larger markets, then local and traditional products are likely to hold smaller market shares (albeit at stable absolute levels) and so be threatened in the future. In that context the ownership of new brands and products is as important as their life cycles. Hughes (1997) proposes a set of possible relationships between product introductions and retailers’ strategies for retailers’ own-label, a topic addressed in section 12.

9.2. Innovation in the food chain

The scope for, and degree of, innovation in the food marketing chain is not addressed solely by new product introductions, and research and development. Innovation can,

¹⁰ Connor (1999) suggests that this is the case for breakfast cereals, although it appears not to have constrained new product introductions.

for example, be in either products or processes, and can entail new introductions in an existing market, or existing products applied in new markets. Traill and Meulenberg (2002) surveyed European food processing firms and presented case studies concerning innovation behaviour. They find that firms adopt an “orientation” toward products, processes or markets, and that this guides their attitudes to, and application of, innovation. New product development and research expenditures are both associated with larger firms, but also depend on market and product variables.

Strandskov et al. (1999) and Traill (2000) have identified strategic marketing types in surveys of the European meat industry, and European food processors, respectively. Strandskov et al. did not associate innovation and new product development with any particular corporate orientation. Firms that innovated in consumer relations and with new technology were the most successful within the sample, although no causal link was established. Traill found that “international product innovators” were associated with large firms that were export oriented, and had a skill base in innovation. While some Danish food processors were included in this group, Traill concluded that groups were not, in general, identified with specific countries or sectors. He was able to characterise groups according to forms of innovation, including those directed at processes and different market segments (own-label manufacture, local branded and unbranded markets, etc).

Duval and Biere (2002) examined the dynamics of product diffusion, concluding that product diffusion is linked in a complex way to the demand for new products: the availability of new products (or existing products in new markets) is both a cause and an effect of increased demand. Boon (2001) examined innovations in the context of vertical co-ordination in Danish agriculture, whereby interdependencies at points in the food marketing chain might be exploited under specific conditions and utilizing selected technologies. However, success in innovation tended to reflect consumer demand and the policy environment, rather than marketing.

These studies refute a simplistic approach whereby innovation incentives are either “demand-pull” or “technology-push” in nature (Traill and Meulenberg, 2002). However, the role of relationships within the food marketing chain, and the nature of the incentives that it transmits, have not been addressed by researchers.

10. Demand patterns and shopping behaviour

10.1. The changing consumer

A variety of authors have identified changes in consumers' food demand in Europe and the USA (for reviews see Brouwer and Bijman, 2001; Neves et al., 2000; USDA, 2001). These include increased demand for high quality, variety and convenience across all food types. There is increased demand for fruit and vegetables at the expense of red meat, and growth in demand for "functional foods" (those with health-enhancing functions). In addition, social and ethical concerns are playing an increasingly important role in consumer choice (Hughes, 2002). This type of product attribute has been shown to influence consumer demand.¹¹

Just as food demand is changing, it also remains diverse. Larson (1998) found that substantial variation exists across the USA in several aspects of demand. Gil et al. (1995) detected some convergence in dietary preferences amongst European countries, but reject the concept of a "euro-consumer" because substantial local preferences remain, many of which cut across national boundaries or are present only as niche markets in single countries. Gracia and Albisu (2001) extend that study, identifying the EU countries' rather different food distribution mechanisms as one factor maintaining consumption differences. Convergence of the food system obviously does not imply convergence in consumer demand.

Kinsey and Senauer (1996) and Martinez (2003) identify numerous recent changes in the US food consumer. These include the rapidly-changing demographic profile (particularly age and ethnic origin) of a generally slow-growing population, the increased participation of women in the workforce, and changed working hours. The identified impacts have been:

- a bifurcation of food demand into "price conscious" (45% of the market) and "convenience conscious" (55%) consumers;
- the emergence of fast foods and ready-to-eat products as major market segments, with food eaten away from home accounting for up to half of all food expenditures for some consumer groups (see also Price, 2002).

¹¹ e.g. Govindasamy and Italia (1998) examined preferences for products produced using Integrated Pest Management (IPM) techniques.

Collins (2002) reports that European grocery markets appear to have three segments: 10% wealthy and 10% poor, with a large middle ground (80%) that has attracted mass marketing with rather few niches. He expects the middle segment to shrink to 40% by 2010, with 30% in each of a poor and a wealthy segment. Hughes (2002) predicts that the European market will soon feature just two such segments, as in the USA. Hualt et al. (1997) identify 3 segments in the French retail food market, each served by different types of brand: manufacturers' retailer own-brand and discounter own-label. Galizzi et al. (1997) find that Italian food processors have not, in general, used multiple-branding strategies (own-label and manufacturers' brands) to serve market niches.

Richards et al. (1998) estimate consumer demand for services described as "value-added" and "convenience", using instrumental variables in the markets for various forms of carbohydrate. Predictably, they find high and increasing demand for value-added and convenience. More interestingly, they find that the demand is inelastic: food chain participants can increase revenue from incremental increases in provision of these attributes.

According to Kinsey and Senauer, price-conscious consumers are targeted not only by specialised stores (e.g. discounters), but also by promotion techniques (e.g. coupons). Convenience-conscious consumers are targeted by greater number of product groups on sale, that feature non-food items and increasingly large stores and "supercentres". These authors propose a future ("the ultimate convenience") role for internet and telephone shopping for this market segment. Gracia and Albisu (2001) report that this business has been slow to develop, and is far more significant in the USA than in Europe.

10.2. Store types and formats

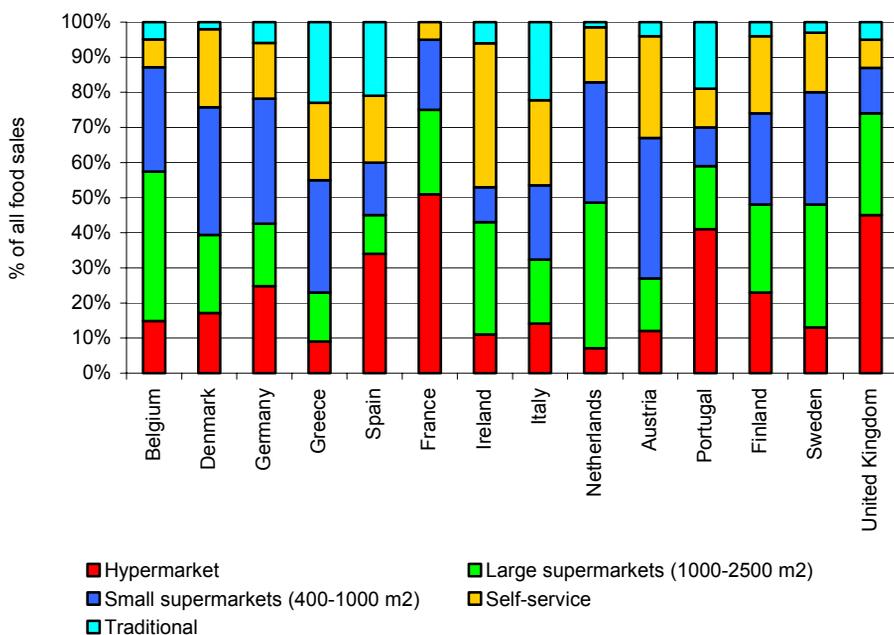
Danish food sales are dominated by small and large supermarkets (figure 23), with hypermarkets not having the same share of sales as achieved in Germany, France and the UK.¹² As indicated earlier, traditional stores (including butcheries, fruit and vegetable stores and fish shops) occupy very small market shares in Denmark, the Netherlands, Finland and Sweden. In the period 1980-1996, hypermarkets are estimated to

¹² See also Stensrud (1999) for a statistical summary of trends in specialised vs. unspecialised food retailing in the EU.

have increased their market share in European countries by between 3% (Austria) to 42% (Portugal), with no estimate available for the growth rate in Denmark (Competition Commission, 2000). There is preliminary evidence that supermarkets may represent a saturated market in many countries, with forecast future growth in hypermarkets' (Competition Commission, 2000) and fast food and home grocery delivery (Hughes, 2002).

Competition Commission (2000) notes that alongside the rise of hypermarkets, discount stores¹³ represent a major fundamental change in European food retailing. Germany, Denmark and Belgium exhibit the highest market shares held by discounters, and also the fastest growth rates, culminating in 30, 20 and 25% respectively in 1996 (see figure 24). Italy is a curious case where discounters' market share rose from 0 to 10% between 1991 and 1996.

Figure 23. Sales by type of retail outlet in selected European countries: 1998



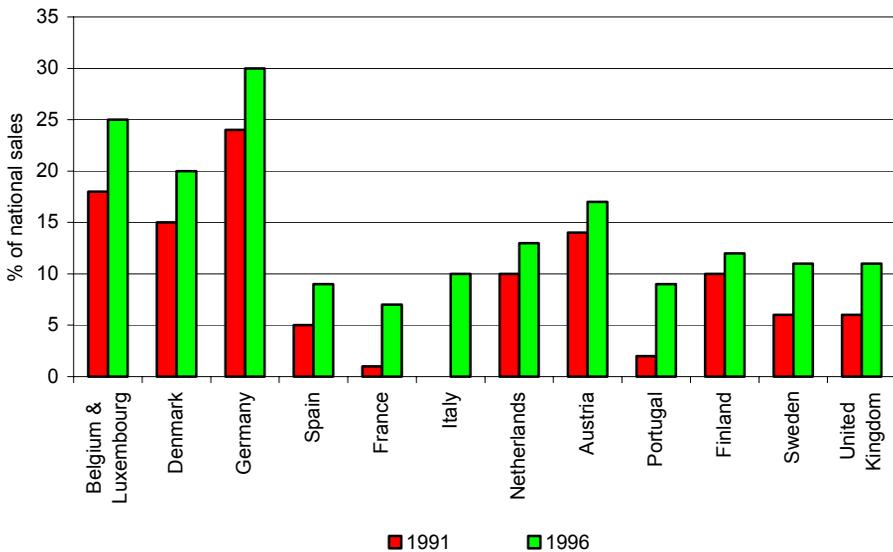
Source: Gracia and Albisu (2001)

¹³ The term “discount store” refers to a retail outlet owned by a firm with a specific sales strategy, and clearly overlaps definitions such as “supermarket” and “hypermarket”.

Collins (2002) projects an increasing role for discount food as a niche market in Europe, but not necessarily by “pure” discount stores. He reports mainstream retailers’ introductions of discount formats, as well as discount own-label and generic brands. At the convenience end of the European market, the forecourt¹⁴ format appears set to increase market share (Dobson, 1999).

Marion (1998) uses a taxonomy of store types with two dimensions: “level of service” (closely associated with price) and “breadth of assortment”. He examines the rise of “warehouse” stores in the US. Warehouses offer a unique combination of low service and medium assortment, that has taken up to 50% of the market in some metropolitan areas.

Figure 24. Discounters’ market shares



Source: Competition Commission (2000)

10.3. Store loyalty

Much food marketing in the twentieth century promoted and exploited “brand loyalty”. At a local and national level, this targeted habitual purchases by consumers. In

¹⁴ Commonly at fuel stations.

the food marketing chain, retailers were confronted with “must stock” brands that influenced consumers’ choice of store. Cotterill (2000) describes this as “brands becoming monopolies” in a US-model of food convergence.

As shopping convenience has increasingly dominated choice of store, “store loyalty” has begun to supplant brand loyalty. Retailers’ strategy to attract and retain repeat customers is referred to as “relationship marketing” (MacIntosh and Lockshin, 1997). Within relationship marketing, retailers recognise that retaining a customer is significantly cheaper than attracting a new one (De Kimpe et al, 1997). Sparks (1997) describes this as “the store becoming the brand” in a UK-model of food convergence.

A survey by Gruen et al. (2002) examined retailers’ “out-of-stock” scenarios for “must stock” brands. Consumers’ responses (categorized into four possibilities, see table 17) showed a mixture of brand and store loyalty. They also were shown to vary substantially by product and by country. There are no available studies that report trends in brand and store loyalty.

Table 17. Comparison of store loyalty and brand loyalty

Consumers' response to out-of-stock	Region		
	USA	Europe	Other regions
	% of respondents		
Switch store	31	27	34
Delay purchase, return to same store	15	17	13
Switch products, use the same brand	21	16	20
Switch brands, use the same store	22	32	25
Do not purchase	11	9	8

Source: Gruen et al. (2002)

11. Quality and product differentiation

11.1. Product differentiation, quality perceptions, and information

A variety of authors have emphasised the significance of quality¹⁵ in food consumers' preferences. Moreover, a great body of research links closely consumers' incomes with the level of quality demanded. Consumers respond not to quality itself, but to perceptions based on information attached to the product. Nelson (1970) classified goods according to the way in which information becomes available to the consumer: before purchase ("search goods"); and following purchase and at consumption ("experience goods"). Some information may never be available to the consumer, and is at best available only in reported form (so-called "credence goods").¹⁶ In each case, information signals are attached to products in various forms ranging from content descriptions, distinctive labelling and packaging, to publication of test results.

Branding is a signal that associates product attributes directly to a product, whereas a variety of schemes for certification provide signals about processes. All such signals involve information provision. The ultimate information provision involves so-called "identity preservation" (IP) or "trace-ability", which allows a product to be traced backwards through the food marketing chain to a farm, through its processing locations, procedures and arrangements. Notably, IP has been in use in several sectors (e.g. seeds, some animal breeding systems) for many years where either sufficient incentives exist, or they are mandated by law. This topic has been examined in the context of international trade by Kalaitzandonakes et al. (2000).

The logistic difficulties inherent in IP in some sectors (e.g. the cleaning of grain augurs and silos), indicate significant costs, as measured by Maltsberger and Kalaitzandonakes (2000). While costs of delivery of the attribute itself (e.g. bacteria-free beef as measured by Jensen et al. (1998)) accrue to an individual firm, signal generation (e.g. certification) can be shared amongst a number of co-operating chain participants. This might occur horizontally (as in a farm co-operative) or vertically (as in a tightly co-ordinated chain).

¹⁵ Food safety is one aspect of food quality.

¹⁶ The lack of an appropriate signal underpins Akerloff's (1970) reasoning that on average, efficient transactions require symmetry of knowledge about quality across the partners to the transaction.

Consumer's willingness to pay for product information has also been little studied.¹⁷ Hobbs' (2003) study of Canadian consumers demonstrates consumers' willingness to pay significant price premia (7-35%) for meat products with included additional information. That auction-based study found that assurances about animal welfare, food safety and IP were valued most when provided together: notably IP received the lowest valuation when offered alone. Hobbs also notes that consumers express substantial distrust of information provided by commercial actors in the food chain, preferring information from independent and government agencies. Latvala and Kola (2000) surveyed Finnish consumers on the topic of the information supplied about beef. Consumers professed strong demand for information, but expressed (under direct questioning) weak willingness to pay for it. There were two (seemingly polar) main reasons given by respondents for low willingness to pay for information: satisfaction with the information already available in Finland; and mistrust of any information provided. The Finnish survey also identified consumer reluctance to pay higher prices food in general.

Insufficient incentives for information provision raises the question of the suitability of government as a certifier-of-last-resort, or alternatively the role of mandatory controls. Looking at this problem another way, Jin and Leslie (2003) examine the responses of firms and consumers to mandatory provision of hygiene information by restaurants in Los Angeles. The information displayed was shown to significantly influence consumers' choice of restaurant and the behaviour of firms at all stages of the marketing chain. These authors did not examine the possibility of, and issues surrounding, "privatising" such a programme.

At the farmer-processor interface, inadequacy of information systems to formulate and transmit signals is interpreted by Hennessy (1996) as a motivation for vertical integration between stages.¹⁸ Bogetoft and Olesen (2003) examine a range of competitive environments under which quality grading is carried out before or after terms of trade are settled. Their theoretical model concentrates on vertical relationships, particularly the incentives for investment, and the usefulness of long-term contracts. Farrell and Tozer (1996) study informational arrangements for a narrowly-defined meat product (high quality lamb) in Australia under (i) supply by a co-operative and (ii) a highly-co-ordinated industry alliance between producers and processors. Price premia for very specific qualities of product are more easily secured by the alliance

¹⁷ See Antle (2001) for an overview of methodology.

¹⁸ The Danish pork industry's price formation method, operating amongst vertically-integrated farmer co-operatives, provides an example.

structure, but the authors point out that this may only last until alternative suppliers undercut the existing alliance. Establishment of barriers to entry might entail non-standard quality descriptions, yielding an overall reduction in transparency and signalling capacity. In these studies, the role of government as an information provider was not examined.

Allocation of responsibility for quality, within the food chain, was studied by Dansk Industri (2002). Their survey revealed a tendency for each stage of the food chain to assign responsibility to other stages. Aside from co-ordination issues, the immediate concern for food chain participants is that they communicate quality incentives to each other: standards used by retailers, and presented to consumers as signals, may not correspond to those used by farmers and processors. An initiative to standardize and promote quality throughout the fruits and vegetables marketing chains is the Euro-Retailer Produce Working Group's Good Agricultural Practice (EUREP GAP).¹⁹ This sets maximum and minimum requirements across a range of chemical inputs and guidelines for adoption and application of integrated crop management for vegetables. The definition of quality in a manner suited to empirical measurement presents an enduring research problem.

11.2. Definition of quality

Hooker and Caswell (1996) propose a taxonomy of five food quality attributes, with examples (table 18). Ideally, each variable would require its own measurement units and methods, with overall quality expressed as some complex index or aggregate. Immediately, several current intuitively-appealing attributes appear to be missing (e.g. protection from food-related terrorist actions), or appear difficult to categorize (e.g. freshness may be nutritional, influence perceptions of value, or indicate process quality).

Henson and Traill (2000) define a similar set of attributes, but include ethical issues (e.g. "behaviour of food companies") and measures of shopping satisfaction (e.g. "choice"). They examine ways of measuring and evaluating consumer preferences for these attributes. They sketch a procedure for estimating and attaching weights to rankings, to achieve a scalar measure. Their research targeted a food chain performance measure ("satisfaction with the food system") rather than preferences for prod-

¹⁹ For a summary see Brouwer and Bijman (2001)

ucts. They found that US and UK consumers were remarkably similar both in overall satisfaction with the food system, and in revealed weightings of the various criteria.

Table 18. Food quality attributes

Attributes					
Food Safety	Nutritional	Value	Package	Process	
Examples of variables					
<ul style="list-style-type: none"> • Foodborne pathogens • Heavy metals • Pesticide residues • Food additives • Naturally-occurring toxins • Veterinary residues 	<ul style="list-style-type: none"> • Fat • Calories • Fibre • Sodium • Vitamins • Minerals 	<ul style="list-style-type: none"> • Purity • Compositional integrity • Size • Appearance • Taste • Convenience of preparation 	<ul style="list-style-type: none"> • Package materials • Labelling • Other information 	<ul style="list-style-type: none"> • Animal welfare • Biotechnology • Environmental impact • Pesticide use • Worker safety 	

Source: Hooker and Caswell (1996)

12. Markets and products in the food marketing chain

12.1. Market definitions

Examination of change in the food marketing chain, and economic inference, requires a clear definition of the market. Dobson (1999) reviews definitions that are product-related, geographically-defined, and oriented to consumer segments. For retail markets, he employs a hybrid definition, incorporating flexible geographic boundaries with complements and substitutes. He defines a market as the geographic area within which a specified price change has a more-than-5% impact on consumption (across a range of products). This is applicable both vertically (to multiple stages of the food marketing chain), and horizontally (to multiple retail formats such as fast food in competition with supermarkets' ready-to-eat products).²⁰

12.2. Composite product

Food products are a composite of agricultural raw materials and marketing inputs. The marketing inputs provided by retailers (particularly convenience, safety, information and service) are the ones having recently been recognized as dominating consumer concerns. Wright (1996) uses the term "bundle", and Richards et al. (1998) and Hughes (2002) describe the product as a set of services. The composite retail product is therefore an overall shopping experience, featuring:

- developments in category management that have allowed staples to be bundled with higher-margin items;²¹
- improved definition and targeting of categories and technical issues such as package sizes;
- improved product information;
- increased emphasis on ready-to-eat food and convenience in preparation;
- substantial diversification into non-food items; and
- clustering of stores in super-centre or hypermarket formats.

Oppewal et al. (1997) examine consumers' response to attributes relevant to the quality of the food shopping experience. They propose and estimate a model of consumers' choices of food shopping destination: essentially a choice amongst shopping centres. Predictably, they found that consumers prefer larger centres and convenience in

²⁰ See Kinsey (1996) on US service sector and Laursen et al. (1999) on implications of product definition for the Danish meat sector.

²¹ At its worst, this involves "loss-leading": substantial price reductions on a visible and regularly-purchased product in association with price increases on complementary goods.

terms of the shopping journey. Less predictably, they found that consumers are strongly influenced by the quality of other products (clothes and shoes) offered at the shopping centre, and the aesthetic appeal of the centres.

Clearly, some such attributes (e.g. store location, size, parking space) are beyond the reach of non-retail marketing chain participants, but others (e.g. information provision, testing, packaging) are already featured in vertical commercial supply relationships. If there is a divergence between attribute types on the basis of assumed retail roles, then it is likely to be accentuated where informational asymmetries exist: incentives at farm and processing stages apply to individual products whereas final consumer value-added applies to the composite product. There appears to have been little research into such a divergence, or the re-design of incentives for the marketing chain as a whole (see Strandskov et al., 1999).

12.3. Efficient Consumer Response (ECR)

The transmission of incentives in the food marketing chain has been addressed by the Efficient Consumer Response (ECR) initiative. King and Phumpiu (1996) define ECR as the latest in a sequence of re-engineering procedures that, over the last 100 years, have embodied technological, informational and organisational change in the US food marketing chain. Fearné and Hughes (2002) recognise ECR as a more fundamental change: *“a paradigm shift... with adversarial trading relationships replaced by co-operation and co-ordination... facilitated by a willingness to exchange information”*.

It is clear that advances in information technologies have enabled many aspects of ECR. While this particularly applies to bar codes and scanning, information technologies at the production level (e.g. enabling “precision agriculture” and allowing high-speed quality sorting of fresh produce) have also facilitated ECR. King and Pomphiu, and Fearné and Hughes, both emphasise ECR’s feature of information exchange between firms, as opposed to within firms as in the 1970 and 80s. At the functional level, logistics are improved: at the structural level, direct store delivery (DSD) has effectively removed the wholesale and distribution functions as farmers or manufacturers deliver direct to retailers. ECR targets linkages and activities in four processes (table 19).

Table 19. Components of Efficient Consumer Response

ECR-relevant processes	Description and role of process in ECR
Product assortment	This is principally “category management”, maximizing the profitability of shelf and storage space throughout the chain, focusing on consumers’ expressed demand for mixes of products and package sizes. This requires co-operation, based on information-sharing, amongst many firms and requiring mixes of skills and resources available only at specific points in the chain.
Product replenishment	Targeted at cheaper and faster completion of orders that satisfy consumer requirements more fully, this also involves a combination of improvements inside the firm and between firms. Three strategies are involved: standardization of information systems, product descriptions, and performance indicators; sophisticated pricing of services amongst food chain participants to reflect transactions costs and select low-cost providers; and the delegation of decisions amongst food chain participants (e.g. letting suppliers do their own re-ordering for a client retail store).
Product promotion	ECR entails greater co-ordination of promotion efforts so as to avoid traditional problems such as the build-up of stocks associated with preparation for, and implementation of, promotions. This can utilize improved category management techniques, and generally reduce reliance on intermittent cheap bulk orders.
New product introductions	ECR focuses on increasingly the likelihood of the success of product introductions. This is achieved by superior initial market information and product targeting, and the selection of optimal timing and location of introductions. In addition, ECR addresses administrative costs of product introductions and withdrawals.

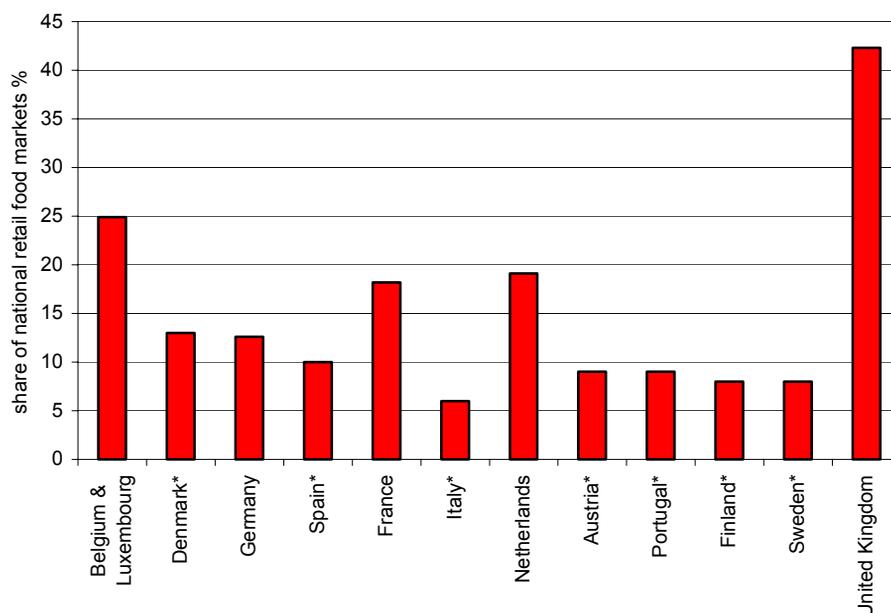
Source: Author’s adaptation from King and Pomphiu (1996)

Hoban (1998) studied the factors influencing ECR adoption by food chain participants. His perspective is of innovation, in that various hypothetical steps in ECR implementation are identified (awareness, interest, adoption, evaluation, etc). His results show significant differences between the stages in the food chain regarding attitudes to ECR and willingness to implement it. Particular issues include processors’ and retailers’ attitudes to sharing information, and beliefs about the shares of ECR’s benefits that they might receive. Such issues of firms’ independence and welfare following vertical co-ordination also surround own-label brands.

12.4. Own-label brands

The growth of retailers’ “own-label” brands has been widely described (Brouwer and Bijman, 2001; Dobson, 1999; Hughes, 1994). In 1995, about 13% of Danish retail food sales were of retailers’ own-label brands (figure 25). This is well behind the UK, where some authors estimate own-labels to have a market share of over 50% (e.g. Brouwer and Bijman, 2001). France, the Netherlands and Belgium have own-label market shares between 15 and 25%. There are, however, substantial differences amongst retail firms in the shares of products, product groups, and sales that are own-label (Dobson, 1999).

Figure 25. National market penetration by own-label brands in selected European countries: 1997



Source: Competition Commission (2000)
*1995 data

Sparks (1997) provides an overview of the development of own-label brands. He describes a segmented market for own-label brands, ranging from low-priced generics through to high quality premium brands that are frequently packaged and presented in a similar manner to manufacturers' premium brands. Each type of own-label brand serves a specific purpose within a retailers' strategy set, involving both sales and purchasing. These factors are one explanation of the observed diversity in shares of own-label amongst European countries.

Ward et al. (2002) have conducted one of the few detailed studies of the scale and impact of growth in own-label market shares, using US scanner data. They find that own-labels²² US market share is, on average, 14% in revenue terms and 19% by volume. However, it is highly non-uniform across product categories. Some categories

²² (including "generic" brands)

(shortening and oil, pickles and relish) showed negligible market share for own-labels, while frozen poultry showed the highest at about 66% by volume. 40% of these categories showed a statistically significant increase in market share over the study's 3-year data period, with 25% of categories showing an increase of 10% or more.

The same authors measure the response of food manufacturers to the growth of own-labels. Most significantly, they find that food manufacturers have responded by increasing prices on their brands in response to increasing market share held by own-labels.²³ In addition, manufacturers of some food items are observed to have curtailed non-price promotions and restricted their product differentiation activities. These results were not what the researchers had anticipated. Possible explanations are that manufacturers have:

- abandoned some market share to own-labels and were able to price discriminate so as to raise prices to loyal customers;
- increased product quality to the extent that price increases were acceptable to consumers; and
- increased (successful) promotional activities to enable price increases.

Notably, Ward et al.'s data do not include observations on new product introductions, costs imposed throughout the marketing chain, or any consideration of vertical relationships and transactions. Borghesani et al. (1999) note that many food manufacturers contract own-label production as a means of utilizing capacity, and use a range of strategies towards production of products that would compete against their own brands. They propose that second- and third-tier brands are being displaced by own-label on food stores' shelves, while leading or global brands are maintaining their market share. Galizzi et al. (1997) find that Italian food processors have, in general, not embraced own-label production. They attribute this equally to the kinds of relationship that prevail between Italian retailers and processors, and to the relative immaturity of own-label practice in Italy (implying consumer resistance).

Sparks (1997) and Collins (2001) emphasize own-label's powerful influence on retailers' ability to generate store loyalty. Hughes (1997) compares US and UK procedures for new own-label product development by retailers. He identifies quite differ-

²³ This result is adjusted for endogeneity (i.e. the increased own-label market share is not brought about by the manufacturer brands' price rises), and is robust in terms of physical factors (the same package sizes were observed and the composition of products did not change).

ent strategies for own-label, and very different retailer-processor relationships, between the two countries.

PART III Analysis of the food marketing chain

13. Analytical models

In the food marketing chain, efficiency is associated with:

- firms' products' prices being equal to Marginal Cost ($P = MC$ for each product);
- firms' paying in input price equal to the Marginal Value of the Production that uses the input ($w = MVP$ for each input); and
- prices being equal to minimum Average Cost ($P = AC_{\min}$) due to long run processes of firms' entry and exit.

Departures from these conditions generally involve firms' "seller power" ($P > MC$) and/or buyer power ($w < MVP$) that necessarily involve a large market share and the ability to protect it by restricting entry by other firms. A large research literature has developed around detection of market power and measurement of its social costs. Several basic classes of model are commonly used, and although a comprehensive review is beyond the scope of this paper,²⁴ their elements are described below.

13.1. Structure-Conduct-Performance models

SCP addresses the market power present in industrial sectors, with no specific reference to individual firms' behaviour. Where concentration (e.g. CR4 as presented in sections 5 and 6) is positively correlated with profitability (or the sum of firms' value added) in a sector, the case is made that a social cost is incurred due to firms' charging excessively high prices. A similar logic can be brought to bear for inputs, such that an industry's buyer concentration might be associated with profits. If prices, profits and product volumes are known, then the degree to which $P > MC$ or $w < MVP$ can be derived from knowledge of demand and supply elasticities.

SCP does not allow for the possibility that industry profits also depend on size-related cost factors: essentially that large firms exhibit economies of scale and also tend to occur in concentrated industries. Other criticisms of the approach include its adherence to accounting data and the possibility that market power and market share are

²⁴ For recent reviews see Sheldon and Sperling (2003), Sexton and Lavoie (2001), Griffith (2000) and Digal and Ahmadi-Esfahani (2002).

simultaneously determined, rather than showing causality (see Sheldon and Sperling, 2003). A related criticism is that observed higher prices in large food retail chain stores may reflect value added (e.g. service levels), which can be supplied at lower cost due to scale economies (Cotterill and Harper, 1995).

13.2. Cost-Demand models

So-called New Industrial Organization Economics addresses firm's commercial decisions in the context of observations on measurable elements of demand and cost. Firms' optimizing behavior is derived from firm- or industry-level data, but focuses on profit-maximizing conditions and the relationship between demand, output and cost. In product markets, cost-demand models rely heavily on estimates of features of demand, specifically:

- its price elasticity; and
- the extent to which changes in a firms' output affects industry output (measured by the "conjectural variation").²⁵

Studies of input markets similarly focus on the elasticity of the input supply function facing the firm and the influence of the firm's purchases on volumes in the input market. In either case, this is combined with information about marginal costs to estimate divergence between P and MC and w and MVP. Estimates of market power center on relating estimates of the conjectural variation to demand and/or input supply conditions.

To model increasing marginal costs involves substantially more data and complexity, and methods have focused on observed responses to exogenous shocks: measuring changes in P, w and output before and after an exogenous cost or demand shock. This approach has the advantage of not requiring detailed cost data. Statistical identification of the measures of market power within the simultaneous equation systems favours specification of variables that "rotate the demand curve" (Holloway, 1991).

Criticisms of cost-demand models include their inherently static nature, which contrasts with the dynamic processes of price and output adjustment that are being stud-

²⁵ A conjectural variation that is non-zero violates assumptions of perfect competition, namely that the single firm's output level is insignificant relative to the rest of the industry's.

ied. These models have also not yielded satisfactory multiple-product applications (Digal and Ahmadi-Esfahani, 2002), a key issue in modern food marketing where:

- production, marketing and distribution address a range of products and brands, and delivery infrastructure (i.e. a cost concern) can be shared amongst products or amongst attributes; and
- category management that employs multiple-product strategies (i.e. a demand concern).

13.3. Game theoretic models

Game theory focuses on equilibria that are achieved amongst groups of firms, either horizontally (as in models of competition) or vertically (as in principal-agent models of transactions). Each firm is characterized by a set of strategies and an associated set of payoffs: equilibria represent the outcomes that appear to satisfy firms to the extent that strategy remains unchanged. Multiple-period and co-operative games have been specified to mimic commercial behavior. Where observed equilibria can be explained by firms' assumed strategies and payoffs, firms' shares of available surpluses (profits or value added) can be derived. The strategy of non-provision of a specific product attribute, for example, is a firm's best available response to the conditions imposed upon it by other firms and the resulting incentives.

Game theoretic models are criticized for their ad hoc nature: that several possible models may deliver an observed equilibrium, but the comparative static model will adopt only one. Single period games have similarly been criticized as oversimplifications of real-world events. However, the advent of scanner data has allowed tracking of short term adjustments in such strategic variables as prices and promotion for differentiated products (e.g. Putsis, 1999), which overcomes the product homogeneity problems of cost-demand and SCP approaches.

13.4. Whole-chain approaches

Explicit recognition of the linkages between stages of the marketing chain began with Gardner's (1975) model, which was used to improve projections of the impacts of supply and demand shocks on the price differences between stages. Later extensions allowed for economies of scale, imperfect markets for products and inputs to allow a policy-relevant focus on industrial sectors.

In models of the entire food chain, assumptions about the substitutability of inputs become significant. Such considerations apply to, for example, the extent to which processors can substitute between the farm product (raw material) and other inputs (e.g. fuel, labour, or marketing activities such as advertising) in processing, or retail sale of, a food product. For the individual firm in the short run, substitutability is likely to be very limited while for the entire sector (i.e. over many firms, each with unique technology) in the long run, substitutability is likely to be greater.

Recent applications have been presented by Griffith (2000) on the Australian meat chain, Fulton and Tang (1999) on Canadian poultry; and Espjerg (1999) on use of information in the Danish food chain. Sexton and Zhang (2001) apply a Gardner-type model to simulate distribution of welfare gain (and loss) amongst food chain participants under various assumptions about competitive behaviour.

Dijkstra et al. (2001) model interactions amongst stages to study patterns of vertical integration and disintegration in farmers' sales of fresh vegetables. They identify transactions costs, market sizes and retail turnover as important variables associated with the length of the marketing chain. Backward integration by beef processors is examined by Azzam (1996), identifying two incentives: elimination of a monopsony-induced inefficiency; and response to transactions costs. Hennessy (1996) examines information costs as an incentive for vertical integration. It appears that no models have effectively addressed the question of "whole chain outcomes" versus "stage-by-stage outcomes". This approximates the reasoning behind state funding of generic promotions: whereby each stage can free ride on others to the extent that promotion is under-provided (e.g. Schmidt et al. 2001).

13.5. Price transmission models

A special case of whole-chain analysis is the study of price transmission. This directly assesses the effectiveness of the food marketing chain in passing information between stages. Prices are the most observable of the information variables, and have two appealing economic roles: they are the key decision variable; and they embody market integration under the so-called "Law of One Price". In general, model specification is of a reduced-form regression equation amongst prices: hypothesis testing focuses on either or both of:

- spatial transmission of price changes; and
- transmission of price changes between stages of the marketing chain.

Of interest to researchers have been the speed and extent of transmission of price changes between stages or between related regional markets, with lagged variables being used to account for transmission speed. A second area of enquiry has involved symmetry of transmission, effectively asking whether price reductions are transmitted as quickly and completely as price increases (see von Cramon-Taubadel, 1998). Such questions inherently assume a direction of causality for price changes, which has been difficult to establish.

Inherent in price transmission models is the assumption of fixed proportions technology, as each stage is assumed to be unable to adjust input purchases by substituting other inputs. Another major limitation of price transmission models is their inability to distinguish between perfect competition, and “perfect collusion” in the food chain under which firms always apply agreed formulae for price changes.

A variety of models (reviewed by Digal and Ahmadi-Esfahani, 2002) have been used, with specifications using either first-differences (i.e. the change in prices between two periods) or time series that are examined for stationarity. Models using non-stationarity are utilized in a number of price transmission studies, which have proven very sensitive to specification (von Cramon-Taubadel and Loy, 1996). Relationships between price transmission, market structure and technology have been investigated by McCorrison et al (1998) to specify “elasticities of price transmission”, assuming causality running from farm to retail level in the US pork and beef sectors.

14. Selected empirical work

14.1. Food processing

Viaenne and Gellynck (1995) report increasing concentration in the EU's food processing sector, with limited reference to measures of performance (due to data limitations). Market definitions are product-oriented, although the authors document the increasingly diverse product range of food processing firms. Using indicative German data, they associate high concentration with high profits in an SCP context. Throughout Europe, retail food prices are found to have risen by less than the overall consumer price index. There are mixed results for the association between concentration and productivity, depending to some extent on the degree of value-added in specific sectors in specific countries.

Using a cost-demand model, Millan (1999) detects market power in most of the 18 Spanish food processing sectors in his study. He notes that the manner in which capital costs are specified has a major influence on estimation of market power. In particular, many of the food sectors are found to be out of long run capital equilibrium, so that cost estimates may omit adjustment costs inherent in on-going investment or divestiture. Furthermore, where an industry is out of capital equilibrium the nature of the cost function (particularly the presence of economies of scale) remains unknown and difficult to relate to prices. Millan's national-level data are highly aggregated and refer to industries with varying levels of value-added.

Griffith (2000) summarizes US studies of market power in food processing to conclude that although SCP analysis associated high profitability with concentrated sectors, cost-demand models have generally not identified departures from perfect competition. This supports the "Demsetz critique": that larger firms earn higher profits because they are more efficient. Bhuyan and Lopez (1997) is an exception, examining both oligopoly power (by estimating conjectural variations) and returns to scale in 40 US food processing sectors. They find that 37 of the 40 sectors showed statistically significant market power in output markets, and 33 of the 40 sectors were not characterized by constant returns to scale. However, the authors note the high degree of aggregation of their (national-level) data, and that their inferred product definitions ignore product differentiation and degrees of value added. Also using aggregate data, Parker and Connor (1979) used advertising expenditures by food processors as a

proxy for monopoly profits, and concluded that the US consumer was paying higher prices for food as a result of monopoly in US food processing.

Hedberg et al. (2000) find that high concentration in Swedish food processing is associated with high profits, but they attribute them to cost efficiencies and not to market power in output markets. This study utilizes industry-level cost and revenue data in milk and meat processing, so as directly to estimate scale economies. Sources of cost efficiencies other than scale are not examined. Morrison Paul (2001) finds no evidence of market power in the US beef processing sector. Her plant-level cost-demand analysis identifies economies of scale and scope as the source of observed differences in profitability.

With regard to purchase of farm products, Alvarez and Sexton (2000) examine prices paid to farmers by milk processors in Spain. They detect monopsony pricing, from patterns followed by prices over time and space. In particular, limited price transmission supports the hypothesis of market power in the raw milk market, supported by the bulk and perishability of the product and high costs of entry by buyers. In California, Just and Chern (1980) analyzed pricing patterns at several stages of the tomato chain to conclude that processors were exercising market power in the prices they paid to growers.

14.2. Food retailing

Kinsey (1998) reviews evidence on US food retailing to conclude that recent higher profits amongst US food retailers may be due more to reduced costs than to increased prices. Park and Weliwheta (1996) detected no significant (selling) market power in US food retailing, nor any change in market power in the period 1967-1992. Their analysis rejected the influence of some suspected sources of market power (introduction of scanner technology, merger activity). In contrast, Gobin and Guyomard (2000) find that French retail firms are strongly non-competitive. Their cost-demand model delivers the result that 20% of wholesale-retail margins are due to selling power and 17% is due to buying power. Cotterill and Harper (1995) report evidence of market power amongst food retailers in Vermont, after adjusting for costs associated with service levels, store format and cost efficiencies.

Hyde and Perloff (1998) concluded that the Australian retail meat markets showed no departures from perfect competition, despite substantial increases in national-level concentration. Although using national aggregate product definitions, their analysis

included interactions amongst related products in a cost-demand framework. Applying game theory to differentiated products, Vickner and Davies (1999) detect retailers' market power (some of which is due to collusion) in spaghetti sauce brands. They observe that price collusion within market segments (i.e. between brands) is stronger than that between market segments.

Asplund and Friberg (2000) examined the Swedish retail food market, focusing on the different concentration conditions applying to different locations. Although local concentration was associated with higher grocery prices, the effect was statistically insignificant. However, concentration in Swedish food wholesaling was strongly associated with high retail food prices. These researchers found that locations featuring supermarkets exhibited consistently low food retail prices. This result was also reported by Marion (1998) for US metropolitan areas.

Binkley and Connor (1996) sought to explain price patterns in US food retailing across a range of retail environments, and across several product types. The study included data on some suggested new aspects of retail competition. Unlike Asplund and Friberg in the Swedish study, their results show that pricing behavior is strongly related to the local competitive environment. Like Asplund and Friberg, and Marion, Binkley and Connor find that pricing behaviour is strongly related to the presence or absence of fast-food establishments and certain retail sales formats.

Binkley and Connor also identify quite different pricing patterns between two broad categories of product: branded, packaged "dry groceries"; and fresh and refrigerated, primarily unbranded, products. Cost factors were significant only for the pricing of dry groceries, with features of local rivalry dominating pricing of unbranded products.

14.3. Whole chain studies

Holloway (1991) adopts a Gardner-type model whereby vertical and horizontal market-clearing structural models are established for eight US food industry sectors. Focusing on farm-to-retail price spreads, he estimates conjectural variations jointly with costs of entry and exit in these sectors, and finds no departure from perfect competition throughout the entire farm-to-retail chain in the period 1955-83. While Holloway used first-differences of price data, Reed and Clark (2000) adopt a co-integration approach and include measures of sectors' structural change (particularly changes in food demand) in their specification. Reed and Clark find no evidence of imperfect competition in the food chain, and explain changes in vertical chain organization by

changes in consumer tastes and habits, and the optimal allocation of risk within food chains.

By estimating conjectural variation, Suzuki et al. (1993) found that Japan's regional milk marketing authorities were exerting market power to raise fluid milk prices to the consumer. They also found that this effect was declining over time, and concluded that milk marketing was becoming more competitive: this coincided with technical and practical developments including improved product flow between regions. Interestingly, the speed and completeness of farm-to-retail price transmission was also found to increase as competitiveness improved. The data spanned a period of reductions in Japanese milk support prices and changes in quota administration.

Collins (2001) examines the determinants of retailers' cost-price margins by referring to relationships with food processors and the competitiveness of stages in the food chain in Britain and Ireland. He finds that retailers' economies of scale are a major determinant of margins: more significant than is concentration at the food processing stage. Collins also finds that high retail margins are associated with retailers' large shares of own-label brands. He finds that retail power is greater in cases where food processors have invested heavily in assets associated with specific relationships with individual retailers.

Overall, Collins finds that more competitive processing conditions are associated with increased retail margins. This curious result has several aspects, surrounding the perceived threat to the processing stage of increasing retailer concentration. First, increased retail concentration reduces the number of potential customers for processors (and increases the cost of losing each one of them). Second, the loss of such a customer impacts cost structures because of economies of scale. However, an application to fresh vegetables demonstrates some countervailing power for processors: the more differentiated is the retailer with regard to fresh vegetables, the lower is the retail margin. This finding indicates that, as a mirror image of the specific investments argument above, processors are able to maintain share of value-added where retailers depend on perishable products for product differentiation.

Giulietti (1996) studied price-cost margins in the Italian food marketing chain, focusing on food processors and retailers using a time series econometric analysis of game theoretic bargaining models. She found that efficient bargaining was taking place in most cases, and rejected collusion amongst retailers, and amongst processors. Only the largest retail chains were able to secure volume-related price reductions from

processors. The largest retail chains apparently agreed prices with processors that reflect their relative market power (measured by numbers of establishments), but this was not the case in most of the interactions across various classes of buyer and seller. Sophisticated relationships were apparent between buying groups and large independent retailers: price competition applied, with buying groups possibly displaying price leadership. Giulietti's study was not able effectively to model the pricing behaviour of specialist food stores, concluding that their pricing behaviour was more related to economic cycles and other factors not included in the study.

15. Selected studies commissioned by competition authorities

15.1. Federal Trade Commission (2001) – Food retailers’ buying practices

Commercial arrangements surrounding food processors’ access to supermarket shelves was examined by the US Federal Trade Commission (2001). It was recognized that food processors make payments to retailers for this purpose (“slotting allowances” for new products (see section 6.2), “pay to stay” for existing products, exclusive dealing and payments to secure premium-location shelf space). The report is based on a summary of discussion groups and other investigations that targeted information generation on the topic. One consequence is that most data, claim and counter-claim is anecdotal. The size of slotting allowances was reported to be 75-300 USD per item per store, although substantial variation was reported. From the report: “one speaker estimated that it would cost approximately 16.8 million USD to [pay the slotting allowances necessary to] introduce a small product line of four items in all supermarkets nationwide.”

The analytical approach taken basically assessed the payments in terms of their likely contribution to “exclusion” (whereby competition is reduced because of the payment), and the actions taken by the retailer. It was accepted that such payments may be viewed as compensation to retailers for risks associated with new product introductions, and have no effect on competition. On the other hand, there are certainly conditions under which the payments are simply exclusive dealing. The circumstances surrounding the payment were extensively discussed. Where a large number of alternative retailers are available to the processor, then close links between any two trading partners may well deliver a well-marketed and successful product while not damaging competition in general.

A second practice examined by the Commission is that of “category captaincy”. Often a part of Efficient Consumer Response (ECR), it entails management of a retail category by a processor: effectively letting one supplier dictate how its competitors are treated. While discussion of slotting allowances focused on circumstances, for category captaincy the key issues were:

- information – the extent to which captains were able to discover and use commercially sensitive information about rivals; and

- collusion – the extent to which a captain may collude with many retailers or many suppliers to influence allocation of shelf space.

The third issue under discussion was retailer market power in the context of shelf space allocation. In addition to monopoly and monopsony, the idea of “gatekeeper” market power was discussed. A retailer wields gatekeeper power when it is so dominant in a (usually local) market that it is the sole means of a product’s reaching the market. The Commission noted that failure to get past the gatekeeper may limit a processor’s output to the extent of not achieving minimum efficient scale, and being forced to abandon production of that product. Long run implications for product variety were discussed, particularly in the context of small processors serving small regional markets characterized by few retail stores. The impact on farmers’ access to sales outlets in such regions was not addressed.

The Commission recommended further research, primarily (a) to enhance analysts and policy-makers’ understanding of shelf-space access and instruments such as slotting allowances and (b) to take greater heed of upstream competition in the application of regulation and oversight for mergers.

15.2. Competition Commission (2000) – Food Retailing

This Commission was set up by the British government at the request of the Director General of Fair Trading. The subject of the year-long study was “the supply of groceries from multiple stores”, and there were three basic concerns addressed:

- that retail food prices in the UK appeared to be higher than in other European countries and the USA;
- that retail food prices did not appear to follow the patterns of farm-level prices (this, particularly in the context of beef and pork when farm-level prices were at historic lows); and
- that large retail stores located outside towns were contributing to a decline in those towns’ traditional high streets.

The methodology used involved extensive surveying of shops and consumers, and access to large datasets for marketed produce in Britain and elsewhere. A sample of large retail store-owning firms was established, effectively covering all the firms to which the above concerns are addressed.

International price comparisons revealed that that British food prices are 12-16% higher than those in France, Germany and the Netherlands. This comparison is however sensitive to exchange rates, and is mitigated by more expensive land and building costs in the UK. There was no evidence to suggest that British food prices were higher than other countries' due to anti-competitive practices by retailers. Similarly, the Commission was satisfied that price reductions at farm level were, in general, passed through to retail prices. Profitability of British food retailing was found not to be excessive, nor to reflect inefficiencies other than (possibly) the high costs of building and land mentioned above. A consumer survey revealed very high levels of satisfaction with supermarkets. The Commission found that recent changes in land use planning in Britain had already slowed the rate of growth in the number of out-of-town shopping centers, and that there was no justification for further action. Overall, there was no indication that the problems encountered were due to anticompetitive behavior by large food retailers.

In examining pricing practices, several steps were taken in defining the relevant markets: this includes identification of the convenience-oriented "one-stop" market, for which clear geographic boundaries can be drawn. In general, customers were prepared to travel less than 10-15 minutes to do their shopping, all at one place. In this market, four large retailers were found to have significant market power. Five pricing practices were examined:

- below-cost pricing of frequently-purchased products was found to distort competition to the extent that it outweighed benefits to some consumers;
- discriminatory pricing by firms amongst their stores across locations, based on the competitive conditions (as opposed to cost conditions) faced at those locations (known as "price flexing"). This was also found to be against the public interest;
- use of price competition for a small number of products (and not for the vast majority of products) was widely observed and judged to be anti-competitive. However, it was judged not to be against the public interest;
- pricing of own-label brands according to branded competitors' prices (rather than according to cost) was not observed. Moreover, own-label products were not found to be excessively profitable for the retailers;
- incomplete or slow price transmission of cost changes onto retail price changes was not detected and it was concluded that this practice was not being followed by retailers.

In examining food retailers' practices in dealing with suppliers (including processors), a large number of complaints had been received as part of a consultation process. The Commission also noted "apprehension" amongst suppliers indicative of fear that submissions to the Commission may attract retaliation from retailer clients. There was, for example, reticence in suppliers' naming offending retailers. The Commission compiled a list of 52 alleged practices and surveyed retailers as to whether they used those practices. The majority of retailers used the majority of named practices, including:

- payments by suppliers not related to costs of supply (some of them retroactive);
- changes to contractual conditions without due warning; and
- unreasonable transfers of risks to suppliers.

An additional finding was that substantial asymmetry in market share is present at the retailer-supplier interface. Whereas many suppliers rely on just one or two retailers for a high proportion of their sales, retailers source product from a large number of suppliers, the most significant of which provides just a few percentage points of total supplies to the retailer.

The Commission concluded that eight major food retailing firms "have sufficient buyer power that 30 of the practices identified, when carried out by these companies... adversely affect the competitiveness of... suppliers and distort competition in the supplier market." The Commission specifically noted that these practices were likely to result in reduced investment by processors in new product development and other innovation.

In recommending future actions, the Commission drew attention to the costs and likely impacts of possible actions, relative to the costs being imposed by the problems identified. For example, countering price flexing by requiring national pricing guidelines was deemed to be cumbersome and restrictive, aside from any implementation and enforcement costs. A code of practice was recommended to counter the anti-competitive practices between retailers and their suppliers. No planning action was recommended with regard to out-of-town stores, but it was pointed out that the current costs made this a barrier to entry that was likely to impact smaller companies the most.

15.3. Monopolies and Mergers Commission (1999) - Raw milk

A Report on the Supply in Great Britain of cows' milk addresses the actions of the company Milk Marque Limited, which collects and distributes more than half of all British cow's milk to processors. Milk Marque was established following the deregulation of the British dairy industry in 1994 which saw the dissolution of Milk Marketing Boards in England, Scotland and Wales.

The Commission concluded that Milk Marque is a monopoly and has exploited that position in a variety of ways. In terms of price, it has discriminated amongst processors due to its monopoly status and buyers' fears of inadequate milk supply. Such discrimination featured smaller buyers' paying inordinately more for milk than larger buyers, and substantial variation in contract terms that were not made public. Moreover, Milk Marque effectively sets a floor price on raw milk, making it more expensive for processors to source milk from other suppliers than would be the case under competition. Overall, the Commission concluded that milk prices at all stages of the food marketing chain are higher than would be the case in a competitive environment, and that milk supplies are unnecessarily unstable on the British market.

The Commission recommended that Milk Marque be broken up into independent quota-holding firms. Such a fragmentation would not necessarily be regional (which may facilitate new monopolies) and would be monitored for collusion.

15.4. Competition Commission (2000) – Ice cream

Three firms currently supply 86% of Britain's "wrapped impulse ice cream" (products bought ready-to-eat on impulse) in sets of very strong brands. Of these, just one is profitable and the Commission had received a large number of complaints from manufacturers and distributors regarding:

- distribution arrangements;
- freezer exclusivity;
- outlet exclusivity; and
- practices involving discounts to retailers.

A widespread reduction in the numbers of independent wholesalers and distributors, and observed costs and prices in the ice cream marketing chain, indicated anti-

competitive behaviour by at least one major manufacturing firm. Notably, few complaints had been received from retailers and consumers.

Freezer exclusivity and outlet exclusivity were both judged to restrict competition amongst manufacturers and amongst distributors. One firm was also judged to have restricted competition by the use of unpublished bonuses and other rewards and penalties that “affect the ability of other manufacturers and distributors to compete”.

The Commission recommended that, effectively, freezer exclusivity be outlawed for impulse ice cream, and that outlet exclusivity be outlawed for use by large firms supplying impulse ice cream. Furthermore, terms offered to independent distributors might be regulated, specifically to prevent below-cost pricing. However, on this last issue the Commission felt that one firm’s dominance was so great that regulation was unlikely to be effective, and so it recommended prohibition of that firm’s anti-competitive distribution activities to retailers.

15.5. Monopolies and Mergers Commission (1989) – The supply of beer

The Monopolies and Mergers Commission investigated the supply of beer in Britain through “tied houses” and “tying agreements” (whereby retail beer selling establishments have exclusivity agreements with breweries). The Commission engaged in consultations with brewers and carried out extensive investigations of the market. British beer brewing is highly concentrated, and brewers also own about 75% of retail outlets. Of the remaining 25%, about half are “tied” to brewers, frequently by instruments such as loans to assist with business establishment. These figures show considerable variation around the country.

Brewers’ submissions (through the Brewers’ Society) emphasized the importance of vertical integration for quality control and in product development. Secondly, it promoted its past performance in terms of assisting small entrepreneurs to start up (through tied loans) and the provision of pub services in low-volume locations. With regard to competition, the breweries defined the beer retail market as one segment of an overall leisure market, and noted the existence of large numbers of pubs that evidently compete with each other.

The Commission’s view was that a complex monopoly existed and was being supported by the existing practices. Competition at retail level was being restricted and

the development of independent wholesaling was being prevented, and that entry of brewers was being restricted. The Commission's evidence included:

- observed rapid increases in retail beer prices;
- that prices differed amongst products to an unjustified degree;
- that brewers forced customers in pubs to purchase only their own products and soft drinks; and
- the impression that tenants (i.e. retailers) are powerless against brewers' wishes.

Actions recommended by the Commission recognized that tying practices also enabled the operation of a small number of small brewers, and that the abolition of tied houses would be likely to increase market concentration as they exited. It did recommend that the tie on a house not be necessarily transferred with sale or lease of that house. The Commission recommended that other ties (loans, product exclusivity) be eliminated. A wholesale price list was recommended, along with other measures to aid price transparency. The Commission recommended that the brewer-tenant relationship be governed by the provisions of residential landlord-tenant legislation in order to improve the negotiating power of the tenant.

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