

**Title:**

## **Future supply and marketing strategies in the Danish organic food-sector**

**Acronym:** SAMSON

**Date:** November 26, 2001

### **Summary in Danish:**

#### *Baggrund*

Økologisk jordbrug nævnes ofte som en frontløber for en ny miljøbevidsthed, hvor spørgsmål omkring fødevarer sikkerhed, dyrkning af jorden og social retfærdighed kædes sammen med bl. a. en omlægning af landbrugs- og fødevarerpolitiken. Værdierne bagved er også blevet identificeret som de tre fundamentale principper i økologisk jordbrug.: 1) Kredsløbsprincippet, 2) Forsigtighedsprincippet og 3) Nærhedsprincippet. I hvert tilfælde synes frembringelsen af økologiske fødevarer – fra jord til bord – at gå imod mange af nutidens trends i produktion, forarbejdning, distribution og markedsføring af fødevarer generelt. Alligevel er den eksplosive vækst siden begyndelsen af 80'erne både grunden til, men også årsag til skabelsen af de mange nye deltagere, som forsøger at gribe de lukrative niche markeder, der gemmer sig bag de økologiske produkter og Ø-mærket. Som følge heraf oplever den økologiske fødevarer sektor hastige forandringer i produktions- og markedsvilkårene, og en omstrukturering af de økonomiske betingelser sektoren er underlagt. Og mens en mangfoldighed af økonomiske og ideologiske aktører fortsat har fremgang indenfor den økologiske sektor, er store agri-business virksomheder – eller succesfulde opstartsvirksomheder, der i stadig højere grad efterligner de 'traditionelle' virksomheders forretningsmetoder, ved at trænge ind på de mest dynamiske og profitable segmenter af økologien.

#### *Formål*

Formålet med dette forskningsprojekt er at analysere den fremtidige udvikling af den danske økologiske fødevarer kæde med to varegrupper som case studier:

- økologiske svin
- økologiske grøntsager

Hovedvægten vil blive lagt på at identificere de økonomiske kræfter og forandringer der virker indenfor de to kæder i kombination med de makro sociale forudsætninger, som fastlægger regelsæt og rammerne for den økonomiske opførsel blandt individer, virksomheder og forbrugere i de to kæders netværk.

Ved at koble forskningsresultaterne af de økonomiske såvel som de produktionsdynamiske indenfor de økologiske fødevarer kæder sammen med de forskellige sociale bevægelser, som er på spil i forbruget af økologiske fødevarer, er det hensigten at identificere og forklare den diversifikation

som finder sted indenfor den økologiske sektor og dermed tilvejebringe nyttige udbudsstrategier for en fortsat vækst i et tiårigt perspektiv.

#### *Forventede mål*

- En ny metodetilgang i forbindelse med fødevarekæde analyser af den økologiske produktion og fødevarer.
- Videnskabelige bidrag til den ny institutionelle økonomiske tilgang til kædeanalyser af den generelle agro-industrielle fødevarerektor.
- Udvikling af økologiske udbuds- og afsætningsstrategier i Danmark i et tiårigt perspektiv.

#### *Teorier*

Den teoretiske tilgang anvendt i analyserne af de dynamiske og økonomiske forandringer i den økologiske fødevarekæde, vil være ny på den måde, at den vil kombinere tre videnskabelige dicipliner. De tre dicipliner er fra: 1) Den politiske økonomi, 2) Landbrugssociologien og 3) Den ny institutionelle økonomi. Følgende teorier indenfor de respektive dicipliner vil blive anvendt:

Reguleringsteori	(Politisk økonomi)
Actor-Network-Teori	(Landbrugssociologi)
Industrial Organization Theory	(Ny institutionelle økonomi)
Transaktions omkostningsteori	(Ny institutionelle økonomi)

#### *Hypoteser*

a)

Akkumulering af (fødevare)produktion og kapital er den dominerende proces i en markedsøkonomi drevet af konkurrence. Arbejdsdeling og specialisering af produktionen skaber stigende produktivitet, som er en del af processen for at overleve i konkurrencen. Udviklingen af den økologiske fødevarerektor er en social reaktion på de konsekvenser akkumuleringsprocessen fører med sig på globalt plan, som f.eks. nedlæggelse af landbrug, intensivering i udnyttelsen af jord og dyr, og den fortsatte fremmedgørelse i forhold til produktion og distribution af fødevarer og deres sikkerhed.

b)

Den fremtidige udvikling af den økologiske fødevarerektor vil kunne forklares ud fra de regler og begrænsninger som sektoren vil pålægge sig selv i forhold til de valg og forandringer i ny teknologi, produktions- og distributions vilkår, som styrer indenfor den traditionelle fødevarekæde. Disse begrænsninger og regler vil have deres udspring i det økologiske jordbrugs principper: Kredsløbsprincippet, Forsigtighedsprincippet og Nærhedsprincippet.

c)

Diversifikation i produktion, virksomheder, netværk og kontrakter i de enkelte led i den økologiske fødevarekæde, vil kunne forklares ud fra de interessekonflikter som vil eksistere imellem det økologiske jordbrugs egne regler og begrænsninger på produktions- og distributionsbetingelser, og så den stigende indtrængning af kapital i profitable økologiske segmenter styret af konventionelle agribusiness virksomheder.

d)

Den økonomiske udvikling af den økologiske fødevareresektor vil være bestemt af typen og niveauet for nationale og fælleseuropæiske reguleringstiltag overfor de globale tendenser til fortsat akkumulering af kapital og fødevarerproduktion.

e)

Adfærd og organisationsstrukturer blandt virksomhederne i den økologiske fødevarekæde vil være bestemt af de totale produktions- og transaktionsomkostninger.

### *Metode*

Mens mere traditionelle tilgange til studiet af landbrug i højere grad har fokuseret på mikro niveauet og de fremad eller bagudrettede til landbrugsproduktionen, vil udgangspunktet for dette forskningsprojekt metodisk blive såvel mikro- som makro baseret fødevarekæde analyser. Det skulle gerne give en mere nuanceret forståelse af de forandrings dynamikker, der foregår indenfor det økologiske jordbrug.

Kæde betragtningen vil være udgangspunktet for makro analyserne. Indenfor kæden identificerer vi de forskellige led af kæden, hvor vi ser på dynamikerne i hvert led, som produktion og videre distribution, såvel som forbindelserne til de øvrige led i kæden. Vi vil i særlig grad undersøge, hvordan forandringer i et led af kæden kan påvirke strategier og forskellige udfald i de andre led i kæden.

Fokus for fødevarekæde studierne vil i dette forskningsprojekt være de to udforskede økologiske fødevarekæder i Danmark:

- økologisk svine produktion
- økologisk grøntsags produktion

For at kaste lys over de interaktioner og magtforhold der eksisterer i markedsrelationer i mellem aktørerne i de forskellige led i de to udvalgte kæder, vil fødevarekædeanalyserne blive udført med interviews, indsamling af økonomiske data på akkumuleringen af kapital og varerproduktion såvel som identifikation af netværk og kontraktudformninger.

Interviewene vil blive udført sammen med nøglepersoner blandt landmænd, grossister, supermarkeder, forarbejdning, restauranter, økologiske landbrugsorganisationer og økologiske konsulenter. Interviewene planlægges udført med spørgsmål, som fokuserer på produktion og afsætningsstrategier, muligheder og begrænsninger for de økologiske virksomheder, og de historiske og fremtidige trends i de udvalgte kæder.

Sammen med de indsamlede økonomiske data vil interviewene blive analyseret i relation til de udvalgte teorier og de opstillede hypoteser. Afhængigt af deres forklaringsværdi, vil udviklingen af udbuds- og afsætningsstrategier for den økologiske fødevareresektor i et ti årigt perspektiv blive tilvejebragt.

## 1. Summary

### *Background*

Organic agriculture is frequently heralded as one of the frontiers of a 'new' environmentalism where concerns about food safety, land use and social justice are converging with a politics of relocalization. These values have also been identified as three fundamental principles in organic agriculture: 1) The principle of circulation 2) the precautionary principle, and 3) the principle of subsidiarity. Indeed the provision of organic food - from farm to table - would appear to countervail many contemporary trends in the production, processing, distribution and marketing of food in general. Yet, explosive growth since the 1980s is both cause and effect of a proliferation of new entrants who are attempting to capture the lucrative niche markets lurking behind organic products and the organic label. Consequently, the field is experiencing rapid changes in production and marketing strategies, and a restructuring of economic imperatives. And while a plurality of economic and ideological actors continue to thrive within the organic sector, large agribusiness firms - or successful start up firms which increasingly mirror agribusiness practices - are penetrating the most dynamic and profitable segments.

### *Objective*

The objective of this research project is to analyse the future development of the Danish organic food sector, with two commodities as case studies:

- organic pork
- organic vegetables

Emphasis will be placed on identifying the economic forces and changes within the chains in combination with the macrosocial foundations which sets the regulatory framework for the economic behaviour among individuals, firms and consumers along the network of the chosen chains.

By linking the research results of the economic and production dynamics within the organic food chains together with the various social movements that are at stake in the consumption of organic food, the aim is to identify and explain the diversification of the organic chain and provide with useful supply strategies for further growth in a ten year perspective.

### *Expected achievements*

- A new methodological approach towards chain management analysis in organic foods and production.
- Scientific contributions to new institutional economic chain management analysis in agribusiness and the food industry.
- Development of organic supply and market strategies in Denmark in a ten year perspective.

### *Theories*

The theoretical approach adopted in analysing the dynamics and economic changes of the organic food chains will be new in the way that it will combine three scientific disciplines. The three

disciplines are from: 1) the political economics, 2) the rural sociology and 3) the new institutional economics.

- The Regulatory theory (Political economics)
- The Actor network theory (Rural sociology)
- The Industrial Organization Theory (New institutional economics)
- The Transaction cost theory (New institutional economics)

### *Hypotheses*

a)

Accumulation of (food)production and capital is a dominating process in a market economy driven by competition. Division of labour and specialisation of production which raises productivity is part of this process to survive in a competitive environment. The development of the organic food sector is a social reaction to the consequences of this accumulation process on a globalized scale with its expulsion of farms, intensification in the use of nature and animals, and the continuing alienation in the production and distribution of foods and its safety.

b)

The future development of the organic food sector can be explained by the rules and constraints which the sector itself will set out in relation to choices and changes in new technology, production conditions, processing and distribution conditions prevailing in the general food chain. These constraints and rules are to be found in the principles of the organic food sector concerning: Cyclical, precautionary and nearness (FØJO, 2000).

c)

The diversification in production, firms, networks and contracts in the nodes of the supply chain of organic foods can be explained by the interest conflict between the rules and constraints in organic agriculture, and the growing penetration of capital in profitable organic food segments conducted by conventional agribusiness firms.

d)

The economical development of the organic food sector are determined by the type and level of national and supra national (EU) regulation policy towards the global tendencies on further accumulation of capital and food production.

e)

The governance structure of the firms in the organic food chain will be determined by the total production and transaction costs.

### *Methods*

While more conventional approaches in the study of agriculture have tended to focus on micro-level forward and backward linkages in the production of agriculture, the aim of this research project methodologically will be a *commodity system analysis* which provides a more multifaceted understanding of the dynamics of the organic agricultural sector.

In accordance with the supply chain approach, the starting point will be the commodity chain - from farm to table - as the macro unit of analysis. Within the commodity chain we identify the various nodes of the 'chain', looking at the internal dynamics of each node, such as production and distribution, as well as the linkages between the levels of the chain. In particular, we will examine how changes in one node of the chain effect strategies and outcomes in other nodes.

The commodity foci of the research will be two unexplored commodity chains in Denmark:

- organic pork production
- organic vegetable production.

To highlight the interaction and market power relations between actors at different levels within the two chosen commodities, the food chain analysis will be conducted by interviews, economic data on accumulation of money and production as well as identifying networks and contractbuilding.

The interviews will be carried out together with key players among farmers, handlers, retailers, processors, restaurants, the organic farm association and organic consultants. The interviews are planned to be structured by questions that focuses on production, sourcing, and marketing strategies, the constraints and opportunities of organic enterprises, and the historical and future trends in the chosen sector.

Together with collected economical data on the two chains the interviews will be analysed in relation to the chosen theories and the listed hypotheses. According to their verifications or rejections supply and marketing strategies for the organic food sector in a ten year perspective will be developed.

## **2. Research group**

The Farm Management and Production Systems Division at the Danish Institute of Agricultural and Fisheries Economics (SJFI-Farm unit) and the Department of Economics and Natural Resources at the Royal Veterinary and Agricultural University (KVL unit of Economics) are involved in this project.

The project work will mainly be carried out at SJFI, but it is the intention that Paul Rye Kledal in the beginning of 2002 should start a formal research education (Ph.D.) under the supervision of KVL-Economic unit. Therefore, this application has been made in close co-operation with the expected Ph.D. supervisor at KVL in order to ensure that the Ph.D. requirements can fit into the project.

The research group consists of  
 Mogens Lund, senior researcher, SJFI-Farm unit (project leader)  
 Kostas Karantininis, associate professor, KVL-Economic unit (Ph.D. adviser)  
 Paul Rye Kledal, research assistant, SJFI-Farm unit

A short C.V. for each member of the group is included in an appendix to the application.

The main responsibilities of the project leader will be

To oversee the achievements of the objectives and milestones  
 To supervise preparation and approval of interim and final reports, projects accounts and other documents to FØJO  
 To co-ordinate with related research projects  
 To communicate and interact with FØJO

The main responsibilities of the Ph.D. adviser will be  
 To ensure the fulfilment of legal Ph.D. requirements  
 To supervise on the theoretical and methodological subjects  
 To supervise on supplementary educational activities  
 To assist in the preparation of research reports and other scientific outputs

The project work will be carried out by Paul Rye Kledal according to the work packages described in section 8 of this application.

### **3. Introduction**

Since World War II the industrialisation of food production into an 'agro-industrial food chain' has advanced quickly on a global scale. Overall the agro-food industry consists roughly of the four nodes mentioned below:

- Industrial inputs to the production on the farm.
- The production activities at the farm itself.
- The industrial processing of the commodities from the farm.
- Retailers and supermarkets.

Within all four nodes there is a continuing concentration and accumulation of the production, because of the evermore competitive environment and its demands for more capital, scientific knowledge and economies of scale. At farm level specialisation and a continuing decline in numbers of farms have been the outcome. Similar processes have occurred within the nodes of processing, retailing and supply of commodities to the farms (Ministry of Food, Agriculture and Fisheries, 2001).

The power relations within the agri-food system itself is moving towards a situation where the first and the last node more and more dictates the terms of the way production is fulfilled. Both at farm level, but also in the processing industry as well (Bonano, 1994). Previously, the processing industry determined to a considerable extent the production conditions at the farm as well as terms of distribution among the retailers (Boehlje M & L. F. Schrader, 1995).

This transformation in the organisation and supply of agricultural commodities can not be explained and described by economics alone. The changing life styles and living conditions of the consumers in modern society – women in the workforce, growing number of single households, more elderly people concerned with healthy food and diets – are all part of the pull towards a growing differentiation in the production of foods.

At the same time the growing concentration and centralisation of the agro-food production makes it more and more complicated for the consumers as well as national public authorities concerning

food health to find out what production processes the food has gone through, as well as the risks involved by eating the food.

Although the growth of the organic movement and environmentalism is seen as part of a 'greening' of agriculture, and at the same time a local/ regional reaction and resistance towards the global centralisation of food production and processing (Buttel, 1992), there are still many economic obstacles and barriers for the conventional farmers in turning into organic farming (Kledal, 2000).

Therefore if one wants to analyse and describe the dynamics of the Danish organic food chain in a ten year perspective, it will be necessary to take into account how the macro social foundations are intertwined with the economic forces that are at stake in the production of food in our modern society.

#### **4. State of the art**

The foundation for the economic thinking in this research project, is, that economics belongs to the social sciences (Harsaa, 1992). The main purpose of the social sciences is first and foremost to analyse and explain social relations. The purpose of economics is therefore implicit to describe the social relations as they are expressed in economic terms by the behaviour of firms and consumers. When analysing the economic activities within the agricultural sector the focus on social relations becomes even more evident if one has that point of view, that "in eating food which has been reared, slaughtered, processed and delivered to our tables in a particular way, we are reproducing particular social structures and particular moral and cognitive ideas" (Tovey, 1997).

Over the past 25 years or so, a broad range of new economic theories have emerged. These theories attempt to provide more realistic assumptions, but usually at the expense of the simplicity or consistency of the theory, which encompasses the neo-classical economy theory. These new approaches, which are often considered neo-institutional economic theories, are, just to name the most common ones, The Transaction Cost Theory (Williamson, 1985, 1996) Incomplete Contract Theory (Hart, 1995), Principal Agent Theory (Jensen and Meckling, 1976), Industrial Organisation Theories (Tirole, 1994).

These approaches differ from neo-classical theory in several ways. First they assume a more realistic perspective on behaviour (opportunism) and rationality (bounded rationality). Second, these approaches incorporate process issues more directly in theoretical explanations. Third, they explicitly take other institutions than the market institution into account (Langlois, 1986). Fourth, imperfect or asymmetric knowledge provides a rationale for economic organisation issues, as a result of either transaction costs and misaligned incentives or differential resource endowments (Langlois and Foss, 1997).

Although there has been this move in economic theory towards the social and political sphere, it seems more relevant in this research project to supplement the new institutional economic theories with relevant theories from the political economy and (rural) sociology. By supplementing the more stringent economic theories with theories from the political economy and rural sociology the stronger conclusions about the dynamic and socio-economic forces surrounding the organic food chain should be the outcome.

## Arguments for a new methodological research approach in agro-food chain management

In many ways the approach in sociological theory and the economic theory are complementing each other, because the sociological theory can explain the creation of the preferences that economic theory use as a starting point. But the main difference between the two approaches is, that sociological theory regards norms and rules of behaviour as changeable. This means that the economic agent can change his or hers utility function, when a situation is changing.

This very difference between the two approaches has decisive consequences for the analysis: Where the stable and immovable preferences are the fundament for economic theory, *focus for sociological analysis is exactly why and how preferences change.*

If one therefore wants to do more than just make a descriptive analysis of the organic food chain, but also catch the dynamics and changing forces within and outside this chain in a ten year perspective, it is necessary to supplement the economic analysis with sociological explanations. In this connection scientific contributions within the *rural sociology* will be used.

On the other hand, the political economy offers to mainstream economics as well as to rural sociology a theoretically informal, structuralist perspective on global tendencies, with 'economy' understood as a 'social economy', that is to say a way of life founded in production (of food) (Atkins & Bowler, 2001). The central concern of political economy is, that it locates economic analysis within specific social formations and explains the development process in terms of the benefits and costs they carry for different social classes (Redclift, 1984). In particular, with respect to market economy, political economy focuses attention on the roles of capital and the state in the restructuring of economy and society, together with the consequences of different social groupings. When used in a study of the agro-food system, a political economy approach takes the analysis beyond the farm gate to consider financial institutions, food processers and food retailers, along with food trade and transport, and intervention by the state (Fine, 1994).

In new institutional economics there is a long and sustained understanding that a market, and a market economy, cannot function without rules and without some form of institutions for implementing these rules and to make them operational (i.e. establishing discipline among partners) (Trienekens, Zuurbier; 2000). In that regard, the economics of the agro-food sector is of major interest for new institutional economics. First of all because the agro-food sector offers an exceptionally rich variety of organisational forms, from large integrated firms to small family producers competing fiercely to supply chain structures. Secondly, there is almost in all countries a strong interaction between public institutions and organisations of the agro-food sector, particular because of the role of the state sector.

It is in regard to institutions as a *mode of regulation* within a certain historical time, that the political economy can contribute to the new institutional economics. It directs the questions of what institutions that are relevant for economic analysis and thereby helps to identify the rules, standards and the accompanying devices that makes transactions within the food chain possible, and what makes them more or less costly.

## 5. Objectives and expected achievements

The objective of this research project is to analyse the future development of the Danish organic food sector in a ten year perspective by concentrating on two unexplored commodity chains as case studies:

organic pork  
organic vegetables.

Emphasis will be placed on analysing the economic forces and changes in combination with the macrosocial foundations which sets the regulatory frames for the economic behaviour among individuals, firms and consumers within the two commodity chains.

By linking the research results of the economic and production dynamics within the organic food chains together with the various social movements that are at stake in the consumption of organic food, the aim is to identify and explain the diversification of the organic chain and provide with useful supply strategies for further growth in a ten year perspective.

Expected achievements:

- A new methodological approach towards chain management analysis in organic foods and production.
- Scientific contributions to new institutional economic chain management analysis in agribusiness and the food industry.
- Development of organic supply chain- and market strategies in Denmark in a ten year perspective.

## 6. Theoretical approach

In the approaches to the analysis of the development of the organic food chain in Denmark in a ten year perspective, four theoretical, each within the political economy, rural sociology and the new institutional economics, will be chosen:

- The Regulatory theory (Political economics)
- The Actor network theory (Rural sociology)
- The Industrial Organization Theory (New institutional economics)
- The Transaction cost theory (New institutional economics)

### The Regulatory Theory approach

At the outset essentially a French scientific contribution from the 1970's, it spread out to Europe and USA. The theories of regulation bring together elements from several social scientific traditions. They begin with a critique of orthodox Marxism (which prevailed during the 70's), since they reject the idea of general, eternal laws applicable to all socio-economic systems. Instead, they draw upon the contributions of structuralism, which offered new foundations for concepts such as relations of production, modes of production etc. However, regulation theorists recognise that a

given social relation can take on different historical forms, which help shape the configuration of social classes and the dynamics of the economy (Boyer, 1990).

In contrast to the neo-classical economic approach in which price and quantity adjust themselves simultaneously, so that supply and demand always end in equilibrium, the regulation theorist emphasise the dynamic processes that make unemployment, bankruptcies, inventory accumulation and excess productive capacity permanent features of a market economy.

From the regulation theorists the concept of 'Food régimes' was developed in the 1980s (Aglietta, 1979, Lipietz, 1987). In this concept the development of the market economy can be interpreted broadly as a sequence of time periods, each period having a specific institutional framework with corresponding norms as regards the organisation of production, income distribution, exchange of products and consumption. These distinct periods are termed 'regimes of accumulation'. The regulation theory recognises three food regimes in the historical development of international agriculture: Pre World War I; from the 1940s to the 1970s; and from the 1980s to the present, where each régime being characterised by particular farm products, food trade structures linking production with consumption, and regulations governing the accumulation of the market economy (Friedmann, 1982, 1987; McMichael 1992, 1994). Regimes of accumulation are separated by severe crises in the market economy as illustrated by the 1930's depression between the first and second regimes. The global recession of 1970's and the following oil crises between the second and third.

With the final dimensions of the third food régime still uncertain, the outcome seems likely to be influenced by the contest between private global regulation and democratic public regulation (Goodman and Watts, 1994). In other words, the third food régime will be shaped, firstly, by the extent to which international institutions are developed to regulate rather than facilitate the globalizing activities and accumulation tendencies of Trans National Corporations. Secondly, the outcome will depend on the relative success of national and local regulatory power in reconnecting and redirecting national/local food production and consumption in resisting the development of global food networks (Atkins & Bowler, 2001).

The utility of the food régimes concept are not universally accepted. The boldest criticism has come from Goodman and Watts (1994). They counterclaim that theorists have concentrated on too few commodities and countries for a complete reading of global food development; as a result the regulationist food régime concept fails to accommodate the differentiated experiences of nation states in the way that farmers are being integrated into the world food system.

So on the one hand, the food régimes concept offers an integrated structuralist reading of the recent history of global food production and consumption under market economic terms and the prevailing institutions which supports it; but on the other hand, the concept remains weak in explaining the wide variety of national and regional experiences in the development of food systems.

In this research project we first and foremost will draw on the methods used in regulation theory starting from the impact of a set of social relations (commodity and/or wage). By emphasising the relations of production the regulatory theories has the advantage of avoiding any possible confusion between rivalries among individuals seeking to occupy positions within a mode of production and the general social frameworks that shape the collective aspects of economic activity. In other words, the regulatory school stresses the importance of distinguishing the overall logic of social relations

from the strategies utilised by individuals, firms and groups (in or around a food chain) to find places within them or escape from them (Boyer, 1990).

The regulatory theory in connection with the new institutional economics would thereby give the opportunity to *combine a macrosocial foundation with the microeconomic analysis*, and a much more clearer focuspoint when using the new institutional economic theories to describe historical and/or present changes in the agricultural sector (instability within the firm, the sector, the nation-state, or between the latter and environmental or consumer groups).

Within the regulatory theory three important hypothesis lies, which implicit will steer the focuspoints in the chosen methods of this research program:

- 1) The domination of the market economy and competition as a mode of production makes accumulation (of capital and commodities) essential.
- 2) The accumulation is the driving force behind the division of labour and the continuing restructuring of production, firms and organisations (private as well as public) along a food chain.
- 3) The mode of regulation, which are any set of procedures, individual or collective behaviour, serves to support the prevailing régime of accumulation through the combination of historically determined institutional forms.

It is these three important imperatives from the regulatory theory which in combination with the actor network and the transaction theory, can provide more stronger tools – theoretically and methodological - in explaining why certain activities in the agricultural sector will be carried out through the market, and/or when they will be carried out within the skins of firms.

### **Actor network theory**

The idea of a 'food system' or a food chain is a convenient means of conceptualising the relationship between the different forces acting upon the commodity flows from producer to the consumer of agricultural products. The idea is not new. There is a sizeable literature stretching back 150 years, in which writers have described the features of particular food chains. George Dodd's (1856) book, for instance, was a pioneering attempt to reconstruct the food supply of a particular city across a range of products (Atkins & Bowler, 2001).

Fine *et al.* (1996) have commented that food studies hitherto have been highly fragmented, according to the approaches traditionally adopted by individual disciplines, and that they have also been lacking in theoretical coherence. They argue that the time has come for greater cross-fertilisation between geography, sociology, anthropology, economics, psychology and the other social sciences that have found some common interest in food. The commodity chain in its various manifestations provides one convenient locus for cross-fertilisation, both conceptually and empirically. It encompasses both production and consumption, and it provides clear links with the spatial conceptions of society.

Cook *et al.* (1998) has provided with helpful critiques of the commodity chain literature. It is argued that 'biographies' of foods need to take into account of their social constructions as

commodities, which will inevitably mean some mutually reflexive interactions between these 'objects' and the hands through which they are passing.

An overlap between the political economy of food, geography and rural sociology as disciplines used in the food chain approach has been delivered by the Actor Network Theory of Bruno Latour (Atkins & Bowler, 2001). Latour provides a means for understanding the links between actors: humans, objects and hybrids of the two. These links are comprised of influences and interactions of various kinds, with agency (human or non-human) more transparent than would be the case in a structuralist or functionalist analysis as for example in a stringent regulatory theory analysis (Lockie and Kitto, 2000). Examples of non-human intermediaries include the contracts that link farmers to processors, the regulation that link processors and farmers to national politicians and the international agreements that link multinational corporations to the WTO (World Trade Agreement). In other words, a food network is conceptualised as a hybrid, that is comprising the interrelationships between the human actors in a commodity chain but extended to include the non-human intermediaries that bind the actors together in power relations. The actor Network theory therefore seems to offer a theoretical frame and a hybrid that could combine a macrosocial foundation in combination with the new institutional economic analysis.

Actor Network Theory has been adopted by a number of writers on food systems (Murdoch 1994, 1995, 1997; Marsden and Arce 1995). Goodman (1999) has recently presented it as a means of overcoming the inability of agro-food studies to give simultaneous priority to both nature and society. The names mentioned here have their disciplines within economic geographers and rural sociology and they therefore emphasise more the importance of spatial changes by agricultural production and its impact on nature as well as society locally and/or regionally, rather than focusing on the mere economic changes.

In connection to the food chain approach and the theoretical assumptions that underline it, an important contribute from Fine and his co-workers has to be mentioned here because these assumptions will be part of the economic research approach in analysing the organic food chain and its development. First of all they argue that food as a commodity is so different from other products that it deserves separate treatment. They assert that food has 'organic' properties that set it apart from the manufacture of cars and textiles (Fine 1993). The food system is squeezed into the fault line between environment and society, and as such is conditioned by natural phenomena. Human control is increasing but food systems are still largely dependent, first, upon production conditions that are influenced by soil, sun and water, and second, upon the perishability of foods, which means that they must be handled with great care at every stage from the field to the table.

These considerations impose organisational and technological constraints that are of a different from those of the industrial sectors. These constraints become even more clear in the production and delivering of organic foods in comparison with conventional foods where for example the constraints in use of additives are much more permitted. Fine *et al.* (1998) also stress the biological needs of the human consumers at the end of the food chain. This is highly significant because of the frequency of food consumption, coupled with food being literally a matter of life and death for us all. A second essential consideration is that there is an upper physical limit to food consumption of a kind that applies to no other goods. There is only so much we can eat or drink at a sitting, or for that matter in a lifetime, and this is different from our insatiable demand for other items.

## Industrial organization and Transaction Cost Theory

From Adam Smith on, economists have recognised that it is specialisation and division of labour that underlies the productivity of economies and permits and encourages the growth of new technologies and more efficient forms of production. But this theoretical foundation of economics is really a half theory. It ignores the costs of trade – that is, the losses that arise because of specialisation and division of labour. Transaction costs are the costs of specifying and enforcing the *contracts that underlie exchange* and therefore comprise all the costs of political and economic organisation that permit economies to capture the gains from trade (North, 1984).

To have an efficient economic system it is necessary not only to have markets, but also areas of planning within organisations and institutions of the appropriate size. What this mix should be we find as a result of competition (Coase, 1992). In economic thinking institutions are contractual arrangements between principals (employers, managers, government officials) and principals and agents (workers, bureaucrats), made to maximise their wealth by realising the gains from trade as a result of specialisation. The contracts may be implicit or explicit. But whether implicit or explicit, they must be defined and enforced; and it is the costs of defining and enforcing them that make up transaction costs (North, 1984).

The transaction cost literature has therefore focused on economic exchange and the institutions that shape those costs. In transaction cost theory institutions consist of a set of constraints on behaviour in the form of rules and regulations; a set of procedures to detect deviations from the rules and regulations; and, finally, a set of moral, ethical behavioural norms which define the contours that constrain the way in which the rules and regulations are specified and enforcement is carried out.

Three assumptions lie behind this framework of transaction cost theory:

- 1) An individualistic behavioural assumption
- 2) Specifying and enforcing the rules that underlie contracts are costly.
- 3) Ideology modifies maximisation. The *contracting man* is distinguished from the *maximising man* (Williamson, 1989).

Industrial organization theory suggests that the desirability of vertical integration (in a supply chain) increases as the transaction costs of using the marketplace rise. There are four types of transactions in which transaction costs are likely to be substantial enough to make vertical integration desirable. They involve *specialized assets* (a tailor-made asset for one or a few specific purposes), *uncertainty* that makes monitoring difficult (food safety, special quality), *information*, or *extensive coordination* (for the retailers to secure GMO free products) (Perry, Martin K; 1989).

In contrary to these assumptions the approaches in politic economy and rural sociology are more holistic and therefore first and foremost explores the rules and regulations of the economic system – the ideology that encompasses the mode of production and the frame for maximisation.

But how, and in what way, does this effect the so-called individual behaviour? This is exactly – on the micro economic level - where the industrial organization and transaction cost theory can contribute more strong to the macrosocial foundation, laid out in the actor network theory and the regulation theory. It can make the analysis more precise of the transfer of rights of usage on goods

or services between individuals, firms or groups within and outside the organic food chain in Denmark.

### **Formulated hypotheses**

Based on the above three chosen scientific approaches, the following preliminary hypotheses have been formulated:

#### *Hypotheses*

a)

Accumulation of (food)production and capital is a dominating process in a market economy driven by competition. Division of labour and specialisation of production which raises productivity is part of this process to survive in a competitive environment. The development of the organic food sector is a social reaction to the consequences of this accumulation process on a globalized scale with its expulsion of farms, intensification in the use of nature and animals, and the continuing alienation in the production and distribution of foods and its safety.

b)

The future development of the organic food sector can be explained by the rules and constraints which the sector itself will set out in relation to choices and changes in new technology, production conditions, processing and distribution conditions prevailing in the general food chain. These constraints and rules are to be found in the principles of the organic food sector concerning: Cyclical, precautionary and nearness (FØJO, 2000).

c)

The diversification in production, firms, networks and contracts in the nodes of the supply chain of organic foods can be explained by the interest conflict between the rules and constraints in organic agriculture, and the growing penetration of capital in profitable organic food segments conducted by conventional agribusiness firms.

d)

The economical development of the organic food sector are determined by the type and level of national and supra national (EU) regulation policy towards the global tendencies on further accumulation of capital and food production.

e)

The governance structure of the firms in the organic food chain will be determined by the total production and transaction costs.

## **7. Methods**

To date, there has been some neo institutional economic studies of Danish Food chains (Boon, 2001). On the other hand there has been no empirical research on the political as well as the institutional economy of organic food and chain provision in Denmark. Therefore one of the main tasks of this research project is first, to explore the structure and dynamics of organic commodity systems, and second, highlight the economic forces as well as the institutional frames that sets the

conditions for the development and possible outcomes of the Danish organic food sector in a ten year perspective.

While more conventional approaches in the study of agriculture have tended to focus on micro-level forward and backward linkages in the production of agriculture, the aim of this research project methodologically will be a commodity system analysis which provides a more complex and multifaceted understanding of the dynamics of the organic agricultural sector.

Following the lead of Friedland (1984; Friedland et al. 1981) Hopkins and Wallerstien (1986, 1994) and Omta, Trienekens and Beers (2001), the starting point will be the commodity chain as the macro unit of analysis. Within the commodity chain we identify the various nodes of the 'chain', looking at the internal dynamics of each node, such as production and distribution, as well as the linkages between the levels of the chain. In particular we will examine how changes in one node of the chain effect strategies and outcomes in other nodes. As such, this method will allow the project to highlight the interaction and power relations between actors at different levels according to the Actor Network Theory.

The economic analysis towards the industrial organisation and drive within the food chain to reduce transaction costs will take into account that the industrial structure of agriculture often involves relatively small numbers of input producers selling their products to a large number of farmers, who then must sell to a small number of firms that then move their products to millions of final consumers. The (commodity) system therefore involves alternating moments of oligopoly and competition. There is very little vertical integration of farming itself into this system; firms that control these commodities shed the production of the commodities, and the risks involved in this production, to farmers, but control prices through oligopolistic control of markets and other strategies (Goodman & Watts, 1997). In other words, the different marketstructures and asymmetric power relations along the food chain, will generate different behaviour among individuals, firms etc. in each node of the food chain.

The commodity foci of the research will be the Danish

- organic pork production
- organic vegetable production.

The organic porks are chosen for several reasons. 1) The organic pork production is still a very small production compared to the size of the conventional pig production in Denmark, but the growth rate has been very high in the last couples of years (Kledal, 2001). 2) There is now an export of organic pork meat to England, so the study of organic pork production with consumers at home as well as abroad can be compared to the conventional pork production which has a very high export to England, 3) The largest organic pork processor (Friland Food) are organised as an independent company within one of the conventional processors (Danish Crown). The risks and the profits are thereby placed at the organic pork farmers, but at the same time they have the possibility to use the organisation and marketing channels of the "mother" company. This is very different to the organisation and distribution of organic milk in Denmark, where 83 pct. of the organic milk is sold through the conventional milk company Arla Foods (99/00), and where the organic milk is "just" another foodline within the company ([www.Arlafoods/fakta/økologi](http://www.Arlafoods/fakta/økologi)).

The organic vegetable production is characterised by two extremes. One extreme is an artisan-like production, mediated by an attenuated chain of producer-consumer links (Årstiderne). The other extreme is characterised by the mass production of organic commodities for both mass and niche markets, where 'organic' is just another form of product differentiation (organic carrots). This wide range of production and distribution forms within the organic vegetable production gives the opportunity to analyse strategies across the broad spectrum of organic production by focusing on following elements: Cropping patterns, labour contra machinery, contract farming. The trends in distribution and marketing gives possibilities to analyse the choice of strategies concerning: Adding value through the brand name, growth in the retail marketplace (supermarkets), direct purchasing locally and supply to gourmet restaurants, bypassing the marketplace (e-trade, subscription farming etc.).

To highlight the interaction and power relations between actors at different levels within the two chosen commodities the food chain analysis will be conducted by interviews and economic data on accumulation of money and production.

The use of interviews in combination with microeconomic studies at field level concerning the organic sector, will be a continuation of previous experiences at the Danish Institute of Agriculture and Fisheries (Kledal, 2000).

### **Organic food strategies**

Farm-based accounts of farming styles have paid insufficient attention to the necessary relationship between consumption and production in the development of useful supply and marketing strategies.

One of the hypotheses in this research project is that organic farming is part of an increasing consumer resistance to the globalizing tendencies of food networks, as expressed through various social 'movements'. In other words, if one wants to describe the changing forces of the organic food chain, one has to explore the social movements as they are expressed in organic food consumption as well.

In connection with *alternative food networks* Buttel (1996, 35) have identified the following range of social movements:

- environment
- sustainable agriculture
- community-supported agriculture
- consumer and health
- genetic resources conservation
- animal rights
- rural social justice
- consumer preference (e.g. organic food)
- farmers markets
- non traditional medicine
- ethnic cuisine

By linking the research results of the economic and production dynamics within the organic food chains together with the various social movements that are at stake in the consumption of organic

food, the aim is to identify and explain the diversification of the organic chain and provide with useful supply strategies for further growth in a ten year perspective.

## **8. Work packages**

The research project will be carried out by Paul Kledal according to four working packages:

### **WP 1: Information and data collection on the two organic commodity chains**

Start: 1.2.2002

Months: 9

#### **Objectives**

Draw the outline of the network and the nodes of the two organic food chains

Commodity system analysis

Identification of the key players within each node

#### **Description of work**

The Danish organic pork chain and organic vegetable chain will be chosen as cases.

These chains will be analysed by a commodity system approach and thereby defining the boundaries of the chains and identifying the key players and their relationships. Economic data on accumulation of capital and production will be collected in the same time.

#### **Deliverables**

D1. Working paper describing the theoretical framework.

D2. Paper describing the results of the commodity system analyses and the data collection

### **WP2: Preparation and carrying out the interviews**

Start: 1.11.2002

Months: 9

#### **Objectives**

Selection of interview methods.

Preparation and testing of interview guidelines.

Carrying out the interviews of the key players in each node of the chosen commodity chains.

#### **Description of work**

Interview guides will be developed, tested and carried out together with farmers, handlers, retailers, processors, restaurants, the organic farm association and organic consultants. The interviews are planned to be structured by questions that focus on production, sourcing, and marketing strategies, the constraints and opportunities of organic enterprises, and the historical and developing trends in

the chosen sector. The interviews will be conducted with key players in each link of the commodity chain and thereby capture the essential trends and developments. This information will be an essential input to confirm or disprove the chosen hypotheses.

### **Deliverables**

D3: Paper describing the chosen interview methods.

D4: Documentation of the interview data.

### **WP3: Analyse of the collected interview and economical data**

Start: 1.7.2003

Months: 9

### **Objectives**

Systematic ordering and classification of the obtained data

Theoretical explanations of the classified data

Comparison of the theoretical explanations with the formulated hypothesis

Development of supply and marketing strategies for the organic food chain

### **Description of work**

The obtained research results of the economic and production dynamics within the organic food chains will together with the various social movements that are at stake in the consumption of organic food be used to identify and explain the diversification of the organic chain. As a second work phase this should lead to useful supply and marketing strategies for further growth of organic food production in a ten years perspective.

It is our intention to plan a workshop where people working in the organic sector is invited to discuss the developed strategies.

### **Deliverables**

D5: Working paper describing the obtained theoretical results.

D6: Workshop where the developed supply and marketing strategies will be presented and discussed.

### **WP4: Overall socio-economic evaluation and outline of the perspectives for the future development of the organic food system**

Start: 1.4.2004

Months: 9

### **Objectives**

Description of the socio-economic consequences of the formulated supply and marketing strategies  
 Analysis of the impact of the developed organic food strategies in relation to the global tendencies of accumulation of capital and food production, with perspectives on the national/ supra national regulation policies towards these tendencies.

Outline the future development of the organic food sector in a ten years perspective.

### **Description of work**

The work in this package will first be to identify the consequences of the selected strategies and evaluate these consequences within the chosen theoretical framework. Second, major work is related to the writing a final report summarizing all the obtained results and used methods.

### **Deliverables**

D7: An SJFI-report with a complete description of methods, obtained results and an outline of future perspectives for the organic food chain.

D8: An international article on socio-economic perspectives of organic food production.

## **9. Collaborative partners**

In order to stimulate to teamwork and sustained knowledge generation the project work will be integrated with activities in other SJFI projects. This is particular the case with respect to two projects.

The first project is “Economic analyses of the future development of organic farming – Effects at the field, farm, sector and macroeconomic levels” (financed by FØJO II). The objective of this research project, which is started in 2001, is to analyse the future development of organic farming in Denmark from the field, farm, sector and macroeconomic perspectives. A core activity is to simulate the economic consequences of a number of policy, regulatory and technology scenarios. Knowledge accumulated in this project might be of relevance in the formulation of these scenarios as well as the results of the simulated scenarios might be used in the above mentioned analyses of the development of organic food chains in a ten years perspective.

The second project is “Food quality and safety – Consumer behaviour, food chains and economic perspectives”. The general aim of this project, which is also started in 2001 and includes a high number of external participants, is to estimate consumers’ attitudes to current and new standards for food quality and safety and analyse the related economic consequences in the whole food chain.

As part of the project SJFI-Farm unit and KVL-Economic unit are currently co-operating to establish a research team concerning economic analyses of supply chains in the Danish Agro-Food sector. The selected food chains are taken from the pork, poultry and egg sector. It is our intention to investigate if the results from these selected commodity chain analysis can contribute to the verification of the outlined hypotheses in the regulatory theory (see page 12).

Therefore, Paul Rye Kledal will be a member of a research team that already consists of three research assistants (of whom one will soon start a Ph.D. education), a senior researcher and an associate professor.

Efforts are also been made by the two units to be partners in a EU network on safety and quality in Agro-Food supply chains. The network, that has about 15 partners from different countries and is co-ordinated by the Agri Chain Competence Center in the Netherlands, is expected to run over the years 2002-2006. Since this network is international oriented and interdisciplinary, it may be seen as valuable forum for getting a more broad understanding of all the factors determining the future developments of organic foods.

Finally, it should be emphasised that we will participate in relevant workshops and seminars etc., and will try to keep close contact with other national and international researchers working in the same or related areas.

### 10. Budget (current prices)

Year	2002	2003	2004
Costs: -----	DKK (1.000) -----		
Salary: AC	350	375	400
Salary: Projectleader	48	50	52
Travelcosts	15	30	15
Phd fees	40	40	40
Over heads	92	95	98
<u>Total costs</u>	<u>550</u>	<u>590</u>	<u>605</u>
Financing:			
FØJO	400	400	400
FØI	150	190	205
<u>Sum</u>	<u>550</u>	<u>590</u>	<u>605</u>

## 11. References

- Aglietta, M. 1979: *A Theory of capitalist regulation*. London: New Left Books.
- Atkins, P. & I. Bowler 2001: *Food in Society. Economy, Culture, Geography*. Arnold, London.
- Boehlje, M & L. F. Schrader, 1995: *The Industrialization of the Food System: Questions of Coordination*, NE-165 Conference Vertical Coordination in the Food System, Washinton D.C., june 5-6.
- Bonano, A., Bush L., Friedland W., Gouveia L., and Mingione E., (eds) 1994: *From Columbus to ConAgra. The Globalization of Agricultura and Food*. University Press of Kansas.
- Boon, Arnold 2001: *Vertical Coordination of Interdependent Innovations in the Agri-Food Industry*. Copenhagen Business School, Departement of Industrial Economics and Strategy. Ph.D – Serie 6.2001.
- Boyer, R. 1990: *The Regulation School: A Critical Introduction*, Columbia University Press, New York.
- Buttel, F. 1996: *Environmentalization: origins, processes and implications for rural social change*. Rural Sociology vol. 57 , 1-28.
- Coase, R. H. 1992: *The Institutional Structure of Production*. The American Economic Review vol. 82, no. 4, pp. 713-19.
- Cook, I., Crang P., and M. Thorpe 1998: *Biographies and geographies; consumer understandings of the origins of food*. British Food Journal no. 100, 162-67.
- Fine, B. 1993: *Resolving the diet paradox*. Social Science Information no. 32, 669-87.
- Fine, B. 1994: *Towards a political economy of food*. Review of International Political Economy 1, 519-45.
- Fine, B., Heasman, M. and Wright J. 1996: *Consumption in the age of affluence: the world of food*. London: Routledge.
- Fine, B., Heasman, M. and Wright J. 1998: *What we eat and why: social norms and systems of provision*. In Murcott, A. (ed.): *'The Nation's Diet: the social science of food choice*. London: Longman, 95-111.
- Friedland, W., A. Barton and R. Thomas 1981: *Manufacturing green gold*. (Cambridge: Cambridge University).
- Friedland, W. 1984: *Commodity systems analysis: an approach to the sociology of agriculture*. In Schwarzweller, H. (ed.) *Research in rural sociology of agriculture*. Greenwich, CT: JAI Press, 221-35.

- Friedmann, H. 1982: *The political economy of food: the rise and fall of the postwar international food order*. American Journal of Sociology nr. 88, S248-86.
- Friedmann, H. 1987: *Family Farms and international food régimes*. In Shanin, T. (ed.) *Peasants and peasant societies*. Oxford: Blackwell, 247-58.
- FØJO (Forskningscenter for Økologisk Jordbrug) 2000: *Principper for økologisk jordbrug*. Notat udarbejdet til FØJO's brugerudvalg.
- Goodmann, D & M. Watts 1994: *Reconfiguring the rural or finding the divide? Capitalist restructuring and the global agro-food system*. Journal of Peasant Studies no. 22, 1-49.
- Goodmann, D & Watts M. (eds.) 1997: *Globalizing food: agrarian questions and global restructuring*. London: Routledge.
- Goodmann, D. 1999: *Agro-food studies in the 'age of ecology': nature, corporeality, bio-politics*. Sociologia Ruralis no. 39, 17-38.
- Harsaa, Erik 1992: *Økonomi, Filosofi og Videnskab*. Systime. Herning-Denmark.
- Hart, O. 1995: *Firms, Contracts and Finansiell Structures*. Clarendon Press, Oxford.
- Hopkins, T. & I. Wallerstien 1986: *Commodity chains in the world economy prior to 1800*. Review no. 10, (1) pp. 157-170.
- Hopkins, T. & I. Wallerstien 1994: *Commodity chains: construct and research*. Pp. 17-20 in G. Gereffi and M. Korzeniewicz eds. *Commodity chains and global capitalism* (London: Praeger).
- Kledal, Paul Rye 2000: *Økologisk Jordbrug for Fremtiden? En økonomisk analyse af de potentielle økologiske jordbrugere*, SJFI WP no. 8/2000.
- Kledal, Paul Rye 2001: *Den Økologiske Driftsforms Placering i Dansk Landbrug*. In J. Christensen and S.E. Frandsen (eds.): *Økonomiske Perspektiver for Økologisk Jordbrug*. SJFI, rapport nr. 124, pp. 49-58.
- Jensen, M. C. & W. Meckling 1976: *The theory of the firm: Managerial Behavior, Agency Costs and ownership Structure*. Journal of Financial Economics 3, 305-360.
- Langlois, R. N. (ed.) 1986: *Economics as a process: Essays in the New Institutional Economics*. Cambridge University Press New York.
- Langlois, R. N. & N. J. Foss 1997: *Capabilities and Governance: The Rebirth of production in the Theory of Economic Organization*. DRUID Working Paper 97-2. Copenhagen Business School, Copenhagen.
- Liepietz, A. 1987: *Miracles and mirages: the crises of global Fordism*. London: Verso.

- Lockie, S. & S. Kitto. 2000: *Beyond the farm gate: production-consumption networks and agri-food research*. Sociologia Ruralis no. 40, 3-19.
- Marsden, T.K. & A. Arce 1995: *Constructing quality: emerging food networks in the rural transition*. Environment and Planning A no.27, 1261-79.
- McMicheal, P. 1992: *Tensions between national and international control of the world food order: contours of a new food régime*. Sociological Perspectives no. 35, 343-65.
- McMicheal, P. 1994: *The global restructuring of agroo-food systems*: Ithaca: Cornell University Press.
- Ministeriet for Fødevarer, Landbrug og Fiskeri 2001: *Fødevarer som offentligt anliggende. Sikkerhed, sundhed og kvalitet*. Regeringens Fødevarepolitiske Redegørelse II.
- Murdoch, J. 1994: *Some comments on 'nature' and 'society' in the political economy of food*. Review of International Political Economy no. 1, 571-77.
- Murdoch, J. 1995: *Actor-networks and the evolution of economic forms: combining description and explanation in theories of regulation, flexible specialization, and networks*. Environment and Planning A no. 27, 731-58.
- Murdoch, J. 1997: *Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society*. Society and Space no. 15, 731-56.
- North, D.C. 1984: *Transaction Costs, Institutions, and Economic History*. Journal of Institutional and Theoretical Economics no. 140, 203-13.
- North, D.C. 1989: *A Transaction Cost Approach to the Historical Development of Politics and Economies*. Journal of Institutional Economics no. 145, 253-60.
- Omta, S.W.F., J., Trienekens; and G. Beers 2001: *Chain and Network Science: a research framework*. Journal of chain and network science, vol. 1 (1).
- Perry, M. K. 1989: *Vertical Integration: Determinants and Effects*. In Richard Schmalensee and Robert D. Willig, (eds.): *The Handbook of Industrial Organization*, Elsevier Science Publishers B.V.
- Redclift, M. 1984: *Development and the environmental crisis: red and green alternatives?* London: Methuen.
- Tirole, Jean 1994: *The Theory of Industrial Organization*. Cambridge: The MIT Press.
- Tovey, Hillary 1997: *Food, Environmentalism and Rural Sociology: On the Organic Farming Movement in Ireland*, Sociologia Ruralis, vol. 37, nr. 1, april 1997.

- Trienekens, J.H. & P.J.P. Zuurbier (ed) 2000: *Chain Management in Agribusiness and the Food Industry. Proceedings of the Fourth International Conference*, Wageningen University, The Netherlands.
- Williamson, O. E. 1985: *The Economic Institutions of Capitalism*. The Free Press, New York.
- Williamson, O. E. 1989: *Transaction Cost Economics*. Handbook of Industrial Organization, Vol 1, Edited by R. Schmalensee and R.D. Willig. Elsevier Science Publishers B.V.
- Williamson, O. E. 1996: *The mechanisms of Governance*. Oxford University Press, Oxford.

## **Appendix**

**Title:**

**Future supply and marketing strategies in the Danish organic food-sector**

**Project number:** **VII.1**

**Acronym:** **SAMSON**

**Research group:**

- Mogens Lund, senior researcher, SJFI-Farm unit (project leader)
- Kostas Karantininis, associate professor, KVL-Economic unit (Ph.D. adviser)
- Paul Rye Kledal, research assistant, SJFI-Farm unit

A short C.V. for each member of the research group is included.

**Mogens Lund, PhD**

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In April 1983 I got a M. Sc. agricultural economics from the Royal Veterinary and Agricultural University, Copenhagen and in June 1986 I received a M. Sc. in commercial science from the Copenhagen School of Economics and Business Administration, Copenhagen.

In September 1987 I was awarded the Ph.D. degree in science of agricultural economics from the Royal Veterinary and Agricultural University in Copenhagen.

From September 1994 to now I have been a senior Research Fellow at the Farm Management and Production Systems Division. I am also an appointed Associate Professor at the Department of Economics and Natural Resources at the Royal Veterinary and Agricultural University.

My previous working experiences include a position as a visiting professor at the Department of Agricultural Economics and Natural Resources, Oregon State University, USA, in 1988/89 and a position as a visiting professor at the Department of Economics and Social Sciences, The Norwegian University of Agricultural Sciences, Norway, in 1991

Currently, I am working as a project leader of a team working with economic analyses of the pork, broiler and egg chains in the Danish Agro-Food system. This team is part of a greater project dealing with analysis of consumer behaviour and the development of strategies for improved food safety and quality. I am furthermore involved in a project concerning the finance of ownership and investments in agriculture and acting as chairman of the Economic Section in the Nordic Association of Agricultural Scientists (NJF).

My fields of interests include microeconomics, agricultural finance, efficiency analysis, risk and uncertainty, strategic management and economics of food supply chains.

**Selected Publications:**

Lund, M.; B. H. Jacobsen & L. C. E. Hansen, *Reducing non-allocative costs on Danish dairy farms: Application of non-parametric methods*. European Review of Agricultural Economics, no. 20, 1993: p. 327-341.

Lund, M.; D. E. Pedersen & L. C. E. Hansen, *Efficiency and size of agricultural production capacity*. Journal of International Farm Management, Vol. 2, No. 1, 1997: p. 1-8.

Lund, M. & J. E. Ørum, *Computerised Efficiency Analysis in Farm Business Advice*. Farm Management, Vol. 9, No. 10, 1997: p. 506-514.

Lund, M., Rådgivning i strategisk planlægningen inden for landbruget (Strategic consultation in agriculture). Report no. 94. Danish Institute of Agricultural and Fisheries Economics, Copenhagen, 1999.

Madsen, T. & M. Lund, *Samarbejde om økologisk oksekødproduktion (Co-operative production of organic beef)*. Report no. 117. Danish Institute of Agricultural and Fisheries Economics, Copenhagen, 2000.

### **Kostas Karantininis, PhD**

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Kostas Karantininis has been with the KVL since 1997. Prior to that he has been employed in various capacities at the University of Wageningen, The Netherlands; The University of Saskatchewan, Canada; The Panteion University of Athens, Greece; The European University; and the Mediterranean Agronomic Institute, Chania, Greece.

He has studied at the Aristotle University of Thessaloniki, Greece (BA Law and Economics); the University of Saskatchewan, Canada (MSc, PhD) and he was also a visiting scholar at the University of California, Berkeley.

He is currently teaching courses on Agricultural Marketing and Agribusiness and Economic Organization of the Agri-Food Chain at KVL. His teaching also includes occasional courses on Agricultural Cooperatives, Micro-Economic Theory, and Consumer Economics.

He has received various scholarships and award for best article by the Canadian Agricultural Economics Association in 1995.

He has published in professional refereed journals (such as *Journal of Econometrics*; *American Journal of Agricultural Economics*; *Canadian Journal of Agricultural Economics*, and others) in the areas of agricultural economics, agricultural marketing, agribusiness, and economic organization of the agri-food chains. He has presented his work in many international professional conferences in Europe and North America. This year he is chairing a conference on “contracts in agriculture” sponsored by the European Association of Agricultural Economists (EAAE) and the Nordic Association of Agricultural Scientists (NJF)

Currently, he is the team leader of a FAIR project on the “Quality Strategies and Producers’ Organisation in the European Agri-Food Sector: Consumer Information and Competition”. This concerns the issue of quality signals, labelling and competition in three industries (dairy, meat, and fruits and vegetables) in seven European countries.

His research interests focus on the economics of organisation in the agri-food chain. This includes issues of competition; food safety, quality assurance and labelling; contracts; and cooperative associations.

#### Some Recent Publications

- K. Karantininis , *Information–Based Estimators for the Non–Stationary Markov Model An Application to the Danish Pork Industry* , Forthcoming, *Journal of Econometrics*
- K. Karantininis, and Angelo Zago, *Endogenous Membership in Mixed Duopsonies*, Forthcoming, *American Journal of Agricultural Economics*
- K. Oustapassidis; A. Vlachvei; K. Karantininis, (1998), *Growth of Investor Owned and Cooperative Firms in Greek Dairy Industry*, *Annals of Public and Cooperative Economics*, 69(3), September: 399–417
- J.M. Gillespie; K. Karantininis; and G.G. Storey, (1997), *The Expansion and Evolution of Vertical Coordination in the Quebec Hog Industry*, *Review of Agricultural Economics*, 19(2): 350-370
- K. Karantininis, T.I. McNinch, W.J. Brown, (1997), *Risk and (Re-)Organisation of Agriculture: The Economics of Backgrounding Cattle in Saskatchewan*, *Canadian Journal of Agricultural Economics*, 45: 301-316

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## Fields of Interest

Organic farming in general and farm politics related to promoting organic farming.

Vertical integration in food production/food distribution and its impact on primary farming, food quality and food safety.

## Publications:

Kledal, Paul Rye (2000): Økologisk jordbrug for fremtiden? – en økonomisk analyse af de potentielle økologiske jordbrugere, Working Paper no. 8/2000, Statens Jordbrugs- og Fiskeriøkonomiske Institut. *Summary in english.*

Kledal, Paul Rye (2000): Den Potentielle Økologiske Jordbruger i Danmark. Forskningsnytt nr. 7-8/2000

Kledal, Paul Rye (2001): Den Økologiske Driftsforms placering i Dansk Landbrug. I J. Christensen og S:E Frandsen (eds.): *Økonomiske Perspektiver for Økologisk Jordbrug*. SJFI, Rapport nr. 124, pp 19-32.

Kledal, Paul Rye (2001): Potentialet for omlægning til Økologisk Drift. I J. Christensen og S:E Frandsen (eds.): *Økonomiske Perspektiver for Økologisk Jordbrug*. SJFI, Rapport nr. 124, pp. 49-58

Kledal, Paul Rye (2001): Økologi for Fremtiden. Jord og Viden nr. 11/2001.

Kledal, Paul Rye (2001): Melklister, billefangere og økologisk raps. Jord og Viden nr. 15/2001.

