

The Norwegian fish processing industry:

Regional adaptation and national policy implications

Arnt Fløysand og Stig Erik Jakobsen (SNF)

Abstract

This article focuses on the regional pattern of the fish processing industry in Norway and how this pattern can be included in the national fishery policy in an effort to develop more efficient and market oriented adaptations. After a short presentation of the theoretical point of departure for this analysis, the structure of the Norwegian fishery industry and the regional pattern of adaptation are described. Then we go on to present and discuss the factors behind the diversity of profitability and changes in activity level in the regions during the 1990s. Finally, some policy implications of this regional pattern of adaptation and regional development are discussed. The discussion is based on the findings of recent research, which has investigated how the firms of the Norwegian fish processing industry have adapted to increasing international competition and a national political liberalisation in the 1990s.

1. Introduction

During the 1990s the European fish processing industry has faced both increasing international competition and political liberalisation. In the same period the liberalisation of the international capital economy has been reflected in the national fishery policies. These political approaches to a very little degree emphasise regional variations in adaptations. This article focuses on the regional pattern of the fish processing industry in Norway and how this pattern can be included in the national fishery policy in an effort to develop more efficient and market oriented adaptations. After a short presentation of the theoretical point of departure for this analysis (section 2), the structure of the Norwegian fishery industry and the regional pattern of adaptation are described (section 3). Then we go on to present and discuss the factors behind the diversity of profitability and changes in activity level in the regions during the 1990s (section 4). Finally, some policy implications of this regional pattern of adaptation and regional development are discussed (section 5). The discussion is based on the findings of recent research, which has investigated how the firms of the Norwegian fish processing industry have adapted to increasing international competition and a national political liberalisation in the 1990s (Jakobsen & Fløysand 1998).

2. A theoretical framework

Economic agents are more or less integrated in the global economic system, but since different firms in different places respond differently to the general processes of capitalism, specific spatial hegemonic regimes of accumulations emerge. The history of capital accumulation has been synonymous with the constant emergence, construction and reconstruction of regional capitalism (Pred and Watts 1992). New perspectives in geography, sociology and organisational theories emphasise how localised resources and externalities are forces of competitiveness in an accelerating and more disorganised capitalism (Harvey 1989, Lash and Urry 1994). Theoretical concepts like "industrial districts" (Hirst and Zeitlin 1992), "new industrial spaces" (Scott 1988), "localised industrial complexes" (Amin and Thrift 1992), "local milieu" (Crevoisier and Maillat 1991) and "learning economies" (Lundvall and

Johnson 1995) have been developed to give a better understanding of local and regional dynamics.

A more or less common theoretical basis for these new perspectives is evolutionary theory, pioneered by Nelson and Winter. They claimed that economies are developed along pathways or trajectories: "...the condition of the industry in each time period bears the seeds of its condition in the following period" (Nelson and Winter 1982:19).

In further developing this perspective Granovetter (1992:4) states that all economic activity is embedded in social, cultural and political systems and therefore "socially situated". This focus on embeddedness also implies that strategies and modes of organisation of firms can be understood as a result of a constant interplay between the firm's own resources and conditions in their environment. The emphasis on the firm / environment interplay also gives relevance to Max Weber's classical statement that economic action must be understood as a type of social action. Economic action "...takes account of the behaviour..." (Weber 1947:88) and is therefore social. It is both an "economic" account, since economic action is affected by the existing supply and demand and by strategies of other actors, and a "social" account since the action also is related to collective knowledge and informal rules. It is important to emphasise that this knowledge and these rules must be understood as socially constructed. Collective routines and sets of rules constitute institutions, and these institutions are constantly produced and reproduced through actions of economic actors at the same time as they form conditions for their action (Berger and Luckmann 1967).

In our analysis we want to focus on regional production systems in the Norwegian fish processing industry. We can differentiate between four sets of conditions affecting firm's strategies and adaptations; factor conditions, demand conditions, political conditions and regional industry conditions (figure 1). The first three are external conditions for firms in a regional production system, while the latter are internal. *Factor conditions* are related to the supply, price and quality of input factors, such as raw fish, semimanufactured products and items for production. *Demand conditions* are characteristics of the market for the firm's products, such as level of demand, price and type of customers. *Political conditions* are related to the political regulation of the activity, which includes both general rules for the activity and economic support measures. *Regional industry conditions* are characteristics of the regional industry, such as size of the firm, ownership structure, level of competition, level of co-operation, level of knowledge and existing socio-cultural values.

Figure 1: Factors affecting activity in a regional production system

3. The structure of the Norwegian fish industry

In 1995, the Norwegian fish processing industry consisted of approximately 500 firms employing 12500 person (SSB Fiskeristatistikk). Between 1970 and 1990, the industry went through several crises. In this period, the numbers of firms and employees decreased, but during the 1990s the industry recovered and even increased in number of employees. The firms of the fish processing industry are located all along the Norwegian coastline (see figure 3), but as Table 1 demonstrates there are regional disparities and concentrations. Measured in share of labour force, more then half of the industry is found in the regions of Finnmark, Nordland and Møre og Romsdal. Further, the figures show that since the end of the 1970s the regions' shares of the total labour force of the Norwegian fish processing industry have changed in favour of the regions of Møre og Romsdal and Sogn og Fjordane, and to the disadvantage of Rogaland and Finnmark.

Table 1: The regions percentage share of the total labour force in the Norwegian fish processing industry

Region \ year	1977	1980	1985	1990	1994
Finnmark	22,5	23,1	25,2	15,2	18,9
Troms	10,4	12,0	12,7	11,6	10,4
Nordland	17,7	19,3	17,9	17,4	16,7
Trøndelag	6,6	6,4	6,4	7,9	6,2
Møre og Romsdal	14,8	14,1	14,0	15,7	18,9
Sogn og Fjordane	6,3	6,0	6,9	11,7	10,7
Hordaland	7,6	7,1	6,9	9	8,2
Rogaland	9,4	8,1	6,1	6,7	5,6
Skagerrak	4,7	3,9	3,9	4,8	4,4

Source: SSB Fiskeristatistikk

The profitability of the industry has been considerably lower than in other industries in Norway and the profitability differs over space. The regional variation in profitability is shown in Figure 2. The index measures the profitability of the firms in the period from 1990 to 1996. The income yield is highest in the regions of South Norway with the exception of Sogn og Fjordane. Legal adjustments have been made in the political regulation system during the 1990s in an effort to increase the profitability of the industry (for further discussions see Jakobsen & Fløysand 1998). In this process the factor conditions and demand conditions have been altered through several changes in national legal regulations. For both the market for raw fish and for processed products, increased competition has been the outcome. The long-term policy goal behind these changes has been to create a political framework stimulating more market oriented strategies at firm level.

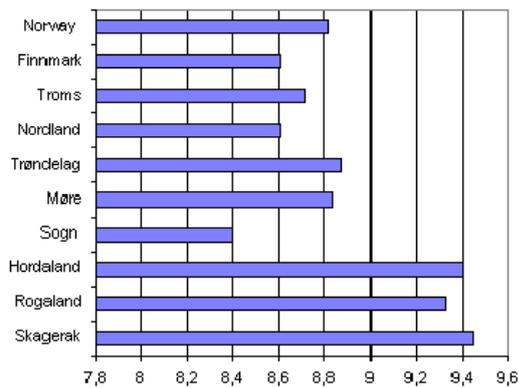


Figure 2: Index of profitability at regional level 1990-1996.

Source: Jakobsen & Fløysand 1998

Small firms dominate the Norwegian fish processing industry. The average firm employees 26 persons. Only 6% of the firms employ more than 100 persons (big firms), one third between 20-99 persons (medium sized firms), meanwhile the remaining 60% employ less than 20 persons (small firms). The degree of product specialisation at the firm level is fairly high. Statistics normally categorise the industry on the bases of the dominating product of the production units. The common categories in use have been the conventional or traditional sector, the freezing sector, the canning sector and "other processing activities" including production of fishmeal. But this categorisation system dates back to the production pattern that characterised the industry in the 1970s. During the last three decades, the dynamics of the industry have to a large degree outdated this system of categorisation. Therefore a more convenient system of categorisation based on the present activities of the industry has been developed for this study. This system has been adjusted not only in relation to the existing pattern of production, but also to the level of processing. Using this system the industry can be divided into five sectors: The fresh fish sector, the conventional sector, the freezing sector, the consumer sector and other processing activities.

Our data demonstrates that the fresh fish sector has gained importance in the Norwegian industry (table 2). This development pattern is mainly related to deliveries of raw material from a growing fish farming industry in Norway during the last three decades. The majority of the production of farmed fish is exported fresh and processing is limited to slaughtering and packing. In addition, good prices and increased demand on international markets have increased the fresh fish sector share of the output of the Norwegian fish processing industry. The average size of the firms in this sector mirrors the global picture.

Table 2: Share of total employment and average number of employees in the sectors of Norwegian fish processing industry in 1997.

Sector	Share of total employment (%)	Average number of employees
Fresh fish	30	26

Conventional	25	17
Freezing	27	59
Consumer	11	37
Other processing	7	18
Total	100	26

Source: Jakobsen & Fløysand 1998

Further, Table 2 indicates that the conventional sector where fish is salted, dried or smoked by the use of traditional techniques, maintain a strong position in the fish processing industry in Norway. The firms in this sector have a long history in processing cod, pollack and haddock. One of the characteristics of the sector is the small size of the firms. Another characteristic is that seasonal peaks very often mark the management of the firms in the local fisheries they depend on. However, a minority of the firms in this sector (mainly some of the producers of dried salted fish) are all year operated, large sized units.

The freezing sector is of most importance in the fish processing industry in Norway. The firms of this sector are generally medium or large sized capital intensive and produce semi-processed frozen products. After a period of decreasing catches of cod and deep crisis in the sector during the 1980s the activity has recovered and expanded in the 1990s. The crisis as well as the recovering of the freezing sector has mainly been related to catch fluctuations in the cod fisheries. But increased catches and freezing of herring and mackerel and more favourable development in the cod fisheries explains the positive development of the sector in the 1990s.

The consumer sector consists of firms that operate with the most sophisticated productions lines in the Norwegian fish processing industry. The average size of the firms of the sector in terms of number of employees is 37. This type of production is the most value adding, but amount to only 11% of the total employment in the industry. The sector includes the "survivors" of the canning sector based on pelagic species. Historically, the canning sector was the most powerful part of Norwegian fish processing, but has lost influence in recent years. The labour force has declined from 4000 employees in 1970 to 600 at present. In the 1990s the expanding part of the consumer sector are firms producing highly refined products, designed and packed for consumption.

With the exception of the fish meal industry the category of "other fish processing" consists of a complex, but at a national level less important, variety of activities. Even if the fishmeal industry still dominates the statistics of this category, the industry has been reduced dramatically during the last 30 years. The number of employees has for example been reduced from 2500 (1970) to less than 500 today. The decrease in the fish meal industry can be related to several factors. The crises in the supply of low quality fish species such as capelin, increased competition on low quality raw fish markets caused by new demand from the fish farming industry, and increased use of pelagic species for human consumption, are among the most important. The remaining fish meal industry is composed of modernised, capital intensive, specialised and compatible production units.

4. The regional variety in adaptation

4.1 Introduction

The regional variations in the adaptations of Norwegian fish industry are well defined. There are for example evident variations in the sector structure at regional level (Table 3). Regional variations at firm level can also be observed along the lines of volume of production, size, profitability, local embeddedness, formal and informal knowledge, and the organisation of input and output relations of the firms. Changes in the level of activity and differences in profitability at the regional level can be explained by different internal and external conditions. In our discussion of the specific regional pattern of adaptation we will focus on the factor conditions (the resource situation), demand conditions (the market situation) and the regional industry conditions.

Table 3: The sectors of Norwegian fish processing industry at regional level in 1997 (%)

Region\ Sector	Fresh fish	Convent ional	Freezing	Consumer	Other processing
National average average	30	40	12	8	10
Finnmark	24	30	26	9	11
Troms	35	51	8	3	3
Nordland	22	56	9	1	12
Trøndelag	58	5	0	24	13
Møre og Romsdal	20	56	10	7	7
Sogn og Fjordane	46	7	40	7	0
Hordaland	51	21	7	14	7
Rogaland	23	18	29	18	12
Skagerrak	21	42	4	8	25

Note: The firms are classified on the bases of their most important product.

Source: Jakobsen & Fløysand 1998

4.2 Skagerrak

The fish processing activity in the Skagerrak region is modest, but characterised by stability in employment and relatively good profitability in the 1990s. The level of activity is more or less stable over the year. Several characteristics of regional industry conditions can contribute to

explain this situation of stability. In the first place, the firms of the industry have adapted to the uncertainty of resource input that in general characterise the fish processing industry by establishing a differentiated supply system, and purchasing inputs from the local coast fleet, the industrial long distance fleet, the fish farming industry and from other fish processing firms outside the region.

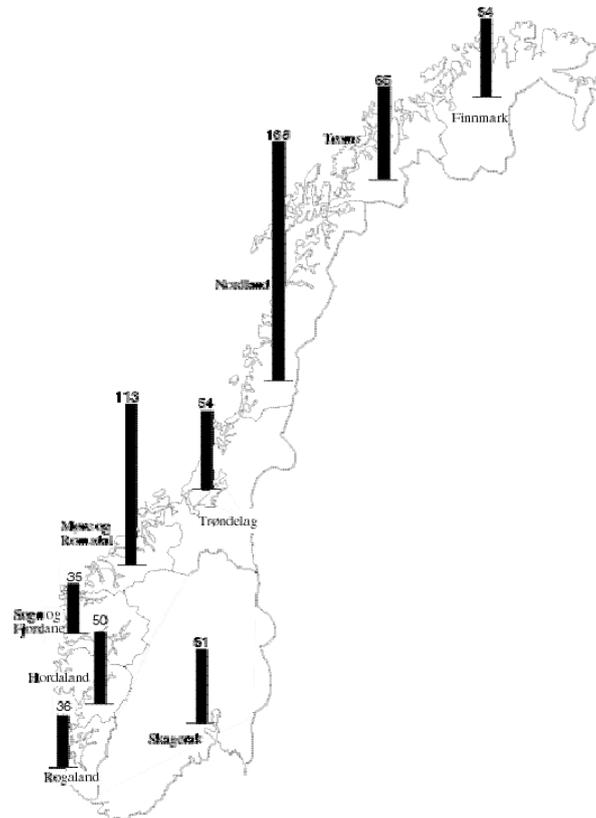


Figure 3: Fish processing firms in Norway at regional level.

Source: Jakobsen & Fløysand 1998

The stability in activity can also be related to the specific demand conditions of the region. The firms in the Skagerrak region mainly attend to the Norwegian market. This is a relative differentiated market that until recently has been modestly exposed to international competition. Their market conditions, together with flexibility in the firms' input relations, are mirrored in the differentiated production spectres of the firms. A third factor that can have contributed to this situation of stability in activity and relatively positive development in profitability in the 1990s, is the high number of small, local owned and independent firms in the region. The firms of the region have a long history and are managed by persons with long working experience in the industry. Thus, the industry has accumulated large amounts of local knowledge and close relations to important actors in the local fishery system they take part in. The result is a production pattern characterised by relative flexible specialisation and production units that are less dependent on one single product.

4.3 Rogaland

Traditionally, Rogaland has been the centre for the canning and fishmeal industry. Thus, the declining of the industry in Rogaland from 9 to 7% share of the total labour force from 1970s

to 1990s, was caused mainly by structural adjustment to falling markets for canned seafood, declining catches of low quality fish species and increased competition on low quality raw fish markets. The development pattern of the industry during the 1990s has been very different. At present the production of frozen fish products is the most important activity, the number of employees has been stable, and the industry has been showing positive rates of income yield.

The generally positive profitability situation and the stability of employment are linked to the flexible supply of raw fish at regional level. As in Skagerrak, the industry rotates purchases of raw fish between different types of suppliers, but under different demand conditions and with less flexibility at firm level. One of the main explanations behind the successful restructuring story in Rogaland is the growth in processing and trading of pelagic fish within the freezing sector. During the 1990s raw material traditionally processed in the fish meal industry became an object of demand in human consumption markets. The fish processing industry in Rogaland took advantage of the new situation by increasing its processing of frozen herring and mackerel products for export to international markets, especially Japan. In addition the industry further developed its export markets in Western Europe and North America. When it comes to product specialisation the pattern is split into two. The fish meal industry is based on scale and specialisation, while the remaining industry are using more product flexible adaptations. In sum this reduces the industry's vulnerability towards fluctuations in resource supply and market demand.

4.4 Hordaland

The fish processing industry in Hordaland has, as in Rogaland, seen its canning sector strongly reduced during the 1970- and 1980s, but growth in the fresh fish sector as a result of an expanding fish farm industry has more than balanced this. Accordingly, the relatively positive development in the fish processing industry in Hordaland in the 1990s both in relation to profitability and employment to a very large degree are explained by the increased volume of production in the fish farming industry in the same period.

The industry's dependency on input of farmed fish implies that the firms in Hordaland are specialised and dependent on export of semi-processed salmon products to the European market. This means that the development in the conditions regulating the common market in the European Union (EU) countries to a large degree structures the demand conditions of the industry. Norway became a member of EEA in 1994, but this did not change the export duty fees on processed salmon and the duty system that continued to favour the export of fresh or semi-processed salmon products. Thus, this integration of Norway towards the EU market hardly explains the relatively positive development of the industry in the 1990s. Price changes for semi-processed salmon products have not been beneficial for the exporters in this period. Instead, the positive development in income yield in the region is linked to regional industry conditions. Huge investment in new production facilities characterises the industry. These investments have reduced the cost of production. In addition the industry has gone through a process of centralisation and concentration. In sum these changes in the internal conditions of the firms have made the industry more efficient and competitive.

4.5 Sogn og Fjordane

Sogn og Fjordane is among the regions that have experienced the largest increase in labour force during the 1990s. Unfortunately this is also the region where the industry has lowest

profitability. The explanation behind this development is complex. The structural situation of the industry is characterised by an almost equal share between the fresh fish and the freezing sector. Accordingly, increased processing of farm fish in the fresh fish sector can be advanced as part of the explanation behind the growth of the industry in the 1990s. However, the most important factors behind the growing activity in Sogn og Fjordane are the positive development in catches and the demand for pelagic fish. Both the fresh fish and freezing sectors in the region have exploited this situation by increasing their volume of production of products based on herring and mackerel.

When it comes to the relatively weak performance of the industry with regard to profitability, neither the catch conditions nor the demand conditions are satisfactory factors of explanation. As in Rogaland the industry has benefited from large catch quotas in the herring and mackerel fisheries. The market adaptation of the region is characterised by being the most flexible in Norway. This indicates that the explanation behind the low-income yield have to be found within regional industry conditions. In this regard the firms in Sogn og Fjordane are distinguished from the average firm in Norway both in size and in strategy of production. The firms are relatively large sized and a relatively high share has been established very recently (during the 1990s). Therefore the low profitability of the industry might be explained by the fact that the firms within the freezing sector still have to wait for the benefits of scale effects. Another explanation is internal restructuring of the firms through the introduction of new production and market strategies. The firms of the region have a top score both in relation to variety of products processed per production unit and in relation to investment in new activities. Thus, the relative negative profitability figures of the industry can be a short-term effect of introducing more flexible product and market strategies to the region.

4.6 Møre og Romsdal

Møre og Romsdal is among the most importing fish processing regions in Norway. During the 1990s the region has strengthened its position and passed all regions except Finnmark in employment figures. Profitability has also been positive in this period. The structural situation of the industry is characterised by a very large conventional sector, very much larger than number two, the fresh fish sector. The conventional sector serves as the centre of dried salted fish production in Norway. In the fresh fish sector, farmed fish is the main raw material. Finally, processing of herring and mackerel are important activities in the freezing sector.

The factor conditions of the industry can partly explain the positive development of the fish processing industry in the region. The industry's raw material purchases are scattered across different types of fishing fleets and national and international fisheries. They produce dried salted fish of cod, pollack, ling and cusk. This means that reductions in isolated stocks of fisheries or changes in quotas for specific fleets have had limited effects on the raw material supply situation of the conventional sector in the 1990s. The supply of pelagic fish to the fresh fish and freezing sector has also been very good in this period. Other factors behind the positive development of the industry are found in the demand conditions of the industry. Increased demand and prices in the dried salted fish market (especially the Brazilian market) have resulted in both growth in volume of production and increased profitability in the conventional sector. Another factor behind the positive development of the fish processing industry in the region is that the firms in the fresh fish and the freezing sector have exploited the positive development in the demand for herring and mackerel in the markets of Asia extraordinary well.

This means that the regional industry conditions also have to be examined in the explanation of the expansive development pattern of the industry. The rate of investment has for example been considerably higher in the industry of Møre og Romsdal compared to the majority of the other regions in the 1990s. Second, the specific regional culture of business management seems to have a significant impact. Møre og Romsdal is more than any of the other discussed regions dominated by local controlled, independent capitalistic firms with a long history. One impact is that the industry has accumulated large reserves of local embedded knowledge. In other regions of Norway, the task of exporting the processed fish traditionally have been taken care of by external economic actors, but in Møre og Romsdal this has always been an integrated part of firm management. Accordingly, the local embedded marketing knowledge of firms in Møre og Romsdal seems to have made them better equipped to face the new political regulation regime of liberalism.

4.7 Trøndelag

The fish processing industry of Trøndelag traditionally has been differentiated, but the restructuring of the industry in 1970s and 1980s has resulted in the dominance of the fresh fish sector. The factor and demand conditions of the region are comparable to the case of Hordaland. The industry is dependent on raw material from the fish farming industry and on the demand on the European market. In the 1990s the growth in the processing of salmon has balanced the decline in other processing activities so that the total number of employees has been maintained. Profitability has also been positive in this period, but never as high as in Hordaland. Accordingly, compared to Hordaland the restructuring process of the industry towards increased processing of farmed fish has to a lesser degree generated surplus in Trøndelag. One explanation behind this is that the process of restructuration started later in Trøndelag. Another explanation is the larger share of newcomers in the industry. Such firms need more time to generate high rates of income.

4.8 Nordland

Nordland is one of the most important regions in Norway for the processing of fish. The region's share of the total national labour stock in fish processing is nearly 17%. As with the rest of the industry, fish processing activities in the region were heavy reduced in the 1980s, but the recovery process of the 1990s have been less marked in Nordland than in other regions of Norway. Measured in employment the regions position has been weakened, and the level of profitability in the industry has been lower than the national average.

The factors conditions of the industry in the 1990s partly explain this development pattern. The industry is highly dependent on the local cod fishery. In the late 1980s this fishery went through a crisis that struck the firms both in the conventional sector and the freezing sector. Thus, the recovery of the industry in the 1990s to a large degree is proportional to the recovery of the local cod fishery in this period. In addition the growth in the fresh fish sector mainly caused by increased supply of farmed fish has improved the factor conditions of the region.

The demand conditions of the industry have also challenged the industry in the 1990s. The dominating processed products within the freezing sector are block frozen cod fillet, while the dominant product in the conventional sector is stockfish. Increased production from firms in Alaska and South America has resulted in more intensive competition on the international

market for frozen cod fillet. In the same period the market for stockfish has shrunk, especially the Nigerian market.

The characteristics of the regional industry conditions have also influenced the industry's ability to introduce offensive strategies. The investment rate in the industry is the lowest in Norway and shows that the industry has used small economic amounts to challenge the new factor and demand conditions. Small sized and family owned firms dominate the industry, with a very strong dependence on the local fisheries. The average age of the managers of the firms is very high and they have limited formal qualifications. In addition, the size structure of the industry hinders individual firms in spending considerable effort and economic resources on the marketing, distribution and export of their products.

4.9 Troms

As in Nordland, the region of Troms experienced a marked decline during the 1980s and has been unable to regain its position in the national industry in the recovery period of the last decade. The profitability situation of the firms has, however, been better than in Nordland.

Developments in factor conditions have been very similar to those in the other regions of North Norway (Nordland and Finnmark). The crisis in the cod fishery in the late 1980s struck both the conventional and freezing sector badly, but as for Nordland the sectors recovered with increasing quotas and catches of cod in the 1990s. In the same period the volume of production of farmed fish in the region increased rapidly and created new opportunities for the industry. The demand situation of the fresh fish sector and freezing sector also mirrors the situation found in Nordland. The different adaptations within the dominant conventional sector in the two counties can however help us in explaining the difference in profitability. The firms in the conventional sector in Troms have concentrated their efforts on salted fish and have profited from the positive development in the international market for salted fish in the 1990s.

The regional industry conditions indicate that the firms in the region have undertaken restructuring. The investments in the 1990s have been among the most intense in Norway and are spread both over investment in existing activities and in new activities. A large number of the firms have for instance started production of fresh fish. Accordingly, the response to the crisis in the cod fisheries in north of Norway and the newly introduced liberal policy regime has been much more active than in Nordland.

4.10 Finnmark

Finnmark has been and continues to be the most important fish-processing region in Norway. Traditionally, the freezing sector has been dominant. This sector faced, as mentioned earlier, increased competition on its main product (frozen blocks of fillet) both during the 1980s and 1990s. Thus, the dramatic decline in the region's fish processing industry in this period can be explained by the resource crisis in the fisheries in the Barents Sea at the end of the 1980s. Between 1980 and 1990 the region experienced a decline in employment close to 60%, and not surprisingly the rates of profitability in the industry have been under the national average in the 1990s.

As mentioned, the negative factor conditions of the 1980s were closely related to the crisis in the cod fisheries. Further, they were related to the fact that the fish farming industry was

poorly developed in Finnmark. Thus, the highly specialised freezing processing industry was unable to reduce the crisis in traditionally fisheries with raw material supply from the fish farming industry, as was the case in some of the regions further south. Also the regional industry conditions seem to have influenced the situation. In the 1970s and 1980s the major production units were controlled by the central government. Its main strategy towards resource and markets fluctuations came in form of capital flows that kept businesses going in periods of market depressions and resource crisis. This strategy to a large degree cemented an old fashioned and rigid industry structure and suppressed the need for the introduction of more efficient modes of organisation.

The deep crisis in the freezing sector, and a change in national policy towards liberalisation, led to a process of radical restructuring of the industry in the 1990s. A majority of the long established firms, including the state controlled firms, have vanished and been replaced by newcomers. The newcomers are both local entrepreneurs and firms from other regions. The consequence has been a more differentiated industry structure. The processing of frozen fish is still important, but much less dominant than in the 1970s and 1980s. The increase in volume of production both in the fresh fish and conventional sector (salt fish production) has changed the industry structure completely. Educated persons demonstrating innovative attitudes manage many of the new firms, introducing new production processes and new products into the region. At present, fresh, frozen and salted processing activities have a balanced share of the total outcome. On the other hand, the high number of newcomers can be a risk in such a fluctuating industry as fish processing, and there exist no causal relationship between theoretical knowledge and successful business management. The high number of externally controlled units can also reduce the number of functions carried out at the local plant, for instance by leaving the development and resource activities outside the region.

5 Policy implications

The regional pattern in the Norwegian fish processing industry is a outcome of a historical process influenced by the specific factor conditions, demand conditions, political conditions and regional industry conditions in each region. The conventional sector is dominant in Troms, Nordland and Møre og Romsdal. In Troms these firms are mainly involved in the production of salted fish; in Nordland in the production of stockfish and in Møre og Romsdal the production of dried salted fish. In Trøndelag and Hordaland a fresh fish sector dependent on the fish farming industry is dominant. The conventional sector and the production of shrimps are the main activities in Skagerrak. In Sogn og Fjordane the fresh fish sector based on both farmed and wild fish and the conventional sector based on pelagic fish are the most influential. The regions with the most differentiated industry structure are Finnmark and Rogaland.

Legal adjustments have been made in the national political regulation system in an effort to increase the profitability of the firms. The long-term policy goal behind the changes has been to create more market-orientated adaptations. It can be argued that this political deregulation has made the demand conditions and the regional industry conditions more influential. At the same time, competition on international markets for fish products has increased. As showed above, the regions have responded differently to these macro level changes. However, the general tendency is that outcome has been more positive in regions where the industry

traditionally has been dominated by business cultures marked by private initiative and capitalism, with Møre og Romsdal as the most outstanding example.

In a short-term perspective, political deregulation and stronger focus on the market forces as governance structure can contribute to make the industry more efficient and increase the profitability at the firm level. The most probable outcome for the Norwegian fish processing industry, which as we have seen is dominated by small and medium sized firms, is take-overs, mergers and both horizontal and vertical integration. In a longer perspective this can lead to an altering of the regional pattern of adaptation that characterises the Norwegian industry. The regional structure of the Norwegian fish processing industry is characterised by plurality. If we accentuate this, the industry in Norway in a global perspective can be described as a "corporation" consisting of a range of differing "divisions". These divisions are structured according to geographical location and carry out specific lines of production within the Norwegian fish processing "corporation".

The variation between the "divisions" both in regard to localisation and products imply that the Norwegian fish processing "corporation" can be characterised as a multifarious and a flexible "organisation". This means that the industry at an aggregated level is less exposed to fluctuations in single markets and in resource stocks of single species than in the case of a specialised "corporation". It also implies that the increased standardisation of the industry can reduce the possibility of reaching the political goal of a more profitable industry in a long time perspective. A development towards a homogenised structure dominated by a few big actors means that the industry would lose the flexibility of the present regional diversified pattern of adaptation. Thus, increased homogenisation of the industry will imply increased vulnerability towards fluctuations in both the resource base and the market. Another cumulative effect of the political deregulation and the efforts of making the industry more efficient by the use of the market forces are increased geographical concentration. This runs counter to the second most important goal of Norwegian fishery policy stating that the industry shall contribute to the maintenance of the pattern of settlement along the Norwegian coast line. A third effect of increased standardisation and concentration can be loss of local knowledge and capabilities. In an industry characterised by globalisation and intensified international competition, this form of accumulated knowledge in the regional production milieux often turns out to be a critical factor for competitiveness.

The main questions to answer, then, are how a national fishery policy simultaneously can encourage the establishment of more market-orientated adaptations at firm level, conserve and further develop local knowledge and capabilities at regional level, and maintain the flexible production pattern at national level? Our argument is that these goals can best be fulfilled if the national fishery policy is anchored in the existing regional pattern of adaptation. This means that, in our opinion, the main policy goal should be to further develop the regional milieux and avoid a marked process of homogenisation and geographical concentration.

This can be realised through different policy actions. If we return to the "corporation" metaphor, two main alternatives for action can be distinguished. One strategy is to increase the autonomy and the self-governance of the existing "divisions" or regions. In practical policy, this implies that political power should be handed down to a regional level. In terms of political organisation, it means that we are moving from a structure composed of a main office and different divisions to a organisation structure based on a holding company (the national fishery policy) and a given number of autonomous divisions (regions). This second

strategy implies the introduction of an intermediate administration level. The fish processing industry corporation Norway could then be separated in "territories" as for example North Norway, Central Norway and South Norway. Accordingly, these "territories" would consist of the different "divisions" (regions) in their territorial domain. In both cases policy decisions related to, for example, development funds and the distribution of quotas needs to be delegated from the national level to a lower administrative level. But the responsibility of some functions such as trade policy should remain under the control of the national government. The main point is however that the suggested concepts of organisational structure permit policy actions that can be adjusted to the different distinctive regional qualities of the industry. The traditional, but expansive and internationally oriented dried salted fish industry in Møre og Romsdal needs for example different incentives than the newly established salt fish industry in Troms and Finnmark.

In both cases of "autonomous divisions" and "territories", the policy needs to stimulate more market-oriented management at firm level and to the maintenance and further development of the local knowledge immanent in the regional pattern of adaptation. As we have seen, the Norwegian fish processing industry consists both of small, medium sized and large firms. Increased market orientation means higher investment costs at the firm level. One way of solving this cost problem, especially for small and medium sized firms, is to engage them in collective solutions. These firms can realise benefits of scale, strengthening their position in negotiations and develop products closer to the requirements of the market through collaboration arrangements. The policy instruments should be organised at a regional level and encourage the firms in the area to establish strategic alliances. They should also stimulate the establishment of alliances with actors outside the regions. Through participation in such constellations, the small and medium sized fish processing firms will be able to develop market-oriented strategies. Simultaneously they will be in a position to learn the art of networking or the operation of inter-organisational relations and to take part in collective learning processes. Collective knowledge accumulated in such alliances will prepare the participants for the next step in the process, to develop strategic alliances towards actors in the export, wholesale and retail sector. Political institutions should support in this development for instance by establishing contact with relevant partners at international market levels.

6. Conclusion

In this article we have focused on the regional pattern of the Norwegian fish processing industry. In a detailed presentation we have revealed that this pattern is marked by regional specialisation. The changes in the level of activity and in profitability at regional level to a large degree can be linked to regionally specific factor conditions, demand conditions and regional industry conditions in the different areas. On this basis, we have argued for a regionalised policy approach in the efforts to make the Norwegian fish processing industry more market orientated. Policy should not only trust the market forces as governance structures for establishing a more efficient industry. In a long-term perspective, this will probably lead to homogenisation and geographical concentration at the firm level, altering the existing local capabilities stored in the diversified adaptations at regional level and reduce the flexibility immanent in the present adaptation at national level. In order to reach the goal of a more profitable and market oriented industry, we have argued for regulations that encourage the establishment of inter-firm relations and collective learning processes at the level of the regional production milieu. A regionalisation of the national policy will be the most

sustainable way of stimulating more efficient and market orientated strategies in the long run. A diversified regional structure means flexibility towards both resource and market fluctuations and further development of local capabilities and know-how. In our opinion, this will lead to increasing competitiveness for the Norwegian fish processing industry.

References

Amin, A. and Thrift, N. 1992 Neo-Marshallian nodes in global networks, *International Journal of Urban and Regional Research*, 16: 571-587.

Berger, P.L. and Luckmann, T. 1967 *The social construction of knowledge: A treatise in the sociology of knowledge* (London: Penguin).

Crevoisier, O. and Maillat, D. 1991 Milieu, industrial organization and territorial production system: Towards a new theory of spatial development, in Camagni, R. (ed) *Innovation networks. Spatial perspectives* (London: Belhaven Press), 13-34.

Granovetter, M. 1992 Economic institutions as social constructions: A framework for analysis, *Acta Sociologica*, 35: 3-11.

Harvey, D. 1989 *The condition of postmodernity. An enquiry into the origins of cultural change* (Oxford: Blackwell).

Hirst, P. and Zeitlin, J. 1992 Flexible specialization versus post-fordism: Theory, evidence, and policy implications, in Storper, M. and Scott, M.J. (eds) *Pathways to industrialization and regional development* (London: Routledge), 70-115.

Jakobsen, S-E. og Fløysand, A. (1998): Endrede rammebetingelser for norsk fiskeindustri. En empirisk analyse av romlige variasjoner i tilpasningen. *SNF-rapport 57/98*. Stiftelsen for samfunns- og næringslivsforskning.

Lash, S. and Urry, J. 1994 *Economies of signs and space* (London: Sage Publications).

Lundvall, B-Å. and Johnson, B. (1995): The learning economy, *Journal of Industry Studies*, 1: 23-42.

Nelson, R.R and Winter, S.G. 1982 *An evolutionary theory of economic change* (Cambridge: Harvard University Press).

Pred, A. and Watts M.J. (eds) 1992 *Reworking modernity: Capitalism and symbolic discontent* (New Brunswick: Rutgers University Press).

Scott, A.J. 1988 *New industrial spaces* (London: Pion Limited).

Weber, M. 1947 *The theory of social and economic organization* (New York: The Free Press).