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Marine Fishing Tourism in Norway: Structure and Economic Effects

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Abstract in Norwegian:
Sjøfisketurisme er en voksende aktivitet i Norge. Norges lange kyst med en forholdsvis åpen tilgang til fritidsfiske, mangel på et fiskeavgiftssystem og et register for fisketurismebedrifter innebærer at det er krevende å identifisere fisketurister og fisketurismebedrifter for datainnsamlingsformål. Denne artikkelen presenterer en studie hvor denne utfordringen er søkt overkommet gjennom å kombinere data fra bedriftene på kapasitet og gjestedøgn med data fra turistene på daglig forbruk i løpet av fiskeferien.

Fokus i studien har vært på de mer profesjonelle fisketurismebedriftene som tilbyr en kombinasjon av overnatting, båt, fasiliteter for å håndtere fangst og et vertskap. Studien har identifisert 434 bedrifter som tilhørende denne industrialiserte delen av norsk sjøfisketurismenæring. Disse bedriftene tilbyr til sammen 14.968 senger og 2.369 båter. Det totale antall gjestedøgn i disse bedriftene er 1.257.577 hvorav 46,5 % er fiskegjestedøgn. 83 % av fisketuristene reiser i kategorien "gutta på tur" mens 17 % reiser med familie. Vi finner at daglig forbruk varierer med både reisefølge og reisemåte (transportform). Den totale omsetning på alle varer og tjenester i den studerte delen av norsk sjøfisketurismenæring beregnes til 842,3 millioner kroner i 2008. Vi har også beregnet de totale økonomiske effektene av dette turistkonsumet i 4 ulike regioner i Norge.

Abstract in English:
In Norway marine fishing tourism is a rapidly developing activity. The long Norwegian coastline with a fairly open access to salt-water recreational fishing, the lack of a license system and a registry of fishing tourism enterprises makes it challenging to identify tourists and enterprises for survey purposes. This article presents the results from an economic impact study attempting to overcome these challenges through combining supply-side data on capacity and guest nights with demand-side data on daily expenditures collected from tourists via European tour operators.

The study focuses on the professional establishments, providing services to tourists who purchase a specialized fishing holiday package including accommodation, boat rental and facilities for rinsing and freezing fish catch. The study identified 434 enterprises as belonging to this Industrialized Fishing Tourism sector (IFT sector), providing 14,968 beds and 2,369 rental boats. The total number of guests nights in these enterprises is 1,257,577 and 46.5% of these are fishing tourist guest nights. 83% of the fishing tourists travel in groups of male friends and 17% travel with members of the family. We find that fishing tourist expenditure vary with both travel group and mode of transportation. The total expenditure in the IFT sector is 104 million Euros. We have also calculated the total economic impact from this expenditure in four different regions.

Keywords: Recreational fishing, marine fishing tourism, economic impact, visitor expenditure, Norway

Introduction

Recreational fishing is defined by the FAO Code of Practice for Recreational Fisheries as: "Fishing of aquatic animals that do not constitute the individual's primary resource to meet nutritional needs and are not generally sold or otherwise traded on export, domestic or black markets." Recreational fishing is an important part of modern culture (Lowerson, 1989; Hickley & Tompkins 1998; Washabough & Washabough, 2000; Pitcher & Hollingworth, 2002; Pawson, Glenn *et al.*, 2008; Aas, 2008) and an im-

portant part of the global tourism industry (Ditton *et al.*, 2002; Borch *et al.,* 2008). In spite of leisure- and tourism research overall gaining strength in the scientific community there are still severe gaps in monitoring and reliable time series of recreational fishing. This is especially the case for salt-water recreational fishing. Kearney claims that a lack of focus on salt-water recreational fishing is the general picture in countries with a tradition for common access to fisheries resources: "In regimes dominated by the seldom questioned right of access of all individuals to the common aquatic resources, few governments saw the need to define recreational users" (Kearney, 2001:53). Ditton & Stoll (2003) explain the gaps in systematic and reliable research on recreational fishing due to anglers being widely dispersed and not easy to identify for survey purposes and argue that this is especially the case in countries where there is no license required for recreational fishing.

In Norway there is a fairly open as well as a free of charge access to salt-water recreational fishing. There is no license system for fishing tourists or for tourism operators. Since the 1990's a marine fishing tourism industry has developed in the country, to serve Norwegian recreational fishers and to facilitate a demand from anglers from several European countries. The fact that Norway has a long and intricate coastline (25,000 km not including islands and inlets) and a fairly open access to salt-water recreational fishing makes it challenging to access the activity for survey purposes. This article presents the results from an economic impact study attempting to overcome these challenges through combining supply-side data on capacity and guest nights with demand-side data on daily expenditure. Transportation costs were not included in the study as tourists most often pay for plane, boat and car costs outside the regions which serve as a frame for the study.

The supply side data has been collected through a survey of marine fishing tourism enterprises and the data on daily expenditures has been collected from tourists via European fishing tour operators. The bottom up data collection undertaken in this project is unique in Norway as most earlier studies on regional economic impact from recreational tourism have relied on input data from the national Tourism Satellite Account (TSA) (Brændvang & Sørensen, 2002; Johansen *et al.*, 2002; Dybedal, 2003; Dybedal, 2005). The direct expenditure has been applied as input data in a regional input-output model calculating total economic impact in four different regions in Norway. The model applied (Panda) calculates the effects from the direct tourism expenditure in 30 different sectors of the Norwegian economy.[1]

The average daily expenditure by fishing tourists in the Norwegian IFT sector is 177.5 Euros.[2] 58% of this daily expenditure is on accommodation and boat rental, 103 Euros. Combining data on fishing tourism guest nights with daily visitor spending on all services we find that the total direct expenditure in the Norwegian IFT sector is 104 million Euros. We have calculated the total economic effects from this expenditure in four different regions.

The next section of the paper presents an overview of marine fishing tourism in Norway. The third section presents some aspects of economic impact studies in tourism. The method applied in this particular economic impact study is presented in the fourth section and the fifth section presents the study results. Finally there is a discussion of implications and recommendations for the future management of marine fishing tourism in Norway.

Marine fishing tourism in Norway

Recreational fishers choose Norway as their marine fishing destination because of the country's coastal landscape qualities and because of the fairly unregulated access to salt-water recreational fishing. No fishing license is needed for salt-water rec-

reational fishing in Norway. Norwegian citizens may use an extensive range of gear for salt-water recreational fishing; hand held line/rod, one machine driven hand line, 200 meters gill net, a long-line of 300 hooks and 20 fish traps. A Norwegian citizen is also allowed to sell some of the catch. Foreign nationals may fish as much as they want in Norwegian territorial waters provided they use a rod and line or hand-held line and do not sell their catch (Act of June 17, 1966 No. 19). Foreigners can only bring 15 kilo of fish when going back home from their fishing holiday in Norway. There are no bag limits for salt-water recreational fishing however a minimum landing sizes for fish in recreational fishing was introduced in 2010.

While many marine fish-stocks in other European countries are declining, Norway can offer tourists good possibilities for catching both a variety of marine fishes as well as big fish. A few enterprises in the marine fishing tourism industry in Norway offer trophy fishing in open-sea, mainly in the north and mid-region of the country. These enterprises have boats with a guide available for deep-sea fishing on 100–700 m depth with an electric reel. There are also some operators offering fishing from head boats. The main marine fishing tourism activity in Norway is however fjord-fishing with tourists renting a motor boat to fish on their own without a guide. The legislation which Norwegian fisheries authorities put into force in 2009, allowing commercial fishers to have angling parties fish from their vessels on their commercial catch quota, has had limited success. In 2009 13 commercial fishing vessels provided this service, by February 2010 this was down to 4 vessels.

Marine fishing tourists visiting Norway sometimes arrange their fishing themselves, either fishing from ashore or bringing their own boat on a hanger and staying on a camp ground or in recreational vehicles. Some buy their services from the Free Independent Fishing Tourism sector (FIFT sector), renting a private home or a second home and a boat for coastal fishing. Other tourists prefer to have their fishing experience organized by a professional tourism operator in the Industrialized Fishing Tourism sector (IFT sector). The investments in facilities to provide special services to non-residential recreational fishers started in the south of Norway (Nordstrand, 2000; Nordstrand & Johnsen, 2008; Nordstrand & Holm, 2009). The recent years increase in the IFT sector has however mainly taken place in the mid and northern parts of the country (Borch *et al.*, 2000; Borch, 2004; Borch, 2009a; Borch, 2009b). The tourism industry in Norway considers fishing tourism as a positive market niche as it contributes to a lengthening of the tourism season. While the period June through August is the main season for most rural tourism destinations, the fishing tourism season may last from April through September. The length of the fishing tourism season varies with the weather conditions in different regions. Looking at the country as a whole the average length of the fishing tourism season is 24.8 weeks.

Theoretical background

Economic impact studies in tourism

The scientific knowledge base for tourism is gradually strengthened as leisure and tourism research overall gains strength in the international science community. In dealing with the economic aspects of tourism it should be noted that although economic research has become one of the more prominent social sciences in the latter half of the twentieth century, the discipline's interest for tourism first started in the 1980's (Eadington & Redman, 1991). There may be several explanations for this. Eadington and Redman suggest that: "The recognition of tourism as an 'industry,' and as a topic worthy of study by economists, has been slowed by the fact that the tourism sector is primarily a collection of service based activities spread across a vari-

ety of industrial classifications and consumer expenditure categories that generally are not otherwise grouped together" (Eadington & Redman, 1991:42). However, as economic studies in tourism are coming along together with other perspectives in tourism research, researchers apply different economic models to be able to understand tourism markets, constructing forecasts, and aiding decision makers in allocating labor, capital or natural resources for tourism purposes.

Economic impact studies in tourism focus on the flows of expenditure associated with the tourism activity in an area. The principal methods include visitor spending surveys, analysis of secondary data from government economic statistics, economic base models, input-output models and multipliers (Frechtling, 1994). When visitor spending surveys are applied in studies of economic impacts from fishing tourism**,** the focus is on the money spent fishing by non-resident anglers on boat rental, gear, gasoline, accommodation, transportation and other attractions and services (Bell *et al.*, 1982; Ditton *et al.*, 2002; Ditton & Stoll, 2003; Borch, 2004; Loomis, 2005). These expenditures are typically classified as "direct" as they are directly linked to the tourism activity. Studying the direct expenditure in what is often labeled the Money Spent Fishing method (MSF metod) does not include any focus on multiplier effects from the visitor spending. However, the expenditure data may be applied as input in an input-output model calculating the total economic impact from tourism on different levels of the economy (Crompton *et al.*, 2001; Radford *et al.*, 2007). The multiplier effect includes the indirect effect which is the effect from the direct expenditures generated as a result of tourism enterprises purchasing goods and services from other enterprises. The induced effect is the economic effect generated as a result of the increased incomes and taxes from tourist expenditure. The sum of direct, indirect, and induced effects is the total economic impact of tourism (Chen *et al.*, 2003).

There is much international literature on the angler expenditure and economic impact from fishing tourism on national level. However, there is a scarcity of literature on economic impacts at the regional and local community level (Bohnsack *et al.*, 2002). In US studies of the regional economic impacts of recreational fisheries individual surveys have been applied to collect data on expenditure patterns (Bohnsack *et al.,* 2002; Chen *et al.*, 2003; Loomis, 2005; Loomis, 2006). These expenditure data have been applied as input data in an input-output model. Both Bohnsack *et al.* (2002) and Loomis (2006) applies the IMPLAN-model for calculating impacts at the community level. In Norwegian studies of regional economic impacts the PANDA-model is a widely used tool.

Methodology

Supply side survey

A supply side survey of marine fishing tourism raises the challenge of identifying the industry catering to fishing tourists. A broad definition of a marine fishing tourism industry is all enterprises providing services to non-residential saltwater recreational fishers. The fishing tourism industry can be further categorized by defining the level of 'industrialization' involved in catering to a fishing tourism activity, ranging from Free Independent Fishing Tourism (FIFT) to Industrialized Fishing Tourism (IFT). In this there will be a continuum on the degree of industrialization. At the IFT end of marine fishing tourism in Norway we find the fishing tourist who buys a total "package" including boat rental, accommodation, gutting and freezer facilities and host services. At the FIFT end is the free independent fishing tourist who arranges the fishing trip on his own, fishing from shore or from a boat which he brought on a trailer. Between these extremes is the traveler who hires private accommodation with a boat and no host services.

A previous study of economic impact of marine fishing tourism in Norway also applied providers of fishing tourism services as an access point for collecting data (Hallenstvedt & Wulff, 2001). The common denominator for these suppliers was that they provided accommodation and boats for coastal fishing. The suppliers in focus in this 2001 study ranged in size and quality from big fishing camps with more than 30 large accommodation units, high powered boats, quality gutting and freezer facilities and a host, to private homes or second-homes for rent with a small boat with no services from a host. These private accommodation facilities are not part of the IFT-sector so a large proportion of the suppliers that were included in the 2001 study belong to the Free Independent Fishing Tourism sector (FIFT). In the 2001 study it seems very likely that there has been a double counting of the suppliers in the FIFT sector. The explanation to this is that many of the private homes and second homes for rent in this sector is marketed through several distribution channels, amongst others Finn.no, Novasol, Dancenter and Norgesbooking.

The study presented in this article, however, focused exclusively on the professional providers or the Industrialized Fishing Tourism sector (IFT), defining a marine fishing tourism company as an enterprise providing a combination of accommodation, boat rental, gutting and freezer facilities and services from a host. This excludes the accommodation and boat facilities on offer from non-professionals; that is private persons renting out their coastal home or second-home. As Norway has a long coastline with an easy and free of charge access to salt-water recreational fishing, the task of mapping this FIFT-sector would require a very large research budget in order to provide valid results.

In Norwegian official statistics the providers of services to fishing tourists is placed in many different categories. As there is no governmental statistics in Norway which can give direct information on the number of enterprises providing services to fishing tourists this study applied enterprise lists obtained from the tourism industry as the point of departure in identifying the IFT sector.[3] From a round of telephone calls to the enterprises on these lists, it became obvious that many of the enterprises listed did not provide fishing tourism services and they were removed from the sample. The sample was, however, also supplemented with more enterprises which project assistants identified through Internet search and telephone calls to regional destination marketing companies. After these rounds of inquiry, the population was 421 enterprises. 85% of these enterprises received a questionnaire through email and 15% via regular mail. The firms contacted by email were directed to an online survey website, while the firms contacted by regular mail had the option of either filling in a paper version of the questionnaire or responding via the survey website. In total, 186 fishing tourism enterprises responded to the survey. This gives a response rate of 44.2%. 80% of the responding enterprises answered the questionnaire via email,[4] the rest, 20%, responded via regular mail.[5]

Parallel with this economic impact study, the Institute of Marine Research (IMR) in Norway carried out a catch survey in the Norwegian marine fishing tourism industry (Vølstad *et al.*, 2010). In March 2009, a list of 791 enterprises was acquired from IMR. When going through this list, 108 potential "new" enterprises were identified for our study. A closer scrutiny of the list, however, revealed that 36 of these enterprises provided fresh water recreational fishing and further that quite a few of the enterprises were secondary-deliverer or sub-contractors of services to enterprises in the IFT-sector. Yet other of these enterprises offered only boat rental or accommodation, not the combination of these two services. Several of the enterprises in the list were tourist information offices or providers of destination marketing services (DMO's). The 13 enterprises on the list that we did

define as belonging to the IFT sector were included in the population but they were not included in the sample and did not receive a questionnaire. From this point we worked from a population of 434 enterprises and a sample of 421 enterprises.

The questionnaire which was sent to the fishing tourism enterprises included questions about number of accommodation units, beds, rental boats and guest nights. The questionnaire also included questions about the length of the fishing tourism season, prices for accommodation and boat rental, the nationality of fishing tourists, travel group/angling party (family or male group) and mode of transportation (plane, car, etc.). In addition to the data obtained via the survey we collected data on the non-respondent enterprises through other methods like Internet search and telephone contact. From these efforts we obtained information on the number of accommodation units and beds for 94% of the population.[6]

Demand side study

We set up a survey to fishing tourists that we distributed via enterprises in the IFT sector. Through this we collected data on tourist expenditure in ten different groups of goods and services. The survey set up was inspired by Bohnsack *et al.* (2002), Loomis (2005) and Loomis (2006) who applied this procedure to enhance the survey response rate. Bohnsack *et al.* had a response rate of 65.1% (Bohnsack *et al.*, 2002), Loomis (2005) had 65% and Loomis (2006) a response rate of 63.6%. In April 2009 we distributed our questionnaires via 200 enterprises in the IFT sector. As an additional method of collecting data we contacted foreign tour operators that distribute fishing trips to Norway to ask for their assistance in distributing the questionnaire. Through these efforts we acquired data on expenditure from a total of 597 tourists who had visited Norway on fishing holidays in 2008.

Results

The structure of the industry

The project has, through extensive mapping, identified the IFT-sector in Norway to be made up of 434 enterprises, providing a total of 14,968 beds and 2,369 boats to tourists. The average length of the fishing tourism season in the Norwegian IFT sector is 24.8 weeks. In the case of year round operation, the total capacity in the IFT sector would be 5,448,352 guest nights. In 2008 the total number of guest nights in the sector was 1,257,577, that is a capacity utilization of 23%. 46.5% of the total number of guest nights in 2008 were fishing tourist guest nights, that is 585,033 fishing guest nights. Looking at the capacity for guest nights in the fishing tourism season only (2,598,444 guest nights) we find that 22.5% of the capacity use in this season is by fishing tourists. Outside the fishing tourism season some of the IFT sector enterprises in rural areas close down. The enterprises that do not close their operations during the winter months of October through March provide mainly accommodation services to skiing tourists, to travelers in the MICE segment (Meetings, Incentive, Conferences, Events) and private arrangements in the local community (weddings, birthdays and other social events).

Norway was divided in 4 regions for this study. The north region includes the counties Nordland, Troms and Finnmark, the mid region the counties Nord-Trøndelag and Sør-Trøndelag, the west region the counties Rogaland, Hordaland, Sogn og Fjordane and Møre og Romsdal and the south region the counties Aust-Agder and Vest-Agder. As the eastern region has only a couple providers of marine fishing tourism services this region was excluded from the study. Nearly half of the enterprises in the IFT sector are located in the northern region of Norway, 21% are located in the mid region, 29% in the western region and 3% of the enterprises are located in the southern region.

Table 1 Regional share of enterprises

Norway	434	100%
North Norway	205	47%
Mid Norway	90	21%
West Norway	128	30%
South Norway	11	2%

A total of 14,968 beds are on offer in the IFT sector in Norway. On average a marine fishing tourism enterprise offers 6.9 accommodation units and 34.5 beds. The regional share of both units and beds is according to the regional share of companies. One exception to this picture is found in the southern part of Norway where the shares of units and beds are higher than the regional share of companies. On average a fishing tourism enterprise in this region offers 30.3 accommodation units and 197.3 beds. The explanation to this is that this region has few but larger facilities to cater for tourists.

A total of 2,369 rental boats are available in the IFT sector in Norway. On average, a fishing tourism enterprise in this sector offers 5.5 rental boats. The larger fishing tourism companies in the south have more boats, with an average of 14.7 boats. The companies in the northern part of Norway have fewer boats and this is probably due to the rough weather conditions, resulting in these companies having few, but large boats. This is also reflected in the prices for boat rental, as these are higher in the northern region.

The annual number of guest nights in the IFT sector in 2008 was according to our data, 1,257,577. 46.5% of these guest nights were fishing tourist guest nights, that is 585,033 guest nights. The providers of fishing tourism services in the mid region of Norway seem to be the most specialized in fishing tourism with 58% of their guest nights being fishing tourist guest nights.[7] The enterprises in the northern region of Norway are the second most specialized with 51% of the guest nights in this region being fishing tourist guest nights. It is interesting to note that the northern region has a smaller share of the total number of fishing tourism guest nights in the country (45%) than the share of companies (47%). The explanation for this is not obvious, but a shorter fishing tourism season due to rough weather conditions may be one factor explaining this.

Distribution channels

From our study we found that 26.3% of the sale of fishing tourism services was distributed through foreign tour operators, 23.2% via Norwegian tour operators and 50.5% is direct sale from the tourism enterprise to the customer. The sales via a foreign tour operator are lowest in the mid part of Norway (17.6%) and highest in the southern region (59.3%). Sale through foreign tour operators is often positive as these operators have important knowledge about the markets in their respective countries; however, with sales via a foreign tour operator, a proportion of the visitor spending (the provision) will not be benefiting the Norwegian economy or Norwegian coastal communities. This is following something that has to be taken into account when calculating the economic impact from visitor spending.

Table 2 Fishing tourism guest nights in Norway by region (2008)

	Fishing tourism guest nights	*Share of all guest nights*
Norway	585,033	47%
North Norway	262,798	51%
Mid Norway	121,272	58%
West Norway	173,096	48%
South Norway	27,868	16%

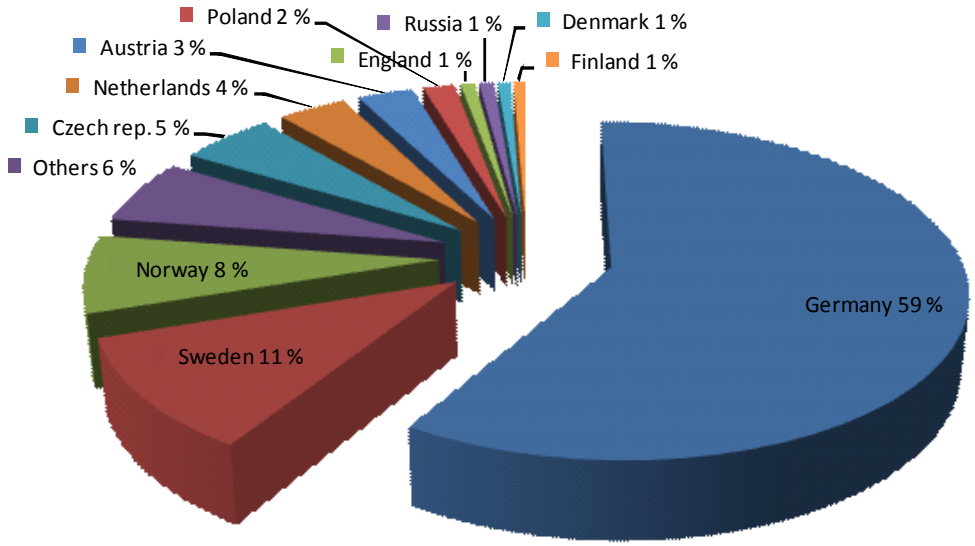
Table 3 Distribution channel by region

	Direct enterprise	*Norwegian tour operator*	*Foreign tour operator*
Norway	50%	23%	26%
North Norway	48%	24%	28%
Mid Norway	54%	28%	18%
West Norway	54%	21%	25%
South Norway	38%	2%	59%

Expenditure pattern

To calculate the economic impact from marine fishing tourism we needed to collect data on tourist expenditure in different categories. Our hypothesis regarding the expenditure pattern was that this would vary with mode of transportation, travel group and nationality of the tourists. Our data are not solid enough to conclude regarding differences in expenditure on nationality but we did find some interesting patterns on travel group and mode of transportation. We can also see some patterns in expenditure according to the region that the fishing tourists have visited. What we find is that tourist visiting the north of Norway have the highest and that the tourists visiting the western region have the lowest average daily expenditure, 226 Euros and 123 Euros respectively. One explanation to this is that more tourists travel by plane to the north and subsequently can not bring food and beverages. Another explanation it the tourists visiting the north have a higher expenditure on boats as the rental boats in this region are larger and better equipped. The average daily expenditure on boats in the north is 50 Euros whilst the average boat expenditure in the west is 16 Euros per day. The expenditure on sports equipment is also highest in the north. Again the fact that more tourists travel by plane to this region and may bring a limited amount of luggage is a probable explanation to this pattern.

Figure 1 Nationality of fishing tourist visiting Norway in 2008



Nationality of tourists

The market for fishing tourism in Norway seems to be changing in terms of the nationality of the tourists. Tour operators in the fishing tourism market state that whilst German tourists still dominated the IFT sector there is a decline in tourists from Germany parallel with an increase in the number of tourists visiting from the Czech Republic, Poland, Latvia, Lithuania, Estonia and Russia (Source: Interview with the Norwegian tour operator Din Tur. www.dintur.no). The nationality of fishing tourists identified in our supply side survey is presented in Figure 1.

The expenditure data from our demand side study are, as mentioned above, not solid enough to conclude regarding the expenditures of different nationalities. What we can see, that will have some consequences for the total expenditure pr tourist, is that the duration of the fishing holiday varies with nationality. The tourists visiting from the Netherlands, Germany and Czech Republic stay longest (9–15 nights and the tourists from Sweden, Finland and Russia stay shorter (4–6 nights).

Travel group/angling party

The fishing tourists in the IFT sector travel in groups, either with family (29%) or with friends/groups of men (71%). The tendency to travel on fishing holidays in groups of men is highest in the south, 82%. One plausible explanation to this is that the southern region has divided their operation into two seasons. In the “off fishing season” (June-August) this region is targeting families whilst they preserve their facilities for the male angling parties in the fishing tourism season, that is spring and fall. The share of fishing tourists traveling with families is highest for the mid and west regions of the country, respectively 33% and 38%. A potential explanation to this may be that the destinations in these regions offer more services to meet the demands of families (e.g. shopping malls, family attractions such as zoos, activities like horseback riding, hiking or bicycling). The share of families visiting Norway on fishing holidays seem overall to have increased over the years. As families tend to take part in more tourism activities than the male angling parties, the tourism industry considers this to be a positive development.

Table 4 Travel group by region

	Male groups	*Families*
Norway	71%	29%
North Norway	78%	22%
Mid Norway	67%	33%
West Norway	62%	38%
South Norway	82%	18%

Looking at the differences in expenditure by travel group we find that families on average spend more than male angling parties. The difference is small however with a daily spending of 178 Euros and 171 Euros respectively. However, when we look more closely at the expenditure patterns, the data reveal some interesting findings. The male angling parties have a higher expenditure on sports equipment when they travel without women and children. The expenditure on souvenirs is also highest in the male angling category. It may be that these groups buy gifts to bring back home to their wives and children. When women are part of the travel party, the expenditure on clothing, cafés and restaurants is higher than for the male angling parties. Expenditure on boat and gasoline is lower and the daily expenditure on sports equipment, attractions/museums and recreational activities is higher when children are part of the travel group. One possible explanation to this is that children do not have the patience to fish for long periods and would rather engage in several types of activities during the holiday. Groups with men and women travelling without children have the highest average total spending pr day, followed by groups travelling with children.

Table 5 Daily expenditure pattern and travel group – Euros

	Bed	*Boat rental*	*Boat fuel*	*Food*	*Dining*	*Souvenir*	*Cloth-ing*	*Sport equip-ment*	*Attrac-tions*	*Activity*	*Total*
Only men	69.0	30.0	15.8	19.5	7.1	9.8	3.6	13.1	2.5	1.4	171.9
With women	72.6	31.7	17.2	20.0	9.6	9.2	6.5	9.5	2.2	0.9	179.4
With children	71.5	26.1	13.0	19.6	7.5	7.4	5.8	21.0	3.3	2.1	177.3

Male angling parties have the lowest average daily spending of the categories studied.

Mode of transportation

85% of the fishing tourists in the IFT sector travel with their own car, 7% travel with a combination of plane/boat and a rental car, and 8% travel with plane/boat combined with some form of transportation service from the fishing tourism enterprise. A lower share of the fishing tourists in the northern part of Norway (73%) travel by car than what is the average for the whole country. The explanation for this is the distance to the north of Norway from important markets in mid and south Europe making it more practical to travel by plane. There are differences in the duration of the fishing holiday in the mode of travel groups. The tourists travelling by plane stay on average 7.7 nights whilst the bus and car travelers stay 9.5 nights on average.

Table 6 Mode of transportation by region

	Own car	*Rental car*	*Plane*
Norway	85%	7%	8%
North Norway	73%	10%	16%
Mid Norway	94%	4%	2%
West Norway	93%	6%	1%
South Norway	100%	0%	0%

It is a general assumption in Norwegian tourism economic impact studies that tourists traveling by plane spend more money than tourists traveling by car (Dybedal, Rideng *et al.*, 2006). One overall explanation to this is that tourists traveling by car, due to the high cost of living in Norway, will tend to bring more of the food and beverages than what is possible for air travelers (due to luggage limitation). Looking at the differences in daily expenditure according to travel group we find that this general assumption is confirmed in our data from the fishing tourism sector. Tourists travelling by plane have the highest and the tourists travelling by bus the lowest total daily expenditure, 264 Euros and 144 Euros respectively. Tourists travelling by their own car and by bus have the lowest expenditure on food, kiosks, cafés and restaurants. Tourists travelling by plane spend 2.7 times more on food, kiosks, cafés and restaurants and 3.5 times more on sports equipment than car travellers.

Table 7 Daily expenditure pattern and mode of transportation – Euros

	Bed	*Boat rental*	*Boat fuel*	*Food*	*Dining*	*Souvenirs*	*Cloth-ing*	*Sport equip ment*	*Attrac-tions*	*Activity*	*Total*
Plane	98.5	46.0	21.7	35.2	12.8	16.3	5.5	23.4	4.0	1.0	264.4
Own car	65.7	28.7	14.3	17.3	6.7	8.0	4.2	10.9	2.4	1.5	159.6
Bus	62.0	16.1	15.7	15.1	5.6	6.2	6.7	14.7	1.4	0.6	144.2

Total expenditure

Total expenditure was calculated by multiplying the number of fishing tourism guest nights with data on average daily expenditure from the demand side study. After doing so we calculated the annual expenditure by fishing tourists in the IFT sector in Norway to be 40.9 million Euros on accommodation, 28.7 million Euros on boat rental and boat fuel and 34.3 million Euros on other services and commodities. The total expenditure in the Norwegian IFT sector is 103.9 million Euros.

Table 8 Regional expenditure in different categories – Million Euros

	Accommodation	*Boat rental and fuel*	*Other services and commodities*	*Total*
North Norway	21.4	18.7	19.2	59.3
Mid Norway	7.8	4.4	6.0	18.2
West Norway	9.8	4.5	6.9	21.2
South Norway	1.8	1.1	2.3	5.2

Regional economic impacts

How is the marine angling tourism contributing to the regional economies in the above mentioned Norwegian regions? The economic impact analysis method applied in this study traces the flows of spending associated with tourism activity in a region to identify changes in sales and jobs due to tourist expenditure. This helps us to better understand the size and structure of the marine angling tourism industry in a given region and its linkages to other sectors of the regional economy. Marine fishing tourism has a variety of economic impacts. Formally, regional economists distinguish between direct, indirect, and induced economic effects. In this analysis indirect and induced effects are collectively labelled secondary effects. The total regional economic impact of tourism is the sum of direct, indirect, and induced effects within a region.

The input-output model Panda was used to estimate the total regional economic impacts from marine fishing tourism in North Norway, Mid Norway, West Norway and South Norway. Panda is a regional input-output model of a Keynesian type. This means that it is demand driven and that regional economies, by assumption, have excess capacities.[8] We have run the model in two alternatives for each of the four regions in order to calculate the impacts of fishing tourism expenditure. The base, or zero, alternative includes all activities in the economy, including the fishing tourism activities. The “impact” alternative is similar to the base alternative, but we have excluded the fishing tourism activities. The difference between the two alternatives represents the impact of marine fishing tourism in the region, which can be split into direct and secondary impacts. We have applied this information to calculate regional production

multipliers. Regions differ in industrial structure and size, and the different regions thus have different production multipliers. This implies that the secondary effects from fishing tourism spending will vary between regions.

Some industries get only secondary impacts and no direct impacts from fishing tourism, while for other industries (with exogenously steered production) the impact is zero, that is the production in these industries is not affected by changes in the regional tourist demand. Production in governmental sectors is assumed to be independent of the regional fishing tourism demand development, as the production in these industries is politically governed. In the same way, we assume that the production in agriculture, forestry and fishing, extraction of crude petroleum and natural gas and manufacture of oil platforms is unaffected by tourism spending, as it is the regional supply of resources and other conditions on the supply side that steer the production. These above mentioned industries have as a result been excluded in our calculation of economic impacts.

Input-output models require all values to be in producer prices (manufacturer prices). We have calculated the output value by extracting value added tax from sales value. In addition, to properly apply tourist purchases of goods to an input-output model, margins in commodity trade have been deducted from the "purchaser price" of the goods to separate out the "producer price"; only the margins on goods purchased at retail stores are counted as local final demand. We have calculated the output value according to principles in the national tourism accounts: the output value in retail is equal to the gross margin. The commodity trade had an average gross margin at 30% in 2009 (SSB, 2009). Furthermore, a share of sales of Norwegian fishing tourism services are distributed via foreign tour operators. These get a provision for their distribution and sale. An average provision for foreign tour operators is 30% (information from the tour operator Din Tur). This provision to foreign tour operators and is not benefiting the regional economies in Norway and we have thus subtracted this proportion from the sales value within the accommodation sector.

North Norway has clearly the highest regional economic impact of the regions in Norway, see Table 9. The total economic impact from marine fishing tourism for North Norway is calculated to be 62.6 million Euros. (The share of direct effects is just under 36.9 million Euros, while the secondary effects sum up 25.7 million Euros in this region). The total effects of marine fishing tourism for West Norway is 25.2 million Euros, whilst it in Mid Norway is just above 20 million Euros. The total regional economic impact of tourist anglers is by far smallest in South Norway, 4.8 million Euros (with direct effect summing up to 2.9 million Euros).[9]

The production multiplier is the ratio between total effects and direct effects. Multipliers capture the secondary economic effects (indirect and induced) of tourism activity. It illustrates the estimated recirculation of marine fishing tourist's spending within a region. The magnitude of secondary effects depends on the propensity of businesses and households in the region to purchase goods and services from local suppliers. Generally, multipliers are higher for larger regions with more diversified economies and lower for smaller regions with more limited economic development; the more a region is self-sufficient and purchases goods and services from within the region, the higher the multipliers for the region. In other words, the higher the multiplier, the more self-sufficient is the region when it comes to sub-supplies. We can see that the production multiplier is highest in West Norway, which is the region with the largest population in this study. The multiplier 1.87 means that every extra Euro in output value (exclusive value added tax) generated by marine fishing tourist spending generates further demand in the region by 87 cent.

Table 9 Regional direct, secondary, and total effects together with production multipliers of marine fishing tourism in Norway by industry – In million Euros

	North Norway			Mid Norway			West Norway			South Norway		
	Direct	*Secondary*	*Total*	*Direct*	*Secondary*	*Total*	*Direct*	*Secondary*	*Total*	*Direct*	*Secondary*	*Total*
Fish processing and food industry		3.3	3.3		1.5	1.5		2.0	2.0		0.2	0.2
Manufacturing		2.4	2.4		1.0	1.0		1.4	1.4		0.2	0.2
Construction		2.3	2.3		0.7	0.7		1.0	1.0		0.2	0.2
Retail	5.0	4.4	9.4	1.5	1.2	2.7	1.7	1.8	3.6	0.5	0.3	0.8
Hotel and restaurant	31.0	0.9	32.0	9.7	0.2	9.9	11.4	0.3	11.7	2.2	0.1	2.2
Transport		1.6	1.6		0.5	0.5		0.7	0.7		0.1	0.1
Post and telecommunications		1.4	1.4		0.3	0.3		0.4	0.4		0.1	0.1
Commercial services and financing		7.2	7.2		2.6	2.6		3.2	3.2		0.6	0.6
Personal services	0.9	2.2	3.1	0.4	0.5	1.0	0.4	0.9	1.3	0.2	0.2	0.4
Total	36.9	25.7	62.6	11.6	8.5	20.2	13.5	11.7	25.2	2.9	1.9	4.8
Production multiplier			1.70			1.73			1.87			1.65
Direct effects/angler tourist expenditure			0.62			0.64			0.64			0.55

If we compare the size of total direct production impacts to fishing tourist expenditure, we get a quite different picture. For example, this ratio is 0.62 in North Norway. This means that every euro that the fishing tourist spends in the region creates only 62 cent direct production impact. There are three explanations to this. First, we have only included the local retail margins in direct effects within commodity trade (only 30% of the total expenditure within commodity trade). Second, we have excluded the value added tax from the total expenditure and third, we have subtracted the provision to foreign tour operators as this does not create any impacts in the Norwegian economy.

The employment impact

With direct and secondary effects marine fishing tourism expenditure generates approximately 1.000 jobs in North Norway and nearly 900 jobs in the other three regions, see Table 10. About two thirds of these jobs are generated within the accommodation and restaurant sector. Compared to the size of employment base, the total employment impact is highest in North Norway, 0.4% of jobs within the region are generated by the marine fishing tourism expenditure. The share is lowest in West and South Norway. The largest regional importance of marine fishing tourism in North Norway can be clearly seen from the fact that marine fishing tourism counts for almost 9% of work places in North Norway within the accommodation and restaurant sector. This is by far the highest share among the regions, over 2.5 times higher share than in the number two region, Mid Norway.

Table 10 The total regional employment effects of marine fishing tourism in Norway by industry

	North Norway		*Mid Norway*		*West Norway*		*South Norway*	
	Direct and secondary employment effects	*Share of total employment in the industry*	*Direct and secondary employment effects*	*Share of total employment in the industry*	*Direct and secondary employment effects*	*Share of total employment in the industry*	*Direct and secondary employment effects*	*Share of total employment in the industry*
Fish processing and food industry	9	0.1%	5	0.1%	7	0.0%	1	0.1%
Manufacturing	14	0.1%	7	0.0%	8	0.0%	3	0.0%
Construction	30	0.2%	12	0.1%	16	0.0%	2	0.0%
Retail	159	0.5%	49	0.2%	62	0.1%	15	0.1%
Hotel and restaurant	656	8.7%	244	3.4%	257	1.3%	54	1.2%
Transport	16	0.1%	6	0.1%	6	0.0%	3	0.0%
Post and telecommunications	8	0.3%	3	0.1%	3	0.0%	1	0.1%
Commercial services and financing	53	0.3%	28	0.1%	25	0.0%	8	0.1%
Personal services	54	0.4%	18	0.1%	30	0.1%	7	0.1%
Total	999	0.4%	372	0.2%	414	0.1%	94	0.1%

Discussion

The study presented provides new knowledge about the structure of marine fishing tourism in Norway and its impacts on regional economies. As marine fishing tourism is an activity in competition with other fisheries sectors this is important knowledge to guide future political decision making. As Dwyer and Forsyth have pointed out, the policy implications arising from growth in tourism create a need for more research to assist in policy formulation (Dwyer & Forsyth, 1997). An optimal tourism development is one which does not result in damage to natural resources or to other economic activities in an area. Policy makers must decide how much of the public resources that should be allocated to the tourism industry. When, as is the case with marine fishing tourism, the basis for the activity is marine resources, many different types of knowledge will be sought to guide policy formulation. Fisheries management has the preservation of fish stocks as an overall goal; however, this policy field also has objectives related to the sharing of catch among recreational and commercial sectors, as well as goals of optimizing the economic impact from the utilization of fish stocks.

When researching the economic impacts from natural resource based activities like nature-tourism, we need to be cautious in how we frame the activity or industry from which impacts are calculated. When the first result from this economic impact study was presented in media, journalists were surprised that the estimated fishing tourism expenditure was lower than what had been presented in a 2001 economic impact study of marine fishing tourism (Hallenstvedt & Wulff, 2002). In such situations, researchers responsible for impact studies may find it challenging to explain the different assumptions and definitions “behind the numbers”. For instance to explain that the calculations in the 2001 study was the direct impact from both the IFT and the Free Independent Fishing Tourism (FIFT) sec-

tors whilst the direct economic impact calculated in our study covered the IFT sector only. However, in all impact studies (ecological, social and economic) it is crucial that researchers are clear in how the activity under study is defined. We have to explain carefully what entities we calculate impacts from.

The comparison between these two studies illustrates the challenges in performing impact studies and this should be a reminder, not only to scientists but also to the media, policy makers and stakeholders to be cautious when applying share numbers from such studies to justify or criticize different nature-based activities. So, even though economics can bring organized thinking into policy areas of importance and controversy, there is a need for supplementary judgement. In the words of Eadington and Redman: "The economic perspective cannot replace many normative judgements of voters or policymakers in deciding the "best choice" with respect to distribution effects or non economic impacts, but it can better define the arena in which such conflicting alternatives should be examined" (Eadington & Redman, 1991: 54).

As the Norut economic study of marine fishing tourism concludes that families and plane travelers spend the most money during their holiday the overall recommendation from this study is that governmental agencies and the tourism industry should focus their resources on developing strong coastal destinations. Through a prioritized development of some coastal destination, instead of a range of small fishing tourism enterprises scattered along the cost, the tourism industry will be able to offer a range of activity products and the quality in transportation, accommodation, shopping and dining that family travelers demand. Strong destinations with a diversity of activities on offer, is also crucial in motivating airliners to set up direct plane routes or charter.

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Notes

1 www.pandagruppen.no. Website in Norwegian only.
2 The exchange rate applied from NOK to Euro is 8.1.
3 The Norwegian Hospitality Association, Innovation Norway and the Norwegian tour operator “Din Tur” (www.dintur.no).
4 63% of the enterprises responding via email had received the questionnaire through email and 17% of the email respondents had received the questionnaire by mail but answered through the survey website.
5 We tested (compared means) for differences between these two respondent groups with respect to the variables, number of accommodation units, number of beds, number of boats and length of season. There are no differences at a 5% level of significance between the groups.
6 Compare means, T-tests and Mann-Whitney tests showed no differences at a 5% level of significance when comparing number of accommodation units, number of beds, number of boats and length of season between the survey respondents and the enterprises that we collected capacity data about through these additional methods.
7 A similar study of the impact from marine fishing tourism in Finland concluded that tourism companies providing services to fishing tourists on average acquired only 15% of their revenues from fishing tourists. Categorizing the enterprises in the study according to the degree of specialization in fishing tourism, the study concluded that the revenues from fishing tourists varied from 8% in the least specialized companies to 31% in the most specialized in fishing tourism companies Toivonen (2008).
8 We have not addressed the question whether the resources allocated to fishing tourism activities could be used more efficiently for other purposes, or the possible crowding out effects of this tourism activity.
9 Readers interested in determining nation-wide values are cautioned that the summation of the region-level impact estimates would likely underestimate the total national economic effects attributable to angler expenditure.

Connecting to the right people; the key to develop business in Northwest Russia

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Abstract in Norwegian:
Russland tiltrekker seg oppmerksomhet fra utenlandske bedrifter som ønsker å få et fotfeste i et land som tilbyr billig arbeidskraft, og hvor markedspotensialet for varer og tjenester forventes å vokse. Men det viser seg at utenlandske forretningsaktører opplever at den russiske måten å praktisere forretninger på er veldig ulik den måten man er vant til å drive forretninger på. Denne artikkelen viser at bedrifter kan lære hvordan de skal drive forretninger i Russland ved å etablere kontakt med personer som kan gi bedriften viktig støtte. Den personen som har ansvar for det russiske forretningsengasjementet ble intervjuet med det formål å utforske hvilke typer aktører som gir bedriften viktig støtte. En semi-strukturert intervju-guide ble brukt til dette formålet. Den russiske døråpneren er en viktig aktør som hjalp bedriften i den forberedende fasen med å etablere kontakter med viktige aktører som ble en del av bedriftens nettverk. Denne studien viser at nettverksbygging er en vesentlig aktivitet som bidrar til å utvikle bedriftens forretningsengasjement i Nord-vest Russland. Imidlertid, nettverksbygging krever et personlig engasjement og et nært samarbeid med russere. Denne studien bidrar med ny innsikt når det gjelder hvordan en bedrift kan utvikle et nettverk som består av relasjoner med ulike aktører som støtter bedriftens etablering i et nytt land.

Abstract in English:
Russia attracts the attention of foreign firms that want to get a foothold in a country which offers inexpensive manpower, and where the market potential for goods and services is expected to grow. However, evidence shows that foreign business people find that the Russian way to practice business is very different from their own way. This paper shows that firms can learn how to practice business in Russia by connecting to people that provide the firm with important support. By means of a semi-structured interview guide the person in charge of the Russian business venture was interviewed to explore what kinds of actors that provides the firm with essential support. The Russian door-opener is one essential actor which helped the firm in the preparatory stage to get connected with other important actors that became part of its network. Thus, networking is an essential activity which helps the firm to develop business activities in Northwest Russia. However, networking requires personal dedication and close involvement with Russians. This study contributes with new insights when it comes to how a firm can develop a network of relationships with various actors in support of its market entry.

Keywords: Networking, door-opener, small businesses, Northwest Russia

Introduction

Russia attracts the attention of foreign firms that want to get a foothold in a market that is expected to experience high growth rates (Aidis & Adachi, 2007). Russia's role as a key player in global energy markets, and its potential as a growing market for consumer and industrial goods and services, makes the country an interesting market for foreign firms that want to expand (Puffer & McCarthy, 2007) and seek new opportunities in international markets (Karlsen *et al.*, 2003). Evidence shows that foreign business people in Russia do find that the Russian way to practice business is very different from their own way (Fey, 1996; Karlsen *et al.*, 2003; May *et al.*, 2005; Michailova, 2000). Even firms that have international experience are likely to face "…a new, rela-

tively unknown, and turbulent market: it was as if they almost had to start another internationalization process in addition to its more general one from scratch" (Karlsen *et al*., 2003, p. 389). Westerners and Russians differ on a number of areas like national culture, and economic, political, ideological, religious, and social systems from which they come (Michailova, 2000).

External networks have been historically very important in Russia, and still is an important part of the society (McCarthy & Puffer, 2008; Puffer & McCarthy, 2007). There is a strong reliance on networks for the provision of information, resources and to "get things done" (McCarthy & Puffer, 2008; Melkumov, 2009). Without a well-founded network you are likely to fail in Russia (e.g. McCarthy & Puffer, 2008; Melkumov, 2009; Puffer & McCarthy, 2007). Karlsen *et al.* (2003) who focused on foreign investments in Russia show that having the right contacts are essential to get things done in an effective way. The business environment is characterised by uncertainty and vague laws and regulations. Investing in networks in the external environment is a way to deal with the underdeveloped legal framework. Reliance on networks can be viewed as one way to compensate for the lack of laws and regulations (Melkumov, 2009). Besides, being part of networks helps develop a common understanding between business partners from different cultures. Understanding of a foreign business culture can only be passed on through active involvement, preferably in the host country itself: knowledge is developed by interaction with the environment and with business partners (Meyer & Skak, 2002).

This paper shows how three small firms, located in northern Norway, develop their business in Northwest Russia by connecting to various actors that provide some kind of support. By connecting to the right people the firms have learnt how to practice business in Russia. The findings should be relevant for firms considering entering Russia. The results could also be of great relevance to policy makers, and agents who facilitate exports and business investments in Northwest Russia and in other transition economies. There is a lack of research when it comes to how a firm can develop a network of relationships with various actors in support of its market entry (Elg *et al.*, 2008). This study contributes with insights on this area.

Research methodology

In-depth interviews were carried out with three small firms that have developed business activities in Northwest Russia. A semi-structured interview guide was developed on the basis of a literature review and interviews carried out with experts in Norway having knowledge about doing business in Russia. The main criteria used to select the firms were that they have carried out business activities in Russia for a longer period of time, and that they are located in northern Norway. The selected firms have carried out business activities in Northwest Russia between 6 and 18 years. Persons having an overview of firms doing business in Northwest Russia gave their assistance to identify relevant cases. The interviews were carried out in the period March to May 2010. The person responsible for the Russian business venture was interviewed. This person was selected because of his active and crucial role in the development and management of the Russian operation (Karlsen *et al.*, 2003). The interviews lasted between 2 hours and 15 minute and 2 hours and 45 minutes. The interviews were recorded and transcribed right after the interviews. The interviewees read through the transcribed manuscripts which allowed them to give corrections, and to make sure that they would agree on the content. Two of the manuscripts were accepted without any corrections, and the third was accepted after some minor changes.

Table 1 presents the firms and include type of entry/operation mode, business area, size in terms of number of employees in Russia and in Norway, motivation for entering Russia, time spent preparing the entry, year of starting up and markets. Two firms have established a subsidiary and one has established a sales office in Northwest Russia. The firms operate within the following business areas: engineering services, electronics and fishing equipments.

The managers interviewed in this study were determined to give Russia high priority, which implied a long-term perspective. It is well acknowledged that a long-term perspective is essential to succeed in Russia (Fey, 1996; Karlsen *et al.*, 2003; Shama, 1997).

Table 1 Presentation of the firms

Firm	*Type of entry/ operation Mode*	*Business area*	*Nr of employees in Russia*	*Nr of employees in Norway*	*Motivation*	*Preparatory phase*	*Year of starting up*	*Market*
A	Subsidiary	Engineering services	14	9	Inexpensive Manpower	1999 to 2000	2000	Outside Russia
B	Subsidiary	Original equipment manufacturing	45	18	Inexpensive Manpower	2000 to 2004	2004	Outside Russia
C	Sales to Russian customers in Norway Sales office*	Fishing Equipments	2	50	Market potential	1988 to 1992	1992 1994	Russia, Norway, other minor markets

* The firm has a sales office in Northwest Russia. The market is worked on through the sales office, like bids are offered by the sales office. The products are delivered to the Russian customers in Norway.

Getting started with networking

Networks and relations with Russians are a premise to carry out business, and it is through interactions with people in the network that you acquire knowledge about how to carry out business in Russia. A well functioning business network is a result of investments; building business relationships is a costly and time-consuming process (Johanson & Vahlne, 2006). Substantial efforts were carried out in the preparatory stage to establish contacts that could help the firms to succeed with its entry into Northwest Russia. The preparatory work implied several travels to Northwest Russia to prepare the foundation for establishing business activities. The Norwegian managers did not have previous experience in Russia, and therefore access to essential market information was limited (Hadley & Wilson, 2003). When they took the first initiatives to enter Russia they entered into close cooperation with a Russian person who could speak Norwegian. This Russian person got the role as a door-opener and played an essential role to introduce the managers to the Russian business life. The Russian door-openers introduced the managers to the Russian culture, and could tell them what would be the right thing to do in various situations. They helped the managers to get an understanding of how things work. In addition to translating lan-

guages, they also had a role as a cultural interpreter. The door-opener had the insider's knowledge and the manager could therefore rely on the door-opener's competence to solve problems that occurred.

By introducing the managers to various people the door-opener also helped the managers to start building their networks. Certain kinds of information are not easily accessible in Russia, and the network helps you stay updated about the developments in Russia, prices and wage levels, and new regulations to mention some. Besides, the managers' experience is that being part of a network is essential to develop a good record and reputation. It is through knowing people that you show who you are. Russians are loyal when you have established a good relationship with them. In the same way, other researchers focusing on foreign investments in Russia find that a network of supporting relationships contributes to a positive image and a strong market position (Elg *et al.*, 2008).

The capabilities of the individual

Russian people are in general very relation-oriented. You have to meet people face-to-face to establish relationships, and you have to be good at developing interhuman relations. Good relations with partners in your business network make things work more efficiently. Consequently, the capability to develop and manage networks is therefore of critical importance (Agndal & Chetty, 2007; Holm *et al.*, 1996). The person in charge of a foreign business venture has to be prepared to interact with local firms, interest groups and institutions in the foreign market (Meyer & Gelbuda, 2006). Close business relationships provide experience and market knowledge, and thus risk and uncertainty about the foreign market is reduced (Agndal & Chetty, 2007; Hadley & Wilson, 2003). To succeed in adaptation to a culturally different environment, an individual's capability of and predisposition for interacting with people in the host country is of great importance (Hannigan, 1990).

The managers' experience is that mastering the Russian language is an advantage. The quality of the communication with your Russian partners is significantly better if you know the Russian language. Language skills help you communicate with your partner in an effective way. Mastering the Russian language fluently gives you an advantage because you do not depend on others to interpret the discussions that you have. Using an interpreter creates a distance; you get closer to another person if you can communicate in her/his own language. Formal and informal communication that takes place within and between firms and in networks requires people who have language skills (Liesch *et al.*, 2002). A firm that invests in language skills shows that it has a genuine will to understand the partner (Salmi, 2000).

Patterns of networks

Establishing a network is a process and the network is likely to expand over time. The network may include customers, employees, suppliers of services, people that are involved in the firm's business area like regulatory and public agencies, experts and more personal relations (others). The kind of information and support required may change over time with the result that the network is developed and extended as a result of changing needs for support and information. As table 2 shows, the composition of the network differs between the three firms. Differences may be explained by the kind of business that the firm is part of, type of operation mode used, and whether Russia is a market. In the case of firm A, the major task in the preparatory phase was to recruit the right personnel. This firm entered Russia because of inexpensive manpower. You need references to assure that you recruit the right person, and the network helps to identify the right people. The experience is that you risk

recruiting the wrong persons in the initial phase because the network is limited. Besides, a Russian legal practioner was used to make sure that the subsidiary was established according to acceptable rules and regulations. The contact with the legal practioner has been maintained and is used as a discussion partner.

Table 2 Patterns of business networks

	Important network partners in Northern Norway	*Important networkpartners in Northwest Russia*	
		Preparatory phase	*Operation phase*
Case A		Employees Legal practioner	Employees Legal practioner Other contacts
Case B		Public agencies	Public agencies Employees Suppliers of services Other contacts
Case C	Firms supplying complementary products and services	Customers	Customers Sales representatives Public agencies Other contacts

The customers are an essential part of the network for a firm that supplies products or services to the Russian market. Firm C entered Russia because of the market, and the customers were therefore considered to be the most important collaborating partners in the early stage. The firm spent a longer period of time mapping the market which implied visiting all potential customers in the Murmansk and Arkhangelsk regions. This mapping provided the basis from where customers were selected. You have to pay your customers frequent visits. It is by meeting your customers that you get to know who they are, you can exchange information about price, products, future deliveries and any changes that are taking place in the industry. A formal contract has so far not been of great value in Russia, although this is changing. You can have long-term business relationships with Russian partners without a contract. Close and trusting relationships with your customers are therefore of great importance. Firm C is part of a horizontal network. This network includes firms in Northern Norway that have complementary services and products. In this way the firms are in a better position to compete because they can offer their customers a broader spectre of products and services. They also carry out joint marketing efforts.

Having relationships with public agencies is considered important by two of the firms. It was of great importance for firm B to establish relations with bureaucrats in the preparatory stage. Meetings were held to discuss issues related to mortgage rights, tax legislation, and various economic models, among others, which helped prepare establishing a subsidiary. Besides, this firm finds that close relations with employees in the customs clearing is important to get things done in an effective way. Your international customers have to know that they receive the products on time, which implies that the products have to cross the border without hindrances and delays. Firm C established relations with bureaucrats at a later stage. The firm finds that relations with bureaucrats in the administration help the firm to stay informed

about new regulations that could be implemented and may affect its business area. You have to be aware of potential changes in order to plan the future activities of your business.

Frequent interactions

The managers have frequent communication every day with the person in charge of the Russian business operation by means of telephone and text messages. You need to stay updated on a continuous basis about what is going on. It is important to take into consideration the views of the Russians because they are better informed than you about what is going on in the market. Information required may include prices, availability of the various products, production records and sales volumes, customer needs and plans, market situation and information about potential changes in the business environments.

Relations are also developed and taken care of by frequent travels to Russia. The managers emphasize the importance to meet people face-to-face on a regular basis. The managers state that presence is Alpha and Omega to succeed in Russia. Frequent interactions with the actors in a network show that your firm has a strong commitment to the relationships (Johanson & Vahlne, 2006). Developing and maintaining business relationships through regular interactions, sharing information and building trust are considered important practices not only to get access to important information but also to reduce the lack of knowledge between partners (Agndal *et al.*, 2008).

Conclusions

This paper shows that having previous experience in Russia is not necessarily decisive to succeed with establishing business in Northwest Russia. Findings suggest that if you do not have previous experience and do not know the language, you could cooperate closely with a Russian door-opener who masters the Norwegian language. The three firms cooperated with a Russian door-opener in the preparatory stage who introduced the managers to the Russian business life. Joining the manager in meetings with potential customers, bureaucrats and experts was one essential action of the door-opener. A second important function of the door-opener was to explain what would be the right thing to do in different situations. The door-opener played the role as a cultural interpreter as well as the translator of languages.

Second, you have to make frequent travels to Russia in order to establish contacts with key persons. Maintaining relations with key actors in the network relies frequently on the individual person, and if this person for some reason disappears the network may collapse. Managers should therefore find some way to protect the network. Two of the firms in this study have a Russian employee in the Norwegian firm who is involved in the Russian business venture. In other words, the firms have at least two people in regular contact with key actors in the network in Russia. In this way the firm reduces the reliance on one person and minimizes the disruption should one person leave or not be available to make the regular visits to its foreign contacts. This helps protecting and monitoring networks as well as assists knowledge development (Welch & Welch, 1996). Besides, the Russian employee has the language skills and the cultural understanding which helps assess market information. It would be an advantage that also the Norwegian business person knows the Russian language, because it will make him/her more independent in his/her interactions with Russians. Language skills help reduce cultural differences and thus, attain acceptance from and improve communications with the foreign partner (Evans & Mavondo, 2002; Usunier & Lee, 2005).

To conclude, evidence suggests that a firm which wants to enter Russia has to

make use of local competencies from day one. This can be done by appointing a Russian door-opener who works closely with the firm's employee who is appointed to take care of the Russian business venture, or employ a person who knows Russia and the business area well from previous experience and speaks Russian fluently. Selecting a qualified and trustworthy person is the key in both cases. Finally, connecting with the right people that can give valuable support to the firm is essential. Each firm has to make its own assessments when it comes to which kinds of actors that would be beneficial for the firm to connect with.

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Do fluctuations in input impact industry structure?

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Abstract in Norwegian:
Denne artikkelen retter oppmerksomheten mot om, og hvordan usikkerhet knyttet til en råvare påvirker industristrukturen blant de bedriftene som lever av å bearbeide råvaren. Produksjon av tre ulike råvarer i norsk matvaresektor studeres; melk, oppdrettslaks og villfanget torsk. Ulike dimensjoner ved industristruktur som grad offentlig engasjement, transaksjonskostnader, konsentrasjon og bedriftsmangfold, studeres.

De empiriske funnene som rapporteres bekrefter på mange områder de forventningene som teoretiske modeller gir. Samtidig er noen resultater mer overraskende. Implikasjonene av funnene, både næringsmessige og teoretiske, drøftes i slutten av artikkelen.

Abstract in English:
This paper addresses whether and how variations in input may impact industry structure. Three Norwegian industries producing fresh food from different biological sources are analysed. The products under scrutiny are milk, farmed salmon and wild caught cod. The industries are compared in terms of input variations, public involvement, transaction costs, concentration and degree of firm heterogeneity.

The empirical findings reported both confirm and contradict predictions from theory, which are explained and discussed. Implications are highlighted.

Key words: Input uncertainty, transaction costs, firm heterogeneity and concentration rate

Introduction

The structure of the industry in which a firm operates is believed to be of key importance for its choice of strategy and profit potential. Porter (1980, p.3) claims that the *"industry structure has a strong influence in determining the competitive rules of the game as well as the strategies potentially available to the firm"*. However, industry structure not only varies across industries, but also over time. A variety of factors may impact industries and their structures. For example, man-made technological breakthroughs can cause dramatic industry structure changes or even give rise to new industries (see e.g. Tushman & Anderson, 1986). Also, industry structure is affected by changes in adjacent stages in the value system/chain and the bargaining power of suppliers and customers. Firms' actions and pursued strategies may as well influence the structure and thus the profit potential and competitive position for actors operating in the industry. Other important factors are scale and scope economies, capital requirements needed to operate in the actual industry, prevailing ideologies and governmental policies. Hence, factors that may impact industries and their structure are multiple. For a comprehensive overview of such factors see Porter (1980) and Besanko *et al.* (2004).

In this paper we ask whether unpredictable fluctuations in supply may also impact industry structure. This question is impor-

tant – at least due to the following two reasons: First, even though fluctuations, which relate to uncertainty, have extensively been dealt with in a variety of disciplines – such as economics, strategy and organisation science – fluctuations – or uncertainty – have to the best of our knowledge only to a limited extent been related to industry structure. For example, in Porter's (1980) extensive discussion of industry structure, this factor is not mentioned at all and in standard industrial organisation textbooks such considerations are also neglected (see e.g. Sheperd, 1997). Further, in order to operate effectively, adequate and timely supply of inputs is needed. In very much of strategy and marketing literature, adequate and timely supply is implicitly seen as unproblematic – and hardly dealt with at all. Challenges related to supply are instead left to sub-disciplines such as logistics and supply management (Ottesen & Grønhaug, 2002). In some industries, such as the fish processing industry, central input factors are nature-based raw materials where the control potential over supply is highly limited.

The remaining part of this paper proceeds as follows. In the next section we first define and clarify the central concepts to be applied. We do so to better grasp and cope with the research problem under scrutiny. Our effort to define and clarify central concepts – in particular our dependent variable "industry structure" – is theory-based, drawing on elements from economics in general, and especially from the field of industrial organisation. As part of our attempt to describe and predict whether and how uncertainty may impact industry structure, we develop a set of interrelated theory-based hypotheses where also transaction cost economics principles are utilised.

To examine our research problem empirically we collected detailed data to adequately describe and contrast three industries, all producing fresh food. The central inputs in the three industries are milk, farmed salmon and wild caught cod respectively. The three industries were selected due to varying degree of fluctuations related to – or uncertainty enveloping –the central biological input applied. To reduce the potential impact of other influencing factors, the three industries were selected as similar as possible, i.e. they all produce fresh food, production is in all three cases based on biological raw material sources, and they are all situated beneath the umbrella of the Norwegian superior legislative and political framework.

Based on detailed mapping of the three industries we report our findings, which take form of presenting the characteristics of the three industries along derived dimensions related to input uncertainty and political involvement. We then continue by reporting our empirical findings related to the hypotheses proposed. Our conclusions partly challenge and complement existing theories on how input uncertainty affects industry structure. Alternative explanations are proposed for unexpected (deviating) observations. At last we draw and discuss implications.

Central concepts and hypotheses

This section starts by defining and clarifying the central concepts we apply to grasp and cope with the stated research problem. We do so because how concepts are defined impact what aspects of, and thus how, the actual problem is captured. After this we advance a set of interrelated hypotheses on how our independent variable, input fluctuations – or maybe more precisely – input uncertainty might impact on our dependent variable, i.e. industry structure.

Basic concepts

The concepts "industry" and "industry structure" are related. However, the concepts are often applied differently – and frequently left undefined. The notion of an industry, for example, often refers to prod-

ucts (e.g. the seafood industry), countries, or central inputs and technologies applied. A more useful definition to capture the importance for competition and strategy is probably the following: *"…the group of firms producing products that are close substitutes for each other"* (Porter, 1980, p. 5). To what extent products substitutes each other relates to the inter-competition between them and can numerically be captured by measuring their cross-price elasticises of demand.

"Industry structure" relates to central aspects or characteristics of an industry. What aspects to emphasise, depend on purpose. For example, the often applied characteristic "concentration", e.g. as captured by the aggregate market share of the largest firms, is often used to indicate the intensity of competition in the industry. In this research we are – in particular – preoccupied with whether and how uncertainty may influence and restrict actors and their coping – and how this may be reflected in the way they organise their activities. Thus, we address characteristic of particular relevance for this purpose. For example, in addition to traditional measures, such as numbers of sellers and buyers, and concentration, input fluctuations or uncertainty may impact the possibilities of standardisation, investment risks, and thus the ability to pursue economies of scale.

Further, if fluctuations relate to variability in type and quality of input, this may influence the possibility for exploitation of economies of scope. Input uncertainty may also impact the potential inclusion of subsequent activities in the value system, or the acquisition of upstream units, hence, the degree of vertical integration. An important question is also whether uncertainty impacts how firms perform their transactions, including activities to secure inputs and exchange their outputs. Transactions are contract-based. An important question is whether input uncertainty impacts ability for monitoring inputs prior to purchase –a prerequisite in order to design contracts effectively.

As stated above our independent variable is input uncertainty. The concept of uncertainty has been applied in various ways. According to Knight's (1921) classical definition, uncertainty is present when actors can not assign well-defined probabilities to possible outcomes. If they can, it is the case of risk. The importance of uncertainty is underlined by Coase (1937, p. 338) who find it *"…improbable that a firm would emerge without the existence of uncertainty,"* since short-term contracts are unsatisfactory under these circumstances.

The research literature distinguishes between different sources or types of uncertainty, e.g. between primary, secondary, and behavioural uncertainty (Williamson, 1989) or primary, competitive or supplier uncertainty (Sutcliffe & Zaheer, 1998). The type of uncertainty under scrutiny here – given the biological production processes in question – is primary uncertainty – i.e. uncertainty related to state of nature. Primary uncertainty stems from random events of nature, unpredictable changes, change in consumer preferences, and regulatory- or technological changes that are difficult to predict. In this paper we distinguish between input uncertainty related both to quality and volume of supply.

Before we develop our hypotheses we briefly discuss how public involvement may moderate the impact of uncertainty on industry structure.

The moderating influence of public involvement

Firms and industries do not operate in a political vacuum. Review of the literature on industry structure reveals that public involvement may heavily moderate the structure and development of industries in several ways (Viscusi *et al*., 2005). Public authorities all over the world struggle to protect consumers from monopolies' opportunistic actions. Antitrust legislation, aiming at hindering firms from harmfully exercising a dominating market position, is now implemented in most western countries. At the

same time, public authorities implement protective measures (like tariffs and import quotas) to shield domestic industries from global competition. Well positioned nations argue for free trade, while nations in weak competitive positions argue for arrangements aiming to protect domestic industry. It should also be noted that WTO struggles to create a global set of rules for international food trade – in which two of the three industries in our study are participating.

Public involvement also includes market intervention pursuing multiple domestic policy goals, such as levelling income among primary producers, improving consumers' welfare, supporting a sustainable rural population, and multifunctional farming. These objectives are especially pertinent among the food producing sectors which often are linked with non-industrial public policy goals. Various means are applied in this effort, such as regulating terms of trade by exclusive dealerships and rules of negotiations, directing producer subsidies, laws that guarantee or restrict market competition, income schemes, barriers of international trade and price guarantees. Also, public involvement can have both intended and unintended effects on contractual relationships and industrial structure.

Here, public involvement is understood as institutionalisation of markets (Guseva & Rona-Tas, 2001) or direct intervention in some favoured industrial sectors – either by subsidisation or protective measures. In terms of contractual relations, institutionalisation is interesting in two respects. First, institutionalisation may influence industrial structure. For example, public intervention could imply sustaining a heterogeneous structure in one industry, while imposing a homogenous structure in others. Secondly, institutionalisation may also act as a risk absorbing mechanism, since economic actors can be protected from the "court of the market" in terms of for example price guarantees or mandatory contract schemes. Similar to hierarchy, institutionalisation reduces uncertainty and transaction costs. The effects should, however, be regarded as highly dependant upon sector specific goals that may vary over time and across industries.

Influencing factors and tentative hypotheses

In this section we address factors that may influence industry structure, why they do so, and how. Regarding the factors addressed we also advance – based on theory – a set of interrelated hypotheses. The conceptual and theoretical bases of the hypotheses are: transaction cost economics, vertical integration, economies of scale and scope and concentration ratio, as well as the moderating role of governmental interventions.

Uncertainty and transaction costs economics

Transaction costs are the costs associated with searching for exchange partners, negotiating, monitoring and enforcing contractual arrangements. When the transaction environment is characterised by high uncertainty, transaction costs, *ceteris paribus*, tend to increase. Transaction cost economics (TCE) – with central proponents such as Coase (1937) and Williamson (1975; 1985) – has demonstrated to be useful to explain under which organisational forms exchanges between transaction partners – in adjacent stages in the value system – should take place (Shelanski & Klein, 1995; Vannoni, 2002). In some cases the market interface is replaced by common ownership, i.e. vertical integration, which – if adapted to a large degree – has great bearing on industry structure. TCE maintains the actual transaction as the unit of analysis, and is not preoccupied with industry structure as such. However, the cumulative effect of individual firm behaviour will of course affect industry settings on an aggregate level.

Asset specificity is the main factor of importance for choice of governance structure within TCE (Williamson, 1986), and can be

defined as the tailoring of resources for specific needs. When assets are committed to specific tasks, redeployment to alternative usages implies surrendering large amounts of their productive value. The investments undertaken by transaction partners in advance of an exchange determine the level of asset specificity, which can take many dimensions. Examples can be site specificity (location), physical (machinery) and human (training, experience) asset specificity as well as temporal asset specificity which can be substantial when the exchange involves highly perishable food products. Under the presence of high asset specificity uncertainty becomes a significant determinant for vertical integration (Sutcliffe & Zaheer, 1998) due to the possibility for hold-up and quasi rent extraction (Klein *et al.*, 1978). Vertical integration then becomes a viable option to protect firms from unforeseen contingencies or contract partners' opportunistic behaviour.

Uncertainty can further serve as a barrier for potential entrants if they do not possess the market and industry knowledge of industry incumbents (Sheperd, 1997). When industry members integrate vertically, foreclosure of input sources or product outlets might be result and potential entrants confronts higher uncertainty levels. For the incumbents, however, the integration of adjacent stages within the firm boarders, alleviate uncertain contingencies, and – as accentuated by Davies (1987, p. 95) *"…the desire to avoid or ameliorate uncertainty lies at the heart of many motives for integration."* Uncertainty related to upstream product quality (Silver, 1984), input price (Arrow, 1975) and final demand (Carlton, 1979) are some sources of uncertainty that may motivate vertical integration.

The quality of an input may from nature be uncertain. If monitoring is costly – or only possible *ex-post* – upstream integration and self production may be preferred to check the quality closer. Arrow (1975) addresses information asymmetry and argues that when the input supply is uncertain, integrating backwards can improve downstream firms' ability to forecast the input price and thereby make a better input-mix decision.

Carlton (1979) addresses uncertainty in downstream demand and claims that when it appears in situations with upstream supply rigidities, backwards vertical integration can reduce costs. This follows from the assumption that upstream producers must make their own pricing decisions before downstream demand and the derived demand for their product is known. When confronted with the risk of having unsold stocks, input prices are set above marginal production costs. Then, if the downstream producer integrates upstream, inputs can be obtained at cost. However, the risk is transferred downstream. The downstream producer can produce at a relatively low level where "…*the integrated firm is able to satisfy the high probability demand by itself, and pass on the low probability demand to some other firm*." (Carlton,1979, p. 207). Hence, vertical integration can reduce uncertainties in the firm's marketplaces regarding future price movements, supply reliability or access. Thus, according to literature we predict transaction costs to rise as uncertainty related to input rises and hypothesis:

> *H_1: High degree of input uncertainty imposes high transaction costs and hierarchical contract relations*

However, when authorities intervene in upstream markets, for instance by setting the terms of trade or by assigning legislative rights to some of the contractual partners, the distribution of bargaining power between stages might be disturbed and input uncertainties resolved. Hence, high degree of public involvement in some industries can reduce transaction costs.

Uncertainty and economies of scale and scope

Economies of scale are realised from operational efficiencies, where the unit cost falls with increased production. Scale

economies are the natural cause of monopolies when the market size is within the range of the cost effective scale of one firm. The degree of specialisation, division of labour, technological and/or financial reasons (supply quantity discount) are the reasons for the falling part of the long run average cost (LAC) function, which in turn is responsible for economies of scale. Management limitations and "diseconomies of scale" are the reasons for the upward sloping part of the LAC-curve from some output volume.

When firms become more capital intensive they tend to increase in size, since high fixed costs (specialised production technology) should be spread over larger volumes of output to reduce average costs. Technological progress encourages specialisation and substitution of capital for labour – therefore larger firms. When production is labour-intensive and fixed costs are low, firms need not be penalised for being small.

Stigler (1951) explains the degree of vertical integration in an industry by its age, since specialisation increases as markets expand and specialisation leads to efficiency since more is produced per unit of input. He argues that the size of the downstream market will influence the level of vertical integration in an industry, which will decrease as markets expand and industries mature. In young industries firms will be more apt to integrate upstream since raw material providers tend to be unable to satisfy the producer's demand when downstream markets grow rapidly. As an industry matures, upstream firms tend efficiently to supply the downstream industry. Also, as specialisation increase, input markets become reliable and vertical integration declines. As the focal industry grows old and declines, upstream market might diminish and vertical integration might again become necessary to secure the inputs needed.

Harrigan (1984) opposes this view, and posits that firm's level of vertical integration over the life-span will take an inverted U-shape, since less vertical integration should be favoured early and late in the industry's evolution due to the risks of demand uncertainty and differing needs to prove a new product's worth. These factors call for lower level of integration since the market penalty from misalignment will be great. However, she makes one exception – for pioneering firms – and asserts that technological leaders in an industry will be more integrated than their followers. The arguments of Stigler and Harrigan are adverse in the meaning that while Harrigan addresses vertical integration as a firm level phenomenon, Stigler's point of view is that from the industry level. Accordingly, their dispute seems to belong to the traditional debate on whether performance effects stem from firm or industry factors as addressed by Hawawini *et al.*, 2003.

Vertical integration should induce a downward shift in the firm's LAC curve, and increase economic efficiency. Then cost benefits can be achieved by production economies (e.g. reduced transport costs), co-ordination economies (e.g. reduced transaction or advertising costs), managerial economies (e.g. single supervision source) or financial economies (e.g. quantity discounts, reduced interest costs).

Input uncertainty may impede the realisation of scale economies. The utilisation of input specific production equipment – that can bring about (further) operational efficiencies – assumes that inputs are of homogeneous kind and supplied in sufficient quantities. Scope economies follow from the advantages from producing several outputs (from the same input) together, rather than by separate firms, and are decisive for the firm's product mix. The diversification of outputs (scope) influence on costs is measured by cost savings due to simultaneous relative to separate production. However, the occurrence of multi-output production within a single multi-product firm instead of separate single product firms requires that it is difficult to trade common inputs across markets, i.e. transaction costs are present (Teece,

1982). If not, the diversification incentives disappear. Teece claims that when transaction costs prevents efficient market exchanges the profit maximising firm will choose multi-product diversification. Levy & Haber (1986) also show convincingly how multi-product firms benefit from flexibility due to the ability to shift inputs and/or organisational assets to other, "higher value" usages when demand uncertainty is present.

In the view of Porter (1996, p. 70) strategy is making trade-offs which also includes deciding what *not* to do. Flexibility then, as an argument related to scope economies, becomes a response to environmental uncertainty (Tannous & Mangiameli, 1993; Olhager & Rudberg, 2003) since firms' ability to change to variations in the business environment becomes valuable. Baumol (1959) also asserts that uncertainty will lead firms to under-invest in specific equipment. This implies that use of production facilities, whose scale of operation is flexible, will increase. Hill & Hoskisson (1987) further claim that environmental uncertainty places a premium on flexibility, where vertical integration might induce inflexibility and poor responsiveness. Based on the above discussion we hypothesise that:

H_{2A}: High degree of input uncertainty favour economies of scope

H_{2B}: and correlates positively with firm heterogeneity

However, public involvement may impact actors and industry structure. Authorities, in their quest for consumer benefits, usually limit large firms' access to monopolistic pricing behaviour. Hence, in industries where public involvement is high, concentration ratios tend to be reduced. Also food safety issues and legislative measures related to them might hinder firms from efficiently utilise economies of scope and thus foster firm homogeneity.

Uncertainty and firm concentration ratio

Industries differ with respect to degree of concentration. Due to factors such as entry barriers and scale economies, high capital requirement is often the case, which can also result in high sunk costs: constituting a considerable *exit* barrier if production technologies are highly specialised and where production equipment and facilities receive low salvage value. Location, input distributor scarcity, and legal reasons can as well influence entry barriers. Governmental authorities can also to some extent influence the concentration ratio in an industry for instance by antitrust laws or by the attitude and behaviour towards the 'openness' of the economy.

Antitrust laws may also limit the extent of horizontal and vertical integration, while the international linkages of an industry affect the market size, and hence, the room for action. Concentration effects can also be achieved by vertical integration, especially if it enables the acquiring firm to foreclose competitors from the upstream market. However, when supply is characterised by primary uncertainty, firm's ability to obtain scale – or other – economies from vertical integration, is limited. Uncertainty surrounding the inputs will function in the same ways as when raw material sources are scarce and no one have obtained specific control over these. Then, actors will be reluctant to undertake specific investments needed for efficient production scales, since supply volumes might be insufficient to provide effective capital utilisation. Thus we hypothesise:

H_3: High degree of input uncertainty favours low firm concentration ratio

However, industries situated under the wings of protective governments, whose purpose is to shield them from global competition, or when legislative monopoly rights are granted, industry structure is expected to be more concentrated than otherwise.

Research Method

To examine the stated hypotheses we chose to study the structure of three different industries. The industries included are all producing highly perishable fresh food and located in Norway. Fresh food is chosen because raw material quality is essential for product differentiation. Additionally, the raw material is based on biological production/harvesting which is sensitive for climate conditions and supply often takes a seasonal nature. This lead to variation in input volumes and quality. Distribution of fresh food is especially demanding, as product quality depends on a short time span between production and consumption.

To add variation to our dependent variable – input uncertainty – we chose to study three different products; milk, wild caught cod and farmed salmon. We also chose to study the industry structure in the part of the value system that processes the biological raw material. The industries chosen also allow for capturing how public involvement may impact on industry structure.

The data collected for our study is based on the need created by our hypotheses requiring information (data) about input uncertainty, public involvement, transaction costs, concentration and firm heterogeneity. To capture input uncertainty we have measured degree of input standardisation, input volume variation and input price variation.

Public involvement has been captured by degree of globalisation in both input and output markets as well as degree of national protection both related to subsidises and in terms of trade.

Transaction costs in the market interfaces have been captured by the degree of vertical integration between raw material production and processing, and terms of trade, i.e. widespread/utilisation of auctions and contracts.

Degree of heterogeneity has been captured by firm variation in term of size, product mix and degree of specialisation. We have also assessed the degree to whether competitive advantages among firms within the same industry are based on economies of scale or scope.

To capture degree of firm concentration we have measured concentration rate, together with number of buyers and number of sellers.

Findings

Below we report the findings from our investigation. To ease the presentation the variables studied are dichotomized in to dimensions like high/low or global/national. The findings are presented by comparing the relative values of the included categories (variables) in the three selected industries. The presentation of findings follows the order of hypotheses. We start by presenting our findings related to degree of input uncertainty and public involvement.

Input uncertainty and public involvement

As discussed above, it is assumed that degree of input uncertainty may impact the industry structure in several ways. It is also assumed that public involvement may moderate the way input uncertainty impact industry structure.

Table 1 shows our findings related to input uncertainty and public involvement in the three industries studied.

Inspection of Table 1 reveals that the degree of input uncertainty varies across the industries studied. In the processing industries based on agriculture and aquaculture, i.e. milk and farmed salmon, input uncertainty is low in the sourcing environment. The processing industry based on wild cod is, however, exposed to high degree of input uncertainty due to factors such as weather conditions, variations in catch rates and biological migration. Inspections

of Table 1 also show that this is the case when considering all of our exploratory variables; variation in quality (i.e. standardisation of input), volume and price variation.

Table 1 also shows that public involvement is greater in the agricultural, i.e. the dairy industry, than in the marine sector, i.e. wild caught cod and farmed salmon. In Norway, agriculture is strictly protected from global competition – including import protection from products and inputs produced abroad, subsidies aimed at increasing the profitability within the industry, as well as laws instructing the organisation of the industry and the level of prices in the input markets for agriculture products. Thus, all milk consumed in Norway is produced domestically. In the marine sector public involvement is very low – both in the farmed salmon industry and in wild caught cod industry. Apart from agriculture, the terms of trade are set by international markets. Since early 1990's there have been no subsidies directed to the marine sector. Accordingly, most of the farmed salmon and wild cod are sold and consumed abroad. As such, the three industries studied show variations both on the independent variable, i.e. input uncertainty, and the moderating variable, i.e. public involvement.

Table 1 Input uncertainty and public involvement in three Norwegian food industries

Construct	*Variable*	*Milk*	*Salmon*	*Cod*
Input uncertainty	Standardisation of input	High	High	Low
	Volume variation	Low	Low	High
	Input price variation	Low	Medium	High
Public involvement	Competition input market	Low	High	High
	Competition output market	Low	High	High
	Globalisation output market	National	Global	Global
	Globalisation input market	National	Global	Global
	National protection	High	Low	Low

Input uncertainty and transaction costs

According to our first hypothesis (H_1) the level of input uncertainty should impact transaction costs positively. In Table 2 we have summarised our findings related to transaction costs.

Inspections of Table 2 reveal that the findings are in accordance with the hypothesis. The highest transaction costs are found in the raw material market for wild caught cod, where the input uncertainty is highest.

The lowest transaction costs are found in the dairy industry, where the input uncertainty is the lowest. Transaction costs are also low in the market for farmed salmon and close to those of the dairy industry. Inspection of Table 2 indicates that transaction costs are driven by different aspects of input uncertainty. The degree of vertical integration is high in the dairy industry, where the farmers collectively own the major processing company – Tine. In spite of high degree of input standardisation of quality, market auctions are absent and monitoring unnecessary. Here long term contracts are applied to handle transactions – and minimum standards regarding the quality of the milk are employed and adhered to by farmers.

Table 2 Transaction cost in raw material markets in three Norwegian food industries

Construct	*Variable*	*Milk*	*Salmon*	*Cod*
Transaction costs	Degree of vertical integration	High	Low	Low
	Number of auctions on input	Never	Low	High
	Contracts on input	Often	Often	Seldom
	Terms of contract	Long	Short	Short
	Inspection of input before purchase	Never	Seldom	Often

Within the farmed salmon industry transaction costs are slightly higher than in the dairy industry. The degree of vertical integration at the industry level is low and most of the farmed salmon are sold to processors abroad. However, at the firm level high degree of vertical integration is partly present. Those who process farmed salmon in Norway are in general backward integrated (Isaksen *et al*, 2002, Isaksen, 2007). Farmed salmon is most frequently mediated through short term contracts or auctions. Prices are set globally and fluctuate to a higher degree than the prices for raw milk (see Table 1). Due to small quality variations, inspecting the salmon before purchases are mainly unnecessary, hence, buyer ex post monitoring costs and risks are reduced. The duration of contracts is usually on shorter terms than for milk. In the later years, commodity exchanges for salmon have emerged and functioning as financial security instruments for salmon exporters.

The industry with the highest transaction costs in our study is the wild caught cod industry. The shown variations in transaction costs reflect different aspects of input uncertainty. Due to high quality variation almost every catch need to be inspected before purchases are made. The catch is often landed directly to the buyer. Most of the catch is sold on a day-to-day basis, where price is decided after inspecting quality and volume of today's catch. Another factor that increases transaction costs in this market is that the catch often includes other species than cod. Due to input uncertainty, long term contracts are hardly ever applied. An often proposed strategy in such markets to reduce transaction costs is upstream vertical integration. Surprisingly, when comparing the three industries, we find this strategy most seldom applied in the wild caught cod industry. This may, at least partly, be explained by public involvement, since processors – according to law – are not allowed to own and operate fishing vessels. The policy goal was to establish a secure privilege for Norwegian fishermen to harvest the wild fish resources. However, some exceptions from this law have been made, where processors have been granted the right to own vessels, and the vessels must sell their catch to one specific processor or region. Several studies indicate, however, that upstream vertical integration only marginally reduces the input uncertainty in this market (Dreyer *et al.*, 2001; Isaksen *et al.*, 2002; 2004; Isaksen, 2007). The major explanation for these findings is that the way the value system is organised neither impact on climate conditions nor the way the cod migrates, and this input uncertainty remains almost the same regardless ownership in vessels.

Our findings related to public involvement are mixed. As indicated in Table 1, public involvement is the strongest in the dairy industry and lowest in the farmed salmon industry. Inspection of Table 2 reveals that transaction costs are low both in the dairy industry and salmon industry. Although the public involvement is lowest in the farmed salmon industry, the transaction costs are higher in the wild caught cod industry. Here the transaction costs are related to primary uncertainty – not under control by man – i.e. biological migration and climate, which

only marginally is moderated by public involvement. In sum our observations indicate that input uncertainty impact positively on transaction costs.

Input uncertainty and scale economies

According to our stated hypothesis, input uncertainty impact on firms' ability to exploit economies of scale. We also proposed that when firms are well positioned for economies of scale, input uncertainty will impact negatively on profiting from them, while if positioned for economies of scope, the effects are indecisive or even positive. Thus, we suggest that when exposed to input uncertainty, the industry structure will develop in the direction of firm heterogeneity and product flexibility in order to respond coherently. In Table 3 we summarise our findings regarding firm heterogeneity.

Table 3 Firm heterogeneity in three Norwegian food industries

Construct	*Variable*	*Milk*	*Salmon*	*Cod*
Degree of firm heterogeneity	Firm size heterogeneity	Low	High	High
	Quality based product heterogeneity	Low	Low	High
	Product differentiation	High	Low	High
	Type of economies realisation	Scale	Scale	Scope
	Degree of specialisation	High	High	Low

A closer inspection of Table 3 shows that firm heterogeneity, i.e. size, technology, and product mix differences, are highest in the farmed salmon industry and wild caught cod industry. In particular, we find extreme heterogeneity in the wild cod industry. Looking closer at the variables related to product mix, we see that in the wild caught cod industry the mix of products is directly linked to the fluctuations in input quality. Here we also observe that firms are low in degree of specialisation and high in degree of product flexibility. Inspection of Table 3 also reveals that the well performing firms in the wild cod industry exploit economies of scope rather than economies of scale (Dreyer & Grønhaug, 2004; Dreyer, 2006, Isaksen, 2007).

In the farmed salmon industry, where input uncertainty is lower than in the wild caught cod industry, highly specialised firms tend to exploit economies of scale producing one standardised product. However, in this industry high firm heterogeneity is present in terms of variation in firm size, and also the way the value system is organised. Some firms are vertically integrated, some located abroad, and some have specialised in producing one single product. These choices relate to technology, product and capacity and are based on standardised inputs and specialisation.

The industry with the least heterogeneity is the dairy industry. Here, firms are more or less similar regarding size, technology and product mix. Firms are highly specialised and focus on economies of scale and exploitation of production capacity. When it comes to product portfolios, the dairy industry differs from farmed salmon. Here we find a wider product mix, based on milk as a standardised input combined with other inputs. The product differentiation is, however, not based on variation in input quality of raw milk, but on its application for further processing, aiming to serve various industrial customers' needs.

When it comes to public involvement, the impact on firm heterogeneity is largest in the dairy industry, focusing on an institutional framework aimed at homogeneity and exclusion of foreign competitors.

Table 4 Firm concentration rate in three Norwegian food industries

Construct	*Variable*	*Milk*	*Salmon*	*Cod*
Degree of Concentration	Concentration rate	High	Low	Low
	Number of buyers	Few	Many	Many
	Number of sellers	Many	Many	Many

Input uncertainty and concentration

In the literature degree of concentration is frequently mentioned as one of the most important dimensions related to industry structure. This is a relatively uncomplicated dimension to measure. It is also an important dimension in many theoretical models, in particular in economics and strategic management. Here we focus on how input uncertainty may impact on concentration ratio.

Our hypothesis (H_3) predicts a negative relationship between input uncertainty and firm concentration ratio. Inspection of Table 4.4 indicates support for this hypothesis. Although multiple sellers are present in all the industries studied, the industry with the highest concentration is also the one with the least input uncertainty – the dairy industry. Here we find one dominating buyer owned by the farmers. In the marine sector, i.e. firms processing farmed salmon or wild caught cod, we find low concentration ratios. We also observe that there is one way the two marine industries differ regarding degree of concentration: the farmed salmon is to a higher degree processed by firms located abroad, as farmed fish is exported unprocessed and processed in the import country. This might be explained by lower input uncertainty and lower transaction costs, resulting in a higher degree of global sourcing of farmed salmon than is the case for wild caught cod.

Again public involvement seemingly impact concentration. In the dairy industry national laws prohibit import of raw milk and milk products which contribute to a higher degree of concentration. Additionally, although firm concentration ratios are extremely high, the institutional framework in the Norwegian dairy industry contributes to, rather than prevents, high concentration rates. We believe that producers located abroad would choose to purchase their raw milk form other than Norwegian farmers if public intervention like subsidises and import protections were repealed. Thus, in an open global market degree of concentration among processors serving Norwegian consumers with milk would probably have been less. The impact on economies of scale can also lead to an opposite outcome, where the Norwegian dairy industry is merged with foreign dairy firms, like in the existing Nordic dairy firms. However, the agriculture sector in Norway has high political legitimacy open for political and regulatory intervention.

Such protective institutional tools are, however, absent in the marine sector. This sector has low public involvement and operates in an open global market and is vulnerable to protective intervention in global trade because the volumes produced are much higher than domestic consumption. In this industry public involvement is related to restriction on who is allowed to harvest how much from wild fish stocks and areas opened for farming salmon.

Concluding remarks

This study addresses how and why input uncertainty may impact industry structure. Our findings show that input uncertainty impact positively on transaction costs and firm heterogeneity. Concentration ratios, however, tends to decrease as input uncertainty increase. Additionally, our study addresses how public involvement moderates the impact of input uncertainty on industry structure. Our findings also reveal that pub-

lic involvement has an important moderating impact on industry structure. In the industries studied it was found that public involvement reduces transaction costs and firm heterogeneity, but increase concentration ratios. However, public involvement is rooted in political goals that differ from industry to industry. In this study, for instance, public involvement aiming to protect national industry from global competition, have major impact in the dairy industry. Such protective tools, however, represent a major challenge for the Norwegian seafood processing industry, if importing countries apply the same kind of protection for their own food industry.

The findings reported here have theoretical implications. According to our study input uncertainty has a potential impact on industry structure through transaction costs, firm heterogeneity and concentration rates. As noted above, this has more or less been neglected in past research. Further empirical and conceptual studies are needed in order to improve the way theoretical models should incorporate input uncertainty. Another challenge, related to a better understanding of how industry structures develop, is to study the impact of public involvement. For instance, in order to protect an industry with high political standing from global competition, tools that increase concentration ratios and restrain firm heterogeneity are utilized by authorities. On the other hand, such interventions reduce transaction costs. Public involvement is often mentioned as a factor that impact on industry structure. Our findings confirm this. However, more studies are needed in order to better understand the intended and unintended moderating impact from public involvement to include this variable into theoretical apparatus.

The reported findings also have some managerial implications. Input uncertainty affect strategy positioning at firm level. For instance, high input uncertainty seems to assign competitive advantages to firms possessing flexibility to volume and product mix. Accordingly, firms that can take advantage of standardised inputs are in a position to exploit economies of scale and specialisation strategies.

Our findings also reveal some major challenges in the three industries studied. In the Norwegian dairy industry the firm(s) is (are) vulnerable for changes in public involvement that opens for global competition. Although exploiting economies of scale today, this is hardly enough if foreign competitors were enabled to enter the Norwegian market. If so, a strategy recommended would be product differentiation rooted in input quality. However, this is not an easily adoptable strategy, since – for decades – the main strategy has been to improve and standardise input quality. This is an experience also recognised by new national actors who have tried to enter this market.

The industry experiencing the highest input uncertainty faces other challenges. In the fish processing industry utilising wild caught cod input uncertainty hassles firms. The uncertainty related to inputs, however, has created competitive advantages for those providing products based on unique input quality or having found profitable market niches. If input uncertainty is reduced, for instance through increased volumes of farmed cod, the possibility to exploit these kinds of competitive advantages will be reduced and open for radical changes in the industry utilising wild caught cod.

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Vertical Integration and Performance: Measurement Issues – and an Empirical Illustration from the Norwegian Fisheries Industry

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Abstract Norwegian:
Vertikal integrasjon er ofte utnyttet for å takle markedsproblemer og fremme bedrifters lønnsomhet. Empiriske funn fra tidligere forskning omkring lønnsomhetseffektene fra dette strategiske grepet viser imidlertid at forskjellig resultat: Positiv og negativ – så vel som betydningsløs – samvariasjon mellom vertikal integrasjon og lønnsomhet er observert og rapportert. I tillegg viser nærmere ettersyn av empiriske funn at samvariasjon mellom lønnsomhet og vertikal integrasjon varierer mellom næringer, og at forskjellige mål – både for vertikal integrasjon og lønnsomhet – har vært benyttet i tidligere empirisk forskning.

Denne artikkelen gjennomgår tidligere funn med tanke på forholdet mellom vertikal integrasjon og lønnsomhet. For å sammenlikne deres fordeler og ulemper benyttes ulike mål for oppstrøms vertikal integrasjon i den samme konteksten; norsk fiskeindustri. Et unikt datasett over paneldata fra bedrifter, som inneholder detaljert informasjon vedrørende lønnsomhet og vertikal integrasjon, benyttes. Våre funn viser at det er stor variasjon i forbindelsen mellom vertikal integrasjon og lønnsomhet, både i forhold til mål og mellom bedrifter. Avslutningsvis vurderes anvendeligheten av ulike mål for vertikal integrasjon, samtidig som implikasjoner understrekes.

Abstract English:
Vertical integration (VI) is a strategy frequently applied to overcome market imperfections and, thus, enhance firms' performance. Empirical findings from past research, however, show mixed results regarding the covariation between VI and performance, and positive, negative, and non-significant covariation has been observed. Closer inspection of empirical findings also reveals that the covariation between VI and performance varies across industries, and different measures, for both VI and performance, have been applied in past empirical research.

This paper reviews findings related to the vertical integration – performance relationship (covariation). To examine the strengths and weaknesses of various measures we control for the so-called "industry-effect" by applying various measures of upstream vertical integration in a single industry setting – the Norwegian fish processing industry. In so doing, a unique data set from a panel of firms containing detailed information about performance indicators and vertical integration is applied. Our findings show variations in the vertical integration–performance link across measures and firms. The applicability of measures is critically assessed and implications highlighted.

Keywords: Vertical integration, performance, measurement, Norwegian fisheries industry

Introduction

Vertical integration is an often addressed topic within corporate and industry strategy research. When applied under conditions characterised by market failures, (e.g. substantial transaction costs, demand variability and high market uncertainty) vertical integration is believed to create different economies and to positively influence firm performance. However, reviews of the literature reveal that the research undertaken

to empirically examine performance effects from vertical integration is limited (Bhuyan, 2002; Shelansky & Klein, 1995; Spiller, 1985). Furthermore, findings regarding the vertical integration performance effect are inconclusive. This article attempts to shed some light on this issue, as the "make-or-buy" dilemma has great practical implications for any firm, and a decision either way should be guided by robust knowledge. In studying this relationship, we carefully examine measurements applied in past research. We also empirically examine the performance of firms in one industry, where vertical integration (VI) is applied to a varying degree. More precisely, we examine the extent to which the varying degree of VI implementation in firms influences their financial performance. In addition, we focus on the problems regarding choice of measurements when testing the VI-performance relationship.

The essence of the VI phenomenon can be broken down to one economic entity's possession of successive stages in the input-throughput-output system, i.e. the value chain from raw material to consumers.[1] The obvious question is why adjacent stages of production, which could have been handled by separate firms, are managed within the boundaries of one firm? The answer is believed to be concealed in the weighted cost comparison between market exchanges and internal resources.

Several problems arise when assessing performance effects from the integration of firms into adjacent stages of the value chain. Measurement problems exist, both regarding VI and performance: How do we capture the true nature of VI on one hand and the financial performance of firms (and industries) on the other? How do we know that our findings at firm level are not a product of the industry structure in question? In this paper, we offer some suggestions for how to address these problems. We do so by employing different measurements for VI and performance, and thoroughly analyse the environment in which firms are embedded. In so doing, we report findings from a study carried out in the Norwegian fish processing industry, where the upstream VI of firms towards their raw material source was assessed and compared with the financial outcome of their businesses.

The rest of the paper is organised as follows: The next section gives a brief review of theories explaining the persistence of VI. We also provide a review of earlier empirical studies on the vertical integration-performance (VI-P) relationship. Then we present our data and the setting studied, before our analyses and results are reported. We also include a critical assessment of our findings, and highlight managerial and methodological implications as well.

Vertical Integration – approach

Vertical integration has interested researchers for decades, going back to Adam Smith and the division of labour, as advocated by Young (1928: 48), and Stigler (1951). In *neoclassic economic theory,* coordination between separate organisations is governed by a market system rather than managed internally within a firm, even in the presence of bounded rationality and opportunism. In the early work of Coase (1937), which has been revitalised and 'illuminated' by Chandler (1962) and Williamson (1971), among others, the boundaries of the firm were ascertained in light of transaction costs. The transaction costs explanation was grounded by the shortcomings of exploiting the market for allocating resources between adjacent stages in the value chain. This, in turn, gave firms motivations for 'making' instead of 'buying' and 'using' instead of 'selling'. Transaction costs were merely *"…the cost of organizing the economic system"* (Arrow, 1969: 48), or as stated: *"…there would be no reason for business firms to exist if (…) we could foresee the future perfectly and there were no costs in negotiating and renegotiating long-term contracts"* (Azzam & Pagoulatos,

1999: 10). *Transaction cost economics* (TCE), *industrial organisation* (IO) and *strategic management* (SM) are the theoretical domains that dominate the analysis of VI, according to Chatterjee (1991).

Theories can be viewed as explanations. Here we apply elements from several theories that help illuminating and capturing the actual phenomenon. One theory alone will seldom or never be able to provide a complete explanation of VI (Joskow, 1988). As Langlois & Robertson (1989: 361) concluded in their study of VI in American automobile industry,: *"An examination of the whole history suggests that no single theory always fits the facts perfectly. A complete explanation must combine specific theories in a way that is attentive to such factors as industry life-cycle, demand, economies of scale, and appropriability."*

Transaction costs economics (TCE) has received considerable attention in efforts to explain the existence and effects of VI, and it is frequently applied to explain the outcome of the vertical structuring of production (Shelanski & Klein, 1995). TCE predicts that organising transactions internally creates economies that are profitable, as long as *"… costs of transacting over market outweigh internal costs of management"* (Levy, 1985: 439). In its 'purest' form, i.e. vertical financial ownership, VI enhances profitability, since inter-firm profit claims are eliminated (Mahoney, 1992). This "make" alternative is – in the view of TCE – the "*organization form of last resort"* (Williamson, 2008: 5).

According to *industrial organisation* (IO), the primary determinant of VI is market structure (Chatterjee, 1991) and VI can constitute a valuable instrument for creating competitive advantages, either by utilising different economies, by reducing external uncertainty, or by securing the supply of critical input (Porter, 1980). Following the IO perspective, VI should lower the risk to firms in markets with few actors and with demand and volume uncertainties, and thereby increasing profitability for those applying a VI strategy.

S*trategic management* (SM) is based on managerial and organisational practice (Rumelt *et al.*,1991) and VI is applied to ease managerial processes in situations with high uncertainty. According to Chatterjee, Lubatkin & Schoenecker (1992), however, SM has so far been the sparsest and most inconsistent one of the three streams of research explaining VI. Within SM, the resource-based view of the firm (RBV) , have improved the understanding of VI (Mahoney, 1992). RBV emphasises heterogeneous, valuable, and rare combinations of resources that give rise to "hard-to-imitate" competitive advantages (Barney, 1991; Wernerfelt, 1984). This perspective, however, gives no simple rules of thumb for *when* to integrate vertically, since for each case the actual situation must be taken into account (Balakrishnan & Wernerfelt, 1986; Barney 1991). Scholars in this field have also pointed to the possible cost disadvantages and potential fallacies when a VI strategy is wrongfully implemented (Collis & Montgomery, 1997; Stuckey & White, 1993).

The VI-performance relationship: Empirical findings

Researchers from various disciplines have addressed the issue of the VI-performance relationship empirically. The points of departure for these studies differ, but they tend to apply the same research strategy. Usually, the impact of one or more explanatory factors on performance is estimated by using some statistical procedure(s), keeping other factors constant. Findings must be treated critically, as performance measurement imposes potential shortcomings, such as instability of performance, causal complexity and use of retrospective data (March & Sutton, 1997).
Within neoclassical economics, perfect competition prevails; firms within an industry are identical, and price- and quantity decisions are the only strategic choices. In meeting the same demand, firms would in the long run achieve average profits.

Hence, an analysis of inter-firm differences would give no meaning, given that market failures do not exist (Yao, 1988). In real world, however, this is not the case.

A useful point of departure for assessing past empirical research related to the VI-performance relationship is the meta-analysis by Capon *et al.*, (1990). Their analysis was based on 320 empirical studies – stemming from journals, books, proceedings, dissertations and working papers during the period from 1921 to 1987 – wherein financial performance is the dependent variable. In their analysis, they identified 15 studies where VI (forward or backward) is utilised for explaining firm (or industry) performance. Several studies used multiple tests. 69 cases reported a positive relationship between VI and financial performance, while 35 reported a negative relationship. In sum, this is indicative of a positive covariation between VI and performance. However, when distinguishing between industries and firms/business units, the findings become highly mixed. The aggregated findings, thus, obviously need closer examination.

In Table 1, studies investigating the VI-performance relationship are summarised. The table reports the industry analysed, theory applied, covariation between VI and performance, and measures applied for each study.

Table 1 Studies investigating the VI-performance relationship empirically*

Source	*Focal industry (sample)*	*Theory*	*Co-variation*	*Measure*	
				Vertical integration	*Financial performance*
Vesey (1978)	600 BUs from 100 companies (PIMS)	IO	+/-	VA/S (profit adjusted)	ROI
Levin (1981)	53 oil industry companies	IO	0	Self sufficiency ratio (crude oil and refinery)	(Net income + interest payments) / sales
Buzzel (1983)	PIMS (1,649 BUs)	IO	+/-	- adjusted VA/S - Relative to competitors (self report)	ROI and others
Maddigan & Zaima (1985)	Random sample of 45 firms	IO	-/+	VIC index (Maddigan [42])	ROA
Harrigan (1986)	192 firms in 16 industries	IO	+/-	Degree, breadth, stages and form	Successful vs. unsuccessful (self report and objective measure; ROS)
Martin (1986)	288 US industries	IO (SCP)	+/-	Back- and forward integration from Input-/output tables	Price cost margin = VA adjusted for labour and capital costs/sales
Chatterjee (1991)	116 vertical mergers (1962-79)	SM	0/+	Actual mergers compared to firms in the same industry (SIC)	Cumulative abnormal return in market value
D'Aveni & Ravenscraft (1994)	3,185 BUs from 200 industries	SM IO	(+)	Internal flow of goods relative to external	Operating revenue over total sale
Edwards *et al.* (2000)	22 US oil companies	IO	+/++	Share of own production from subsidiaries	Standard & Poor's stock rating
Fan & Lang (2000)	About 500 industries	SM TCE	- -	Vertical relatedness (Rumelt [35]) – input transfer between industries	Excess value=firms actual value over imputed value, (market value)
Bhuyan (2002)	43 food manufacturing industries	IO TCE	- -	Forward integration from input-output tables (Davies & Morris [36])	Industry price cost margin: (total sales – total costs)/total sales
Peyrefitte & Golden (2004)	US Computer hardware industry (50 firms)	SM	-	Between and within stage vertical integration (Davis & Duhaime [37])	ROI and Net income/total sales

*) The 12 studies were published in 11 periodical journals. Analyses cover a great variety of industries – across as well as within – and time series as well as cross sectional data for the period from 1948 to 1997. None of the studies entered Capon *et al.*'s [34] meta-analysis.

Inspection of Table 1 reveals that findings regarding the VI-performance relationship are inconclusive. The table shows that a large number of measures have been applied, both for VI and for performance. In addition, the settings and periods studied also vary.

When going into more detail, we find that Vesey (1978: 11) defines VI as: *"…the ratio of value added to sales, with both numerator and denominator adjusted for profits"*. VA/S is a proxy measure for VI first suggested by Adelman (1955). Vesey uses the PIMS database including about 600 business units. Performance is measured by return on investments (ROI) and he finds that a high degree of VI is not always profitable. Backward VI, he claims, is more profitable than forward VI, and VI is the third most influential factor on performance, after market share and investment intensity.

Buzzell (1983) also employs the VA/S measure, adjusted for net profit and 20 percent of investments, and the PIMS database. His data covers 1,649 business units in manufacturing industries. Profitability is measured by means of ROI. He found that both very low and very high levels of VI yield above-average rates of return. Further, ROI decreased consistently across the whole range of VA/S for producers of raw and semi-finished material. When using a subjective measure for VI (obtained by asking managers whether their line of business is less or more VI than that of competitors), ROI was slightly enhanced by backward VI.

The justification for using VA/S as a measure for VI is based on the assumption that it will increase as firms integrate vertically, forwards and backwards, when transactions are carried out within instead of across firms (Davies & Morris, 1995). Several authors have pointed to several shortcomings in this measure. For instance, Maddigan & Zaima (1985) assert that more profitable firms, or firms with relatively high labour and capital productivity, will score better than other firms by using the VA/S measure. By comparing Maddigan's (1981) *vertical industry connections* (VIC) to the VA/S in a random sample of 45 firms' ROA, they found that the two measures yielded opposite conclusions. Also, the VA/S measure has been criticised for being higher the closer the firm is to the raw material source, and therefore for being more sensitive to backward than to forward integration (Martin, 1986). In addition, VA/S does not reflect the choices firms make about coordinating potential separate activities (Caves & Bradburd, 1988), and also – when measured at individual enterprises – it becomes sensitive to multi-plant backward integration (Levy, 1985). A final objection against this measure is its failure to capture a firm's partial consolidation of control due to contracts and other agreements (Frank & Henderson, 1992).

The VIC index introduced by Maddigan (1981) relies on national input-output tables (Leontief, 1951), information on the industries in which firms operate and the average share of these industries' production. This measure is also criticised, arguing that it fails to account for intra-industry partial integration (Levy, 1985) and that it is a firm-level index inadequate at industry level (Davies & Morris, 1995). Henderson (1994) also criticises this measure for only including industries in which the firm has a 100 percent ownership.

Levin (1981) introduces "self-sufficiency" as a measure of VI when examining VI in the US oil industry. According to Levin, self-sufficiency is the quotient of crude oil production divided by the sum of crude oil production plus refinery runs. For a refiner without its own crude oil supply, this quotient will take the value 0, whereas a crude oil producer without refinery capacity will have a quotient of 1. Balanced integration, then, is assigned the value 0.5, where over- and under-sufficiency deviates symmetrically from 0.5. Performance is measured by net income plus interest payments divided by total revenue. Levin found, however, that performance was not affected by the degree of VI towards crude oil or refin-

ery production, but he also observed that VI helps to reduce performance variations, and that the self-sufficiency ratios of firms vary over time, but without a specific evolutionary trend.

Harrigan (1986) underlines the many facets of VI and argues that it is a multidimensional construct. She distinguishes between *degree*, *stages*, *breadth,* and *form* of VI and identifies successful and unsuccessful firms from in-depth interviews with 192 firms in 16 industries for the period 1960–81. *Degree* of VI is measured by the percentage of internal purchases (backward VI) and sales (forward VI). *Form* of VI is measured by the ownership percentage in the venture. She asserts that involvement in many integrated stages can not be sustained with the same success throughout the industry's entire life-span and that VI is indeed a costly strategy. According to Harrigan, VI should therefore be adjusted as conditions change.

Martin (1986) constructs his measure by input-output tables of the average (backward and forward) VI in the industry, ranging from 0 (no VI) to 1 (full VI). It was tested within the limits of a structure-conduct-performance model, where performance was measured by an industry price-cost-margin. Martin found that the effect of VI on performance in manufacturing industries is complex, depending on whether integration goes *into* the industry or *out of* the industry. His findings revealed both positive and negative relationships, supporting a 'case by case' approach.

Chatterjee (1991) compared actual vertical mergers to firms in the same industry. Performance was measured by cumulative abnormal return (stock market measure). Profit gains were found to be about 20 percent in target firms, while acquiring firms recovered almost nothing. His findings corroborated those of the IO literature in the way that advantages through VI are the greatest when acquiring firms operate in concentrated markets and target firms are in competitive markets, as mergers then yield increased market power.

D'Aveni & Ravenscraft (1994) used internal flow of goods relative to external flows to measure VI in their study of 3,185 manufacturing business lines. Performance was measured by the rate of operating revenues to sales. They found that VI units performed marginally better than unintegrated business lines in the same industry after controlling for economies of scale and scope. However, VI units showed higher production costs (especially when integrated upstream), but were found to economise through other cost components (like R&D, advertising, administrative and general expenditures).

In the study by Edwards *et al*. (2000), the VI-performance relationship in the US oil industry was assessed. They measured VI as the share of production coming from own crude oil extraction (i.e. backward VI) and share of refinery runs shipped through own pipelines (i.e. forward VI). Performance was measured by the company stock rating of Standard and Poor's *Stock Guide*. Based on observations from two separate time periods – 1972 and 1992-1994 – they found that performance was strongly enhanced by crude oil production, whereas only a weak positive effect was observed from pipeline integration.

Fan & Lang's (2000) study departed from Rumelt's (1974) diversification strategies. They applied commodity flow input-output tables to capture inter-industry and inter-segment vertical relatedness and found vertical relatedness to be associated with poor performance.

Bhuyan (2002) examined how vertical mergers in US food manufacturing industries affect performance, when simultaneously controlling for industry characteristics (like productivity and competitive conditions). His VI measure was based on input-output tables and earlier work (Caves & Bradburd, 1988; Davies & Morris, 1995; MacDonald, 1985) while net industry profit – computed as a price-cost margin – served as a performance proxy. Bhuyan found that VI negatively affects profitability, as – he asserted – vertical mergers fail to

create differential advantages for the integrated firm.

Peyrefitte & Golden (2004) examined how the performance scores (average 7 years ROI and profit margin) of 50 US computer hardware industry firms were affected by VI. Their study covered the years 1987–1993, and VI variables were constructed as dichotomous dummies (0 or 1) to cover within or between stages VI. By regressing VI variables (together with firm size, financial leverage, debt/equity, and diversification level) against performance they found that VI within a single value chain stage had a significant negative effect on performance – opposite of expected. Between stage VI had an incremental negative, yet insignificant, effect in their study.

Based on the review and discussion above we can conclude that: First, the findings from the different studies above on the VI-performance relationship are ambiguous, which makes it difficult to compare the results. Second, VI is a multidimensional construct, which cover many aspects of organisational life. This property makes VI difficult to measure.

In our view, measures applied to capture VI must be suitable to the specific research problem. Harrigan (1986; 538) expresses it this way: *"…to be useful to managers, measures of VI should not be made at the industry level […]. Some measures should be at the 'firm' level, some measures should look at relationships between business units, and others should incorporate comparisons with how competitors use vertical integration."* Also, how to measure performance presents a measurement problem when attempting to establish the VI-performance relationship. Like Keats & Hitt (1988: 576), we conclude that: *"Performance is a difficult concept, both in terms of definitions and measurement"*. Past empirical studies show that multiple measures have been used.

Below, we present a specific industry setting, in which VI is utilised by firms. We utilise several measures in our examination of the VI-performance relationship in this setting.

Testing the VI-performance relationship

This section reports a test of the VI-performance relationship when taking the concerns regarding measurement difficulties into account. We restrict our study to the Norwegian fish processing industry, and our reasons for doing so are: First, we need a competitive setting in which the units studied are motivated to integrate vertically, and do so to a varying degree. Second, industry firms must vary in terms of the degree of VI, and, finally, detailed data at firm level must be available in order to measure performance and degree of VI. By limiting the study to one industry we avoid problems of the so-called "industry effect", i.e. that performance effects are linked to the industry in which firms operate, not results of the actions firms take. In addition, the difficulties caused by variations across industries and misperceptions about the explained phenomenon (Casson, 1984) are avoided. Thorough knowledge to the industry studied, is a necessity to comprehend which factors influence specific dependent variables (Joskow, 1988).

The Norwegian fish processing industry is an intervening link in the seafood value chain, whose *centre of gravity* lies in manufacturing semi-finished or end products of fish, in which several structural variables motivate for VI. Managers of fish processing firms are exposed to an almost stochastic supply of the most important input factor; namely fish (Dreyer, 1998; Prochaska, 1984). Uncertainty is present downstream the value chain as well, where prices fluctuate heavily and seasonally. Uncertainty is an emphasised motive for VI (Carlton, 1979; Miller & Shamsie, 1999; Walker & Weber, 1987; Williamson, 1991a). Here, uncertainty variations among firms also emerge, as some rely on wild-

caught fish, whereas others process farmed fish – a much more stable supply source. Upstream VI towards fishing or aquaculture, in order to gain control over the most important input factor, is thus a meaningful strategy to reduce uncertainty and/or to secure sufficient supply. Fish farming has emerged as a prominent actor in the industry over the latter five decades. However, traditional fish processing firms have only to a limited extent seized the opportunity to take advantage of this source of supply by integrating upstream towards the fish farming industry.

Industry age has also been argued to be a catalyst for VI. According to the industry life-cycle hypothesis, firms in young and fast growing industries are expected to integrate backwards in order to secure important input factors. As the industry matures, the need for VI diminishes, until it increases once again in the industry's last stages (Langlois & Robertson, 1989; Tucker & Wilder, 1977). The Norwegian fish processing industry can be divided into a "young" and an "old" part. In the young part of the industry, the most important input factor come from aquaculture, whereas the older part relies on wild-caught fish.

The Norwegian fish processing industry constitutes a highly competitive setting, where the input market for fish has been referred to as 'next to perfect', where almost identical commodities are traded between numerous sellers and buyers (Ottesen & Grønhaug, 2005). The fish processing industry consists of approximatly 550 firms of varying sizes. The concentration in the industry is modest, where revenues from the 20 largest actors constitute less than 50 percent of industry revenues. These firms employ about 40 percent of the workforce. The Hirschman/Herfindahl index is about 0.025, indicating very low concentration (Bendiksen, 2001). Few barriers to entry are present, although primary producers (fishing vessels and fish farms) need a license in order to gain entry to the business. Upstream integration towards fishing vessels is, however, strictly regulated.[2]

Detailed data at firm level, both for VI and performance, is needed. Here we had access to a unique database, which has surveyed the profitability and structure of the Norwegian fish processing industry on an annual basis since 1977 (Bendiksen, 2007). From this database, firm level data from financial statements were accessible, and quantities of fish (inputs) purchased. We also interviewed general managers of the 100 largest processing firms, regarding their VI strategies, which enabled us to construct a measure of VI.

Measures

As shown in Table 1 above, multiple measures have been applied in empirical studies to capture both VI and performance. Below we report our effort to measure these variables. The measure for upstream VI constructed for this study is the share of supply from upstream units in which the firm holds proprietary ownership interests (SO). It requires direct ownership and is truncated at zero and one,[3] but is still in agreement with methodological literature recommendations (Blair & Kaserman, 1983; de Koning, 1994; Frank & Henderson, 1992; Peterson *et al.*, 2001), i.e. to ensure continuity in the VI variable. Our VI-variable is based on transfers that can be judged as *internal* (i.e. flows of goods between stages tied together by common ownership) – and displays properties like MacDonald's more macro-oriented MVI-variable.[4] This variable incorporates the main content of the self-sufficiency ratios employed by Levin (1981) and Edwards *et al.* (2000), which assesses the share of total inputs to the focal firm supplied by owned subsidiaries, and is similar to the variable Ohanian (1994) utilised in her study of the US pulp and paper industry. Our operationalisation of VI fully covers at least two of the four dimensions emphasised by Harrigan (1984): *degree* and *form* of VI.

The emphasis on the actual flow of goods between value chain stages, where ownership counters the flow of goods, makes it natural to label our variable as *use* of vertical integration (the extent to which ownership interests in adjacent upstream stages in the value chain appears in the form of actual input streams). From this point of view, it becomes a well-suited measure for the setting studied, and is believed to incorporate the core of the concept *upstream vertical integration.*

When comparing it to other measures applied in the literature, the most obvious and reasonable counterpart would be the 'Value Added over Sales' (VA/S) measure, utilised to a large extent in prior research according to Table 1. Both measures are at firm level, but whilst our measure rests on ownership and "internal" transfers, the VA/S-measure is a proxy to VI, collected from firm accounts. To avoid the potential connection to performance, we also utilise a version of this measure, where profits are subtracted from both numerator and denominator, as previously applied by Vesey (1978) and Buzzell (1983). By comparing these three explanatory variables (SO, VA/S and profit adjusted VA/S), one deficiency emerges: While our measure only reveals upstream VI, value added to sales also embodies effects from downstream integration, i.e. towards the customers. However, following Adelman's (1955) critical remark when introducing VA/S as a measure for VI, it is sensitive for proximity to the raw material source. Hence, upstream VI of firms will be offset – at least partly – by downstream VI, when measured by VA/S.

When measuring performance, stock market based measures – mirroring the expected profitability – are disqualified since, hitherto, shares in fish processing firms are generally not found on the stock exchange. Therefore we utilise the key figures *gross profit margin* (GPM) and *return on total assets* (RTA), meaning the ratio of pre-tax net profits to sales, and the yield of the total capital employed, respectively. Measures like these are the most employed in earlier research (cf. Table 1).

Data

Vertical integration is dynamic (Langlois & Robertson, 1989), a feature retained by our operationalisation (eg. SO). We therefore need to narrow the scope of our analysis. Performance measures are based on annual account reports, and we have chosen the year 2000 as our basis. In 2001, we addressed 100 managers of fish processing firms, and asked them – in hindsight – to state their firm's specific levels of upstream VI, as captured by our VI-measure (SO).

.

Table 2 Statistical means for groups of fish processing firms on our variables

Industry segment	*Share from upstream units (SO)*	*Value added over sales (VA/S)*	*Profit adjusted value added over sales (π-adj. VA/S)*	*Gross profit margin (GPM)*	*Return on total assets (RTA)*
White fish (n=55)	17%	16%	15%	- 1.8%	4.4%
Farmed fish (n=18)	76%	26%	23%	2.6%	9.9%
Both inputs (n=18)	29%	20%	17%	2.9%	10.1%
Total (N=91)	31%	18%	17%	0.0%	6.6%

Since different processing firms utilise different input sources, we distinguish between groups of processors in an input-dependent manner: firms who process *i)* only white fish, *ii)* only farmed fish (e.g. salmon and trout), and *iii)* both farmed and white fish. As emphasised earlier, the motives for, and outcomes from, VI can vary depending on the nature of the input. This grouping coincides with the focus on 'stra-

tegic groups' (Thomas & Venkatraman, 1988), where industry member firms are classified according to their competitive strategies. Descriptive statistics for the groups are entered in Table 2.Table 2 shows that firms utilising farmed fish on average are more vertically integrated and more profitable than those processing only white fish. Even though the tendency is weak, it seems as though firms producing both white and farmed fish are the most profitable, even though their level of VI (on average) is lower than for farmed fish firms. For comparison, the average RTA for all Norwegian mainland industries (oil- and gas extraction excluded) was 6.7 percent that year (Statistics Norway, 2003). In the Appendix, the data set is more thoroughly examined with respects to statistical analyses.

Pearson's correlation tests (see A2 in Appendix) reveal that the groups of white fish and farmed fish processors differ significantly in terms of all three VI-measures. The farmed fish and the combined white/farmed fish groups differ only in terms of share from own units (SO), while no significant difference can be found between the white fish group and the combined white/farmed fish group. Also, all the VI measures are significantly correlated to each other (see A2 in Appendix). With measures showing correlation to this degree, we can conclude that they more or less capture the same phenomenon.

In the next section, we test the correlation between our independent and dependent variables, reveal our findings, and comment on the implications thereof.

Results and discussion

Table 3 shows the results from our regression analyses, where each of our explanatory variables (the three VI measures SO, VA/S, and π-adjusted VA/S) is regressed against our two dependent performance variables (GPM and RTA). Six different OLS regressions are applied to test for covariation between VI and performance.

Table 3 Test statistics (constants, unstandardised coefficients (β), R^2 and p-value). Separate (OLS) regressions of vertical integration against performance (in 2000)

Dependent	*Independent*	*Constant (β_0)*	*β_1*	*R^2*	*p-value*
Gross Profit Margin	Share from own (SO)	- 0.016	0.052*	0.049	0.035*
	VA/S	- 0.043*	0.236**	0.089	0.004**
	VA/S (π-adjusted)	- 0.004	0.024	0.001	0.793
Return on Total Assets	Share from own (SO)	0.048**	0.058	0.027	0.121
	VA/S	0.017	0.268*	0.051	0.031*
	VA/S (π-adjusted)	0.062*	0.024	0.000	0.856

*) Significant correlation at a 0.05 level (2-tailed).

**) Significant correlation at a 0.01 level (2-tailed).

The main findings from Table 3 is that VI only to a very limited extent can explain the inter-firm differences in profitability in the Norwegian fish processing industry in 2000, as the models have modest explanatory power (R^2) and regression coefficients are rather low (except for VA/S). None of our six models are able to explain more than nine percent of the variation in profitability in our sample – and the worst model is unable to explain any of the variation. This is in line with Wensley's (1997) claim that, since measurement problems are highly present when financial performance measures are used, no single variable can account for more than 10 percent of the variation in business performance. In addition, the determinants of business success are multiple. He (Wensley) concludes, accordingly, that: *"…in strategy situations the*

variance nearly always matters more than the mean!" (p. 75). Hence, it comes as no surprise that our regressions demonstrate modest explanatory power, since – obviously – many explanatory variables are left out. Bhuyan's study (2002) can serve an example in that respect. When testing nine industrial organisation variables on industry profitability (measured by a price cost margin) in the US food manufacturing industries, only 36 percent of the total variance was explained (R^2). In his case, the contribution from including VI to explain industry profitability was small, and its impact was negative.

Our results show that when measuring VI by VA/S, it significantly improves firm performance (though, with modest explanatory power). As noted by several authors,[5] a major weakness of this measure is its positive correlation to profits, i.e. it is influenced by factors other than VI, leading to spurious results when regressed against profit. When regressing VA/S against gross profit margin (i.e. the model with the highest explanatory power), we merely state that pre-tax profit should equal a constant multiplied by the value added, which in fact should hold since profit should be strongly correlated to the value added. When utilising π-adjusted VA/S, the effect of VI becomes insignificant, R-squared shrinks to nothing, and the coefficients (β_1's) are decimated.

Our own measure (SO) seems to have a significant, yet negligible, positive effect on performance measured by GPM. When measured by RTA, the effect is similar, but insignificant. Applying this measure to white fish firms only, using 1997 data, Dreyer *et al*. (2001) found that VI had contradictory, but non-significant, effects on the two performance measures; positive for GPM but negative for RTA. One explanation could be that VI brought about positive profitability effects, but insufficiently to give a reasonable return to the additional funding required when obtaining proprietary interests in upstream supply units. Here, the effects from VI are uniform for both performance measures, and the difference compared to Dreyer *et al*.'s (2001) findings, can be interpreted as stemming from altered input market conditions in the period. In 1997, the fish supply exceeded demand. From 1997 until 2000, cod catches fell by 45 percent, and demand exceeded supplies, which led to a 90 percent input price increase. In addition, the performance of white fish firms was influenced by low market prices for salted and frozen fish in 2000. The markets for farmed fish were good, with peak prices, which increased the performance of fish farmers. Farmed fish processors, however, struggled with high input prices, which resulted in weak performances for this segment. Obviously, the forces influencing the profitability of VI were altered in the period, since the value of the "controlling" supply increased from an input-security point of view. However, by including farmed fish processors in the sample scrutinised here, comparisons between the studies cannot easily be made, since sourcing conditions are qualitatively different in the white fish and farmed fish segments. Finally, the possibility that our data deviates from the normality criteria justifies a cautious treatment of our findings. Hence, the effect of upstream VI on performance is vague and difficult to evaluate coherently.

The curse of endogeneity

In every attempt to reveal the performance effect from strategic change – the main objective of strategic management – researchers are facing the problem of endogeneity[6]. Since the strategic choices made by managers are guided by their expectation of future performance, i.e. management's self-selection of strategy, econometric procedures to account for possible omitted variables should be employed – an argument put forward by Wensley (1997) above and further elaborated by Masten (1993), Hamilton & Nickerson (2003), Jacobides (2005) and Desyllas (2009) among others.

In our research problem several problems arise when trying to address endogeneity. Firm heterogeneity regarding the origin of vertical integrated fish processing firms is highly present in our setting. Some firms are vertically integrated due to political legitimacy, regulations and legal exemptions. This is the case for large white fish filleting plants, who were granted cod trawling licences and by exception clauses allowed the right to own (majority interests in) fishing vessels, from regional and industrial policy reasoning. The main objective was to ensure a stable supply to large plants, in order to secure employment in communities relying heavily on fish processing firms, and to improve profitability, since supply from smaller coastal vessel could be limited due to weather and availability conditions. These fish processing firms can be argued to be "locked into" a VI strategy, dating back at least 20–30 years. Hence, the firm's existing managerial team, have had next to no influence in this decision, even though they prevail over the flow of fish from these vessels. In as much as we want to measure the outcome of strategic decisions, in some of our cases we measure long term lagged variables of policy outcomes. The variables we utilise are continuous, so that it is not a question of make or buy, but to what degree firms make. Also, our variable (SO) depends – among other things – on the size of the quotas allocated to vessels balanced against the capacity of firms.

What further complicates, and render good endogeneity tests impossible, is that some processing firms have minority interests in fishing vessels, and cannot dictate landings or input prices. In such cases, the agreement is more of a social contract, where the processing firm receive landings from the vessel in question if fishing grounds are in proximity to the landing site. Other processing firms are the result of a downstream vertical integration, where fish vessel owners or aquaculture firms have set up or acquired a processing plant. Others again are the result of a long term structuring process, including both horizontal and vertical integration. Hence, the strategic choice of make or buy is enveloped in a heterogeneous industry context, not easily transferable into econometric models. As underlined in Isaksen (2007), a survey among processing firms in 1998 revealed that most firms in this industry (58 per cent) considered upstream vertical integration to be more important in the future. 85 per cent of the managers considered increasing their upstream VI in near future. Five years later, it was hardly any that had pursued this strategy, and the will to VI was vaporised. The reasons for this are many, but by large that the cod quotas in the period fell by nearly 50 per cent, so that upstream VI as a mean to secure inputs lost some of its attraction. Also, reduced industry profitability in the period might have contributed. Hence, the flaw of not correcting for endogeneity in this research is left open, as we subscribe to the motion of Jacobides (2005: 490) that: *"To understand vertical scope, scholars have to understand, at the industry level, the forces that affect it."*

Concluding remarks

Our results reveal that vertical integration has modest effects on firm performance. But can it be that the causality goes the opposite way? Should the research question rather be directed the other way around? Researchers have shown that strategic change is triggered by shifts in competition, and especially declining profits (see Webb & Dawson, 1991). Antithetically; do firms who obtain superior results and succeed in outperforming their competitors, create the financial power and autonomy necessary to bring about the ability to invest in adjacent value chain stages? Instead of scrutinising firms' strategy formulation and alignment, we have measured the actual use of VI. In so doing, we avoid the fact that strategy, or strategy change, outcomes occur in subsequent periods to the actual incorporation of change. We may,

however, simply have revealed the financial effects from capital outlays stemming from strategic alignments like VI. Analogously, firms may integrate vertically for tax reasons (since internal transactions can be carried out at favourable transfer prices to avoid direct taxes like VAT) or in order to create barriers to entry for competitors. To grasp the complexity of the vertical integration-performance puzzle, further research should incorporate other measures for success than merely financial performance. Also, insights into the way strategic changes like VI is formulated, and – of course – implemented in different firms and industries, is likely to generate more knowledge related to this research problem.

The use of vertical integration in this industry is not easy to comprehend, due to the firm heterogeneity and variation in organising the buyer-seller relationships. Whereas many businesses have invested in fishing vessels, others manage the buyer-seller relationship by other means, for instance by offering local vessel owners loans to contract vessels, with an underlying tacit agreement that tie landings to the lender when feasible. As emphasised by Williamsson (1991b: 84): *"Debt, equity, leasing, etc., are more than financial instruments. They are also instruments for governance"*. Others maintain their relationship to fishermen by placing plant premises at fishermen's disposal (for carrying out onshore-related activities, such as baiting, lodging and fishing gear mending), while others again, merely by ways of a common understanding of what is best for the local community, tacitly agree to serve each other. And, as noted by Fine & Hax (1985: 32): *"The crucial element of success of integrating operations is not ownership, but management and co-ordination of the series of processes"*.

Measurement problems are crucial in all empirical studies of VI and have, in fact, been accused for being the primary reason for the limited number of studies carried out (Hay & Morris, 1991; Spiller, 1985). Our results indicate that the VI-performance relationship is sensitive to the measure chosen to test the relation. Measures that easily can be applied in different settings are often based on financial accounts' data. As performance measures often originate from the same data source, potential multicollinearity problems may weaken the statistical validity. Here, we apply a VI measure based on input volume to evade this problem. Our conclusions regarding the VI-performance relationship were not altered by using account-based measures of VI, which indicate a high level of internal validity when applying different measures of VI at firm level.

External validity, however, is at stake, since the sample examined here was collected in the same industry in a single year. Our choice of industry was made to control for the potential industry effect, since all firms entering the analysis face similar external conditions. However, as our findings are based on the situation at only one point of time, some variation can be lost. As emphasised earlier, VI is a highly dynamic concept, which makes inter-year comparisons both time- and resource-consuming. However, earlier time series approaches, utilising the whole population for the period 1977–1992 indicate no direct effect between VI and performance in this industry (Dreyer *et al*., 2001). From a policy point of view, knowledge of this relationship can guide authorities considering regulations regarding the boundaries between segments in the seafood value chain.

Since one third of the firms state their share of inputs from subsidiaries to be zero, our operationalisation of VI violates the requirements for a normal distribution – on which the OLS procedure relies – due to skewness. One way of avoiding this could be to omit the 'zeros', which would have reduced our sample dramatically. But it would also imply a reluctance see the choice of *no* vertical integration as part of the business strategy of a huge number of fish processing firms. A test, wherein we divided only between those who were inte-

grated and those who were not, yielded no additional explanatory force. Neither did it do so when we omitted the 'zeros'. Therefore we present the material 'as is'. As the zero-group can be argued to consist of two strategically different groups of firms – one group choosing to use the market for transactions and the other wanting to integrate vertically but lacking the financial ability – a way of separating these two groups would be recommended for refining our research.

Our findings, however, support Harrigan's (1986) conclusion that degree of VI should be measured at firm instead of industry level when assessing the impact of VI on performance. As demonstrated here, conclusions concerning this relationship are sensitive to studies based on measures at different levels, i.e. at firm level and industry level. Thus, we recommend applying measures of VI developed at firm level that do not originate from financial statements when analysing the VI-performance relationship, in order to avoid possible spuriousness in regression results. We also suggest developing measures that are adapted to the production and setting studied. This recommendation may, however, limit the external validity and application of the same measurements to different industries.

A relevant question for future research is whether the VI-performance relationship is sensitive also for the way performance is measured. Our literature review revealed that several measures of performance had been applied in previous studies of this relation. According to conceptual models, internal pricing strategies between adjacent stages in the value chain are crucial for situations where profit is directed in the financial statements of firms. This indicates that in order to better understand the ambiguous findings in studies of the VI-performance relationship, we need to apply different measures of performance when assessing this relationship. That remains for further research.

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Appendix

Table A1 Pearson's correlation matrix – between measures in groups of processors

Groups	*Farmed fish (n=18)*					*White and farmed fish (n=18)*				
	SO	*VA/S*	*π-adj. VA/S*	*GPM*	*RTA*	*SO*	*VA/S*	*π-adj. VA/S*	*GPM*	*RTA*
White fish (n=55)	0.00*	0.01*	0.02*	0.19	*0.10*	0.11	*0.02**	*0.22*	*0.00**	*0.05*
Farmed fish						*0.00**	0.16	0.15	0.92	0.96

*) Significant correlation on a 0.01 level (2-tailed). Figures in *italics* imply tests assuming equal variance, as determined by Levene's test for equality of variances. Means, by groups of processors, are given in Table 2.

Table A2 Pearson's correlation matrix for measures utilised on total sample (N=91).

	SO	*VA/S*	*π-adj. VA/S*	*GPM*	*RTA*
SO	1	0.46**	0.38**	0.22*	0.16
VA/S		1	0.94**	0.23**	0.23*
π-adj. VA/S			1	0.28	0.19
GPM				1	0.82**
RTA					1

*) Significant correlation on a 0.05 level (2-tailed).
**) Significant correlation on a 0.01 level (2-tailed).

Normality tests

Our data exhibit some features demanding awareness when regressing the level of VI to performance. Two conditions put forward this demand. Of the 100 firm manager in-

terviews, only 92 answers were satisfactory. One firm, however, was identified as an outlier due to extreme values on the performance variables. First, of these 91 observations, EBIT was negative for 43 firms (white fish firms were overrepresented among these). Hence, for these firms the VA/S and profit-adjusted VA/S measures were identical and almost perfectly correlated (0.94 and significant at a one-percent level). Second, the extent to which firms are not vertically integrated, as captured by our variable (SO), also brings about more careful treatment. Since about one third of our firms has no ownership in the upstream industry and attains a null value for this variable, the median of SO is only 0.2, even though firms can be found all along the range from null to one. Table 6 presents the key statistics of our variables for the whole population (N=91).

Table A3 Descriptive statistics for the variables – N=91

Variable	*Mean*	*Std. Error*	*Median*	*Minimum*	*Maximum*	*Skewness*	*Kurtosis*
SO	0.3076	0.0349	0.20	0	1	0.836	-0.508
VA/S	0.1844	0.0104	0.17	0	0.48	0.945	0.833
VA/S (π-adj.)	0.1674	0.0097	0.15	0	0.43	0.945	0.948
GPM	0.0003	0.0082	0.00	-0.17	0.30	0.982	3.326
RTA	0.0659	0.0123	0.06	-0.17	0.44	0.664	0.805
					Std. Error	0.253	0.500

Table 6 displays the mean and its standard error, the median, maximum and minimum values that our variables take. Additionally we have included the skewness and kurtosis of the variables, since these features are decisive for the normality properties of our variables. Perfect normal distributions would display skewness and kurtosis values of zero. This is, however, rather uncommon in social sciences data (de Vaus, 2002).

With our variables, concerns regarding skewness and kurtosis exist. However, we have deliberately not attached asterisks to these values, indicating them to be diverging from the normal distribution assumptions, since methodological advice is conflicting. For instance, according to SPSS, both skewness and kurtosis is within the range of a normal distribution range if the ratio of the values to their standard error is less than +/- 2. In our case, all variable are skew (to the right) while only the GPM variable is more than normally peaking unacceptable. When utilising *Pearsons index of skewness*, which Byrkit (1987) ascribes as a correct operator for deciding whether or not distributions are significantly skewed, none of the variables are deemed too skew. The *Jarque-Bera* test (Gujarati, 1995), which simultaneously tests for skewness and kurtosis, and the *z*-test (Hair Jr. *et al.*, 1995) return values for all variables that are inconsistent with normality. And, finally, the *Kolmogorov-Smirnov* and the *Shapiro-Wilks* tests return test statistic values for all variables (RTA excepted) that suggest violations to the normality assumption.

While the negative kurtosis for our vertical integration measure (SO) indicates a distribution with heavy tails, the other variables are distributed with peaks greater than in standard normal distributions, especially for the gross profit margin, where the histogram shows that about half the firms have a gross profit margin within the range of +/– 3 percent.

As mentioned, the kurtosis and skewness of the data are decisive for the normality of the distribution. The tendency displayed here, especially the skewness of the variable distributions, questions the fundamental assumption of normality. However, inspecting our plots (box plots, normal probability plots and plots of the

actual deviation of the scores from a straight 'normal probability' line) and outliers gave no further reasons for concerns, therefore, we continued as if our data were normally distributed.

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As mentioned, the kurtosis and skewness of the data are decisive for the normality of the distribution. The tendency displayed here, especially the skewness of the variable distributions, questions the fundamental assumption of normality. However, inspecting our plots (box plots, normal probability plots and plots of the actual deviation of the scores from a straight 'normal probability' line) and outliers gave no further reasons for concerns, therefore, we continued as if our data were normally distributed.

Notes

1 When introducing the value chain concept, Porter (1985: 36) defined it as "…a collection of activities that are performed by the firm to design, market, deliver and support its product". He further remarked that "A firm's value chain is embedded in a larger stream of activities (…) the value system" (p. 34). Others use the term value-added chain to denote the various steps goods or services go through from raw material to final consumption (Johnston & Lawrence, 1988). The use of the term value chain in this article covers the adjacent vertical activities both within and outside the firm, and thus contradicts Porter's terminology, as does Cacciatori & Jacobides (2005).

2 Legislation calls for majority owners of fishing vessels to be registered fishermen. In some cases, white fish filleting firms were granted sole ownership to a fleet of wet fish trawlers, which served the firms with most of their input needs. However, in terms of long time industry performance, during the period 1993–2001, these firms have been the industry losers (Bendiksen, 2001), and the number of filleting plants has been dramatically reduced.

3 Unintegrated firms – or more accurately, units without ownership interests in upstream units – will be assigned the value 0, while 1 is assigned to firms receiving all inputs from subsidiaries. We do not assign values > 1, even though situations can occur where firms sell excess upstream production. In our industry this might arise in seasons with high geographical fishing pressure. Over the year, however, this will balance.

4 MVI = vertical integration restricted to the manufacturing channel; the share of industry shipments to manufacturing establishments that are directed internally, to the sellers establishments (MacDonald, 1985).

5 See for instance Burgess' comment (1983) to Buzzel (1983), where he demonstrates that the 'VA/S'-measure for vertical integration has a positive correlation with return on investments (ROI), and therefore is subject to tautological entities, which in regression analyses give rise to the discovery that profit equals profit.

6 According to Hamilton & Nickerson (2003: 53) the concept of endogeneity in this research problem can be illustrated: "…an analysis that regresses profitability on make versus buy will likely lead to biased coefficient estimates of the impact of this strategic choice on performance unless we control for self-selection. The fundamental question for assessing the impact of choosing to buy is this: What profit would the manager's organization earn if he had chosen to make instead? We are not likely to provide an accurate answer to this question by comparing the profits of firms choosing to make with the profits of those choosing to buy, since the observed outcomes may not correspond to the counterfactual performance levels of interest. For example, firms choosing to make may have particular production capabilities that make this a highly profitable choice. On the other hand, firms choosing to buy may not have these production capabilities. Consequently, had the 'buy' firm chosen to make, they would have been much less profitable than those firms who actually chose to make. As a result, a regression of performance on the make versus buy choice, that does not allow for endogeneity of the choice may not answer the strategy effect question of interest."

Markedssvikt på første hånd

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Sammendrag på engelsk:
This paper discusses two types of market failure within the first hand sale of fresh whitefish from the Norwegian coastal fleet; (1) fish of poor quality gains a too high price, and (2) catches from the coastal fleet based on long line/hooks are in decline. Causes and consequences of these two related phenomena are discussed and suggestions for how to overcome such market failures are highlighted.

Sammendrag på norsk:
Denne artikkelen tar utgangspunkt i to typer markedssvikt i førstehåndsomsetningen av fersk hvitfisk fra kystflåten; (1) fisk av dårlig kvalitet betales med for høy pris og (2) kystlinefisket som gir den beste fisken er i tilbakegang. Artikkelen diskuterer både konsekvenser og årsaker til disse to relaterte fenomenene. Konkrete forslag som kan bidra til å redusere markedssvikten fremsettes også[1].

Vi kaller våre to observasjoner for markedssvikt fordi aktørenes atferd gir andre resultater enn hva tilfellet ville vært i det mikroøkonomene kaller et "perfekt" marked. Et slikt idealisert marked består av et uendelig antall kjøpere og selgere, identiske produkter, komplett informasjon og transaksjonskostnadene er ubetydelige (*e.g.,* Pindyck & Rubinfeld, 2001). I et perfekt marked er aktørene antatt å være økonomisk rasjonelle – de vil til en hver tid forsøke å maksimere profitten basert på tilgjengelige innsatsfaktorer i markedet. I den virkelige verden er det imidlertid få eller ingen markeder som fungerer helt perfekt – de er beheftet med imperfeksjoner – det vil si forhold som bidrar til markedssvikt. Et eksempel på dette er når en aktør ikke har full informasjon om alternativer og priser og kjøper dyrere enn det billigste alternativet i markedet.

Når fisk av dårlig kvalitet betales med for høy pris kan resultatet være negative økonomiske konsekvenser for fiskekjøperen. For eksempel viser en kalkyle fra Ålesundfisk (Henriksen *et al.,* 2010) at fersk hyse av dårlig kvalitet kjøpt inn til minstepris kun gir 5 % godt betalte spesialprodukter (fersk loins). Når 95 % av fisken går til lavt betalte anvendelser (blokk og farse) er resultatet en negativ margin på nesten tre kroner. Dette viser at hyse av dårlig kvalitet kjøpt til minstepris isolert sett ikke er økonomisk rasjonelt. Samme kalkyle viser at hyse av høy kvalitet, til betydelig høyere pris enn mistepris til fisker, ga fiskeprodusenten en positiv margin på nesten ti kroner.

I det andre tilfellet registrerer vi at kystlinefisket som gir fersk fisk av ypperste kvalitet er i tilbakegang sammenlignet med garn- og snurrevadfiske langs kysten. Fisken fra kystline- og juksaflåten er regnet som den aller beste fisken blant både fiskekjøpere, produsenter og eksportører (Henriksen & Sogn-Grundvåg, 2011) og etterspørselen øker i viktige markeder (Young & Sogn-Grundvåg, 2011). Kystlinefisket er mer kostnadskrevende og har lavere fangstrater på den attraktive torsken enn alternative driftsformer. De variable kostnadene i linefiske er store, sammenlignet med alternative redskaper. Minsteprisen for hyse fanget med krok er i dag cirka 30 % høyere enn for hyse fanget med andre redskaper (Råfisklaget, 2011). En slik prispremie for snørefanget torsk eksisterer ikke. Disse forholdene bidrar trolig til at linefisket er i tilbakegang (Larsen *et al.,* 2010, Henriksen & Sogn-Grundvåg 2011).

Det at et marked i den virkelige verden ikke fungerer like godt som et "perfekt marked" er på ingen måte noen overraskelse.

Når vi likevel sammenligner førstehåndsmarkedet med det perfekte marked gjør vi det med to formål. For det første er det et retorisk grep som kan bidra til interessante forskningsspørsmål (Davis, 1971). For det andre gir sammenligningen et fokus på hva det er som ikke fungerer (imperfeksjoner) i førstehåndsmarkedet og hvorfor. På denne måten kan sammenligningen med "det perfekte marked" bidra til nyttig innsikt om imperfeksjoner i førstehåndsomsetningen og mulige løsninger.

Hva er så årsakene til den observerte markedssvikten i førstehåndsomsetningen av fersk torsk og hyse fra kystflåten? Hvordan er det mulig at fiskekjøpere kan være villig til å betale priser som ikke er regningssvarende for fisk av dårlig kvalitet? Og hvorfor går kystlinefisket tilbake? For å belyse disse spørsmålene har vi benyttet flere datakilder. Høsten 2010 ble en rekke kystlinefiskere, fiskekjøpere og eksportører av hvitfisk intervjuet. En annen viktig datakilde har vært avisa Fiskeribladet Fiskaren som har hatt en lang rekke relevante artikler om kystlinefiske, førstehåndsomsetningen, minsteprissystemet, kvalitet og marked. Vi har også hatt nytte av å lese debattene på avisens nettside som følger mange av artiklene. I tillegg har vi benyttet og analysert datamateriale basert på førstehåndsomsetningen av fisk (sluttseddeldata). Hensikten med å benytte ulike datakilder til å belyse de samme forskningsspørsmålene er at dette kan gi økt innsikt i tillegg til at påliteligheten til datamaterialet kan forbedres ved å sjekke ulike datakilder opp mot hverandre (Jick, 1979).

Vi benytter også faglitteratur til å belyse, tolke og analysere våre observasjoner. Fenomenene vi studerer her er komplekse slik at de med fordel kan belyses fra ulike faglige innfallsvinkler. Vi benytter oss derfor av faglige perspektiver fra en rekke felt slik som transaksjonskostnadsanalyse, makt og avhengighet, sosiale dilemma, kjøper-selger relasjoner og mikroøkonomi.

Resten av artikkelen er organisert som følger: i neste avsnitt diskuteres den observerte markedssvikten i mer detalj. De neste avsnittene diskuterer følgende forhold som på ulikt vis bidrar til å forklare markedssvikten: råfiskloven, makt og avhengighet mellom fiskere og fiskekjøpere, bruk av makt i kjøper-selger relasjoner, og høye transaksjonskostnader. Til slutt diskuterer vi våre funn og forslår konkrete tiltak.

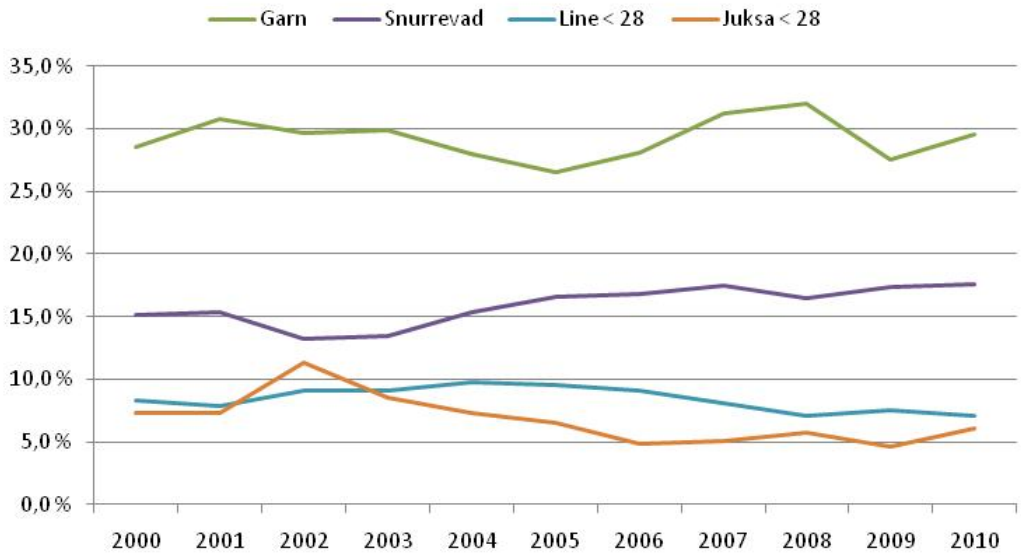
Dokumentasjon av markedssvikt

Vi hevder altså at fersk hvitfisk fra kystflåten som er av dårlig kvalitet betales med for høy pris. Dette er en påstand som kan sette både fiskere, fiskekjøpere og salgsorganisasjoner i et uheldig lys. Påstanden må derfor dokumenteres best mulig. Selv om data fra alle transaksjoner mellom fiskere og fiskekjøpere registreres på sluttseddelen kan det imidlertid være vanskelig å dokumentere at dårlig kvalitet betales for godt. Et viktig poeng i så måte er at det ikke registreres på sluttseddelen når det *ikke* trekkes i pris for dårlig kvalitet. Sluttsedlene (som ikke er påført informasjon om pristrekk) sier derfor ingenting om tilfeller hvor fiskekjøper betaler minstepris (eller mer) for fisk hvor prisen burde vært redusert på grunn av dårlig kvalitet.

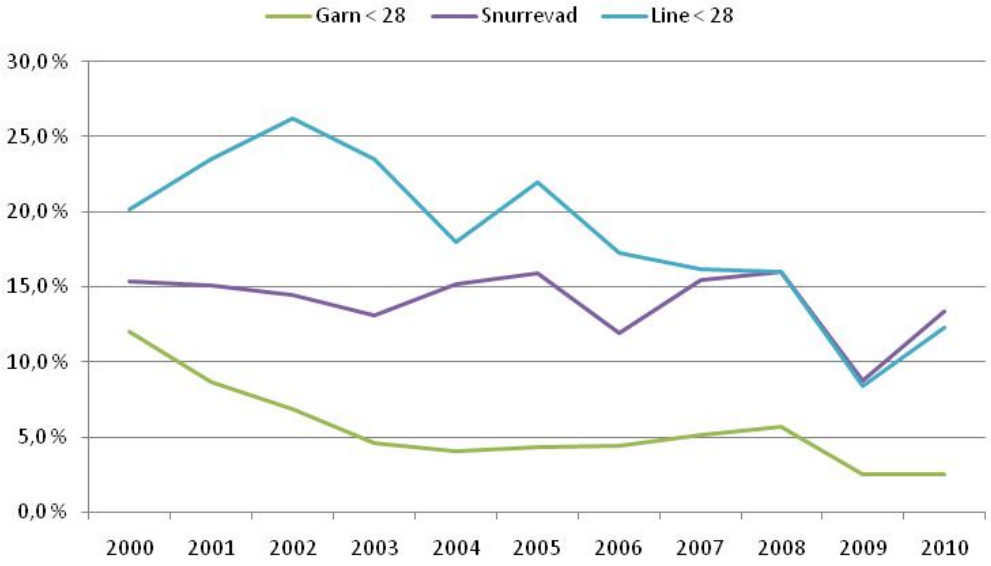
Vi har imidlertid en lang rekke rapporter fra ulike fiskere som ved selvsyn har observert leveranser av fisk av dårlig kvalitet som har oppnådd samme pris som fisk av ypperste kvalitet. Vi har dessuten intervjuet fiskere som selv leverer dårlig kvalitet. De innrømmer at de leverer fisk av dårlig kvalitet og begrunner det med at de gjør det som er lettest/mest rasjonelt om bord. For snurrevadbåter vil dette være tilfelle om de tar for store hal som gjør det umulig å bløgge fisken fort nok til å sikre god utblødning. Store hal gir også klem- og slitasjeskader på fisken. For garnbåter kan dårlig kvalitet forekomme når fisken dør på garnet. For line- og juksabåter vil dårlig kvalitet være resultat av direktesløying som leder til dårlig utblødning av fisken, samt skader etter bruk av høtt. For alle fartøy forringes kvaliteten om fangsten ikke kjøles ned hurtig nok med en blanding av is og

vann. Et viktig argument fiskerne selv fremholder når de leverer fisk av dårlig kvalitet er at "vi får jo samme prisen som de andre likevel". Vi har også intervjuet en rekke fiskekjøpere som innrømmer at de ofte betaler en for høy pris for fisk av dårlig kvalitet.

Våre intervjuer med sentrale norske eksportører av fersk torsk og hyse viser også at den krokfangede fisken oppfattes som den beste fisken i markedet. I perioder oppnår denne fisken høyere pris enn fisk fanget med andre redskaper og i andre perioder er det denne fisken som er lettest å selge, noe som reduserer transaksjonskostnadene (Sogn-Grundvåg & Henriksen, 2011). Figur 1 viser imidlertid at kystline- og juksafiske etter torsk utgjør en liten og avtagende del av de totale torskefangstene i kystfisket. Figur 2 viser at linefisket etter hyse har redusert sin andel sammenlignet med snurrevad.



Figur 1 *Andel av totalfangst av torsk (alle redskap, alle fartøygrupper) fordelt på redskap i kystflåten (Kilde: Sluttseddeldatabasen)*



Figur 2 *Andel av totalfangst av hyse (alle redskap, alle fartøygrupper) fordelt på redskap i kystflåten (Kilde: Sluttseddeldatabasen)*

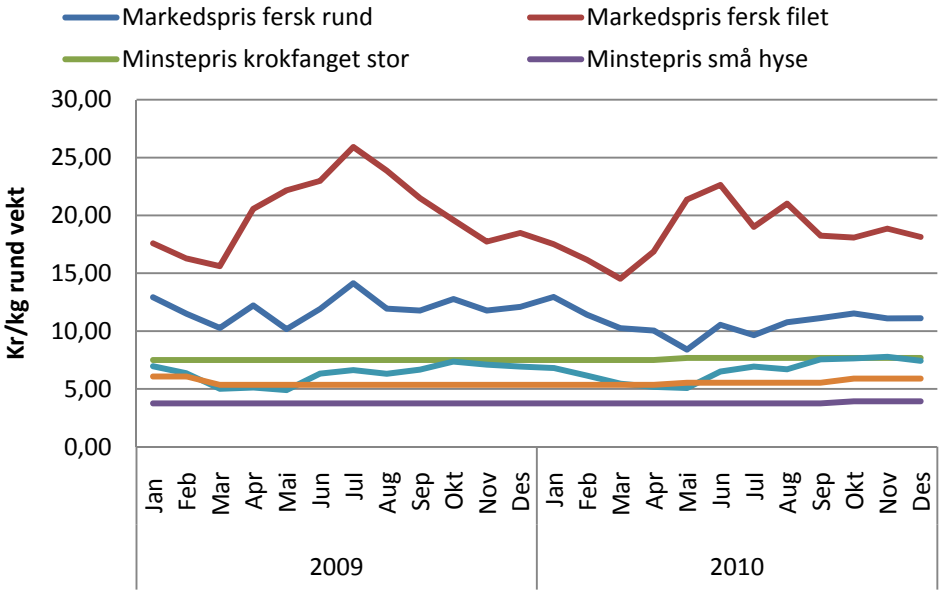
Våre intervjuer med kystlinefiskere som leverer torsk og hyse av ypperste kvalitet tyder også på at disse ofte ikke oppnår bedre pris enn fisk av dårligere kvalitet. Mange av fiskekjøperne vi intervjuet mener også at krokfanget fisk av ypperste kvalitet betales for dårlig.

Råfiskloven

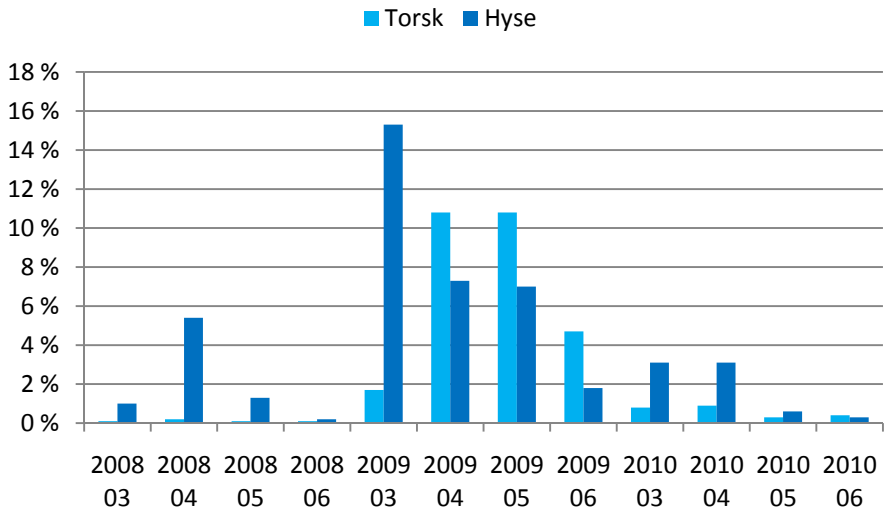
Gjennom råfiskloven fastsettes mistepriser som skal sikre at prisene til fisker reflekterer "reell" markedsverdi og ikke blir presset for lavt av sterke kjøpere. Ifølge "Gjeldende minstepriser til fisker. Oppdatert 10. januar 2011" (Råfisklaget, 2011) gis det adgang til pristrekk med opptil 40 % i forhold til minsteprisen om kvaliteten er dårlig. Det forutsettes at "Reduksjon i pris bare kan foretas etter avtale mellom fisker og kjøper" (Råfisklaget, 2011). Fiskekjøpere står fritt til å betale mer enn fastsatt minstepris. Dette innebærer at råfiskloven gir mulighet til at det betales lavere pris for dårlig kvalitet og høyere pris for god kvalitet. I tillegg er det fastsatt en egen minstepris for snørefanget hyse (over 8 hg) som for øyeblikket (vinter 2011) er 30 % over prisen andre redskapsgrupper oppnår. Disse sidene ved minsteprissystemet er positive i den forstand at de gir gode muligheter for at det betales en "riktig" pris – det vil si at fisk av dårlig kvalitet gis en lav pris og at fisk av høy kvalitet betales godt.

Under prisforhandlingene i 2010 ble imidlertid vektgrensen for den største torsken flyttet fra "minst 5 kg" til "minst 6,5 kg". Per i dag (vinter 2011) er minsteprisen for torsk over 6,5 kg kr 17,50 mens prisen i vektkategorien "minst 2,5 kg under 6,5 kg" er kr 14,50 (Råfisklaget, 2011). Fordi torsk fanget med line vanligvis er noe mindre i størrelse enn torsk fanget med garn bidrar dette til at båter som fisker med line får mindre igjen for sin torskekvote. Lønnsomheten reduseres også som en direkte følge av at vektgrensen for den største torsken ble flyttet (forutsatt at minstepris benyttes).

Minsteprisen fastsettes to ganger i året (mai og desember). Minsteprisen er derfor den samme i et halvt år av gangen. En gjennomgang av eksportstatistikk for ferske produkter av hyse for 2009 og 2010 viser imidlertid at prisene varierer sterkt gjennom året – og langt mer enn pris til fisker. Dette fremgår tydelig av Figur 3.



Figur 3 *Markedspriser for fersk hyse og fersk hysefiltet omregnet til pris per kg rund vekt. Gjennomsnittlig rund vekt pris til fisker for hyse landet på line, autoline og snurrevad fra fartøy mindre enn 28m og gjeldende rund vekt minstepriser for stor og små hyse i Norges Råfisklags distrikt (Kilder: Sluttseddeldatabasen, EFFs månedsstatistikk Norges Råfisklag)*



Figur 4 Andel "skadet" og nedklassifisert torsk og hyse i månedene mars til og med juni i årene 2008 til 2010 (Kilde: Norges Råfisklag)

Når tilbudet blir så høyt (eller etterspørselen synker) at markedsprisene blir så lave at lønnsomheten til fiskekjøperne trues blir det problematisk. Noen (mange?) fiskekjøpere og fiskere) søker da etter metoder for å kompensere for de lave markedsprisene. En slik strategi er bruk av kvalitetstrekk for å redusere prisen. Figur 4 viser andelen nedklassifisert torsk og hyse i treårsperioden 2008–2010 for månedene mars, april, mai og juni (i resten av året benyttes kvalitetstrekk i svært liten grad).

Figur 4 viser tydelig at kvalitetstrekk ble brukt aktivt våren 2009. Det er ingen grunn til å tro at kvaliteten var dårligere dette året enn i 2008 og 2010 – men effektene av finanskrisen rammet viktige markeder med sterkt synkende etterspørsel og priser (Dreyer & Bendiksen, 2010). Dette stemmer også med at Fiskeridirektoratet under sin torskeoffensiv i 2009 observerte kvalitetstrekk når det objektivt sett ikke var grunnlag for det (Fiskeridirektoratet, 2009). Etter vår mening viser dette tydelig at kvalitetstrekk først og fremst brukes som et "verktøy" for å senke førstehåndsprisen når minsteprisen er for høy i forhold til prisene som oppnås lengre ut i markedet.

At kvalitetsvurderinger benyttes til å justere prisen er også kjent fra tørrfisknæringen. Korneliussen *et al.* (2007) påviste at reduksjon i kvalitet (og pris) sammenfaller med stort tilbudsoverskudd – og omvendt. På den måten brukes kvalitetsvurderingen til å redusere ulempene (store pris- og inntektssvingninger) for både tilvirkere, eksportører og importører/kunder ved store variasjoner i tilbudet. Når tilbudet er stort bidrar redusert kvalitet til lavere priser som gjør det lettere å selge tørrfisken. Korneliussen *et al.* (2007) argumenterer for at denne praksisen er institusjonalisert i tørrfisknæringen og også at det er en fornuftig måte å dempe effektene av store tilbudsvariasjoner. Figur 4 tyder på at kvalitetsreduksjon for å dempe effektene av stort tilbudsoverskudd også til en viss grad er institusjonalisert innen førstehåndsomsetningen av fersk torsk og hyse.

Makt og avhengighet

Alle bedrifter er "åpne systemer" som er avhengig av ressurser utenfra for å nå sine mål (Scott, 2002). Fiskere er avhengig av at noen vil kjøpe fisken for å kunne betale for drivstoff, redskaper, mannskaper og andre innsatsfaktorer. Fiskeindustrien er avhengig av råstoff til sin produksjon i tillegg til kompetent arbeidskraft, produk-

sjonsutstyr, kapital og andre innsatsfaktorer. Fiskere og fiskeindustri er derfor gjensidig avhengig av hverandre for å nå sine målsettinger. Denne avhengigheten virker inn på maktbalansen mellom selger og kjøper fordi avhengighet er omvendt proporsjonalt med makt (Emerson, 1962). Sagt på en annen måte så har en fiskekjøper med stor avhengighet til fiskere i prinsippet liten makt over fiskerne – og omvendt. En rekke forhold påvirker makt og avhengighetsforholdet mellom fiskere og fiskekjøpere.

Fiskekjøpere som har stort behov for å holde produksjonen i gang – for eksempel av hensyn til høye kapitalkostnader og behov for å holde på kompetent arbeidskraft som ellers vil forsvinne – har spesielt høy avhengighet til fiskere. Når det er mye fisk tilgjengelig og mange båter som vil levere, for eksempel under vinterfisket etter torsk, flyttes gjerne makten over til fiskekjøperne. Dette gjelder spesielt for fiskekjøpere som er lokalisert nært fisket. I perioder med knapphet på råstoff forteller våre informanter i fiskeindustrien at det forekommer at man betaler mer enn mistepris for fisk som ut fra kvalitet strengt tatt burde ha vært nedklassifisert.

Fiskernes avhengighet til fiskekjøper varierer blant annet avhengig av fartøystørrelse og mobilitet. Mens små kystfartøy gjerne er knyttet til en hjemmehavn er større kystfartøy mer mobile med mulighet til å levere flere steder, noe som øker deres forhandlingsmakt. For kystlineflåten er denne tilknytningen ekstra sterk; de er avhengig av en landbase for å få egnt lina. Store kystfartøy leverer også store fangster – noe som gjør dem til attraktive leverandører av flere grunner. For det første bidrar de med mye råstoff som fiskekjøper ønsker, spesielt i perioder med lav fangstaktivitet. For de andre gir store landinger lavere kostnader for fiskekjøper knyttet til transaksjonen enn hva tilfellet er for små landinger.

Mange fiskekjøpere tilbyr ulike former for service og støtte til fiskeflåten (Ottesen & Grønhaug, 2003). Dette kan være egnebuer, lagerhold, overnatting og hjelp til finansiering av fartøy. Fiskekjøpere vi har snakket med anslår at service til kystlineflåten kan utgjøre 1–1,50 kroner per kilo fisk levert. Dette øker fartøyets avhengighet til fiskekjøper.

Enkelte fiskekjøpere opplever også at noen fiskere er mer lojale mot hverandre enn mot fiskekjøpere. Et eksempel på dette fikk vi fra en fiskekjøper som med stor frustrasjon fortalte om konsekvensene dersom han reduserte pris på en tilbudt fangst på grunn av dårlig kvalitet. Fiskekjøperen erfarte da at nyheten om redusert pris spredde seg svært fort fiskerne imellom og at en kollektiv boikott ofte ble resultatet. Dette gjorde at fiskekjøperen ble ”tvunget” til å betale en høy pris selv om fangsten var av dårlig kvalitet. Et viktig poeng her er at slike trusler ikke nødvendigvis gjelder i øyeblikket – de kan også gjelde over lang tid. Den samme fiskekjøperen fortalte at pristrekk ikke var aktuelt på fangster av dårlig kvalitet under hysefisket på våren. Om så skjedde kom neppe fartøyet – og fiskerkolleger – tilbake på høsten når fiskekjøperen var svært avhengig av råstoff for å holde produksjonen i gang.

I prinsippet skulle en tro at juksa- og linefartøy som leverer torsk og hyse av ypperste kvalitet sto i en svært gunstig forhandlingsposisjon i forhold til fiskekjøper. Fisken de leverer gir tross alt den høyeste andelen spesialprodukter (fersk loins) som gir best pris og best lønnsomhet for bedriften i viktige markedssegmenter. Flere forhold bidrar imidlertid til at prisforhandlingene ikke nødvendigvis går i fiskernes favør. For det første er kystlinebåtene som oftest små – de leverer derfor små kvantum. De er også ustabile leverandører fordi de er avhengig av godt vær for å kunne fiske. Mange linefiskere legger også om til andre redskaper eller fiskearter dersom det lønner seg. Et eksempel er at flere linefiskere høsten 2010 gikk over til å fiske breiflabb med garn. Breiflabbfisket er lite arbeidskrevende (to sjøvær i uka) med gode priser og høy lønnsomhet. Breiflabbfisket er også et

svært plasskrevende fiske som fortrenger linefiskere fra viktige fiskefelt.

Disse forholdene gjør det vanskelig for fiskekjøpere å planlegge produksjonen på land i tillegg til at det kan være vanskelig å oppnå gode salgskontrakter i markedet på grunn av manglende stabilitet i leveranser, noe som bidrar til å redusere forhandlingsmakten til små kystlinefartøy.

Mange små kystfartøy er også hjemmehørende i havner hvor det bare er en fiskekjøper. I små fiskevær kjenner alle hverandre noe som bidrar til sosiale bindinger og lojalitet. Når det er stort tilbudsoverskudd av fisk (slik som vinteren 2009) blir ofte de lokale båtene fortrukket som leverandører, men lav mobilitet og lojalitet til hjemmehavnen gjør små fartøy sterkt avhengig av sine lokale fiskekjøpere.

Bruk av makt i kjøper-selger relasjoner

Det å ha mye makt betyr ikke nødvendigvis at makten brukes fullt ut til å nå ulike mål. To alternative perspektiver på hvordan kjøpere og selgere forholder seg til hverandre er beskrevet av Schmidt & Kochan (1977). På den ene siden finner vi relasjoner hvor den ene parten bruker sin makt til å presse den andre parten til å oppføre seg på en ønskelig måte. Slike relasjoner vil ofte være karakterisert av harde forhandlinger og konflikt siden begge partene søker å oppnå sine mål på bekostning av den andre. Utstrakt bruk av makt vil derfor lede til dårlige samarbeidsforhold, liten vilje til å tilpasse seg dens andre ønsker og behov, og opportunistisk atferd vil være vanlig.

På den andre siden finner vi relasjoner hvor kjøpere og selgere samarbeider for å gjøre "kaken" som skal deles større slik at begge parter kan oppnå bedre resultater enn de ville gjort hver for seg (Jap, 1999). Slike relasjoner vil være preget av godt samarbeid og felles problemløsning fordi begge parter er motivert til å koordinere sine aktiviteter for å optimalisere felles fordeler. Slike relasjoner innebærer at begge parter tilpasser seg hverandre og dessuten forplikter seg til langsiktig samarbeid og kontrakter. Ulempen med slike samarbeidsrelasjoner er at de kan innebære deling av sensitiv informasjon i tillegg til at partene gjør relasjonsspesifikke investeringer som vil være bortkastet dersom den andre forlater samarbeidet.

Når det gjelder forholdet mellom kystfiskere og fiskekjøpere tyder våre observasjoner på at makt ofte brukes rått av begge parter i prisforhandlinger. Når fiskekjøper har størst makt brukes denne til å presse fiskeren til å levere god kvalitet til lav pris. Et godt eksempel på dette så vi under vinterfisket etter torsk i 2009 når markedsforholdene ble svært vanskelige samtidig som fisket var svært godt. Garnfiskere måtte stubbe garnene og fikk ofte ikke levere fisk fra nattstått bruk. Noen fiskekjøpere ville ikke kjøpe garnfisk i det hele tatt og "nektet" sine faste leverandører å legge om fra line til garn – noe som er vanlig når torskefisket er på sitt beste midt på vinteren. Dette resulterte i en markert nedgang i andel torsk tatt med garn fra 2008 til 2009 (se Figur 1). Til tross for dette ble det altså de effektene som vist i Figur 4. Og som vist over så bruker fiskere sin makt – når forholdene ligger til rette for det – til å holde prisen oppe også når kvaliteten er dårlig.

Det finnes imidlertid noen få eksempler på samarbeidsrelasjoner mellom kystlinefartøy/rederi og fiskekjøpere. I et av disse tilfellene intervjuet vi både fisker og fiskekjøper. Det fremkom at begge parter må "ofre" noe for å oppnå fordeler gjennom samarbeidet. Det som rettferdiggjorde høy pris til fisker var kvalitet og kontinuerlige leveranser med en viss størrelse. Det ble også inngått avtaler om å levere fangsten ved arbeidsdagens start. Dette gir god kapasitetsutnyttelse, rasjonell logistikk og mulighet for å følge opp avtaler i markedet. I Tabell 1 beskrives fordeler og forpliktelser for fisker og fiskekjøper i dette samarbeidsforholdet som omhandlet leveranser av hyse.

Tabell 1 Fordeler og forpliktelser for fisker og fiskekjøper

	Fiskekjøper	*Fisker*
Fordeler	– Jevn tilgang på råstoff – Leveranse på fast klokkeslett som optimaliserer produksjon	– Høyere pris – Slipper å sløye fisken – Får utnytte fangstkapasiteten maksimalt
Forpliktelser	– Høyere pris – Må sløye fangst – Må ta imot all fangst	– Må levere til den aktuelle fiskekjøperen – Må levere på fast klokkeslett på dagen

Tabell 1 viser at begge parter gir og tar. Samarbeidsrelasjonen er nylig startet opp og det gjenstår å se om den vil fungere for begge parter over tid. Foreløpig ser det ut til at muligheten til å betale høyere pris til fisker er best i andre halvår (se Figur 3) og at pris har vært justert i tråd med endringer i markedspriser. Fri sløying av fangst har imidlertid vært uendret og bidratt sterkt til at fangsteffektiviteten holdes oppe.

Transaksjonskostnader

Fiskekjøperne står fritt til å betale mer enn fastsatt minstepris for god kvalitet og de kan redusere prisen med inntil 40 % dersom kvaliteten er dårlig. For prisreduksjoner forutsettes det at: ”Reduksjon i pris kan bare foretas etter avtale mellom fisker og kjøper.” (Råfisklaget, 2011). Det å bli enig om hvor dårlig kvaliteten er og hvor mye reduksjon i pris kvalitetsforringelsen tilsvarer er både konfliktfylt og tidkrevende. Paradoksalt nok er det også konfliktfylt og ressurskrevende å belønne fiskere som leverer utmerket kvalitet med bedre pris. Dette leder til generell forventning om at prisen skal opp for alle, med tilhørende konflikter mellom fisker og kjøper og fiskerne seg imellom. Dersom fiskekjøper må forhandle med hver enkelt fisker om hver enkelt fangst blir transaksjonskostnadene betydelige, spesielt i perioder når mange fartøy leverer relativt små fangster. Dette bidrar trolig til at mange fiskekjøpere setter en fast pris for alle. Dette vil imidlertid passe de som leverer dårlig kvalitet best, mens de som leverer den beste fisken blir svært frustrerte. Men, fordi små kystlinefartøy ikke nødvendigvis er i en gunstig forhandlingsposisjon som diskutert over, gir denne løsningen minst støy og transaksjonskostnader for fiskekjøper.

Det norske kystfisket etter torsk er preget av sterke sesongsvingninger hvor om lag ¾ av årskvantumet landes i løpet av første halvår (Henriksen, 2010). Dette innebærer en betydelig kapasitetsutfordring for hvitfiskindustrien. Under vinterfisket etter torsk kommer det på land så mye torsk at bedriftenes produksjonskapasitet presses maksimalt. I denne perioden kjører mange produksjonsbedrifter en ”samfengtstrategi” hvor de ikke har kapasitet til å holde krokfanget torsk atskilt fra torsk fanget med garn og snurrevad. Dette er forståelig også fordi krokfanget fisk i denne perioden ofte utgjør en liten andel av fisken de mottar. Dette gjør at produksjonsbedriften mister muligheten til å hente ut en eventuell prispremie på krokfanget fisk i markedet, som igjen gjør det vanskelig å betale høyere pris for dette råstoffet.

Diskusjon

Førstehåndsomsetningen av fersk hvitfisk fra kystflåten har som vi har vist en rekke imperfeksjoner. Disse bidrar til å forklare hvorfor fersk torsk og hyse av dårlig kvalitet oppnår gode priser og hvorfor krokfanget fisk av god kvalitet ikke oppnår gode nok priser og er i tilbakegang.

Når en fisker bruker sin forhandlingsmakt til å presse en fiskekjøper til å betale en for høy pris for fisk av dårlig kvalitet,

opptrer fiskeren fornuftig i den forstand at vedkommende får en svært god pris for fangsten sin. Problemet blir at fiskekjøper taper penger på dette, men går med på kjøpet av frykt for å miste leveranser senere på året og av hensyn til å holde produksjonen i gang. Dette går ut over lønnsomheten til fiskekjøper. På lang sikt har dette en rekke konsekvenser som neppe er ønskelig for noen, inkludert den aktuelle fiskeren. For det første vil fiskekjøper over tid og gjennom mange ulønnsomme kjøp redusere sin lønnsomhet. I verste fall går bedriften konkurs og fiskerne mister en kjøper, noe som øker deres avhengighet til gjenværende fiskekjøpere. Om bedriften overlever vil dens evne til å betale gode priser bli redusert over tid.

Når fiskerkjøperen bruker sin forhandlingsmakt til å betale for lav pris for den beste fisken (krokfanget) er dette rasjonelt for fiskekjøperen på kort sikt. Men når mange fiskekjøpere gjør dette over tid, leder det til redusert lønnsomhet i linefisket. Dette bidrar til at linefiskere legger om til andre redskaper som garn og snurrevad, som har høyere fangstrater og derfor tillater en raskere avvikling av fisket med lavere kostnader. Problemet her er at linefanget torsk og hyse er den beste fisken markedet kan få og den bidrar til et positivt omdømme for hele hvitfisknæringen (Sogn-Grundvåg & Henriksen, 2011). Når andelen linefisk reduseres, mister hvitfisknæringen en viktig spydspiss i markedet. Det vil slå tilbake på alle.

Den beskrevne atferden representerer såkalte ”sosiale dilemma” – det vil si situasjoner hvor tilsynelatende fornuftig individuell atferd leder til en situasjon hvor alle kommer dårligere ut enn de ellers ville ha gjort (Kollock, 1998). Sosiale dilemma er ikke lett å løse – heller ikke her. Men vi tror det kan være nyttig for alle involverte parter å sette seg inn i hvilke sosiale dilemma de er en del av og ikke minst reflektere over hvilken rolle de selv spiller – og om det kan være fornuftig og endre atferd for å bedre sine egne (og andres) forutsetninger for å lykkes bedre i fremtiden. For eksempel vil det kanskje være fornuftig å fokusere mer på samarbeid enn på ”rå” maktbruk. Samarbeid kan gi fordeler for begge parter som overgår det hver enkelt kan oppnå hver for seg. Fordeler og forpliktelser må vurderes i hvert enkelt tilfelle før partene inngår forpliktende samarbeidsrelasjoner.

Det kan også diskuteres om reguleringen av førstehåndsomsetningen i større grad kan bidra til å bedre lønnsomheten i kystlinefisket. Dersom Råfisklaget innførte en prispremie for snørefanget torsk – slik det i dag er for snørefanget hyse over 8 hg – ville lønnsomheten i linefisket blir bedre. Man kunne for eksempel gå fra dagens størrelsesgrense for høyeste minstepris på 6.5 kg, tilbake til den gamle størrelsesgrensen på 5 kg kun for snørefanget fisk. I tillegg ville tidkrevende og vanskelige diskusjoner om pris/kvalitet bli flyttet fra kaia til prisforhandlingene mellom organisasjonene.

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Noter

1 Dette arbeidet er en del av prosjektet ”Sjømatnæringen: produktdifferensiering og konkurransefortrinn”, finansiert av Fiskeri- og havbruksnæringens forskningsfond (FHF).

Nye rapporter og publikasjoner fra Nofima Marked

Listen nedenfor omfatter offentlige tilgjengelige arbeider publisert siden "Økonomisk fiskeriforskning" nr. 2009/2010 . Fullstendig oversikt over rapporter fås ved henvendelse til instituttets arkivansvarlig eller på nettsidene våre http://www.nofima.no. Bidragsytere som ikke er ansatt i Nofima er markert med *.

Rapporter

Margrethe Esaiassen, Gustav Martinsen,Guro Eilertsen, Bjørn Gundersen, Reidun Dahl & Mette Serine Wesmajervi

Hodekapping av hvitfisk – Vanninnhold og mikrobiell vekst i torsk når den lagres i is/vannblanding med og uten hode

I dag føres om lag 140.000 tonn hodekappet fisk i is og vann eller kjølt vann (RSW) om bord i norske fiskefartøy. I henhold til EUs hygieneregelverk (hygienepakken) vil det ikke bli tillatt å oppbevare hodekappet fisk i is og vann. Det vil således ikke være tillatt å føre hodekappet fisk i is og vann eller i kjølt vann ombord i fiskefartøy. Det argumenteres med at det er mindre sjanse for bakteriell kontaminering av fisken og mindre vannopptak dersom fisken føres med hodet på. Dette er imidlertid ikke dokumentert.

Formålet med dette prosjektet er å undersøke om det er mikrobiologiske forskjeller på fisk som er lagret med og uten hode i blanding av is og vann den første tiden etter fangst.

Torsk ble delt i to grupper kort tid etter fangst. Gruppe A ble hodekappet, og gruppe B ikke. Fisken ble overført i kar (1000 l) med is og sjøvann. Det ble benyttet ca 250 l sjøvann og 100 l is. Etter lagring i sjøvann og is i henholdsvis 0, 24, 48, 72 og 96 timer ble det tatt ut ti fisk fra hver gruppe. Disse ble overført til videre lagring i kasser på is inntil total lagringstid på 7 og 12 dager.

Det er ikke påvist signifikante forskjeller i vanninnhold og bakterietall mellom fisk fra gruppe A og B selv etter 96 timers lagring i sjøvann/is før videre lagring på is.

Rapport/Report 18/2010. ISBN 978-82-7251-772-3 (trykt) 978-82-7251-773-0 (pdf)

Geir Sogn-Grundvåg

Muligheter og forutsetninger for differensiering av fersk laks og hvitfisk

Rapporten identifiserer naturgitte og kompetansebaserte fortrinn som kan danne grunnlag for differensiering av norsk fersk laks og hvitfisk (torsk og hyse). Viktige forutsetninger for differensieringsstrategier diskuteres også. Rapporten gir en faglig diskusjon av hva differensiering innebærer, sammenhengen mellom differensiering og konkurransefortrinn, og hvilke forutsetninger som er sentrale for å lykkes, herunder produktets unikhet i markedet og barrierer for imitasjon fra konkurrenter. Deretter beskrives en rekke ulike differensierings-strategier og muligheter som i større eller mindre grad anvendes av norske sjømatbedrifter i dag. Til slutt presenteres forslag til delprosjekter om sentrale differensieringsmuligheter knyttet til bærekraft (MSC), fangstredskap (line/krok), økt produktkvalitet gjennom levende-lagring av torsk og strategier for laksefilet. Delprosjektene innebærer en systematisk og dyptgående analyse av ulike sider av disse strategiene, inkludert verdikjedenes organisering og funksjonalitet. Formålet er å gi forskningsbaserte råd til næringen.

Rapport/Report 19/2010. ISBN 978-82-7251-776-1 (trykt) 978-82-7251-777-8 (pdf)

Oddrun Bjørklund, *Frank Asche, Geir Sogn-Grundvåg, *Ragnar Tveterås, Pirjo Honkanen, Gøril Voldnes, John R. Isaksen & Morten Heide

Markedsforskning knyttet til sjømat – Kartlegging i Norge, Vest-Europa og Nord-Amerika

Denne rapporten er en kartlegging av markedsforskning knyttet til sjømat i Norge, Vest-Europa og Nord-Amerika. Hensikten er å få oversikt over hvilke organisasjoner som gjør hva knyttet til dette temaet. Kartleggingen viser at om lag 10 institutter/organisasjoner i større eller mindre grad driver markedsforskning relatert til sjømat i Norge. I Europa har fem universiteter avdelinger som gjennomfører markedsforskning på sjømat, EU har gjennomført prosjektet SEAFOODplus og de nordiske landene har et program MARIFUNC under arbeid. Hovedsakelig har 1–2 forskere sjømat som spesielt fagfelt ved disse universitetene/ instituttene. I Nord-Amerika har vi kun fått informasjon fra University of Rhode Island.

Det har vært hensiktsmessig å dele markedsforskningen inn i seks hovedtemaer:
1. Forbrukerforskning
2. Markedsstrategi/organisasjon
3. Industriell kjøpsatferd
4. Etterspørselsanalyser
5. Markedsintegrasjon og markedsmakt
6. Hedoniske modeller, miljømerking og markedsmodeller

Det gis et sammendrag av forskningen innen disse temaene. Det må bemerkes at kartleggingen delvis er avhengig av tilbakemeldinger fra kontaktpersoner ved de ulike instituttene, noe som kan bidra til at ikke alle relevante forskningsbidrag er tatt med i oversikten.

Rapport/Report 20/2010. ISBN 978-82-7251-778-5 (trykt) 978-82-7251-779-2 (pdf)

Hans Martin Norberg & Bjørg Helen Nøstvold

SKREI ® Merkeprofilering av et naturprodukt: konsumenters assosiasjoner, preferanse og betalingsvillighet

Stortingsmelding nr. 19, ”Marin næringsutvikling − Den blå åker”, omhandler perspektiver for marin verdiskaping. Meldingen tar for seg etableringen av en frivillig merkeordning som skal styrke norsk sjømats konkurranseevne. I meldingen knyttes konkurranseevne til begreper som differensiering, merverdi, merkevarebygging og kvalitet. Det presiseres videre at for å skape troverdighet i markedet må en merkeordning baseres på uavhengig godkjenning av produksjonen, og kvalitetskravene må være høyere enn minstekravene fastsatt ved offentlige forskrifter. Bruk av merke skal garantere for høyere kvalitet på produktet og derfor gi en høyere produktpris.

Prosjektet ”Kvalitetsmerking og forbrukerrespons i den norske matsektoren” er finansiert av Norges forskningsråd. Et delmål i prosjektet har vært å studere hvordan et natur-/ primærprodukt kan profileres ovenfor konsumenter med mål om å stabilisere eller øke produktets etterspørsel.

Rapport/Report 21/2010. ISBN 978-82-7251-780-8 (trykt) 978-82-7251-781-5 (pdf)

Bent Dreyer & Bjørn Inge Bendiksen

I etterpåklokskapens lys – Finanskrisens effekter i torskesektoren

Hensikten med denne rapporten er å svare på hvorfor den norske torskesektoren fikk problemer da finanskrisen rammet internasjonal økonomi høsten 2008. For å svare på dette spørsmålet blir finanskrisens utfordringer og aktørenes forutsetninger for å tilpasse seg disse analysert. Samtidig blir det redegjort for tiltakene myndighetene satte i verk og hvilke

tilpasninger ulike aktører valgte. Rapporten gir deretter en oversikt over hvilken effekt, økonomisk og strukturelt, finanskrisen fikk for sektoren.

Rapport/report 23/2010. ISBN 978-82-7251-784-6 (trykt) 978-82-7251-785-3 (pdf)

Audun Iversen, *T. Brustad & *S. Jahnsen

Innovasjon i sjømatnæringen

Fiskeindustrien viser stor evne til å ta i bruk ny teknologi, til å automatisere og effektivisere. Men likevel er lønnsomheten lav. En viktig årsak til dette er at det er langt mellom de gode differensieringsstrategiene og de gode prisøkende innovasjonene. Vi peker i denne rapporten på behovet for å satse på kunnskap og kompetanse, kvalitet gjennom hele verdikjeden og tiltak for å utvikle nye strategier for å øke verdiskapingen, både gjennom differensiering av lite bearbeidet fisk og utvikling av foredlede produkter og merkevarer.

Rapport/Report 24/2010. ISBN 978-82-7251-786-0 (trykt) 978-82-7251-787-7 (pdf)

Bjørg Helen Nøstvold, Siril Alm, Ingelinn E. Pleym & P. Honkanen

Hva er drivkraften bak bærekraftig sjømat og hvordan er norsk sjømatnæring posisjonert?

Denne rapporten er en del av et FHF-finansiert prosjekt ”Etterspørselsforhold knyttet til bærekraft og miljø” og bygger videre på rapporten ”Hva menes med bærekraftig sjømat”. Rapporten er basert på intervjuer blant sertifiserings- og miljøorganisasjoner samt norske eksportører og produsenter. Rapporten danner et grunnlag for videre undersøkelser blant industrielle innkjøpere/ledelse og forbrukere.

Fokus på bærekraft og krav om sertifisering er kommet for å bli. Diskusjonene dreier seg om hvor fort denne utviklingen vil gå, hva begrepet bærekraft skal omfavne, hvor strenge kravene bak sertifiseringene bør være og om sertifisering er veien å gå. NGOene har ulikt fokus og ulike arbeidsmetoder, fra offentlige aksjoner til samarbeid med bedrifter, myndigheter og andre organisasjoner. NGOer og bedrifter er enige i at selv om bærekraftig utvikling er et samfunnsansvar så må myndigheter legge til rette gjennom lover og regler. Norsk næring får internasjonal anerkjennelse for sitt fokus på bærekraft, men har også mye arbeid igjen for å bli 100 % bærekraftige etter FAOs definisjon. NGOene og bedriftene mener at fokus på bærekraft ikke er forbrukerdrevet, men drevet fram av detaljistene. Både detaljister og forbrukere vil være sentrale i det videre arbeidet i prosjektet.

Rapport/Report 27/2010. ISBN 978-82-7251-792-1 (trykt) 978-82-7251-793-8 (pdf)

Øystein Hermansen

Økonomi og driftsrutiner i fangstbasert akvakultur av torsk – Fokus på oppdrettsleddet

Denne studien har kartlagt erfaringer ved drift av anlegg for fangstbasert akvakultur av torsk. Det er fokusert på kostnadsforhold, vekst, driftsrutiner og teknologi. I tillegg modelleres lønnsomheten i driften av et tenkt anlegg i større skala. Førstnevnte er gjort gjennom intervju av nøkkelpersonell ved anleggene, mens sistnevnte er en skrivebordsøvelse basert på data fra intervjuene og data fra en fiskeeksportør.

Resultatene viser at driften foregår på lokaliteter med akseptabel kvalitet. Anleggstype og tilstand varierte, det samme gjør produsert mengde. Noen har stor produksjon og mange års erfaring, mens andre kun har drevet i liten skala og få år. Rutinene ved fangstmottak varierte også mellom anleggene. Noen sorterer i størrelsesgrupper, andre ikke. Sortering etter skadestatus ble samlet oppfattet som viktig og kunnskapskrevende. Etter dette er dødelig-heten lav, med unntak av sykdomsutbrudd som har funnet sted hos ett firma og

rømming/selproblematikk som har inntruffet hos to anlegg. Tilveksten har variert mellom anleggene, men med godt egnet fisk og god behandling vil fisken generelt doble vekten i løpet av om lag 22 uker. Fôring skjer med sild eller lodde, og man opplever andelen fisk som ikke tar til seg fôr som svært liten. I forsøk ligger den rundt 20 %.

Resultatene fra lønnsomhetsmodellering indikerer at lønnsomheten kan være betydelig. Den er mest sensitiv for endringer i salgspris og tilvekst.

Rapport/Report 29/2010. ISBN 978-82-7251-796-9 (trykt) 978-82-7251-797-6 (pdf)

Edgar Henriksen, *R. Larsen, *S. Margeirsson, *M. Pol, *L. Rindahl *B. Thomsen & *J. Vidarsson

Hooked on long-line. Proceedings from a workshop on long-lining in Reykjavik October 19th and 20th 2010

I denne rapporten publiseres presentasjoner holdt på en internasjonal workshop i Reykjavik om ulike aspekter ved linefiske. Problemstillinger knyttet til markedsforhold, ulike teknologiske aspekter når det gjelder redskapsteknologi og håndtering av fisk, lønnsomhet på sjø og land samt aspekter ved forvaltning ble presentert. Det legges også fram forslag til oppfølging av innspill fra deltakerne.

Rapport/Report 39/2010. ISBN 978-82-7251-818-8 (trykt) 978-82-7251-819-5 (pdf)

Kine Mari Karlsen, Øystein Hermansen, Edgar Henriksen & Bent Dreyer

Målrettet fangst av vill fisk

Knapphet på ressursene har ført til et økende behov for å vurdere potensialet for økt verdiskaping i villfisksektoren. Flere forhold tyder på at potensialet for økt verdiskaping er stort dersom det er mulig å utvikle beslutningsstøttesystemer som kan brukes til å velge fangststrategier for å målrette fangsten mot områder, tidspunkt og deler av bestanden som er optimale i forhold til produksjon og konsumentenes behov. Hensikten med denne rapporten er å gi en oversikt over hvilke beslutningstøttesystemer som fins i dag og avdekke hvilke forbedringspotensial slike systemer har. Gjennomgangen av utvikling av slike systemer i Norge og Island viser at mye relevant arbeid er utført i begge landene. Dette er et godt utgangspunkt for å se nærmere på utvikling/forbedring av slike systemer i Norge. Før en slik utvikling/forbedring gjennomføres, bør en identifisere om de tilsvarende kvalitetsfaktorene identifisert på Island har betydning for verdiskapingen i verdikjeder i Norge, hvilke kvalitetsparametrer er viktig i Norge i forhold til ulike produkter, og hva er betalingsvilligheten i forhold til dette. Det vil også være et behov for å identifisere hvilke aktører som vil ha størst nytte av bedre koordinering av aktivitetene, og hvilke beslutninger det kan være relevant å støtte gjennom et slikt system.

Rapport/Report 40/2010. ISBN 978-82-7251-820-1 (trykt) 978-82-7251-821-8 (pdf)

Finn-Arne Egeness, Jens Østli, Bjørn Inge Bendiksen, Bjørg Helen Nøstvold & Morten Heide

Markedsendringer i britiske supermarkedkjeder – Tint blir ferskt

Knapphet på ressursene har ført til et økende behov for å vurdere potensialet for økt verdiskaping i villfisksektoren. Flere forhold tyder på at potensialet for økt verdiskaping er stort dersom det er mulig å utvikle beslutningstøttesystemer som kan brukes til å velge fangststrategier for å målrette fangsten mot områder, tidspunkt og deler av bestanden som er optimale i forhold til produksjon og konsumentenes behov. Hensikten med denne rapporten er å gi en oversikt over hvilke beslutningstøttesystemer som fins i dag og avdekke hvilke forbedringspotensial slike systemer har. Gjennomgangen av utvikling av slike systemer i

Norge og Island viser at mye relevant arbeid er utført i begge landene. Dette er et godt utgangspunkt for å se nærmere på utvikling/forbedring av slike systemer i Norge. Før en slik utvikling/forbedring gjennomføres, bør en identifisere om de tilsvarende kvalitetsfaktorene identifisert på Island har betydning for verdiskapingen i verdikjeder i Norge, hvilke kvalitetsparametrer er viktig i Norge i forhold til ulike produkter, og hva er betalingsvilligheten i forhold til dette. Det vil også være et behov for å identifisere hvilke aktører som vil ha størst nytte av bedre koordinering av aktivitetene, og hvilke beslutninger det kan være relevant å støtte gjennom et slikt system.

Rapport/Report 41/2010. ISBN 978-82-7251-820-1 (trykt) 978-82-7251-821-8 (pdf)

Finn-Arne Egeness

Nye markeder for pelagisk fisk – En studie av mulighetene for norsk sild i det brasilianske markedet

Siden norsk eksport av pelagisk fisk er konsentrert til et begrenset antall markeder, er det viktig at næringen evner å utvikle nye markeder. Hvis næringsaktørene skal lykkes med markedsutvikling trenger de kunnskap. Markedsforskning kan være et relevant hjelpemiddel. Rapporten viser at norsk sild kan være et substitutt for brasilianske sardiner, enten hele året eller i perioder med fangststopp i det lokale markedet. Brasilianske forbrukere kjenner ikke til norsk sild, og en bør derfor bruke betegnelsen norske sardiner – sild.

Norske bedrifter vil imidlertid møte flere utfordringer. Brasilianske myndigheter bruker toll aktivt for å beskytte lokal industri. Valgt inngangsstrategi må derfor ikke komme i konflikt med lokal verdikjede. En annen utfordring er at Brasil mangler videreforedlingsleddet som finnes i mange av de markedene pelagisk industri eksporterer sine produkter til. Produktutvikling og -tilpasning er derfor nødvendig dersom en skal øke eksporten til Brasil. Det anbefales at norske bedrifter benytter seg av en lokal agent, som kan fange opp endringer i regelverk på et tidlig tidspunkt og tilføre uformell kunnskap. Høye transportkostnader fra Nord-Norge, gjør at bedrifter på Vestlandet har størst mulighet i dette markedet.

Rapport/Report 43/2010. ISBN. 978-82-7251-826-3 (trykt) 978-82-7251-827-0 (pdf)

Finn-Arne Egeness

Markedsutvikling i pelagisk sektor – En studie av mulighetene for større eksport av norsk sild til Egypt

Siden norsk eksport av pelagisk fisk er konsentrert til et begrenset antall markeder, er det viktig at næringen evner å utvikle nye markeder. Hvis næringsutøverne skal lykkes med markedsutvikling trenger de kunnskap. Markedsforskning kan være et relevant hjelpemiddel. Hensikten med rapporten er derfor å framskaffe økt kunnskap, slik at norsk pelagisk industri kan basere sine strategiske valg og handlinger i det egyptiske markedet på et bredere grunnlag (Gripsrud, 1987).

Lokal industri, begrenset holdbarhet på fryst fisk og tollsatser setter begrensninger på norsk eksport. Det anbefales at norske aktører forsøker å endre reglene for holdbarhet på fryst fisk fra 6 til 12 måneder. Sortering av sild med og uten rogn og kommunikasjon av fettinnhold vil kunne skape fortrinn i markedet. Det anbefales at en ser på muligheten for sild som et substitutt til sardiner. Makroøkonomisk utvikling antyder økt etterspørselen etter sild i Egypt, dersom prisen ikke øker mer enn hos produktets substitutter. Konkrete tiltak vil kunne øke norsk markedsandel.

Rapport/Report 44/2010. ISBN 978-82-7251-828-7 (trykt) 978-82-7251-829-4 (pdf)

Bjørn Inge Bendiksen

Driftsundersøkelsen i fiskeindustrien – Lønnsomhet og inntjening i 2009

Sett under ett ble lønnsomheten i norsk fiskeindustri betydelig bedre i 2009 enn året før. Samlet driftsresultat økte fra 2,1 % til 2,8 % av driftsinntektene. I tillegg ble mye av valutatapene som ble utgiftsført i 2008 tjent inn igjen i 2009 og inntektsført. Mens valutatapene utgjorde 1,3 milliarder kroner i 2009, ble om lag 875 millioner inntektsført igjen i 2009. Dette bidro til at ordinært resultat før skatt ble snudd fra et underskudd på 3,5 % av inntektene i 2008 til et overskudd på 4,7 % i 2009.

Målt etter driftsresultat hadde sildemelindustrien best lønnsomhet i 2009, fulgt av pelagisk konsumindustri, som produserer sild, makrell og lodde for konsum. Pelagisk konsumindustri hadde også sitt beste år noen sinne.

Disse ble fulgt av klippfiskprodusentene, som både hadde størst bedring i resultat fra 2008, og det høyeste ordinære resultat før skatt som følge av inntektsføring av reverserte valutatap. I øvrige deler av hvitfiskindustrien var tapene store, spesielt blant saltfisk- og tørrfiskprodusentene, etter et svært vanskelig år.

Rapport/Report 45/2010. ISBN 978-82-7251-830-0 (trykt) 978-82-7251-831-7 (pdf)

Edgar Henriksen & Geir Sogn-Grundvåg

Linefisk fra kystflåten: Høyt etterspurt i markedet, men kan vi levere? Fagrapport 2

I denne rapporten spør vi om linefanget torsk og hyse virkelig er så ettertraktet i markedet som mange vil ha det til. Hva er det i tilfelle med linefisken som gjør den så attraktiv i markedet? Hvilke barrierer i verdikjeden fra fangst til eksport hindrer bedre utnyttelse av verdipotensialet i fersk linefanget torsk og hyse fra kystflåten? Vi fokuserer på verdikjeden for fersk linefisk fra kystflåten fordi barrierene for utnyttelse av verdipotensialet synes å være større her enn for ombordfryst fisk levert fra havgående autolinefartøy. Vi belyser disse spørsmålene med statistikk fra fiskeauksjonen på Island og førstehåndsomsetningen i Norge i tillegg til intervjuer med fiskere, fiskekjøpere og eksportører. Resultatene viser at linefanget torsk og hyse er vurdert som bedre enn fisk fra andre redskaper. Linefanget fisk har et svært positivt omdømme som primært tilskrives høy og jevn kvalitet som gir mange fordeler for kjøpere. En rekke barrierer som bidrar til å hindre en bedre utnyttelse av verdipotensialet i fersk linefisk fra kystflåten identifiseres. Forslag for å øke kystlinefisket slik at den fordelaktige markedsposisjonen kan utnyttes bedre fremsettes.

Rapport/Report 49/2010. ISBN 978-82-7251-838-6 (trykt) 978-82-7251-839-3 (pdf)

Kathryn A.-M. Donnelly

Traceability requirements for foreign producers wishing to use the 'Norway' logo

I mange utenlandske markeder er Norge et foretrukket opphavsland for sjømat. Å kunne dokumentere norsk opprinnelse på produkter er derfor til større fordel for utenlandske produsenter.

Eksportutvalg for fisk (EFF) ønsker en løsning for å dokumentere fiskens opphav i Norge, når norsk fisk er produsert og merket med "Norge"-logoen utenfor Norge.

Denne rapporten skisserer fire modeller for dette og beskriver hvordan utprøving av modellene kan gjøres.

Rapport/Report 1/2011. ISBN 978-82-7251-840-9 (trykt) 978-82-7251-841-6 (pdf)

Finn-Arne Egeness & *Maria C. Monfort

Det franske markedet for hvitfisk - Tinte filetprodukter av hvitfisk, status og framtidig utvikling

Studier av det britiske markedet har vist at tinte filetprodukter av torsk og hyse i stor grad har erstattet genuint ferske produkter i det britiske dagligvaremarkedet. Kan norske aktører oppleve den samme utviklingen i det franske markedet? Tinte produkter av torsk, hyse og sei finnes ikke i det franske markedet. Denne rapporten viser imidlertid at bildet må nyanseres.

Rapport/Report 3/2011. ISBN 978-82-7251-844-7 (trykt) 978-82-7251-845-4 (pdf)

Finn-Arne Egeness, Jens Østli & Bjørn Inge Bendiksen

Torsk i det svenske og tyske dagligvaremarkedet. Forprosjekt: Tilstedeværelsen av tinte torskeprodukter i etablerte kanaler for fersk fisk

Siden tinte filetprodukter av torsk og hyse har erstattet genuint ferske produkter av de samme artene i britiske supermarkeder er det viktig at norske bedrifter får kunnskap om hvorvidt det samme kan skje i andre store markeder for fersk torsk. Denne rapporten ser nærmere på tilstedeværelsen av tinte torskeprodukter i det svenske og tyske dagligvare-markedet.

Rapporten viser at torsken som er observert i svensk dagligvare kommer fra både Nordøst-Atlanteren og Østersjøen. Parallelt er det observert mye norsk oppdrettstorsk. Det gir svenske importører stor fleksibilitet, og sikrer tilførsel av fersk torsk store deler av året. Det er imidlertid observert noe tint torsk i svensk dagligvare, både i juli og februar. Konsumet av torsk i Tyskland har falt de siste årene, og tint torsk erstatter kun fersk torsk i svært korte perioder av året. I det tyske markedet skilles det klart mellom Kabeljau (Nordøst-Atlanteren) og Dorsch (Østersjøen). En av de største dagligvarekjedene i Tyskland har nettopp begynt å selge brettpakket torsk, basert på tint råstoff. Råstoffet i disse produktene er stillehavstorsk (gadus macrocephalus). Det åpner for ennå større konkurranse i det tyske torskemarkedet.

Rapport/Report 11/2011. ISBN 978-82-7251-860-7 (trykt) 978-82-7251-861-4 (pdf)

John R. Isaksen, *S. Tjelmeland, B. Dreyer & *I. Røttingen

Markedsbasert høsting av lodde

Rapporten som foreligger er tredelt: Hoveddelen er en deskriptiv kartlegging av loddefisket i 2009 og 2010. Avsnittene deretter, som kartlegger kostnadene i verdikjeden for lodde forbundet med ”start-stopp”-fisket og den totale verdiskapingen, bygger på den kunnskap som genereres i de forutgående avsnittene. Avslutningsvis gis det en redegjørelse vedrørende forvaltningsregelen for lodde og mulige alternativer til denne, helt til slutt følger en beskrivelse av loddefisket hittil i 2011 og mulige utviklingstrekk fremover.

Rapport/Report 12/2011. ISBN 978-82-7251-862-1 (trykt) 978-82-7251-863-8 (pdf)

Edgar Henriksen

Sånn kan det også gjøres! Drift av autolinerederiet Eskøy AS; ”Saga K” T-20-T og ”Åsta B” T-3-T, driftsåret 2010

I samarbeid med rederiet Eskøy AS og Norges Fiskerihøgskole har Nofima Marked fortsatt undersøkelsene om hvorvidt, og under hvilke betingelser bruk av autoline i kystfiske er en rasjonell driftskombinasjon i norsk fiske. Til dette formålet ble det stilt 60 t forskningskvote til rådighet i 2010 for ”Åsta B” T-3-T. Fartøyet er 14,99 m og er utstyret med Mustad Coastal autolinesystem med 21.500 angler. Vi har også fått tilgang på data fra ”Saga K” T-20-T, som

er 10,95m og utrustet med samme system, men med 13.000 angler. Dette gir oss mulighet til å sammenligne mellom år og fartøy.

Med grunnlag i driftsresultatene fra 2010 og erfaringene fra 2009 finner vi grunnlag for å konkludere med at autolinedrift i kystflåten er meget lønnsomt på følgende forutsetninger: Fartøyet drives hele året med to mannskap og med hyse som viktigste art og der steinbit, kveite og blåkveite får oppmerksomhet på sommeren. Det investeres i tilstrekkelig torskekvote (minimum 100 tonn rund vekt) til at fartøyet kan drives rasjonelt på vinteren. Under forutsetning av at det investeres i tilstrekkelig torskekvote er den årlige fangstkapasiteten på minimum 1000 tonn rund vekt for et fartøy på rundt 15 m.

Det er videre grunn til å hevde at driftsformen kommer mer til sin rett når fartøystørrelse ikke setter for store begrensinger for fangsteffektivitet. Et fartøy på 14,99m vil være langt å foretrekke foran et fartøy på 10,95m.

Driftsformen ser også ut til å legge grunnlag for et konstruktivt samarbeid mellom fisker og fiskeindustri.

Rapport/Report 14/2011. ISBN 978-82-7251-866-9 (trykt) 978-82-7251-867-6 (pdf)

Jens Østli & Bjørg Helen Nøstvold

Britiske forbrukeres oppfatning av fersk og tint filet fra torsk. Oppfattes produktene forskjellig og hva består i så fall forskjellene av? Sluttrapport prosjekt FHF # 900444

Storbritannia er et interessant marked for sjømat fordi de utviklingstrekk man ser gjerne gjenfinnes i andre europeiske markeder på et senere tidspunkt. For sjømat er det særlig introduksjonen av ”fersk” sjømat i selvbetjente disker som har vært bakgrunnen for inneværende prosjekt. Ferdigpakket sjømat har gått fra å være genuint fersk til i veldig stor grad å være tint, sannsynligvis uten at den britiske konsument er klar over dette. I prosjektet har vi med ulike metodiske innfallsvinkler sett på hvordan forbrukerne forholder seg til fersk, fryst og tint sjømat. Norskprodusert torskefilet har vært brukt som eksempel når forbrukerne har smakt.

Resultatene viser at mange har et negativt forhold til fryst sjømat, men at dette kan modifiseres dersom man utstyrer produktene med budskap a la ”Frozen at sea”. Smakstesten viste at forbrukerne i liten grad diskriminerte mellom ferske og tinte smaksprøver når de skulle vurdere hvilket de kunne tenke seg å kjøpe.

Noen mener at utviklingen i UK vil ramme norsk fiskeindustri fordi man ikke kan utnytte ferskhet som konkurransefortrinn. Et motargument er at mange norske anlegg har muligheter til å produsere fryst filet av meget høy kvalitet. Inneværende prosjekt viser at hos britiske forbrukere vil denne fileten antagelig få like god aksept som den genuint ferske. Med dokumentert råstoffkvalitet, og prosedyrer i innfrysing og lagring, kan man dessuten utvikle et helårlig tilbud på filet som i tint tilstand vil ha lang (garantert) holdbarhet i kjøledisk. Dette vil kunne gi nye muligheter i forhandlinger om leveranser og pris.

En annen konsekvens av studien kan være at man fra norsk side søker å unngå de bedriftene som lager konsumprodukter til engelsk dagligvare og heller satser på de kanalene som forlanger genuint ferske produkter. I hotell, restaurant og catering finnes det mange bedrifter som både satser på fersk fisk og også tar hensyn til de naturlige svingningene man har i fiskeriene.

Rapport/Report 18/2011. ISBN 978-82-7251-874-4 (trykt) 978-82-7251-875-1 (pdf)

Finn-Arne Egeness, Bjørn Inge Bendiksen, Frode Nilssen & Bjørg Helen Nøstvold

Fersk fisk fra Nord-Norge til Europa. Forutsetninger, vareflyt, barrierer og markedsmuligheter

Nordnorske fiskeribedrifter er lokalisert nært de viktigste fangst- og gytefeltene for nordøstatlantisk torsk. Det gir gode forutsetninger for eksport av fersk torsk, forutsatt at bedriftene evner å utnytte sine fortrinn. Kystflåtens torskefiske er sesongbasert og ikke tilpasset markedets ønsker om stabile og forutsigbare leveranser. Det er mye stor torsk som fiskes. Denne torsken går til saltfisk og klippfisk, på grunn av prispremie for stor fisk. Ulike fiskeredskaper gir ulik kvalitet på fisken, og kun den med best kvalitet går til fersk anvendelse. Alle disse tre forholdene bidrar i stor grad til at torskefisket i Nord-Norge er bedre tilpasset konvensjonell enn fersk anvendelse.

Fangstbasert havbruk og oppdrett av torsk har vært sett på som løsninger for å tilfredsstille kravet om forutsigbare leveranser. På grunn av prisfall på villfanget torsk, sliter disse næringene i dag med store utfordringer og mange aktører har lagt ned sin virksomhet. Rapporten peker på muligheter for større eksport av ferske torskeprodukter til Frankrike, Spania, Portugal og Tyskland. Utfordringene i disse fire markedene er svært forskjellige. Det viser at markedskunnskap er en forutsetning for større eksport av ferske torskeprodukter fra Nord-Norge til EU.

Rapport/Report 19/2011. ISBN 978-82-7251-876-8 (trykt) 978-82-7251-877-5 (pdf)

Morten Heide & Mats Carlehög

Nye rekeprodukter til det norske markedet. Utvikling av middagsretter med pillede reker som ingrediens

Den overordnede målsettingen med prosjektet var å utvikle middagsretter med fryste pillede reker som ingrediens til det norske forbrukermarkedet. Prosjektet har utviklet 17 oppskrifter som har fått god evaluering i forbrukertester i Tromsø og Stavanger. Videre har prosjektet vist at 3 av disse oppskriftene presterer godt i en konkret brukssituasjon, de krever liten tid og kunnskap og er enkle å tilberede. Oppskriftene er tatt i bruk av næringen, både på emballasje, i oppskriftshefter og på nettsider.

Oppskriftene ble utviklet av kokker fra 3 ulike matfaglige miljøer med basis i 4 ulike typer fryste pillede reker. Rettene ble utprøvd av totalt 400 forbrukere i en kantinetest i Tromsø og Stavanger. I videreføringen av kantinetesten ble 3 retter testet ut av 210 forbrukere i en hjemmetest i Tromsø.

Prosjektet viser at forbrukerne både i Tromsø og Stavanger har svært liten erfaring i å kjøpe og anvende pillede reker. Dette gjør det viktig for rekeindustrien å synliggjøre for forbrukerne at disse produktene er på markedet, og at det er utviklet en rekke oppskrifter for rekene.

Forbrukerne forventet at retter med pillede reker skulle være mer komplisert å tilberede enn de erfarte. Dette kan være en potensiell barriere for at forbrukerne tar i bruk oppskriftene fra dette prosjektet. Av denne grunn burde rekenæringen kommunisere til forbruker at middagsrettene med reke er enkle å tilberede, særlig rettene som ble testet hjemme av forbruker.

Rapport/Report 23/2011. ISBN 978-82-7251-884-3 (trykt) 978-82-7251-885-0 (pdf)

Andre åpne rapporter

Kathryn A.-M. Donnelly, *Jun Sakai, *Yuka Fukasawa, *Mariko Shiga & *Jostein Storøy

Simulated recalls of Mackerel caught in Japan and Norway - Summary of results

Utgitt 8. september 2010.

Jens Østli

Merking av klippfisk i det brasilianske markedet – Hvilken informasjon er relevant for forbruker og detaljist? Sluttrapport FHF-prosjekt 900325

Brasil er et av Norges viktigste markeder for klippfisk. Eksporten har økt, konsumet likeså. Men det er liten tvil om at klippfisk er dyrt for den jevne brasilianer, i sær gjelder dette klippfisk av torsk. Dersom produktet du kjøper er dyrt, er det naturlig at mange skaffer seg kunnskap/innsikt som gjør at de er i stand til å vurdere om produktene gir "value for money". I dette prosjektet har vi ønsket å avdekke hva slags klippfiskkunnskaper som finnes hos den brasilianske forbruker og ditto hos de som selger klippfisk i butikk.

Våre studier viser at kunnskapene er til dels svært mangelfulle, særlig når det gjelder ren faktainformasjon. Siden de fleste utsalgsstedene selger ulike typer klippfisk (torsk, sei, lange og brosme), og de butikkansatte i mindre grad synes å kunne komme med faktabaserte anbefalinger til den interesserte forbruker, kan det synes som om klippfisk som selges med betegnelsen "Porto" får drahjelp av nettopp denne betegnelsen. Annen klippfisk selges nok mest som en kombinasjon av pris og utseende.

Mer kunnskaper om produktene kombinert med mer produktinformasjon på pakker/utsalgssteder kan bidra til at forbrukeren gjør bedre/tryggere valg. EFFs satsing i Brasil monner, men i et geografisk stort land som Brasil og med dets 200 millioner innbyggere er dette en formidabel oppgave. I sær hvis man har ambisjoner om at Norge som opphav og garantist for prima klippfisk skal være viktig når folk velger produkt i butikk.

Utgitt desember 2010.

Jens Østli

Saltfisk i det greske og italienske markedet for saltfisk – Status substitutter og mulige konsekvenser for norsk saltfisknæring
Sluttrapport FHF-prosjekt 900093

Saltfisk i Hellas er en utsatt produktgruppe. Manglende tilgjengelighet, meget begrenset anvendelse, stor del av konsumet knyttet til en bestemt dato samt at ordet bacalaos ikke bare betegner saltfisk men en rekke andre fiskeprodukter, gjør at tradisjonell saltfisk kan få problemer med å forsvare sin posisjon. Den viktigste konkurrenten/substituttet er eller kan utvikle seg til å bli lettsaltet og fryst torskefilet. Saltfisk "sliter" antagelig også med at det er et produkt som omsettes "av gammel vane", det vil si at det er et mindre viktig produkt for aktørene enn for få år siden. Dette påvirker naturligvis aktørenes vilje og økonomiske evne til å gjøre noe på markedssiden.

Saltfisk i Italia er antagelig svært sammensatt i den forstand at Italia kan deles opp i en rekke mindre markeder hvor forbruksmønster og produktpreferanser er svært varierende. Det lar seg derfor ikke, med utgangspunkt i det som er gjort i dette prosjektet, å kunne si noe mer i detalj om dette. Vi konstaterer at saltfisk omsettes i tradisjonelle kanaler (markeder/spesialbutikker), kanaler som er under press fordi flere og flere italienere handler på supermarkeder. Lettsaltet og fryst torskefilet finnes det mest av i nord, og etter hvert er utvannet og vacuumpakket vare også tilgjengelig. Produktsammenblanding, slik vi ser i Hellas, er mindre sannsynlig (foreløpig) i Italia da baccalá (dvs saltfisk) ikke kan brukes som

betegnelse på fryst og lettsaltet fisk. Torsk heter Merluzzo Nordico og lettsaltet fisk må selges med denne betegnelsen. Italia er, som nevnt, et langt mer sammensatt saltfiskmarked enn Hellas og derfor ikke så utsatt. Hovedutfordringen er antagelig å sikre supermarkeds-distribusjon samt skape tilstrekkelig oppmerksomhet slik at produktene rullerer. Norske aktører burde vurdere de mulighetene som ligger i "Slow Food".

Utgitt desember 2010.

Bidrag til eksterne rapporter

*R. B. Larsen, *L. Rindahl & Edgar Henriksen
Kartlegging av brukerorienterte FoU-behov for videreutvikling av kystlinefisket. Sluttrapport til FHF prosjekt: 900442.

Utgitt desember 2010.

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