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# Pushed or pulled? Understanding fishery exit in a welfare society context

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## Abstract

For a long time the number of fishers in Norway has declined. Is the decline the result of an increasingly difficult situation for Norwegian fishers or can other factors have had an impact? Or in other words: are fishers pushed out or pulled out of the fisheries? Our analyses are based on a survey among retired fishers and suggest several reasons for exit: in addition to structural push and pull factors we also find reasons that are connected more to change in social and cultural values than economic value. Our point is that we cannot understand why Norwegian fishers are leaving the fisheries without taking the broader societal context into consideration. Our results show that fisheries and marine industry policies for recruitment and employment will have to take the pull from other industries and the comprehensive welfare state into consideration.

**Keywords:** Fisheries change, Modernisation, Welfare system

## Introduction

During the last three decades, the fishing industry in Europe has changed dramatically, and employment in the fisheries has been declining. Correspondingly, both demographic patterns and industry patterns on the coasts around the North Atlantic have changed (Brookfield et al. 2005; Directorate of Fisheries 2000–2010a; EU Fisheries 2011; Hersoug 2005; Standal 2009; Sønvisen et al. 2011). Since community development and fishery traditionally have been closely connected, fishery policymaking impacts on coastal development as well (Jentoft 2000).

As in most policy fields, goals may be contradictory in fishery and coastal policy. On the one hand, the needs to protect resources and to develop economically sustainable fisheries have made it necessary to reduce the fishing fleet. A good individual vessel economy is necessary to develop and sustain a well-functioning fishing fleet with decent working conditions, technology and wages that match the standards in the surrounding society. In practice, these goals also imply a reduction in the number of vessels and in the employment in the sector (Johnsen et al. 2009a; Standal 2009). On the other hand, robust coastal communities have been seen as necessary for recruitment, for legitimate governance and development of sustainable fisheries (Jentoft 2000; Walsh 2011).

An ever-growing body of research literature documents changes in fishing fleet structure, management systems, organisation and local community relationships within the fisheries in the North Atlantic (Hersoug 2005; Johnsen et al. 2009a; Neis et al.

2005; Sinclair 2002; Standal and Aarset 2008; Walsh 2011). In the Norwegian context, as in other fisheries nations around the North Atlantic, the number of people employed in the fisheries has dropped (Sønvisen et al. 2011). This decline in fisheries employment has partly been a result of the closure of the fisheries commons and the ensuing structural policies directed towards adapting capture capacity to the resources (White Paper nr. 21 (2006–2007)). Thus, the closure may have limited the number of jobs available in the fisheries and may also have complicated other conditions internal to fishery to such a degree that people are *pushed* out.

In Norway, however, the change from open to closed access for commercial fishing is not complete. The fishing fleet is divided into two main management segments, one closed and one open. The closed segment consists mainly of vessels from 11 m and up and is regulated with permits, licences and individual, partly transferable, vessel quotas (IVQs)<sup>1</sup>. Entry is limited; normally one has to buy into this segment. The open segment consists of vessels under 11 m, and in principle, everybody can enter as long as income from other sources does not exceed a certain limit. It has been proven feasible to make a decent income in this vessel segment. However, some boats have experienced recruitment problems, which indicates that jobs as crew members are available.

For some years, recruitment to the fisheries has been an important issue in the Norwegian fisheries discourse. Clearly, a sustainable recruitment policy for the fisheries requires a solid insight into why people leave the fisheries and subsequently also leave coastal communities. However, exit from the fisheries is not a straightforward issue. This paper is an attempt to shed light on it. Our starting point is that there can be several reasons behind a decision to leave the fisheries. Exit can be seen as being caused by *push* factors related to fisheries closure and working conditions, but most likely, though, in combination with *pull* factors, it is related to, for example, opportunities in other sectors, such as the oil supply industry, public sector and others.

Push and pull factors can be seen as having a relational character, where a decision about exit can be the result of a mixture of structural factors, expectations and social mechanisms (Otterstad and Hamilton 1998). Our aim in this article is to explore the relationship between push and pull and to identify some of the factors driving a decision to quit.

Our analyses explore several reasons for leaving. In addition to structural factors we also find reasons that are related to changes in social and cultural values. The reasons that ex-fishers give for leaving their jobs point towards a pattern of adaptation to lifestyles in a modern welfare society. Consequently, as we discuss in the last part of this article, the fishing sector needs to take this perspective into consideration in recruitment and employment issues.

In the next two sections of this article, we present our theoretical and methodological framework. In section four, we describe the changes in the fishing fleet in Norway over the last 30 years that form the main background for the push hypothesis. In our fifth section, we present our results and findings and how they can be interpreted in relation to each other and to other factors. In section six, we discuss the findings and interpretations in relation to the specific pattern we have described in section three. Finally, in section seven, we point toward some future implications for employment policymaking in the fisheries.

### Theory – push and pull in employment systems

In this article, we apply a relational approach, where human action and decisions are shaped and structured by material, structural and symbolic relationships (Latour 2005). While on the one hand we acknowledge that this structuring and shaping is not deterministic, in the sense that it is the individual actors that in the end make choices inside an environment, on the other we accept that forces in the environment can have a strong impact. For example, several studies have described how changes in fisheries technology have contributed strongly to a wide range of relational changes in the fisheries, in terms of changing practices in the fisheries, of perception of resources and man-nature relationships and adaptation to rules and regulations (Caddy and Cochrane 2001; Johnsen 2005; Johnsen et al. 2009a; Standal 2003; Standal and Aarset 2002). Our approach is a development of the concept of the *Fisheries Employment System* (FES) (Jentoft and Wadel 1984; Terkla et al. 1988). The point of departure for the FES theory was that many elements in fishing communities were woven together. Up to the 1970s, the people in coastal communities were seen as heavily dependent upon each other. Households depended upon the fishing fleet and the fishing industry for employment. The fishing industry and fleet depended upon the households and a flexible school system for seasonal labour. The fishing fleet depended upon the local communities and local industries for all kinds of services. With little focus on inequalities and domination (see Neis 1999), the FES theory can in retrospect be criticised for overemphasis on dependency, close relationships and harmony (Sønvisen et al. 2011; Vik et al. 2011). Nevertheless, the theory captures important coordination aspects of the coastal culture. Recruitment and employment in the fisheries were, for example, to a large extent based on socialisation, and through socialisation fishing became more of a “way of life” than just a profession (Terkla et al. 1988). The fishers, and their families as well, became attached to the fisheries as a way of life and the fisheries households and communities in Norway and around the North Atlantic became socially organised in relation to this way of life. Moreover, everyday life in the households became structured by the need of the fishers to adapt their activities to the changing and fluctuating natural and physical environment they worked in, because the welfare level was dependent on both the availability of natural resources and the changing and fluctuating export markets (Gerrard 1983; McGoodwin 1990; Neis 1999). If other job opportunities were lacking, individuals had few possibilities to choose alternative ways of life.

Consequently, the FES represented a distinctive cultural and empirical setting that could be impacted upon by material and cultural changes in a wider societal context (Johnsen 2005; Johnsen et al. 2009a; Johnsen et al. 2009b). As described by Sønvisen et al. (2011), the local Norwegian fisheries employment systems today seem to have changed from local community networks to more sector-connected and professional networks transgressing local boundaries, with consequences for recruitment processes in terms of potential recruits, knowledge and value formation. Terkla et al. (1988) documented in their studies from New England that in kinship-based fisheries employment systems people are more likely to remain underemployed for longer periods before they seek alternative employment. This is seen as a result of the strong attachment to fishing as a way of life. Value reorientation, triggered by push and/or pull factors, can weaken the attachment and result in a decision to leave.

Due to their relational character, push and pull are difficult to define clearly. The concepts have their origin in demography and migration studies and can be found as a hypothesis to be tested (Efstraglou-Todoulou 1990; Fuguit 1959; Otterstad and Hamilton 1998), more than as a theoretical framework. The idea, however, is that migration in and out from a region or a sector is caused by structural or socioeconomic imbalances that push and pull people out of a sector or a region (Fuguit 1959). Push factors are stressors that push people out of a certain sector and, either by force or as a result of non-discretionary decisions, where people have no choice (Stimson and McCrea 2004). For example, entry barriers, reduction in number of positions as a consequence of regulations or increased efficiency, loss of jobs, more formal and stricter requirements for participation, harder work conditions, declining economy or deteriorating work environment are stressors inside the fisheries that actually can force people out. However, push is not always caused by force: for example, the perception that the general income level over time cannot compete with a regular job on land can be seen as an internal stressor that can trigger a discretionary decision about voluntarily exit. Such stressors or push factors are related to growing dissatisfaction with the job or the perception that the conditions inside the sector have become worse and can lead to a wish for change in work or lifestyle. To sum up, the internal stressors that cause a push can be of a material, legal, political or economic character such as, for example, quota cuts, fleet-downsizing decisions, reduced income or increased interest rates. Increased interest rates may influence the need for higher income for the vessel owner and can lead to decisions about reducing the size of the crew, which may lead to a reduction in employment. In addition to these structural stressors, push factors can be of a cognitive or perceptive character related to the fishers' perceptions of the daily work experience, the feeling of attachment to the job and comfort and satisfaction in the job. In the public debate in Norway, the closure of the fisheries has wrongly been seen as a push factor. Closure can undoubtedly be a step in a downsizing process, but does not necessarily contribute to a push. As a matter of fact, a closure of a fishery is a restriction on access that can actually make it more attractive to remain in the fishery and as such reduce push and pull factors. But once one has exited, a closure will also make a return more difficult. Therefore, an exit decision will be more definitive in a closed fishery, and consequently a closure makes the employment system less flexible in terms of migration of labour in and out of a fishery.

Pull factors, on the other hand, are not related to thresholds, barriers or structural or perceptive factors inside the sector, but can be seen as attractors on the outside that pull people out, like education or job opportunities, higher wages, better or improved work conditions, more leisure time or time with the family. Although many of the attractors can be of a structural character, they do not pull people out of the fisheries by force. Moreover, while push factors can have both a non-discretionary and a discretionary character, pull factors are basically of the latter type in the sense that a voluntarily decision about leaving has to be made (Stimson and McCrea 2004). As previously mentioned, a value reorientation following changes in work condition, life standards and lifestyles, education or general development in the society can be seen as a contributor to pull. Hence, push and pull are not only about material, economic and structural differences in regions and sectors, but can also capture migration caused by what we can call differences in social and cultural capital<sup>2</sup>. The perceptive factors can

be difficult to categorise clearly as push or pull factors and point towards the fact that push and pull actually work together; stressors in the fisheries may strengthen attractors outside and vice versa.

From this theoretical starting point, it follows that the relationship between exit from the fisheries and push factors and pull factors cannot be taken for granted but have to be established empirically. In particular, it is of interest to explore the relationships and correspondence between the structural push and pull factors and the perceptive factors.

### **Methodology, methods and data**

Methodologically, this study applies a mixed approach. We have combined *quantitative and qualitative* methods (Grønmo 1996; Holme and Solvang 1986; Holter 1996). The methods are complementary, and we aim to maximise the mutual benefits from quantitative and qualitative insights in the article. Our approach is basically exploratory and inductive and our aim is chiefly to point to possible causes and mechanisms, not to perform conclusive hypothesis testing. The exploratory and inductive approach follows from the fact that no quantitative data about fishers' careers and job satisfaction existed prior to our survey. Thus, our aim has been to collect reliable data and to explore patterns in the material. Subsequently, we use a deductive approach to elaborate on theoretical and empirical expectations concerning what makes fishers leave the industry.

When developing the questions for the survey, we have so to say pre-coded the world into specific categories. The categories have been developed through a qualitative analysis of the Norwegian fisheries recruitment and employment discourse. Inspired by Foucault (Foucault 1991, 1970), we define the fisheries recruitment and employment discourse as a set of statements, arguments and practical projects related to fisheries employment and presented either in the research literature, in the political documents or in the project reports we have used. We have used several sources. First, we have drawn on official documents from the Ministry of Fisheries and Coastal Affairs. We have in particular made use of the four central generic policy documents from the period 1977 to 2005 (which was most recent) and the official report that forms the foundation for the Marine Resources Act from 2008 (Parliament Proposal [Ot.prp.] nr. 20 2007–2008); White Paper (St.meld.) nr. 18 (1977–78); White Paper (St.meld.) nr. 19 (2004–2005); White Paper (St.meld.) nr. 51 (1997–98); White Paper (St.meld.) nr. 93 (1982–83)). Second, we have studied research literature and project reports addressing recruitment and employment issues (see e.g. Johnsen 2004). Third, we also draw on a wide range of materials and formal and informal interviews with people in or affiliated with the fishing fleet during the period from 1996 to 2007 (see, for example, Johnsen 2004, 2005; Johnsen et al. 2009a; Johnsen et al. 2009b; Johnsen and Vik 2008). Finally, we have used information from the annual profitability survey in the fishing fleet from the Fisheries Directorate in Norway (Directorate of Fisheries 2000–2010b). Although some of this material is anecdotal, it is part of a discourse about this subject that we as researchers have participated in<sup>3</sup>.

It should be noted, though, that although our story is about the Norwegian fisheries, this discourse is not limited to Norway. Obviously, stocks, management policies etc. are international by nature. Furthermore, concepts, understanding and frames of reference that are part of the Norwegian discourse sometimes have their origin in descriptions

and studies in other parts of the world. For example, Jentoft and Wadel (1984) developed the employment system theory inspired by both Berger and Luckman's (1991, 1967) general theory and by empirical studies of local interdependence and relations in Newfoundland fisheries (Anderson and Wadel 1972a, 1972b; see also Sønvisen et al. 2011).

Through analyses of the material described above, we have identified statements and arguments about why people either leave or do not want to enter the fisheries. From the statements we have developed the questionnaire. The quantitative material was collected through a telephone survey among former fishers. The sample of 200 ex-fishers was drawn from the official register (Fiskarmanntallet) in the Directorate of Fisheries. The material covered the intense downsizing and restructuring period from 1990 to 2005. To identify fishers who had left, we selected five cohorts of fishers: 1988, 1993, 1998, 2003 and 2005. By cohort here we mean fishers with a shared first year of registration as a fisher regardless of age. By comparing the Directorate of Fisheries' official register for these years with the register for 2007, we identified 586 fishers of different ages out of 4,523 fishers in total who registered for the first time in one of these years but are no longer active fishers. Two hundred out of these 586 were randomly picked for the survey. A professional opinion bureau, *Norfakta Markedsanalyse* (NM), carried out the telephone survey. The data were analysed by use of SPSS.

#### **Validity, reliability and generalisation**

The quantitative study of fishermen exit is the first of its type carried out in Norway. Therefore, we have no similar studies to compare it with. However, we do see implications from the findings from our analyses of the recruitment discourses and the findings from the quantitative study together. This enhances reliability. Also, comparing findings from the different periods/cohorts gives indications as to the reliability of our findings. There is no reason to believe that the answers from the former fishers in the chosen cohorts should differ significantly from those of the others who left these cohorts in the same period.

However, the 200 randomly picked individuals that make up our sample in the quantitative study represent less than 5% of the total number of 4,523 fishers registered in these years. We do not know how many of these 4,523 actually left and whether our 200 individuals are representative of those who left. The results therefore reflect the reasons given by those who left and cannot be used to draw general conclusions about general perceptions or opinions among the fishers who have remained in the fisheries.

#### **Push and pull from local employment systems to cybernetic fish harvest machines**

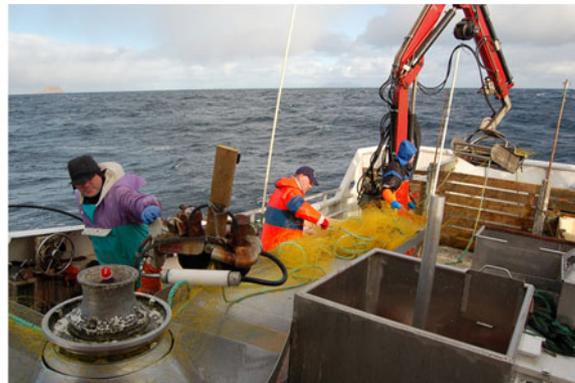
A comprehensive research literature<sup>4</sup> over a period of 40 years portrays fishing as the last remains of a traditional organisation in coastal communities (Anderson and Wadel 1972b; Apostle et al. 2002; Barth 1972; Brox et al. 2006; Dalseng 1980; Gerrard 1983, 1993, 2008; Jentoft 1993; McGoodwin 1990; Neis 1999). The households' dependency on fishing, however, was reduced through the 1970s and 1980s with the expansion of the welfare state, and the public and service sector, which created new job opportunities for women<sup>5</sup>.

The research literature has also described a radical shift in organisational relationships in the fisheries from a traditional organic type toward what we can call more cybernetic relationships (Gerrard 2008; Sønvisen et al. 2011). The characteristics of the organic relationships are that they were all based on a high degree of social commitment, implicit

mechanisms for governance and control, like social norms and culture, flexibility, adaptation, experience and practical knowledge. These relationships tied fishers to a larger, complex but local network. The cybernetic relationships are more formal, organised with formal feedback mechanisms and explicit control and surveillance mechanisms (Johnsen et al. 2009b). The changes from the organic to the cybernetic organised fishery imply an evolving *harvest machinery* (Johnsen 2005; Johnsen et al. 2009a; Johnsen et al. 2009b), consisting of a strong relationship between vessels, markets, the processing industry and more. A visible result is the increased technological sophistication of the fishing vessels and increased catch efficiency (Figure 1). In this machinery, the “fisher” can have different properties. There are fundamental differences between a deckhand without individual fishing rights on board a trawler and the skipper, between the crew and the vessel and quota owner and a single boat owner and fisher without crew. Their roles and social statuses as “fishers” are quite different, depending on the relations that constitute them, although they all are registered as “fishers” in the Directorate of Fisheries’ official register (Fiskarmanntallet) (Johnsen 2004, 2005). This network transformation has probably impacted on how fishers perceive their job and their alternatives.

The increased efficiency is reflected in a decline in the number of active vessels and fishers on the one hand and increased catch per fisher on the other<sup>6</sup>. The reduction in the number of people and vessels is partly a consequence of the shift in the Norwegian fisheries regime from open- to closed-access fisheries, whose cause is driven by an idea that open access will cause ruin to all (Hardin 1968). This came as a response to stock collapses, first in the herring fishery in the late 1960s and then in the cod fishery in the late 1980s. Closed access to the herring fishery was introduced in 1973, while closed access was introduced in the cod fishery in 1990. Both followed after increased capture pressure, partly because of new technology. Several fishing nations around the North Atlantic experienced the same, and, internationally, a continuously increasing capture pressure was the rationale behind the processes that culminated in the UN Law of the Sea. Thus, in Norway, as well as in other countries, in an attempt to reduce the capture capacity, the fishing policies were directed toward reducing the number of vessels and people directly involved in fisheries (Apostle et al. 2002; Caddy and Cochrane 2001; Hersoug 2005; Holm 2001).

Parallel to the closure, the direct price subsidies to the Norwegian fishing fleet that peaked in 1992 were gradually reduced to zero. However, due to a reduced number of



**Figure 1** The work deck on a modern fishing vessel. Photo: Jahn Petter Johnsen, 2009.

actors to allocate the fish between, the profitability increased (Hermansen and Flåten 2004; White Paper (St. meld.) nr. 21 (2006–2007)) (Table 1). Moreover, the vessels, particularly in the closed group in the coastal fisheries, became even more technologically advanced (Figure 1). Modern fishing vessels are in fact effective “fish harvest machines”. Technological development reduces the need for crew and may have contributed to a push effect. These changes toward a more cybernetically organised fishing fleet (Johnsen et al. 2009b) are often seen as stressors that push or force fishers out of the fleet. It remains unclear, though, how – and whether – these changes link to individuals’ choices of leaving or (not) entering the fishing fleet. Up to 1990, when many boat owners and fishers struggled economically (Jentoft 1993) and the operating margins in the fleet were negative, people may have left the fisheries because of the economic conditions. Since 1990, after the more comprehensive closure of the capture sector, the increasingly more sophisticated fish harvest machines have steadily increased their operating margins (Table 1).

These results from the economic surveys undertaken by the Directorate of Fisheries correspond to findings from research about the physical and social changes in the fishing fleet that indicate that the economic and social labour situation for the fishers has improved since 1980. The technical development has, for example, reduced the physical workload to some extent, and research indicates that the profession has become both safer and healthier (Geving et al. 2008; Aasjord 2011). This substantially counters the image created by some media discourses of the difficulties in the fisheries. In our material, on the other hand, we see few signs of a bad situation. Compared to the early 1980s, the Norwegian fishing fleet of today is technologically advanced and profitable, with a high wage-paying ability (Directorate of Fisheries 2000–2010b; Johnsen et al. 2009a). Better economy and improved labour conditions suggest that push factors alone are insufficient in accounting for fishery exit.

As previously mentioned, employment in fishing can be expected to be affected by better employment opportunities outside the fisheries, so-called pull effects. With the evolvement of the new welfare state in Norway and a restructuring of both the fishing and processing industries, the economic foundation for households and communities have changed dramatically in coastal Norway since the 1980s (Statistics Norway 2009). From the mid-1980s until today, all economic sectors or rural or coastal communities in Norway have been affected by the welfare state expansion, in particular the expansion of the local labour markets. However, the FES seemed to have been quite robust, since the work organisation in the fishing fleet remained rather unaffected by the evolving welfare state up to 1990, but after 1990 the FES changed in a parallel manner with the reduction of the subsidies and downsizing of the fishing fleet.

**Table 1 Operating revenue and operating margin in the Norwegian fishing fleet 1980–2010**

| Year                 | 1980  | 1985    | 1990    | 1995    | 2000    | 2005    | 2010      |
|----------------------|-------|---------|---------|---------|---------|---------|-----------|
| Operating revenue    | 6,256 | -14,240 | -59,574 | 305,178 | 294,416 | 941,682 | 1,206,700 |
| Operating margin (%) | 0.8   | -1.3    | -4.3    | 11.6    | 7.9     | 14.9    | 16.4      |

Operating revenues = Operating result – Operating costs.

Operating margin = (Operating result/Operating revenues) x 100).

(Source:<http://www.fiskeridir.no/statistikk/fiskeri/loennsomhetsundersokelse-for-fiskeflaaten/tidsserier-bedriftsokonomisk> (Time series from the annual economic survey for the Norwegian fishing fleet, accessed 20. September 2012).

Another important factor in Norway since the 1990s is the “education revolution” that resulted in over 90% of young people between 16 and 18 years old continuing their education after primary school, and with an increasing level of participation in higher education as well (Heggen et al. 2001; Johnsen 2004; Statistics Norway 2010). To some extent, the school system seems to educate the youth away from an insecure future in the fisheries. In other words, it contributes to the pull away from the fisheries. As a result, fewer members of the coastal communities are directly involved in the fisheries, fewer members of the community engage in fishing, and fewer members of the community are recruited into the fisheries (Gerrard 2008; Johnsen 2004). Hence, social relations in the fisheries and the community may change as fewer members of the community engage in the fisheries.

Push or pull? Scholars hold that fisheries in Norway and other North Atlantic fisheries nations have become increasingly *disembedded* from family life, local structures, practices and institutions. The disembedding is partly a consequence of modernising processes in the fleet and the development of resource management that has reduced the need for manpower in the fleet (Apostle et al. 2002; Gerrard 2008; Jentoft 1993; McCay 1999; Neis et al. 2005; Otterstad and Hamilton 1998; Sinclair 2002; Sinclair et al. 1999). A part of this disembedding is reflected in the fact that the crew and owner relations in the fisheries system have become more formalised and thereby now resemble the relationships that we find in the ordinary labour market more<sup>7</sup>. Furthermore, the disembedding has the consequence that the threads in the net between fishers and local communities are worn thinner, and thus both push and pull may become stronger. In the next section we present our findings for why fishers leave the fisheries.

### **Why do fishers leave the fisheries?**

The previous chapter has described some key elements in the changing fishery sector and the fishers’ networks. This is clearly related to recruitment issues. Recruitment to fisheries is a wide and highly politicised discourse that is treated in depth elsewhere (for example, Sønvisen et al. 2011; Sønvisen 2013.). Here we will concentrate on the downside of this recruitment: exit decisions. Surely, the reasons behind exit decisions may also be reasons for not entering, and, therefore, they also have value for a recruitment policy. In the following, we present and analyse what the fishers themselves hold as their reasons to quit. Thereafter, we discuss the consequences of our empirical findings.

The discourse on fishery downsizing, closure and recruitment has normally been directed, as previously described, toward issues internal to fisheries and focused on push factors. The strongest type of push is forced exit: when people are forced to leave their jobs. Table 2 reports the findings on how the fishers left their jobs.

We see from Table 2 that as many as 81.5% say that they quit on their own initiative. This includes those who resigned due to age. Further, 4% were fired, 6% were given disability benefits, 4.5% quit because the boat was sold, and 3.5% reported other reasons. Obviously, the fact that 81.5% of the fishers reported that they resigned themselves implies that they were not forced out of the fisheries in the direct meaning of the word. Even the percentage of people who answered that they had to leave the fisheries when the boat was sold was low. On the other hand, we do not know whether those who chose to quit had much of a choice or whether they left before they could be fired or had to sell the boat (in the case of boat owners). The answers in Table 3 indicate that even if few left as a direct consequence

**Table 2 How the fishers left their jobs**

| <i>How did you quit as a fisher?</i> | <i>Percentage</i> |
|--------------------------------------|-------------------|
| I resigned myself.                   | 81.5              |
| I was given notice (was fired).      | 4.0               |
| I was given disability benefits.     | 6.0               |
| The boat was sold.                   | 4.5               |
| Other reasons                        | 3.5               |
| Don't know                           | 0.5               |
| <b>Total</b>                         | <b>100.0</b>      |

of the boat being sold, boat sale is given as an important reason for the choice to quit. Table 3 presents the push-related factors that former fishers have mentioned as reasons to leave the fisheries.

In the table, the factors are ranked in descending order. The single factor that is most commonly mentioned is that the boat was sold; 20.5% of respondents mentioned this as a reason for quitting. This is a somewhat unsatisfactory answer because we would like to know why the boat was sold in the first place. And, for those affected by such a sale, we would like to know why they did not find a job on another boat. However, for the individual crew member on the boat, the sale of the fishing vessel out of a community may very well be – and is indeed – the decisive factor behind fishery exit. The second and third most common reasons cited were injuries and sickness resulting from the fishing activity (16%) or from other reasons (14%). These factors point to a much debated fisheries problem: it is a hard job with risks far higher than most jobs on shore, and it is a job that requires good physical health. Here we see that a classical push factor is highly relevant for a substantial portion of fishery exits.

After the factors of illness and injury comes dissatisfaction with the economic outcomes in terms of salaries and/or unpredictable incomes. Nine per cent held that, for them, economic conditions were the reason to quit. As we see it, this is a relatively small amount. The small importance of this reason is consistent with the rather positive development of economic results in Norwegian fisheries (See Table 1 above).

Next, we see that 7% answered that they lacked the necessary certificates. As mentioned, the technological and organisational development in the Norwegian fishing fleet is going toward more cybernetically organised fisheries with vessels that are effective fish harvest machines. Part of this development is an increasing formalisation and

**Table 3 Push factors**

| <i>Reasons to quit (categorised as push)</i>               | <i>Mentioned by (Percentage)</i> |
|--|----------------------------------|
| The boat I worked on was sold.                             | 20.5                             |
| I was injured while fishing and couldn't continue.         | 16.0                             |
| I was injured/ill for other reasons and couldn't continue. | 14.0                             |
| The income was bad and/or unpredictable.                   | 9.0                              |
| I didn't have the necessary certificates.                  | 7.0                              |
| I wanted more free time.                                   | 4.5                              |
| The working conditions on the boat were bad.               | 2.5                              |
| I felt my future was insecure as a fisher.                 | 2.5                              |
| I wanted more regular working hours.                       | 2.5                              |

standardisation of work processes and procedures. The requirements for formal training and certificates have also increased. In the Norwegian fishery discourse, the increasing level of formal and standardized requirements for education and/or certificates is much debated. Especially for older fishers and fishers on smaller vessels, it may be a problem to keep up with this increasing formalisation –in terms of both knowledge and economy. Knowledge requirements, formal requirements and economy can be seen as factors that to some extent force people out. The last answers on the list are related to working hours, leisure time and insecurity about the future. These reasons are not commonly reported and can also be seen as a factor in between push and pull factors – they can hardly be viewed as anything but relative to the pull from an on-shore lifestyle. We will come back to this relationship later.

Also here we see that many of the push factors are probably important because they work in concert with expectations of another lifestyle and the conditions in jobs on shore – the pull factors. Let us therefore take a look at the pull factors. Reasons to leave fisheries that are not directly related to the conditions within fisheries may be seen as pull factors. These factors are presented in Table 4.

The most important pull factor in our material is that the fishers wanted to obtain more education. 42% of the respondents, mainly younger fishers, reported this as a reason to leave fishery. The correlation between age and this exit reason is clear (Pearson's correlation  $-0.281$ ) and significant (at the 0.001 level). For other fishers who quit, the competition from jobs in other sectors was the key reason: 28% were offered a job in other marine activities; 16% were offered a job in the petroleum industry; and 10% were offered a job on shore. Finally, 9% left fishery for family reasons.

An interesting follow-up question here would be whether these reasons to quit are related to developments in the wider society, for example the growth in the petroleum industry and the expansion in the welfare state. We may address this to some degree by looking at the correlation between the reasons to quit and the cohorts we have selected. Here we found significant correlations for three of the reasons to quit. The findings are presented in Table 5.

The numbers in Table 5 indicate that there may be a relationship between the most important period in the downsizing of Norwegian fisheries and the build-up of the offshore petroleum industry. The substantial increase in employment in the oil and gas industry in the early 1990s (Statistics Norway 2011) corresponds with the significant effect of the variable "I was offered a job in the offshore/petroleum industry" for the 1993 cohort. Furthermore, we see that most of the effect of the growth in the on-shore job

**Table 4 Pull factors**

| <i>Reasons to quit (categorised as pull factors)</i>    | <i>Mentioned by (Percentage)</i> |
|---|----------------------------------|
| I wanted to obtain more education.                      | 42.0                             |
| I was offered a job in other maritime activities.       | 28.0                             |
| I was offered a job in the offshore/petroleum industry. | 16.5                             |
| I was offered a job on shore.                           | 10.0                             |
| I quit for family reasons.                              | 9.0                              |
| I was offered a job in another country.                 | 6.0                              |
| I wanted to try something new.                          | 2.0                              |
| I started military service.                             | 2.0                              |

**Table 5 Reasons to leave and cohort**

| <i>Year reasons to quit</i>                             | <i>1988</i> | <i>1993</i> | <i>1998</i> | <i>2003</i> | <i>2005</i> | <i>Sig (2-sided)</i> |
|---|-------------|-------------|-------------|-------------|-------------|----------------------|
| I was offered a job in the offshore/petroleum industry. | 14.9        | 39.3        | 8.6         | 15.4        | 13.3        | 0.009                |
| I was offered a job on shore.                           | 21.3        | 10.7        | 6.9         | 3.8         | 6.7         | 0.047                |
| I wanted more regular working hours.                    | 0           | 10.7        | 0           | 3.8         | 0           | 0.024                |

market came in the early years of the period we have studied. This also corresponds with a decline in the growth of the public sector in coastal and rural Norway from the end of the 1980s. However, the data on these issues do not invite strong conclusions and the findings are suggestive only.

In summary, with regard to exit reasons, it seems that the explanation for why fishers leave is to be found in a mix of pull factors related to welfare state developments, expectations and competing job markets and perceptive push factors related to the working conditions in the industry.

At the same time, as presented in Table 1, we witnessed an exceptional development in the operating margins in the fisheries following an extended closure of the fisheries. As mentioned earlier, the vessel groups with sound wage-paying ability (larger vessels) also had the highest recruitment challenges. Closure and high wage-paying ability should probably keep people in the fisheries as, for example, the increasing age in the most profitable fisheries indicates<sup>8</sup>. High wage-paying ability and recruitment needs can be characterised as attractors that could work as pull-back factors. On its own, this should imply that fishers were held in fisheries and attracted to fisheries – not pushed out.

As previously mentioned, we have followed the discourse about employment and recruitment for a long time. From this discourse, we identified 18 arguments that were frequently presented as reasons for fishers to leave the fishing industry. In the Norwegian debate about fisheries recruitment and exit, these arguments are expressions of the challenges within fisheries employment policy. The former fishers were asked to answer, on a scale, how heavily these arguments weighed in their decision to quit. The answers reflected that, in addition to the push and pull factors in tables 3 and 4, several other reasons may have contributed to the decision. These arguments cannot be labelled clearly as push and pull factors; some of them could actually be seen as both, depending on how they relate to other factors inside or outside of the fisheries. In addition, in practice, a person can quit because of a new job on land or in the oil industry, but the deciding factor for quitting may still be influenced by several other factors, for example perceived physical labour conditions or a change in the family situation. The physical labour conditions (in this case a push factor) were not strong enough alone to make the decision, but when an interesting job became available, it made the choice easier. Thus, the findings reported below are complementing nuances rather than contradictions to the previous discussed findings.

The arguments consist of one group (1–5) of what we can call psychological and physical characteristics of the job as a fisher. They relate to personal abilities, seasickness, physical strength, and the ability to work alone. These are difficult to clearly categorise as push or pull factors, since they are so closely linked to personal abilities. The next group of arguments (6–10) is more closely related to structural changes in the fleet or the effects of such changes and can be seen as push factors in the sense that they are structural factors within the fisheries that affect individual choices. To some extent they are the effects

of a fishery policy. Lack of vessels in the community, new technology and strong regulations can be seen as conditions that make it more difficult to continue as fishers. The last group of arguments (11–18) consists of factors that are related to conditions within the fishing fleet, but the judgement of these factors is also related to broader valuations in the society. For example, the perception of physical and social work conditions, of risk, of acceptable work hours, leisure time and time with the family are all factors that can be valued in relation to conditions in other businesses and trades in the welfare society. Even if the factors we have mentioned are all related to conditions on board, their perception can be affected by general values in the society. Fishing is a risky and physically challenging job, but the willingness to accept the risks and hardships is not a fixed constant. It depends on conditions inside and outside of the fisheries. Thus, a society's generally low level of willingness to accept risk may be seen as a stronger pull factor than the push effect stemming from the perception of risk in a group of fishers. The labour conditions and risk perception are some of the factors in group two affected by the fisheries policy directly, though not to the same extent. In a society that does not value leisure time very highly, for example, a fisher would probably not report that as important for quitting the job. The results are presented in Table 6.

As we see, of the personal factors, 15% of those who left reported that their experience of the work as physically demanding and monotonous was an important reason for leaving the fisheries. This answer is not about the physical labour conditions as such, but more about the individual ability to master the work. In group 2, where the factors are more related to push factors, we see that only the difficult economy was reported to have had an effect for more than 15% of the respondents. In group 3, six factors were reported by more than 20% of the fishers as important or very important

**Table 6 Reason to quit and cohort**

| <i>Importance reasons</i>                | <i>Very little</i> | <i>Little</i> | <i>Neither little nor large</i> | <i>Large</i> | <i>Very large</i> | <i>Don't know/not relevant</i> |
|--|--------------------|---------------|---------------------------------|--------------|-------------------|--------------------------------|
| 1 Seasickness                            | 91.0               | 3.0           | 1.0                             | 1.0          | 2.0               | 2.0                            |
| 2 Too demanding physically               | 60.5               | 12.0          | 11.0                            | 8.0          | 7.5               | 1.0                            |
| 3 Lonely working alone                   | 4.5                | 1.5           | 1.5                             | 0.5          | 1.0               | 91.0                           |
| 4 Work too monotonous                    | 45.0               | 16.5          | 20.0                            | 8.5          | 9.5               | .5                             |
| 5 Was treated badly                      | 72.5               | 12.5          | 5.5                             | 5.0          | 1.5               | 3.0                            |
| 6 No boats left in community             | 79.0               | 7.0           | 4.0                             | 2.0          | 5.5               | 2.5                            |
| 7 Difficult to run a profitable business | 55.0               | 10.5          | 14.5                            | 9.0          | 8.5               | 2.5                            |
| 8 Strong certification demands           | 65.5               | 13.0          | 7.5                             | 3.0          | 3.0               | 8.0                            |
| 9 New technology                         | 79.0               | 10.0          | 6.5                             | 2.0          | 0.0               | 2.5                            |
| 10 Regulations and demands               | 62.0               | 9.0           | 12.5                            | 6.0          | 5.0               | 5.5                            |
| 11 Bad social labour conditions          | 57.5               | 15.5          | 10.0                            | 4.0          | 3.0               | 10.0                           |
| 12 Physical labour conditions            | 46.0               | 15.5          | 16.5                            | 13.0         | 8.0               | 1.0                            |
| 13 Too risky                             | 36.5               | 24.5          | 16.5                            | 15.0         | 7.0               | 0.5                            |
| 14 Loss of interest in fishery           | 46.0               | 15.0          | 15.5                            | 11.5         | 11.5              | .5                             |
| 15 The working hours (bad times)         | 33.0               | 14.0          | 14.0                            | 15.5         | 22.5              | 1.0                            |
| 16 Too little leisure time               | 33.5               | 12.5          | 19.5                            | 15.5         | 18.0              | 1.0                            |
| 17 Too little time with family           | 30.0               | 13.5          | 18.0                            | 13.5         | 24.0              | 1.0                            |
| 18 Friends stopped fishing               | 62.5               | 13.0          | 10.0                            | 7.5          | 6.0               | 1.0                            |

for their decisions to leave the fisheries. These are the physical labour conditions, the risky character of the job, loss of interest in fishery, perception of the working hours as not good or inconvenient, that fishing offered too little leisure time, and that fishers had too little time with the family. As we have said, all of these factors can be seen as valued in relation to a more general perception of what is good welfare and a good livelihood.

In the group of answers related to *family and social life*, “the working hours” (38%), “too little time with family” (37.5%) and “too little leisure time” (33.5%) have the highest scores. The awkward working hours, substantial working pressure in fisheries, the seasonal patterns of the fisheries and too little time with the family and/or friends outside the fishery can therefore be seen as the major reasons for fishers’ leaving among these factors.

So far we have looked for reasons in general. Of the 18 arguments, the arguments related to economy, technology and formal requirements apply more to boat owners than to the crew. Cross tabulation of factors 7, 8, 9 and 10 indicated that these mainly applied to boat owners and not so much to the crew. It should be mentioned that the number of boat owners in the material was low; only 30 of the 200 were boat owners. Technological change, more regulations and other formal requirements are changes inside the sector that are typical push factors. They can, to some extent, be compared to whether or not being a fisher was easier or more difficult before. If the situation in the fisheries is perceived to have become more difficult – for example, because regulations have reduced freedom – increased regulations can be seen as a push factor. The factor “Difficult to run a profitable business”, which applies entirely to boat owners, is more complicated to categorise. Particularly because this is reported in a period when economic indicators give us reasons to believe that the situation is good (Table 1), it is obvious that this factor is not only related to internal factors in the industry. The general cost level, interest rates, income levels and expectations in the society (Directorate of Fisheries 2000–2010b; Johnsen 2005) may have impacted on what a boat owner regards as a profitable business. Again, push and pull are closely related.

As mentioned above, a positive correlation connects age with leaving fisheries to take more education. Since education seems to be mostly of interest to the younger fishers, this may affect how the cohorts of fishers develop over time. At our request, the Directorate of Fisheries has followed the development of the 1993 cohort. This cohort diminished on average by 11% annually from 1993 to 2007, with declines varying from up to 30% in the first six years down to less than 1% in the last part of the period. An analysis of the material in the Fishermen’s Pension Fund Register (Garantikassen for fiskere), carried out for a government committee evaluating pensions and social benefits for fishers, indicated the same pattern (Johnsen 2003). Fishers seem more likely to quit early in their careers. Traditionally, due to seasonal patterns and opportunities for good income through hard intensive work, fishing has been attractive for people with a short-term perspective on their careers.

#### **Discussion: push, pull and welfare considerations among fishers**

Our results show that there were several reasons behind the reduction in the number of Norwegian fishers in the period between 1990 and 2005 and these did not support the simple hypothesis that was presented in the public debate in Norway that fishers were mainly forced out of the fisheries. Altogether, we see that the factors we describe

as social, related to family, working hours and leisure time, are reported to have had a considerable impact on the former fishers' choices. This is quite consistent with the impression we gained by interviewing people in fishing communities: we rarely meet people who actually claim that they have been directly forced out of the fisheries.

As illustrated in Table 1, the economic situation in the fishing fleet has improved since the 1990s, and the fleet's wage-paying ability has increased. Thus, as our findings also indicate, poor vessel economy cannot be seen as an overall reason for leaving in the period we have studied. This is supported by the findings in a quantitative study of recruitment from 2007 that indicate that the fishing fleets in general have had few recruitment problems in the period (Sønvisen et al. 2011). However, some vessels and vessel groups reported in this study that they have had some problems recruiting. In the study, 20% of owners of vessels between 15 and 21 m and conventional vessels larger than 28 m answered that they have experienced recruitment problems (Johnsen and Vik 2008; Sønvisen et al. 2011). According to the economic surveys in the fishing fleet, these two vessel groups have had a substantial increase in their operating margin<sup>9</sup> and "wage-paying ability". Recruitment problems in a situation when positions are open for new fishers, and with increasing wage-paying ability, point towards a pull more than a push. In such a situation, neither low profitability nor closure can be seen as the main causes for leaving the fishing fleet. Since 2007, the use of migrant labour seems to have increased in the fisheries, particularly in the vessel groups where indications of recruitment problems were found<sup>10</sup>. Obviously, the reasons for leaving the fisheries are more diverse and cannot be seen as an effect of only a few factors.

On the other hand, our findings cannot be interpreted as claiming that non-discretionary push factors are irrelevant, though they are not the only important reasons for people leaving the fisheries. The push and pull factors must be seen in relation to each other. Furthermore, they must be seen in relation to, and as indications of, the changing character of fishery networks. From our point of view, the reasons to quit are complex. As we have argued, both the fishery-specific networks and the networks that involve coastal communities and larger welfare state factors have changed. As Sønvisen et al. (2011) pointed out, the employment systems for the fishing fleet have become more specialised and less embedded in the communities. Parallel to this development, people in coastal communities now have many other work opportunities. A policy directed toward downsizing the fisheries sector may be perceived by some as a push to explore alternative employment opportunities, even if jobs are available in the fisheries. The material we have studied suggests that welfare state development has impacted on why people choose to leave the fisheries. These factors are expressed mostly as an emphasis on social factors such as time with family, leisure time and more regular work hours. The increased use of foreign labour may indicate that the pull from the welfare society is strong.

Clearly, though, the reasons for leaving the fisheries are heterogeneous. Even if the factors can be grouped as pull and push factors, they are probably more related to each other than the results show. The effect of pull factors might actually make push factors appear stronger than they are.

#### **The disciplining welfare state as a transformative force**

Our results point toward the strong transformative forces in the welfare society that contribute to pulling everyone toward a more regulated life, surrounded by a

comprehensive safety net. To some extent, this is what the modernisation processes are all about.

Before we turn to our final thoughts about the fisheries, we will add a methodological remark. This study has illustrated the value of combining methods and approaches. The mixed approach and methodology have helped us to see that the changes we have studied are not caused by one factor or a few clear factors endogenous to our own study set-up. Instead we see that several factors work together and strengthen and weaken each other. This is particularly important for studies of sectorial change within a welfare state context. General increases in living standards change the perception of welfare in a sector that develops differently for different reasons. Often it is not possible to point to one or a few single causes because several factors have indirect effects, not through direct regulation but through symbolic or mental impact on perceptions and values. Furthermore, the disciplining effects from the many welfare state instruments and devices that structure and rationalise all kind of activities train us to be welfare state citizens, almost in the same way as the former fisheries employment systems attached people and households to fishing as a way of life. None of these welfare state “dispositifs”, to use a Foucaultian term, work through external push and pull factors but assemble the factors together, internalise and combine them in ways that make them even more powerful. Fishers’ exit is not the effect of one or a few factors but an accumulation of effects of the relationships between many factors – within and outside the world of fisheries. You can beat a fishing regulation and choose to stay inside the fisheries even if the regulation makes your life more difficult. But when the regulation is introduced at the same time as you need a new chart plotter, when you have a strict repayment scheme for your mortgage and boat loan, a requirement to be present at a parents’ meeting at school, an expectation about planned holidays and involvement in your kids’ sports activities, alternatives to fishing may become more attractive.

Fishing is still the last pre-modern hunting activity in the modern society, while the rest of the population live rather stable lives with secure incomes. The last hunters probably feel the pull from their families and society to a more secure and stable life. Stability, safety and security for the fishers have been among the rationales behind the attempts to transform the fishing fleet from a seasonal and unstable activity to a more predictable harvest activity as we have described. Resource management, together with technological, managerial and organisational development, have been the main tools for this transformation (Bavington 2009; Holm 2001; Johnsen 2005; Johnsen et al. 2009a). In spite of the radical changes we have described, the organisation of the fisheries still makes it more difficult for fishers to have what we today regard as a normal on-shore life. Some of the instability in terms of irregular working hours, periods away from home and changing income is almost impossible to change. A couple of decades ago, fishing families represented a majority in fishing communities, and the organisation of the fisheries impacted on the organisation of society. In the attempts to modernise and professionalise the fisheries, the focus has been on fishers’ social security, job protection, pension rights and reduction of instability. Because of this process, in combination with the rural development policy in Norway that has contributed to more job opportunities outside fishing, the attachment to fishing as a way of life may have been weakened both for fishers and for their families. This is reflected in the concept of disembedding that we described earlier in this article. Today these families are a minority

and therefore others' lives constitute the dominant organising force even in fishing communities. Some might see the organic organisation of the fisheries in the past as the ideal, but the practice of such anti-modernism will require fishers to break with the welfare society to a large extent.

Instead we will point in another direction. We believe that fishers should have the same rights and opportunities as others. However, they have to accept that some aspects of their job make it special. We do not believe that the development toward more cybernetic organisations and harvest machines will be reversed, but it is important that they are understood as tools, not only for increased efficiency, but also for improving people's lives. Certainly, developing cybernetic harvest machines is not a goal in itself. The results from this article give us reason to claim that fisheries have to develop in concert with the surrounding society. One set of implications from our results is that the work conditions on board must be excellent and the job has to be safe. Moreover, the fisheries must be profitable enough to compensate for drawbacks and inconveniences related to fishing. One solution is, of course, related to the use of more than one crew and a regular shift system as many vessels have today. The shift system contributes to more time off and makes it possible for the fisher and the family to plan their everyday life. In addition, the opportunity to work intensively over certain periods with long periods off could give considerable freedom to those who can adapt to such a lifestyle. These conditions must be competitive if they are to work as pull-back factors. However, as we have already mentioned, closed access makes it more difficult to return. On the other hand, keeping a part of the sector open, both in terms of access and in terms of reasonable capital requirements and income opportunities, can be important. Through this opening, committed people can find a way into the fisheries, for longer or shorter periods. The knowledge they acquire can represent an important asset if recruitment to the closed segment of the fleet stops. Such an opening is also one of the very few self-employment opportunities in coastal Norway.

In relation to the definition of employment and recruitment policy for the fisheries sector in the future, single-factor incitements to motivate people to become fishers or to remain fishers may not work. As our study has illustrated, the effects are caused by the relationship between several factors. Since the fisheries have become more and more affected by and integrated into on-shore society, the sector policy approach is about to become too narrow. Therefore, a closer integration between sector policies, educational policy, labour market policy, coastal community policy and welfare policy is needed. The challenges in front of us are not sector challenges but challenges for coastal communities and the wider society, in Norway as well as in other coastal regions.

## Endnotes

<sup>1</sup> The closed group is very diverse, from 11 m coastal vessels to large factory trawlers, purse seiners and autoliners. Different measures apply to the vessels depending on length, fishery and gear type. We do not go into details about this.

<sup>2</sup> We have borrowed concepts from Bourdieu (1986, 1983) to express the difference between a material and cultural field or domain. Inside the frame of this article we do not go deeper into these concepts.

<sup>3</sup> Here we can mention the most recent: "Seminar about Right Based Fisheries in the North Atlantic". Nordic Council of Ministers, Tórshavn, Faroe Islands. 10 June 2010.

Workshop on Longlining, Reykjavik, Iceland, 19–20 Oct. 2010. General Assembly, Norwegian Fishing Vessel Owners Association, Oslo 2–3 February 2011. Norwegian Conference on Longlining, Måløy, Norway, 29–30 March 2011.

<sup>4</sup> The literature quoted in this section is a selection of the literature produced throughout this period.

<sup>5</sup> There are striking similarities between, for example, Norway and Newfoundland where sector policies, rural policy and social policy were oriented towards modernisation in terms of focus on stabilisation of natural or market fluctuations, stable employment and increased and stable wages, access to education and public services, and social benefits, like pension and unemployment wages. In addition, support was given for resettlement from remote communities (see Neis 1999; Wadel 1986; Finstad 2005). In some of the communities along the coast of Finnmark, the consequences of the cod crisis in 1989 for the households were mitigated by the women's increased labour activity in other sectors. During the cod crisis in Norway the unemployment rate was higher for men than for women, which actually illustrates that the dependency on fish was reduced because women had found other job opportunities (Mariussen, et al. 1990).

<sup>6</sup> See figure five in Gullestad (2004):5.

<sup>7</sup> Work contracts are common today; the wage is still based on a share of the catch, but the fishers have the right to get paid regularly and not only at the end of the season. In recent years, the use of immigrant labour has increased in the fishing fleet, and the effects of this development have not been studied yet.

<sup>8</sup> In the purse seining fleet in Norway it has been regarded as a problem that due to the high salaries and the short seasons nobody left their positions before they actually had to quit because of age or health (Johnsen 2004).

<sup>9</sup> Operating margin = result  $\times$ 100/operating revenues.

<sup>10</sup> The issue was raised under the Norwegian Conference at Longlining, Måløy, Norway, March 29–30, 2011. We also discussed the issue with boat owners, crew and former owners and crew during the conference.

#### **Competing interests**

The authors declare that they have no competing interests.

#### **Authors' contributions**

Both authors have equally contributed to project design, collection of data, analysis and writing. Both authors read and approved the final manuscript.

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