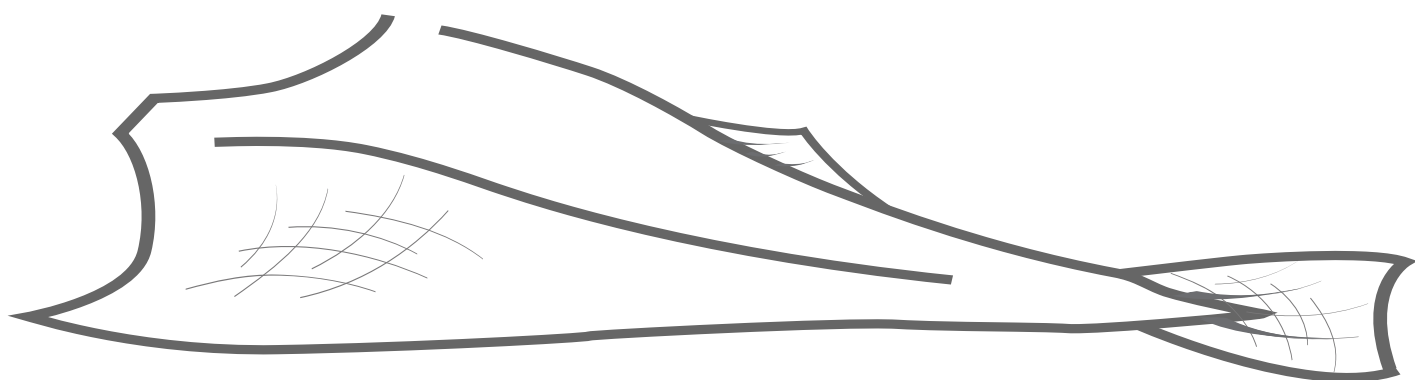# THE NORWEGIAN-SPANISH SALTED FISH PROJECT

Jinghua Xie

THE DEMAND STRUCTURE OF THE SPANISH SALTED FISH MARKET

THE NORWEGIAN-SPANISH SALTED FISH PROJECT REPORT is a series of publications from the project "The Spanish salted fish project and the opportunities for the Norwegians". The project is partly financed by The Research Council of Norway and Norwegian fish processing industry.

The project "The Spanish salted fish project and the opportunities for the Norwegians" focuses on the restructuring of the Spanish salted fish market, and investigates possible strategies for Norwegian salted fish producers to increase their market share in the Spanish salted fish market. Salted fish products have been in the heart of Spanish and Norwegian culture for centuries. Production of bacalao salado (salted cod) emerged in Spain the 13th century, and the Norwegians have supplied the Iberian markets for 300 years. During the last decades a fundamental restructuring of The Spanish market for salted fish products has occurred. Consumption has increased, new products have been introduced, and the entire process of salted fish production has changed. The project aims to examine the key factors responsible for such trends in one of the world's leading seafood markets, as well as supporting good business relations between Norwegian and Spanish producers.

Publication list for Reports (July 2009)
01/09   Vigdis Lode: Skriftlige konvensjoner i norsk og spansk saltfisk næring. Departement of Geography. University of Bergen
02/09   Vigdis Lode: Rapport om konvensjoner og markedstilpasning i saltfisknæringen (kortversjon masteroppgave). Departement of Geography. University of Bergen
03/09   Tor Brynjar Welander: Omstilling og industrielle konvensjoner i Finnmark. Departement of Geography. University of Bergen
04/09   Knut Bjørn Lindkvist: Innovations and market responses in the Norwegian salted fish industry. Departement of Geography. University of Bergen
05/09   Vigdis Lode: Produksjonskjeder, konvensjoner og markedstilpasning i saltfisknæringen. Departement of Geography. University of Bergen
01/10 Jinghua Xie: The Demand Structure of the Spanish Salted Fish Market

The Demand Structure of the Spanish Salted Fish Market

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Contents

Abstract

The Spanish market for salted fish products has been restructured over the last decade. A significant pattern is a steady increase in the consumption of frozen light salted fillets at the expense of traditional products. The study aims to analyze the market structure of the Spanish salted fish market with two approaches. First it analyses the Spanish market structure by presenting descriptive trade data using tables and diagrams. Then a more rigorous demand model is estimated to explore the market relationships between salted cod products by country (i.e., Norway, Iceland and the Faroe Islands) and by product form (i.e., the traditional products with the newly introduced light salted cod fillets). The study ends with suggestions for the Norwegian salted fish industry to improve its market strategy in Spain.

The findings suggest that a significant trend exists that consumers in Spain prefer to purchase the new light salted cod fillets to traditional salted cod in general. The cross price elasticity of Norwegian salted whole fish with respect to frozen light salted fillets is significantly positive. This suggests that the light salted fillets are a strong substitute for Norwegian salted whole fish. Strong substitution effects also exist between the salted whole fish from Norway, Iceland and the Faroe Islands. Since Norway has the dominant share of exports of traditional salted whole cod, the results overall indicate a strong challenge for the Norwegian salt fish industry to maintain its position in the Spanish market. Thanks to the growth of light salted fillets exports, the market share of Iceland is expanding in the Spanish market. The share of the Faroe Islands is slightly increasing due to its success in klippfish fillet exports in consumer packaging. The big loss of market share is from the Norwegian exports, which is mainly explained by their adherence to the traditional wet salted cod market. The results overall suggest the importance of differentiating and developing the products according to the consumer needs.

Introduction

The product group salted fish in the Spanish market consists of three main traditional products and one relatively new product called frozen light salted fillets. The traditional ones are whole wet salted cod, salted cod fillets and klippfish (dried salted cod). Wet salted cod is a product where the gutted fresh fish is split and salted. Salted fillets are wet salted cod fillets, boneless and without a belly. Klippfish is a wet salted cod that is dried to around 70–75% of the wet salted weight. Light salted fillets are the frozen fillets either soaked or injected with 2% salt. The product tastes similar to the desalted traditional salted fillets.[1]

The data sources for our analysis are monthly and yearly trade data of Eurostat and national statistics of Norway, Iceland and the Faroe Islands. All the data were provided by Kristin Lien, market manager of the Norwegian Seafood Export Council (NSEC). We found that Eurostat is not consistent with the national data for the specific commodity, i.e., for the commodity with the same HS number, the Norwegian export to Spain is not consistent with the Spanish import from Norway. The reason for this, explained by the Norwegian Seafood Export Council, might be that Eurostat registered the commodity according to the first landing countries in EU countries, while the Norwegian data are registered according to who is the buyer in the contract. It is probably the same for the Icelandic and the Faroe Island data. This means the EU data on Spanish imports from EU countries might also include some commodities that are just passing through the country for transportation reasons. Therefore, we use Eurostat for the data of the total Spanish imports and use the data of these three nations as their exports to Spain, respectively. The ambiguity of Eurostat and exporting countries' data is a problem for researchers making an empirical analysis. Luckily, for our

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[1] For a more detailed description of the product, see Lindkvist *et al.* (2008).

analysis, the problem is not serious since the three Nordic countries make up 90% of the total Spanish imports and we use the relatively aggregated data.

Another problem with the data is that so far there is no registered record of light salted cod fillets in Eurostat of Spanish imports, nor in the Icelandic export data until the year 2008, while, since the mid-1990s, the brine and injecting salt solutions have changed the content of frozen fillets. No one wants to talk about it, everyone knows about it and the market seems to be happy with the development (Lindkvist, 2008). This claim is strongly confirmed by the Icelandic data in 2008 when for the first time Iceland had light salted fillets in its statistics. According to the Icelandic statistics of 2008, the exports of frozen fillets to Spain were 1,113 tons and the exports of new recorded frozen light salted fillets were 5,790 tons, a total of 6,905 tons. This number is smaller than the exports of frozen fillets, 8,582, in 2007 due to the overall decline of salted fish exports as a result of the world economic crisis. The relative shares of frozen fillets and frozen light salted fillets indicate that at least 80% of the frozen fillets from Iceland before 2008 were actually light salted. Therefore, we use the export data of frozen fillets from Iceland as a proxy for the Spanish imports of frozen light salted fillets. To keep the data consistent, we add up the frozen fillets and frozen light salted fillets for the year 2008. There might be some light salted fillets exported by the Faroe Islands too, while, according to Lindkvist, *et al.* (2008) interview with the Spanish importers, they believe that the majority of them are from Iceland. In addition there are still no available data for the Faroe Islands to indicate how many frozen light salted fillets are exported to Spain. Thus, when we mention the Spanish imports of light salted cod hereafter, we actually use the data of the Icelandic exports of frozen fillets based on the above-discussed reasons.

The total Spanish imports from other countries (e.g., China, Canada and Russia) make up about 10%. To give the addressed problem manageable dimensions, the study therefore focuses on the salted fish from the three Nordic countries.

The report includes three sections. Section I presents the general situation of the Spanish imports of salted fish and the problems for the Norwegian salt fish industry indicated by the descriptive data. Section II estimates the demand elasticities of salted cod products using econometric modeling. Finally, Section III generalizes the suggestions for the Norwegian salted fish industry to improve the market strategy based on the main findings from Sections I and II.

Section I. Comparative analysis of descriptive data for the Spanish salted fish market

1. Spanish imports of salted fish

The total Spanish imports of salted fish grew very fast between the years 1991 and 2007 (Figure 1). The import volume (in product weight)[2] doubled from 25,000 to 50,800 metric tons. Among those, the traditional wet salted whole fish and fillets grew by 25%, and klippfish by 283%. The main contribution was from frozen light salted fillets, which grew from 47 to 11,532 tons in this period. As a result, the market share of salted whole fish and fillets dropped from 86% to 52%, klippfish grew from 13% to 25% and frozen light salted fillets grew from almost 0 to 23%. This pattern remained in the year 2008 although the imported amounts of all the products declined due to the world economic crisis.

For traditional salted whole fish and fillets, the export amounts of Norway, Iceland and the Faroe Islands account for about 90% of Spanish imports (Figure 2). The big difference exists for klippfish. The 3 Nordic countries only account for 15 to 20% of the Spanish imports

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[2] Hereafter in product weight, otherwise noted.

and the remainder is shared between 4 EU countries, namely Denmark, the Netherlands, Portugal and France. Whether this is because of the different statistic criteria between Eurostat and the national statistics of the exporting countries or because a large amount of klippfish is processed in these EU countries or both is not clear. However, this may indicate that, compared with traditional salted whole fish and fillets, more klippfish is processed in EU countries and re-exported to Spain.

Spanish imports of salted fish

Figure 1

Source: NSEC (2009)

Nordic exports of salted fish to Spain
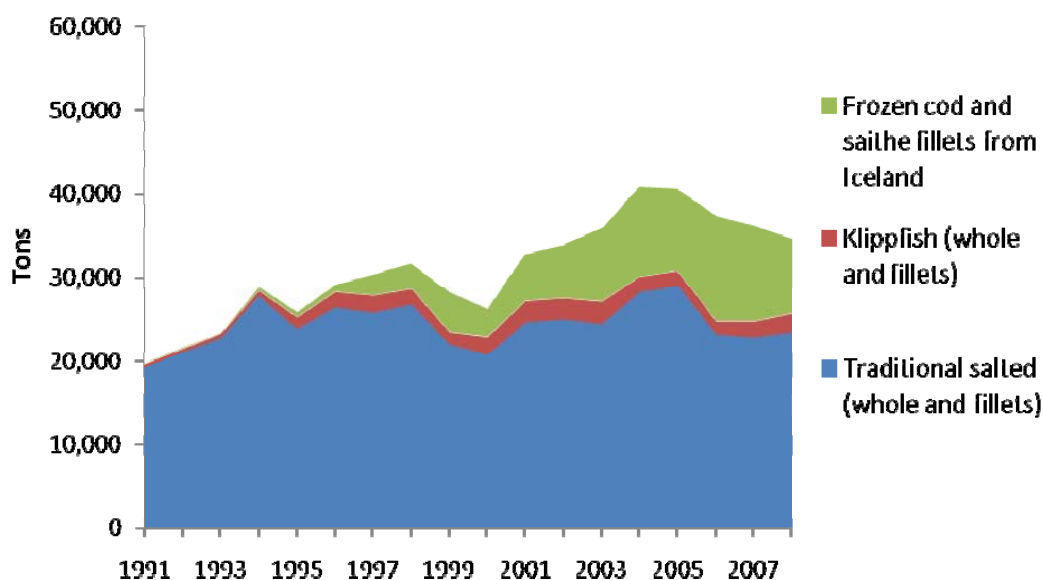
Figure 2

Source: NSEC (2009)

The Spanish imports of salted fish include cod (torsk)[3], saithe (sei), haddock (hyse), ling (lange), blue ling (brålange) and others. Although cod still keeps the dominate share, the exports of salted cod slightly declined from 45,560 in 2005 to 44,027 in 2007 before the economic crisis. Some other white fish species seem to be taking up more shares and keeping the Spanish market growing (Figure 3). Eurostat aggregates all the other species together. To see what the main species are that are beginning to explore the Spanish salted fish market, we have graphed the Nordic exports of different species to Spain for the period 1991–2008 in Figure 4. It shows that saithe is the main contributor: the export of saithe increased from 707 to 2,303 tons in the period. Lang makes a minor contribution. The exports increased from 785

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[3] Norwegian name in the bracket

to 1,516 tons in the period. The exports of all the other species are still comparatively tiny. The saithe exports are mainly as a product of frozen light fillets from Iceland to Spain. The lang exports are in the form of traditional salted whole fish and fillets.
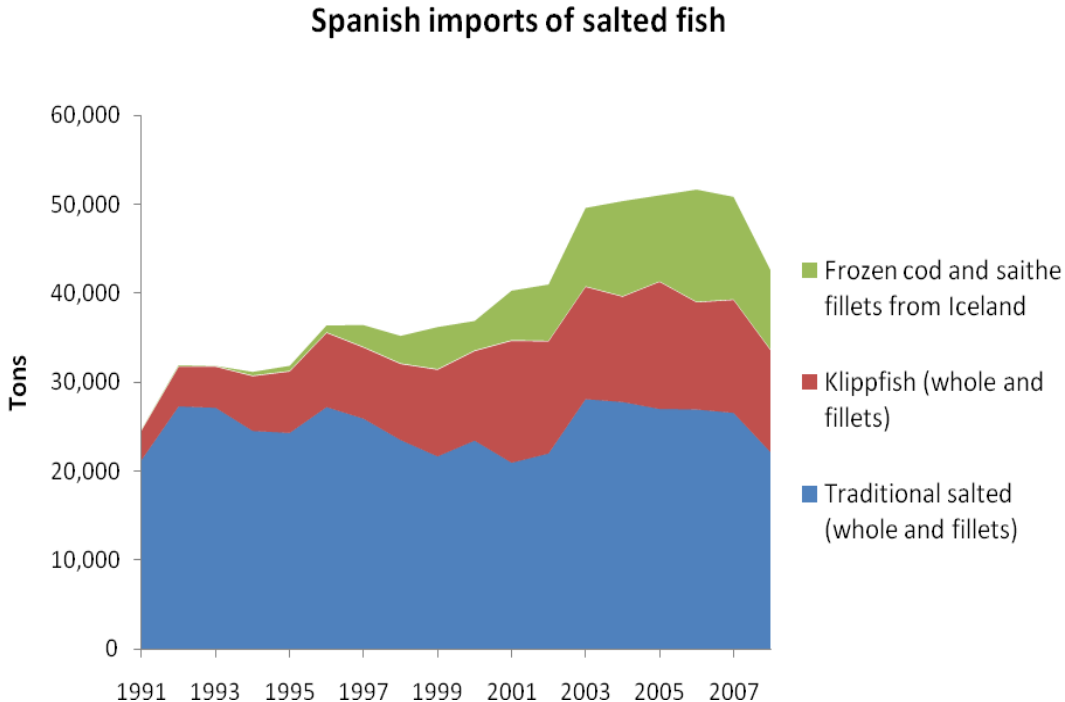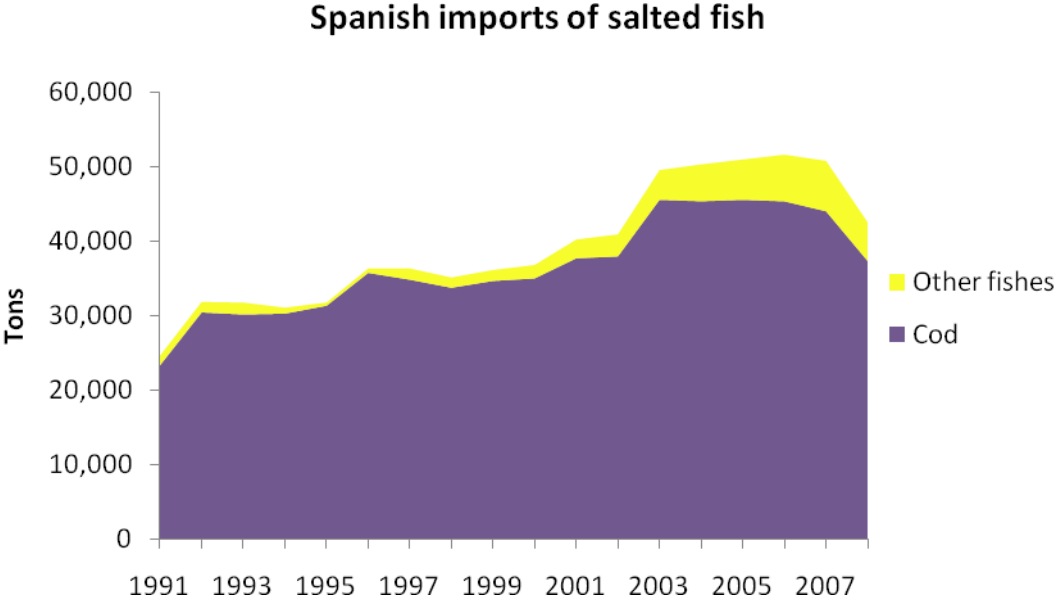

Figure 3

Source: NSEC (2009)

Nordic exports of salted fish to Spain
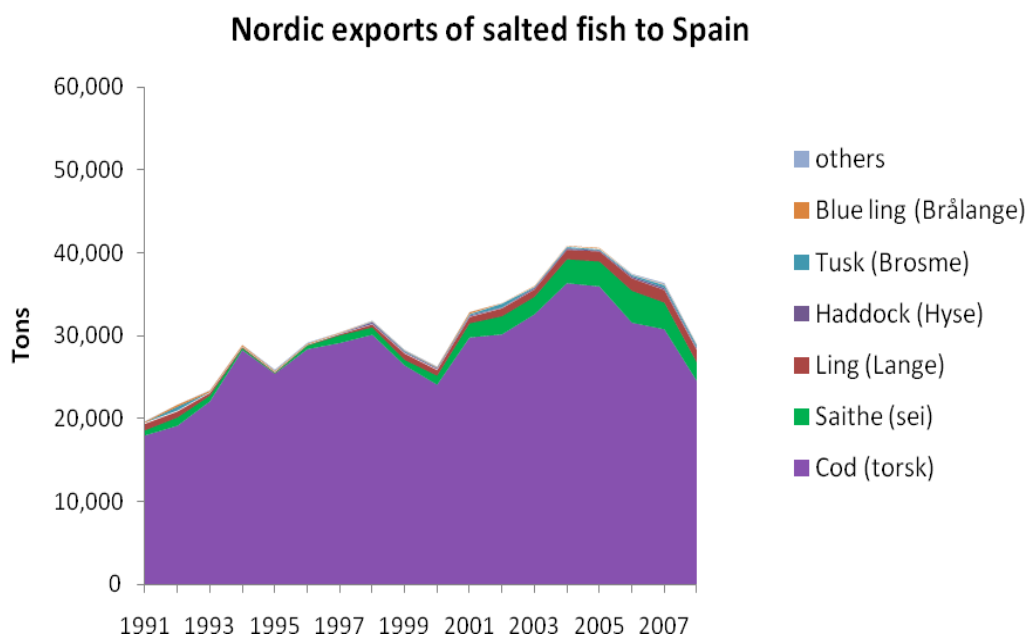
Figure 4

Source: NSEC (2009)

2. Spanish imports of salted cod from three Nordic countries

The total Spanish imports of salted cod from Norway, Iceland and the Faroe Islands grew from 17,900 to 36,300 metric tons between 1991 and 2004; after that the exports decreased year by year to 30,734 in 2007 before the economic crisis. The number in 2005 is just 1% less than that in 2006. The big decline happened in 2006: 12% less than in the previous year (Figure 5). The main reason for this is a dramatic 36% less exporting of salted whole fish in 2006.

Spanish imports of salted cod from Nordic countries
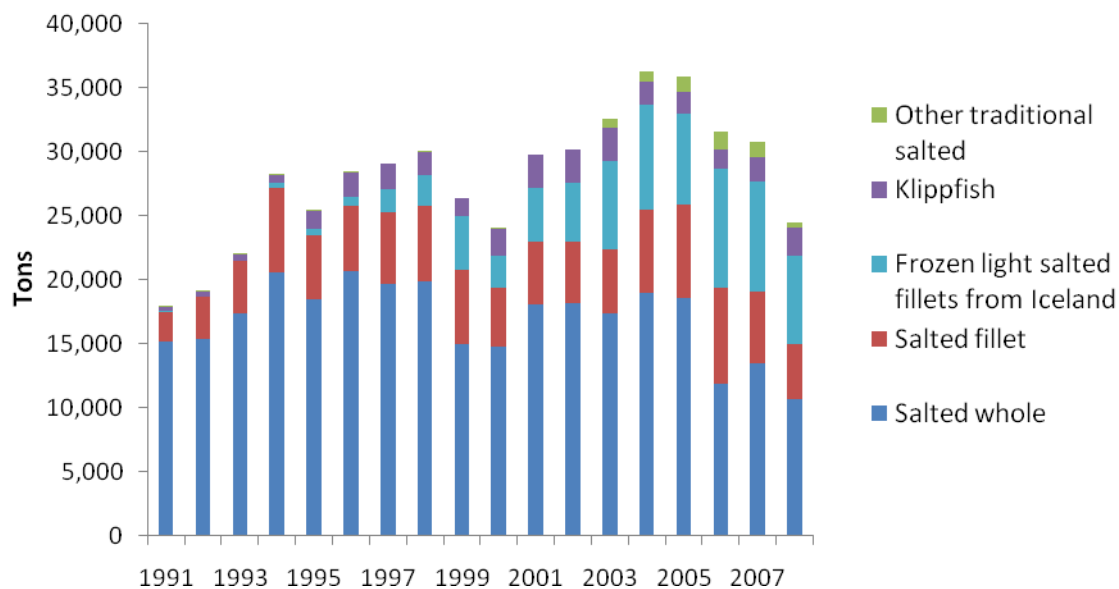
Figure 5

Source: NSEC (2009)

Although wet salted whole fish is still leading the market, its share has decreased from 85 to 44%. On the other hand, the imports of frozen light salted fillets have grown from 47 to 8,582 tons, and the market share has increased from 0 to 28%. The market for salted fillets and klippfish is relatively stable. Salted fillets accounted for 15 to 20% and klippfish for 2 to 10% between the years. There were also some imports of salted eggs and tongues from Iceland in recent years. The volume in 2007 was 1,330 tons, close to the klippfish exports of 1,528 tons (Figure 5).

As a statured traditional market, the total exports of salted whole fish are relatively equally shared by these 3 countries (Figure 6). Differently, the salted fillets and klippfish markets are dominated by Iceland's and the Faroe Islands' exports, respectively (Figures 7 and 8). When the overall Spanish market was growing, the Spanish imports of salted whole fish from the 3 Nordic countries decreased from 15,176 to 13,489 tons between 1991 and 2007. This indicates that the Spanish customers are beginning to change their interest in traditional wet salted whole fish. When the market has the new option of frozen light salted fillets, they buy the new product. It is also possible that the new frozen light salted fillets have successfully attracted new consumers to the market by changing the concept of salted fish in the old tradition.

Spanish imports of salted whole cod from Nordic countries
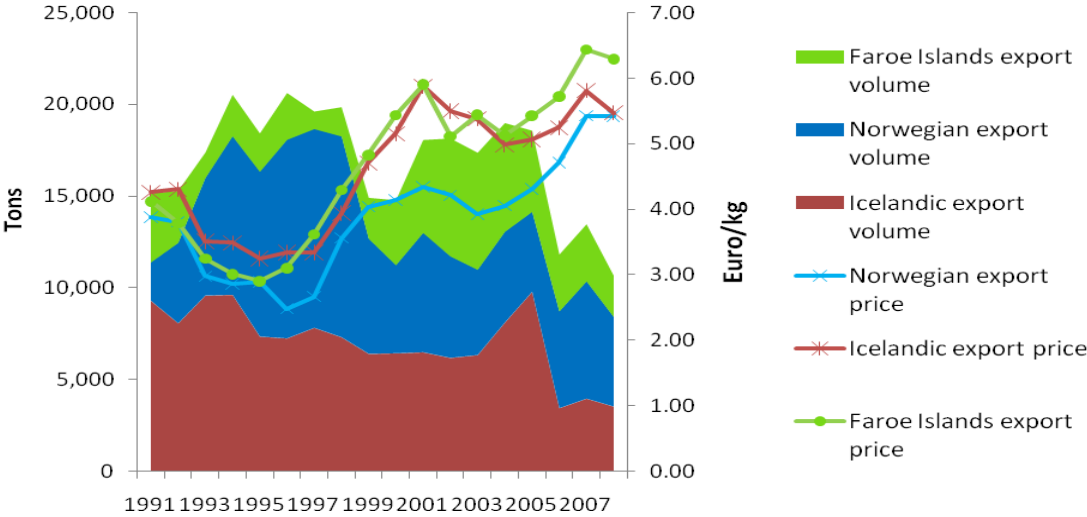
Figure 6

Source: NSEC (2009)
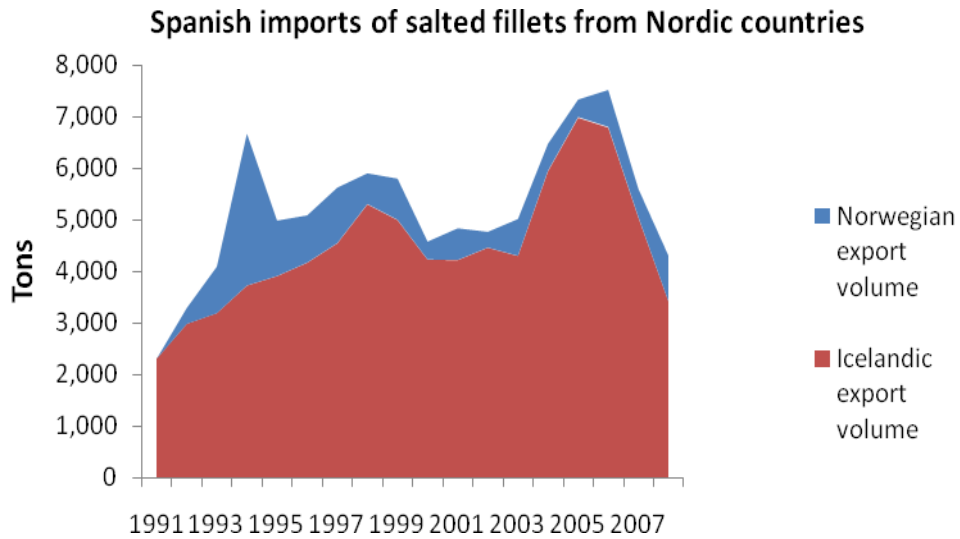
Figure 7

Source: NSEC (2009)
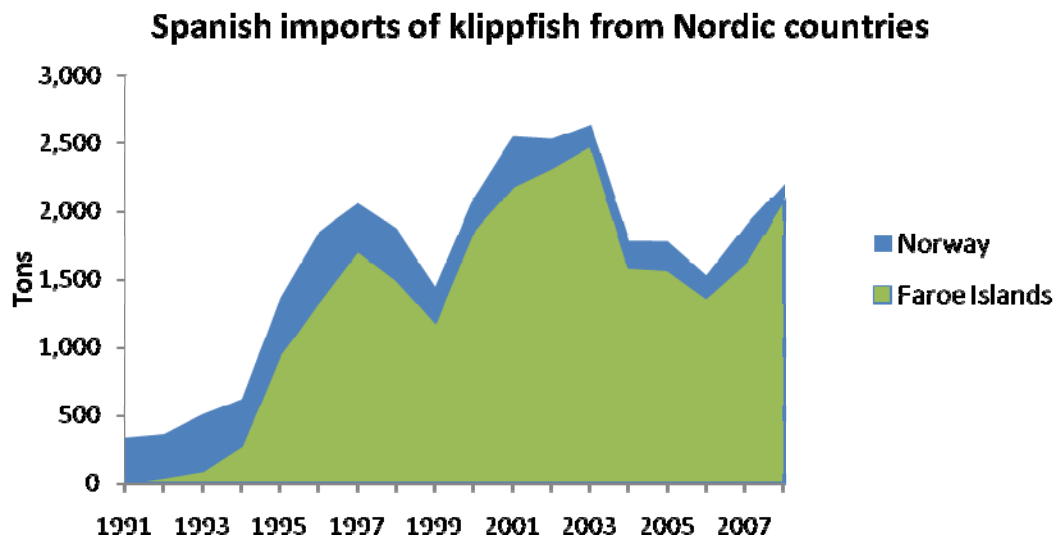
Figure 8

Source: NSEC (2009)

3. Problems of the Norwegian salted fish industry in the Spanish market

Figure 9 shows that the growth of the Spanish market generally is not equally shared by Norway, Iceland and the Faroe Islands. In the early year of 1991, Iceland had the dominant share of 65%, followed by the Faroe Islands with 21% and Norway with 14%. After that, the Norwegian industry seemed to try to expand the Spanish market by exporting both more salted whole fish and more fillets. In 1998, the total Norwegian exports of salted cod reached 11,500 metric tons, accounting for 45% of the Spanish market. After that, the exports stagnated at the amount of 5,000 to 7,000 tons with the market share around 15 to 25%. On the other hand, Icelandic exports steadily increased from 11,600 to 18,700 tons between 1991 and 2007. The peak year was 2005 with an export volume of 25,000 tons. The share of Iceland in recent years was around 60%. The exports of the Faroe Islands were rather stable, 4,000 to 8,000 between the years, with the market share from 15 to 30%.
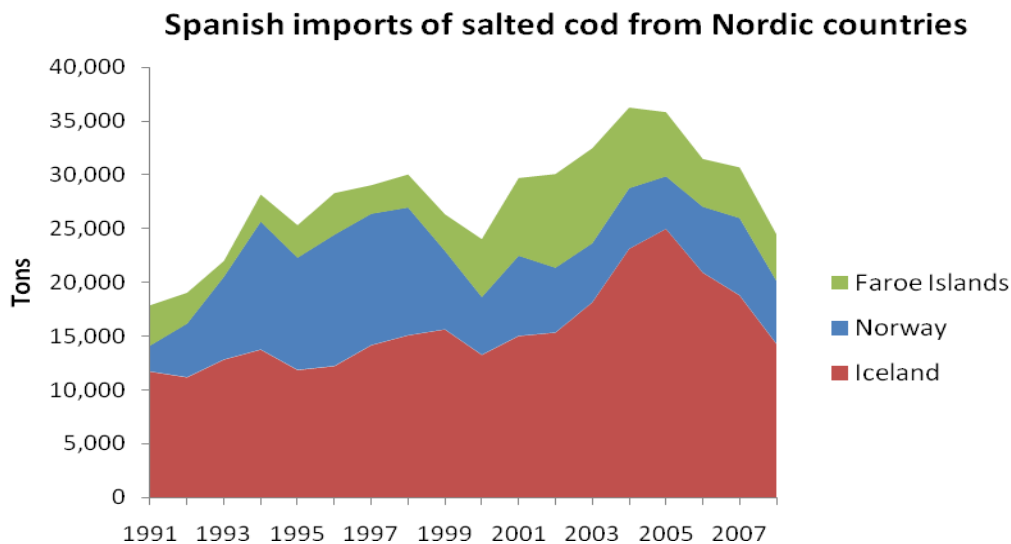
Figure 9

Source: NSEC (2009)

Exports of salted fish are generally decided by both the import demand for the product and the supply of the raw fish. According to Trondsen (1994), all North Atlantic cod fisheries in the EU countries, Norway, Iceland, the Faroe Islands, Greeland and Canada have been through a process where the cod quotas have been reduced year by year. So far only regulations of the cod stock in Norway have been successful. The Norwegian cod stock has recovered, and the quota and catch again increased from 1991. Therefore, the reason for the loss of the Norwegian market share to Icelandic salted cod in Spain seems mainly to be a result of poorer marketing performance of the Norwegian salted fish industry.

According to standard marketing and strategy literature, value growth of commodity products is related to industries' ability to segment the buyer preferences and differentiate and focus their product marketing strategies towards the most attractive buyers (Porter, 1980). Figure 10 shows that the Norwegian exports to Spain adhered to the exports of salted whole fish, which dominated 85% of its total exports throughout the years from 1991 till recent years. Opposite to Norway, Iceland has much more product differences. From 1991 to 2007, it cut the exports of salted whole fish from 9,300 to 4,000 tons, slightly increased the exports of fillets from 2,300 to 5,000 tons and greatly expanded the exports of frozen light salted fillets from 47 to 8,600 tons. In 2007, it had the market distribution of 25% for salted whole fish, 24% for salted fillets and 46% for frozen salted fillets. In addition, it also tried to export salted cod eggs and tongues: 6% in 2007 (Figure 11).

If we compare how many product items specified as salted cod are exported to Spain in the national statistics of Norway,[4] Iceland and the Faroe Islands, we can see that there are 3 for Norway, 15 for Iceland and 4 for the Faroe Islands. The 3 items from Norway are salted whole fish, salted fillets and klippfish. No product forms or packages have been changed

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[4] According to the product HS numbers listed in the national statistics of these countries.

since the year 1990, which is the earliest year in our data set. For the Iceland product group, it includes 14 different products, 5 of which are salted whole fish or light salted whole fish in consumer packages, 2 of which are light salted fillets and 3 of which are other salted cod such as tongues, buklapper and eggs. What we can see is that the Icelandic industry has tried the different product forms and packages to differentiate their products and to satisfy the consumers in the different segments. Although the Faroe Islands have only 4 items, the majority of their klippfish fillets are in consumer packaging. This more convenient packaging for consumers might be one of the reasons that the Faroe Islands has dominated the market share of klippfish in Spain (Figure 8).
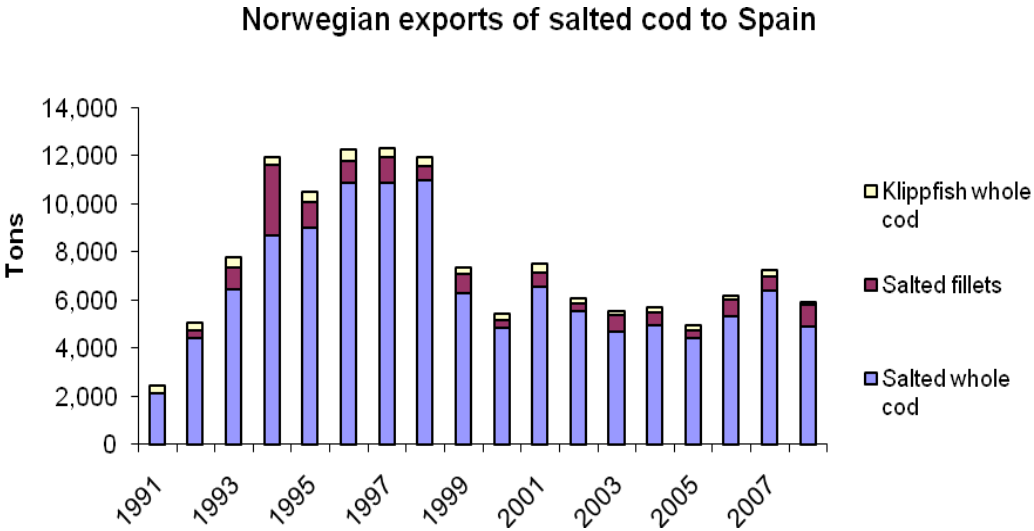
Figure 10

Source: NSEC (2009)

Icelandic exports of salted cod to Spain
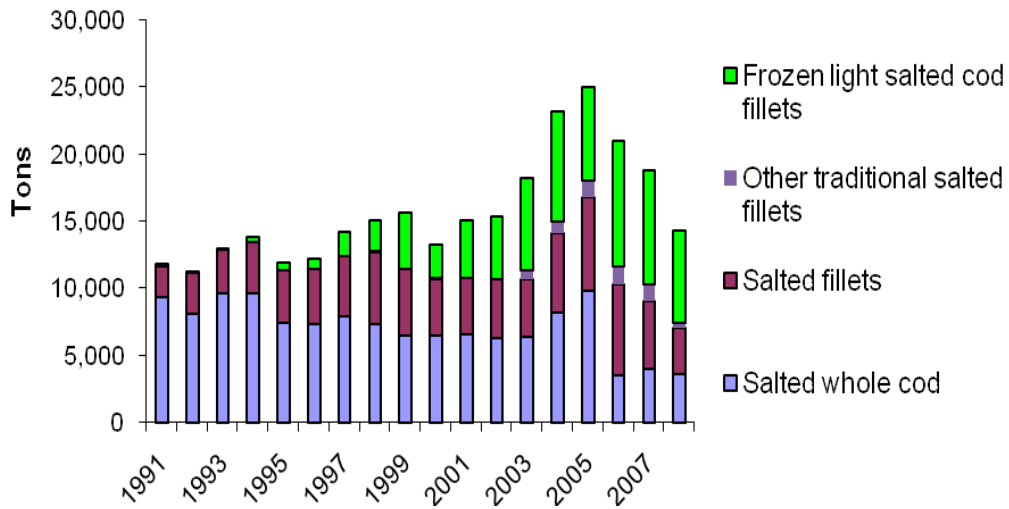
Figure 11

Source: NSEC (2009)

As discussed in Section 2.1, Spanish imports of traditional wet salted whole fish and fillets only grew by 25% in the last 16 years; the growth of the Spanish market was mainly contributed by frozen light salted fillets. As a historical main supplier of salted fish, when the Norwegian salted fish industry still keeps the old mind of producing and exporting traditional products, instead of considering the change of consumer preferences for new products, it is no surprise that it is losing the market to the Icelandic industry, which seems to be much more market-oriented.

The situation might be even worse for the Norwegian industry if we look at the prices of different products from different sources (Figure 12). To make the prices comparable, the prices of the different products in Figure 12 are calculated in round fish weight; the

corresponding weights to convert the product weight to round fish weight for different products were provided by the Norwegian Fishery Bureau. In general, it seems that there is the same trend for the prices of different products and therefore they are expected to play in the same market. However, the prices of three products from Norway are relatively cheaper than those of its competitors.

Prices of Nordic exports of salted fish to Spain
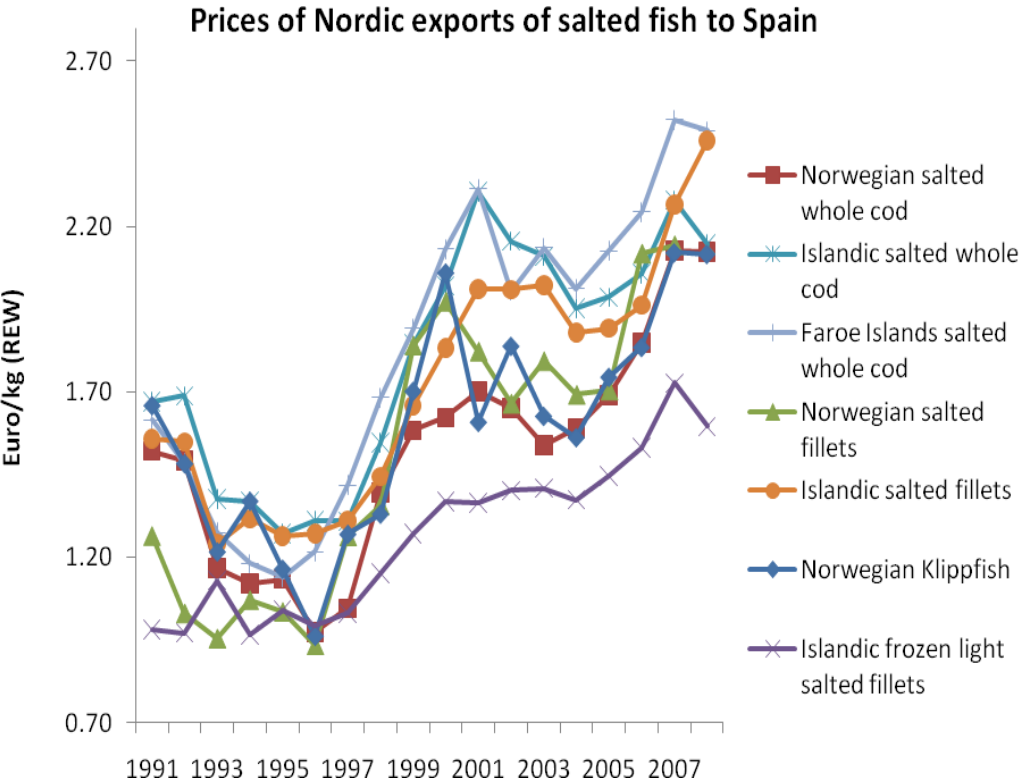
Figure 12

Source: NSEC (2009)

When the traditional salted fish market is matured, products from different suppliers substitute each other and prices become the only competitive tools. Businesses have, according to Porter (1980), three strategic options: cost cutting, differentiation and focus, or a

combination of these strategies (Trondsen, 1994). If the Norwegian industry only uses the strategy of cost cutting to keep itself in the Spanish salted fish market, it might be feasible in the short run to see that the Norwegian share in the salted whole fish market has increased in recent years. However, the strategy is not sustainable in the long run. One issue is how low the industry can keep the prices when the prices of salted fish are very dependent on the prices of raw fish. More importantly, the total Spanish demand for salted whole fish is decreasing and the market is facing a strong substitute in cheaper light salted fillets. Therefore, in order to increase or stabilize its role in the Spanish salted fish market, differentiation and focus strategies are necessary.

Based on the above comparative analysis of trade data, we expect there to be a strong competition between Norway, Iceland and the Faroe Islands in the traditional wet salted fish market. The new growing exports of frozen light salted fillets from Iceland are a strong substitute for the traditional salted products and the Norwegian industry is facing a great challenge in the Spanish market.

Section II. Modeling the market structure of the Spanish salted fish market

1. Model

We will use the Almost Ideal Demand System (AIDS) of Deaton and Muellbauer (1980) to model the demand for salt fish commodities in Spain. Since salted fillets accounted for just 6% of the total value over the sample period and salted fillets are considered relatively homogenous across supply sources, we combined them into a single category, and the same

for klippfish. This resulted in a 6-equation system consisting of traditional salted whole fish from Norway, Iceland and the Faroe Islands, respectively, undifferentiated salted fillets, undifferentiated klippfish and frozen light salted fillets from Iceland. The Spanish demand for salted fish is assumed to be weakly separable from all the other goods and 2-stage budgeting is invoked to justify the conditional demand specification.

The AIDS model given by Deaton and Muellbauer (1980) is

$$(1) \quad w_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i \ln(x/P)$$

where P is the price index defined by

$$(2) \quad \ln P = \alpha_0 + \sum_{\alpha_k} \log p_k + \frac{1}{2} \sum_k \sum_l \gamma_{kl} \ln p_k \ln p_l$$

The model is linear except for the translog price index $\ln P$. This problem has been circumvented in most applied work by instead using the linear Stone price index $\ln P = \sum_{w_i} \ln p_i$. Deaton and Muellbauer argued that, if prices are highly collinear, the Stone price index should be a good approximation to the translog index. Moschini (1995) showed that the approximation properties may be seriously affected by the fact that the Stone index is not invariant to the (arbitrary) choice of units of measurement for prices and quantities. To circumvent this problem, we will follow one of Moschini's (1995) suggestions and simply use the following geometrically weighted average prices:

$$(3) \quad \ln P = \sum_{w_i^0} \ln p_i$$

where w_i^0 is the market share of product i at the mean point. As we are using monthly data, we expect there to be a problem of serial correlation. Therefore, a dynamic version of the

AIDS model was estimated. The model is augmented with a lag-dependent variable, a trend and seasonal dummy variables specified as

$$(4) \quad w_i = \varphi_i + \sum_{k=2}^{4} \phi_{ik} D_{k,t} + \varsigma_i T + \iota_i T^2 + \sum_{j=1}^{6} \sigma_{ij} \ln p_j + \theta_i \ln(x/P) + \lambda_i w_{i,t-1} + u_{i,t,}$$

$$i = 1,...,6; \quad t = 1,...,T.$$

Seasonality is specified on a quarterly rather than a monthly basis to save degrees of freedom for model estimation, but also because Wessells and Wilen (1994) found little difference in the two approaches.

To be in accordance with economic theory, theoretical restrictions on the price and expenditure parameters in equation (4) are as follows:

$$(5a) \quad \sum_{j=1}^{6} \sigma_{ij} = 0, \quad i = 1,...,6 \qquad \text{homogeneity}$$

$$(5b) \quad \sigma_{ij} = \sigma_{ji} \quad \forall i \neq j \qquad \text{symmetry}$$

$$(5c) \quad \sum_{i=1}^{6} \sigma_{ij} = 0, \quad j = 1,...,6, \quad \sum_{i=1}^{6} \theta_i = 0, \qquad \text{adding up}$$

In addition, the following adding-up conditions apply to the intercepts and other variables in the model:

$$(6a) \quad \sum_{i=1}^{6} \psi_i = 0,$$

$$(6b) \quad \sum_{i=1}^{6} \phi_{ik} = 0, \qquad k = 2,3,4,$$

$$(6c) \quad \sum_{i=1}^{6} \varsigma_i = 0, \quad \sum_{i=1}^{6} \iota_i = 0,$$

$$(6c) \quad \sum_{i=1}^{6} \lambda_i = 0$$

The short-run expenditure and price elasticities are calculated using the following formulas:

$$(7a) \quad e_i = \frac{\theta_i}{w_i} + 1$$

$$(7b) \quad e_{ij} = \frac{\sigma_{ij} - \theta_i w_j}{w_i} - \delta_{ij}$$

$$(7c) \quad e_{ij}^* = \frac{\sigma_{ij}}{w_i} + w_j - \delta_{ij}$$

where δ_{ij} is the Kronecher delta defined as equal to 1 if $i = j$ and 0 if $i \neq j$. e_{ij} and e_{ij}^* are the Marshallian and Hicksian price elasticities, respectively. The long-run Marshallian elasticities are the short-run elasticities divided by $(1 - \lambda_i)$.

2. Data and estimation procedures

Monthly data on the quantity and FOB value of salted cod exports to Spain for the period January, 1994to February, 2009were provided by Kristin Lien, market manager at the Norwegian Seafood Export Council (NSEC). The NSEC data are collected on the basis of Eurostat and other national statistics. The original data were specified according to product

description and the associated HS number for each product. We aggregated the data according to our model specification. The values are measured in euro at the trade level. The quantity on a live-fish-equivalent basis for Norwegian export is available from the data set given by the NSEC. Those for Iceland and the Faroe Islands are converted from product weights according to the corresponding conversion factors given by the Norwegian Ministry of Fisheries. Unit prices were computed by dividing the value by quantity on a live-fish-equivalent basis.

Table 1 presents the Spanish imports of salted cod products from the 3 Nordic countries, namely Norway, Iceland and the Faroe Islands, between 1994 and 2008. Salted whole fish has declined from 20,541 tons to 10,684 tons. This mainly happened in the imports from Norway and Iceland, not the Faroe Islands. The imports of salted fillets declined, which is mainly contributed by the decrease of imports from Norway, not Iceland. Klippfish was all from the Faroe Islands in consumer packaging. It has increased from 273 tons to 2,086 tons. Frozen light salted fillets from Iceland grew from 376 tons to 6,905 tons. Overall, it appears that the significant pattern in Spanish imports of salted cod is a steady increase in the imports of frozen light salted fillets at the expense of traditional products. Klippfish fillets survived successfully by coming up with the consumer packaging.

Since the dominant share of Norwegian exports is salted whole fish, in addition, the exports of a small share of salted fillets has also declined tremendously. The result is that the market share of all salted fish from Norway decreased from 42% to 24% from 1994 to 2008. The loss of market share is taken up by Iceland and the Faroe Islands. The former seems mainly to benefit from the expanding exports of light salted fillets, and the latter from klippfish fillets exports. Figure 1 shows that there is the same trend for prices of different

products and therefore they are expected to play in the same market. However, the price of frozen light salted fillets is much lower than any other salted cod products in Spain.

Data for the period 1994.01 to 2009.02 are used to estimate the model. However, two sample periods are chosen to test the robustness of the estimated coefficients to sample updating. The data set from 1994.01 to 2006.12 serves as the baseline estimates and we refer to it as the original sample hereafter. The updated sample covers 1994.01 to 2009.03. The reason for selecting the data periods in this way is as mentioned earlier. First, after 2006, Icelandic statistics began to include more product varieties, particularly products in consumer packages. Second, after 2008, frozen light salted fillets were specifically recorded. Before that, they were expected to be recorded as frozen fillets. Since more than 80% of frozen fillets exported from Iceland before 2008 were expected to be light salted, we use the data of frozen fillets as a proxy for the frozen light salted fillets before 2008.

We estimated the model (4) using seemingly unrelated regression (SUR). For the estimation, the econometric software LIMDEP was used. To estimate the demand system, one equation must be omitted to avoid singularity in the variance–covariance matrix of the residuals across equations. Therefore, we ran the model twice, first with the equation of frozen light salted fillets dropped and then with the equation of klippfish dropped. Theoretical restrictions of homogeneity and symmetry were first tested using the Wald test. Based on the test results, an appropriately restricted model was used to estimate elasticities. The elasticities are calculated at sample mean budget shares.

3. Results

The test results for theoretical restrictions are consistent in the two samples. That is, homogeneity is compatible with the data but symmetry is not (Table 2). Therefore, we estimated the model with homogeneity imposed for both sample periods. The estimation results of the parameters for the two samples are reported in Tables 3 and 4. The results overall suggest that salted fish demands are subject to seasonal change and a trend effect.

Of the 12 parameters associated with the trend variables, 8 are significant in both samples. This suggests that a structural change may be at work in the Spanish salted fish market. Specifically, the positive signs of trend variable T in the Icelandic light salted frozen fillets, klippfish and Faroe Island salted whole fish equations in both samples suggest that consumer preferences for these products may be strengthening over time at the expense of salted whole fish from Norway and Iceland and aggregated salted fillets.

Estimated price effects and expenditure effects in general are consistent in the two samples. However, a sufficient difference exists in the two samples to suggest that the estimated results are sensitive to sample updating, particularly when the exact data for light salted fillets are not available before 2008 and the concept of the products may change when their packages are changed. Specifically, the majority of klippfish exported to Spain in recent years was in consumer packages from the Faroe Islands. More salted whole fish and frozen light salted fish from Iceland were in vacuum or consumer packages.

In the AIDS model, the statistical significance of estimated parameters *per se* has little economic significance; we focus on elasticities, which are computed by the Wald test using the formulae (7) in Section 3. The conditional Marshallian price elasticities for the two

samples are reported in Tables 5 and 6. The own price elasticities are all negative and significant in both the short and the long run and in the original and updated samples except for that of frozen light salted fillets. The own prices elasticities of frozen fillets are positive in both sample periods, while they are not significant in the original sample and significant in the updated sample. The result indicates that demand for frozen light salted cod is not sensitive to price change or it is like a kind of Giffen good; specifically, the quantity demanded increases with the rise of the unit price. This result is not what we might expect. However, as shown by Figure 1 in Section 3, the price of frozen light salted fillets is far lower than that of all the others. When the expenditure is fixed and allocated to the demand for all salted fish, it is still reasonable to think that a portion of low-price-seeking consumers will keep purchasing the light salted fillets although their price is increasing, since the relative price of light salted fillets is much lower than that of the other product forms. In addition, there might be a group of consumers who strongly prefer to buy the light salted fillets, due to their unique taste and convenience for cooking compared with other salted fish products.

The estimated expenditure effects are consistent in the two samples. That is, the conditional income elasticities are all positive and significant in the short- and long-run estimates of the two samples. Thus, all the products benefit from the income-induced increase of market size. However, the benefit is distributed unevenly, with Norwegian salted whole fish gaining the most and klippfish the least. The same result applies to an income decline associated with the world economic crisis; Norwegian salted whole fish can be hurt the most and klippfish the least.

To gain insight into the relative strength of substitution relationships, we computed the Hicksian elasticities using the Slutsky equation. For applied analysis, we are always more interested in the long-run relationships. To save space and make the expression neater, we only report the long-run Hicksian elasticities in Table 7. The estimated results are robust across the samples for the relationship between salted whole fish from different sources. The estimated cross price elasticities of Norwegian salted whole fish with respect to the price of Faroe Island whole fish e_{13} is positive, which indicates that the salted whole fish from the Faroe Islands substitutes the demand for salted whole fish from Norway. The same applies to e_{21} and e_{32}. That is, salted whole cod from Norway substitutes the demand for that from Iceland, and salted whole cod from Iceland substitutes that from the Faroe Islands. Given the large magnitude of these cross price elasticities, it indicates that salted whole fish from different sources are competing strongly against each other. This result is expected since the Spanish market for salted whole cod is a traditional saturated market relatively averagely shared by Norway, Iceland and the Faroe Islands.

The cross price elasticity of Norwegian salted whole fish with respect to frozen light salted fillets is 2.09 and 1.09 in the original and updated samples, respectively. This suggests that a reduction in light salted fillet prices will greatly drag down the Norwegian salted whole fish demand since light salted fillets are a strong substitute for Norwegian salted whole fish. Bearing in mind that Norwegian salted whole fish is the second-cheapest product next to light salted fillets (Figure 12), this reflects that, in a cheaper market, the consumers prefer to buy tastier light salted fillets, which are also much easier to prepare for cooking.

The price of salted fillets has a positive effect on Icelandic salted whole fish demand and a negative effect on light salted fillets in both samples. This indicates that salted fillets are a substitute for the Icelandic salted whole fish and a complement to Icelandic light salted fillets. Since more than 80% of salted fillets come from Iceland, the result may in part suggest that both the product cuts and country of origin work in the same market. None of the cross price effects in column e_{i5} are significant, which means that the prices of klippfish will not affect the demand for the other salted products. This, combined with no estimated price elasticities that are significant in the klippfish equation in the original sample, may suggest that competition between klippfish and other salted products is limited. Klippfish is wet salted fish dried to around 70 to 75% of the wet salted weight.

The robustness issue of the sample periods is most pronounced in the estimation of the light salted effects. For example, only two price elasticities are significant in colume e_{i6} in the original sample. However, all the price elasticities are significant in the updated sample (Table 6). In the original sample, the price of light salted fillets has no significant effect on the demand for Faroe Island salted whole fish, salted fillets and klippfish, while in the updated sample, light salted fillets are complementary to Faroe Island salted whole fish and klippfish, and a substitute for salted fillets. The fragility of light salted fish parameters may be due to the measurement problem in our data set. As we mentioned in Section 4, we use frozen fillets as a proxy before sample period 2008.

27

4. Concluding comments

The elasticities estimated in this study suggest that there are strong substitution effects between salted whole fish from Norway, Iceland and the Faroe Islands. The basis for this claim is that the cross Hicksian price elasticities between salted whole fish from these countries are significantly positive and consistent with the large magnitude in both the original and updated samples. Since the Spanish demand for salted whole fish is shrinking overall, the strong substitution between the product forms will make the competition in this market even greater. The Icelandic light salted fillets are playing an important role in reshaping the Spanish salted fish market. According to consistent results in the two samples, a significant trend exists that consumers prefer to buy light salted fillets instead of traditional salted cod. Furthermore, the light salted fillets are a strong substitute for the Norwegian salted whole fish in the relatively cheaper market.

The study results suggest that the Norwegian salted fish industry is facing a big challenge in the Spanish salted fish market. This claim is based on the following findings. First, the estimated parameters of the trend variable (T) for the Norwegian salted whole fish equation in Tables 2 and 3 are consistently negative and significant, which means the consumer preference effect is negative in the demand for Norwegian salted whole fish. Second, the own price elasticity for Norwegian salted whole fish is bigger than that of other products in the market, which means that the demand for Norwegian salted whole fish is very sensitive to the change in its own price. Figure 12 shows that Norwegian salted whole fish is second cheapest next to light salted fillets, much lower than its main competitors, salted whole fish from Iceland and the Faroe Islands. How much room exists for the Norwegian

salted fish industry to lower its price when the production of salted fish largely depends on the raw fish is questionable. Third, the estimated price effects of Faroe Islands salted whole fish and Icelandic light salted fillets are positive and significant, which means that the substitute effects of these products on the demand for Norwegian salted whole fish are strong. Particularly the large magnitude of cross price elasticity with respect to the price of light salted fish means that a reduction in the price of Icelandic light salted fillets can substantially drag down the demand for Norwegian salted whole fish. Fourth, although the price of Icelandic salted whole fish has no direct effect on the demand for Norwegian salted whole fish, it affects the Faroe Island salted whole fish indirectly via a substitution effect. For example, a reduction in the price of Icelandic whole fish would reduce the demand (and presumably price) for Faroe Island salted whole fish, which, in turn, would reduce the demand for Norwegian salted whole fish. Finally, the worst thing is that around 85% of Norwegian salted fish products are salted whole cod.

The findings that the effects of light salted fillets are sensitive to the sample period suggest that more estimation is needed to establish the robustness of the empirical findings in the Spanish salted fish market. We use the Icelandic frozen fillets as a proxy for light salted fillets before 2008 due to the unavailability of the exact data for light salted fillets. Clearly, more research is needed when a longer period of data is available. It is also important to establish whether there are any other light salted fillets exported to Spain except for those from Iceland.

Table 1. Trade volumes and market shares for Spanish imports of salted cod from Nordic countries

| Exporters | 1994 Volume | | | | 2008 Volume | | | |
	Norway	Iceland	Faroe Islands	All	Norway	Iceland	Faroe Islands	All
Salted whole fish	8,656	9,618	2,267	20,541	4,886	3,539	2,259	10,684
Salted fillets	2,934	3,727	-	6,661	882	3,422	-	4,304
Klippfish	349	-	-	349	119	-	-	119
Klippfish fillets	-	-	273	273	-	-	2,086	2,086
Frozen light salted fillets	-	376	-	376	-	6,905	-	6,905
All	11,939	13,721	2,540	28,200	5,887	13,866	4,345	24,098

| | 1994 Market share | | | | 2008 Market share | | | |
Salted whole fish	0.42	0.47	0.11	1.00	0.46	0.33	0.21	1.00
Salted fillets	0.44	0.56	0.00	1.00	0.20	0.80	0.00	1.00
Klippfish	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Klippfish fillets	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Frozen light salted fillets	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
All	0.42	0.49	0.09	1.00	0.24	0.58	0.18	1.00

Source: NSEC (2009)

Table 2. Tests of theoretical restrictions in the AIDS model

| Model | Comuted | | 5% Critical value[a] | Test result |
	Original sample (94.01–06.12)	Updated sample (94.01–09.02)		
Price homogeneity	7.75	4.58	11.07	Fail to reject
Price symmetry	23.15	26.79	18.31	Reject

[a]Degrees of freedom for the tests are 5, 10 for homogeneity and symmetry, respectively

Table 3. SUR estimates of parameters for the AIDS model (sample 94.01–06.12)

Independent variables	Norway Salted whole fish	Iceland Salted whole fish	Faroe Islands Salted whole fish	Nordic Salted fillets	Nordic Klippfish	Icelandic Light salted fillets
lnp1	-0.14	0.15	-0.003	0.04	-0.05	0.03
	(-2.00)*	(2.36)*	(-0.06)	(0.78)	(-1.85)**	(0.71)
lnp2	-0.07	0.01	0.13	-0.07	-0.01	-0.05
	(-0.78)	(0.09)	(2.04)*	(-1.02)	(-0.22)	(-0.93)
lnp3	0.10	-0.01	-0.08	0.04	-0.01	-0.02
	(1.70)**	(-0.22)	(-1.82)**	(0.86)	(-0.53)	(-0.42)
lnp4	-0.13	0.16	0.03	0.07	0.03	-0.19
	(-1.40)	(1.75)**	(0.52)	(0.95)	(0.73)	(-3.00)*
lnp5	-0.08	-0.03	0.02	0.00	0.04	0.04
	(-1.32)	(-0.48)	(0.53)	(0.08)	(1.56)	(0.94)
lnp6	0.31	-0.28	-0.10	-0.09	0.01	0.19
	(3.62)*	(-3.40)*	(-1.70)**	(-1.29)	(0.21)	(3.30)*
Ln(y/P)	0.10	0.01	0.002	-0.07	-0.04	0.001
	(3.93)*	(0.44)	(0.10)	(-3.58)*	(-3.78)*	(0.09)
D2	0.04	0.02	-0.02	-0.02	-0.01	-0.002
	(1.99)*	(1.39)	(-1.74)**	(-1.58)	(-1.64)**	(-0.16)
D3	-0.01	0.05	-0.01	0.01	-0.04	0.01
	(-0.50)	(2.54)*	(-0.73)	(0.64)	(-4.00)*	(0.40)
D4	-0.02	0.02	0.01	-0.02	-0.01	0.02
	(-1.05)	(1.27)	(0.64)	(-1.14)	(-1.11)	(1.28)
T	-0.001	-0.002	0.001	-0.002	0.001	0.002
	(-1.30)	(-2.38)*	(2.68)*	(-4.06)*	(4.46)*	(3.46)*
T^2	-0.000002	0.000004	-0.00001	0.00001	-0.00001	-0.000002
	(-0.49)	(1.14)	(-1.87)**	(4.39)*	(-4.30)*	(-0.64)
$w_{i,t-1}$	0.18	0.23	0.30	0.05	0.22	0.24
	(3.63)*	(4.26)*	(4.82)*	(0.80)	(3.52)*	(5.09)*
Intercept	-0.59	0.101	-0.015	0.91	0.40	0.02
	(-2.55)*	(0.45)	(-0.091)	(5.00)*	(4.08)*	(0.13)
R^2	0.60	0.35	0.53	0.30	0.41	0.70
DW	1.93	2.06	1.82	2.13	1.91	2.24

Note: numbers in parentheses are asymptotic t-ratios, *, ** indicate significance at the 5 and 10% levels, respectively.

Table 4. SUR estimates of parameters for the AIDS model (sample 94.01–09.02)

Independent variables	Norway Salted whole fish	Iceland Salted whole fish	Faroe Islands Salted whole fish	Nordic Salted fillets	Nordic Klippfish	Icelandic Light salted fillets
$lnp1$	-0.06	0.09	-0.05	0.02	-0.04	0.04
	(-0.92)	(1.47)	(-1.03)	(0.42)	(-1.20)	(0.92)
$lnp2$	-0.16	0.06	0.15	-0.02	-0.02	-0.01
	(-1.97)*	(0.85)	(2.41)*	(-0.31)	(-0.46)	(-0.23)
$lnp3$	0.12	-0.02	-0.01	-0.03	0.01	-0.07
	(2.34)*	(-0.51)	(-0.36)	(-0.70)	(0.57)	(-2.01)*
$lnp4$	0.004	0.08	0.05	-0.05	0.09	-0.17
	(0.05)	(1.07)	(0.83)	(-0.85)	(2.27)*	(-3.01)*
$lnp5$	-0.08	-0.004	0.05	0.02	0.02	-0.004
	(-1.56)	(-0.09)	(1.25)	(0.42)	(1.01)	(-0.11)
$lnp6$	0.18	-0.20	-0.19	0.06	-0.07	0.21
	(2.40)*	(-2.95)*	(-3.26)*	(1.09)	(-2.05)*	(4.20)*
$Ln(y/P)$	0.07	0.02	-0.01	-0.05	-0.04	0.01
	(2.96)*	(0.95)	(-0.63)	(-2.70)*	(-3.69)*	(0.61)
$D2$	0.04	0.02	-0.03	-0.02	-0.01	0.01
	(2.12)*	(1.06)	(-2.12)*	(-1.66)**	(-1.35)	(0.59)
$D3$	-0.03	0.06	-0.02	0.02	-0.04	0.01
	(-1.29)	(3.13)*	(-1.24)	(1.11)	(-4.25)*	(0.80)
$D4$	-0.03	0.02	0.01	-0.01	-0.01	0.02
	(-1.88)**	(1.34)	(0.54)	(-0.56)	(-1.08)	(1.79)**
T	-0.003	-0.001	0.002	-0.001	0.001	0.002
	(-5.12)*	(-2.31)*	(4.09)*	(-1.36)	(3.21)*	(5.45)*
T^2	0.00001	0.00000	-0.00001	0.000003	0.00000	-0.000002
	(3.19)*	(-0.002)	(-3.21)*	(1.49)	(-2.83)*	(-0.90)
$w_{i,t-1}$	0.00004	-0.0001	0.00000	0.00002	0.0001	-0.0001
	(0.51)	(-0.96)	(0.08)	(0.33)	(1.88)**	(-1.24)
Intercept	-0.22	0.09	0.09	0.70	0.40	-0.06
	(-1.06)	(0.51)	(0.61)	(4.49)*	(4.18)*	(-0.46)
R^2	0.50	0.43	0.37	0.19	0.29	0.70
DW	1.45	1.57	1.23	1.83	1.35	1.81

Note: numbers in parentheses are asymptotic t-ratios, *, ** indicate significance at the 5 and 10% levels, respectively.

Table 5. Estimated Marshallian price and expenditure elasticities (short run)

Quantity demanded from	ei1	ei2	ei3	ei4	ei5	ei6	ei
Norwegian salted whole fish	-1.81*	-0.47	0.48	-0.81**	-0.45	1.55*	1.51*
	(-1.38)*	(-0.94)*	(0.60)*	(-0.07)	(-0.48)*	(0.92)*	(1.35)*
Icelandic salted whole fish	0.62*	-0.98*	-0.06	0.62**	-0.11	-1.13*	1.04*
	(0.36)	(-0.75)*	(-0.11)	(0.32)	(-0.03)	(-0.88)*	(1.08)*
Faroe Island salted whole fish	-0.03	1.11*	-1.69*	0.29	0.19	-0.89**	1.02*
	(-0.41)	(1.29)*	(-1.11)*	(0.46)	(0.44)	(-1.57)*	(0.91)*
Salted fillets	0.22	-0.21	0.20	-0.65*	0.04	-0.32	0.72
	(0.12)	(-0.04)	(-0.09)	(-1.17)*	(0.08)	(0.27)	(0.82)*
Klippfish	-0.51	0.02	-0.10	0.43	-0.52	0.13	0.55
	(-0.31)	(-0.09)	(0.19)	(1.03)*	(-0.69)**	(-0.72)**	(0.59)*
Frozen light salted fillets	0.30	-0.50	-0.16	-1.73*	0.34	0.74	1.01
	(0.31)	(-0.12)	(-0.57)*	(-1.36)*	(-0.04)	(0.70)**	(1.07)*

[a] Note: numbers in parentheses are updated sample estimate, *, ** indicates significance at the 5 and 10%

levels, respectively.

Table 6. Estimated Marshallian price and expenditure elasticities (long run)

Quantity demanded from	ei1	ei2	ei3	ei4	ei5	ei6	ei
Norwegian salted whole fish	-2.20*	-0.58	0.58	-0.98**	-0.55	1.89*	1.84*
	(-1.38)*	(-0.94)*	(0.60)*	(-0.07)	(-0.48)**	(0.92)*	(1.35)*
Icelandic salted whole fish	0.80*	-1.27*	-0.07	0.81**	-0.15	-1.47*	1.35*
	(0.36)	(-0.75)*	(-0.11)	(0.32)	(-0.03)	(-0.88)*	(1.08)*
Faroe Islands salted whole fish	-0.04	1.58*	-2.40*	0.41	0.27	-1.26**	1.44*
	(-0.41)	(1.29)*	(-1.11)*	(0.46)	(0.44)	(-1.57)*	(0.91)*
Salted fillets	0.23	-0.22	0.21	-0.68*	0.04	-0.33	0.75*
	(0.12)	(-0.04)	(-0.09)	(-1.17)*	(0.08)	(0.27)	(0.82)*
Klippfish	-0.66	0.02	-0.13	0.56	-0.67	0.17	0.70*
	(-0.31)	(-0.09)	(0.19)	(1.03)*	(-0.69)**	(-0.72)**	(0.59)*
Frozen light salted fillets	0.39	-0.66	-0.21	-2.28*	0.45	0.97	1.33
	(0.31)	(-0.12)	(-0.57)*	(-1.36)*	(-0.04)	(0.70)**	(1.07)*

[a] Note: numbers in parentheses are updated sample estimates, *, ** indicate significance at the 5 and 10%

levels, respectively.

Table 7. Estimated Hicksian price elasticities (long run)

Quantity demanded from	ei1	ei2	ei3	ei4	ei5	ei6
Norwegian salted whole fish	-1.85*	-0.13	0.80*	-0.52	-0.39	2.09*
	(-1.13)*	(-0.63)	(0.75)*	(0.27)	(-0.35)	(1.09)*
Icelandic salted whole fish	1.06*	-0.94*	0.08	1.14*	-0.03	-1.32*
	(0.56)*	(-0.50)	(0.02)	(0.59)**	(0.07)	(-0.75)*
Faroe Island salted whole fish	0.24	1.93*	-2.23*	0.77	0.40	-1.11
	(-0.24)	(1.49)*	(-1.00)*	(0.69)	(0.52)	(-1.46)*
Salted fillets	0.38**	-0.04	0.30	-0.50	0.11	-0.25
	(0.27)	(0.15)	(0.01)	(-0.97)*	(0.16)	(0.37)**
Klippfish	-0.52	0.20	-0.05	0.73	-0.60	0.24
	(-0.20)	(0.04)	(0.26)	(1.18)*	(-0.64)**	(-0.65)**
Frozen light salted fillets	0.65	-0.33	-0.05	-1.94*	0.57	1.12
	(0.51)	(0.13)	(-0.44)	(-1.10)*	(0.06)	(0.84)*

Section III. Suggestions for the market strategy of the Norwegian salt fish industry in Spain

Based on the comparative analysis of the Spanish market using the tables and diagrams in Section I and the stricter econometric analysis of the Spanish market structure in Section two, the problems for Norwegian salted fish in Spain are basically concluded as: it is losing competence in both the quality and the quantity in the Spanish traditional market and failing to adapt the production to the Spanish growing demand for new products and new packages. In agreement with Lindkvist (2009), the overall suggestion for the Norwegian salted fish industry to improve the situation is to transit from production convention to market convention. From the market point of view, the suggestion can be further specified as follows.

1. Improve the quality of fish

Both Figure 12 in section Iand Figure 13 in this section indicate that, for the same product categories, the prices of Norwegian products are always much cheaper than those from Iceland and the Faroe Islands. In addition, the low prices of the same are associated with the small market shares. This confirms the findings given by Lindkvist (2009) from a panel study between 1998 and 2006 that Spanish importers consider the salted fish from Iceland and the Faroe Islands to be of better quality than Norwegian products. With the growth of income, people do not take food just to fill their stomachs. They would like to pay the price for quality. Although, as pointed out by Lindkvist (2009), the Norwegian control system with reference to the organization of the production chain and the production laws to be followed by the Norwegian food authorizes were a barrier for single actors to deliver the same products as their competitors, when the whole industry is facing the same problem, it is time for the government, organizations and industries to work together to solve the problem.

2. Increase the exports of salted white fish other than cod

Table 9 shows that, over the last decade, Spain has expanded the imports of other salted white fish, which include saithe, lange, hyse, brosme and blålange. The market share of other white fish grew from 6% to 14% between 1991 and 2009 (01–03). Although the expansion speed is not that fast, the pattern of growth is always there without any exception between the years. Figure 1 suggests that they have started to explore this market. However, it should not be too late to join in the competition when the demand is growing.

3. Enhance the product variety

It is not unrealistic to assume that the consumer demand for food is actually the demand for the attributes of food, which include nutrients, taste, smell, appearance, safety, culture etc. The consumer's demand for a combination of attributes is at the same time constrained by the prices of the products, the disposal income of the consumer and the consumer preferences driven by social factors such as the size of the family, the level of education and the age of the head-of-household and so on. Therefore, the demand for the food products must be various and vibrant. The point for the producers is to provide the various products to meet the different demands from each subgroup.

Table 8 shows in our sample period of 1990.01–2009.03 that Norway provided the exact same products of salted whole cod and salted cod fillets to Spain. The only change is that, starting from 2009, it separated the klippfish according to the sources of catches, i.e. Atlantic and Greenland klippfish, respectively. Differently, Iceland provided seven different salted whole cod, three different salted cod fillets and two different frozen salted light salted fillets starting from 2008. The variety happened both in the product itself and the packaging of products. Market success depends on many conditions, but the basic principle is that producers should adapt the production to the market needs. When the market needs become more sophisticated, it is necessary for producers to come up with a greater variety of products.

4. Segment the market according to the need of each customer subgroup

As mentioned, consumers' demand for the attributes of products is constrained by economic factors such as prices and income and also by social factors such as the size of the family, the education level and so on. Therefore, the demand is a function of prices, income and social factors. We can find the common characteristic of the subgroup that prefers to buy the specific product. For example, busy young couples might prefer to buy the frozen light salted

fillets with consumer packaging since it is easier to cook, while retired old people might prefer to buy the high quality traditional salted cod since they have time to cook and it also provides a good memory of the past. The importance is to segment the market and provide the products according to the needs of specific sub-markets.

As pointed out by Lindkvist (2009), the market conventions are not homogenous. Although the new light salted products have encroached on the Spanish market, the traditional salted fish still accounted for about 50% of the market share. A good example is the Faroe Islands' positioning of selling the salted whole cod to the customers who prefer the traditional product with good quality. It can be seen from picture 1 (Section II) that, although the price of salted whole fish from the Faroe Islands is the most expensive among all the salted cods from Norway, Iceland and the Faroe Islands and the total Spanish demand for salted whole fish has been greatly decreasing over the last decade, the export of salted whole fish from the Faroe Island remains at the same level.

The success of the Icelandic salt fish industry in Spain is not all but very importantly due to its attention to market segments. Figure 13 and Table 8 (this section) show that it exports the cheap frozen light salted fillets probably to those consumers who prefer fast, tasty and cheap salted fish. On the other hand, it exports the salted whole fish with and without consumer packaging to those who would like to pay the price for good quality conventional salted fish.

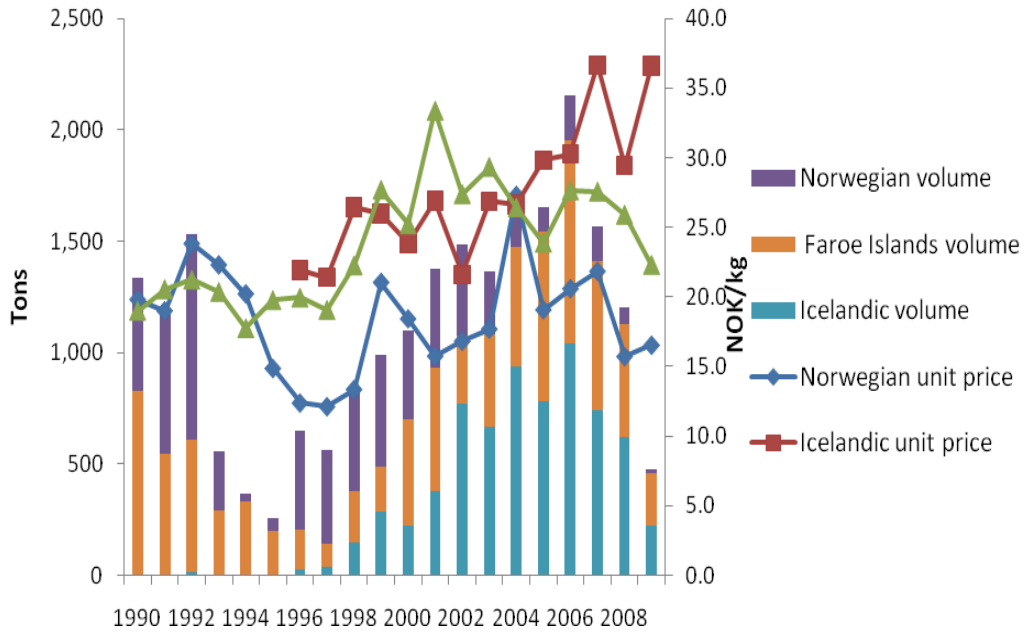**Nordic exports of other salted fish (not cod) to Spain**

Figure 13

Table 8. Products exported by Norway and Iceland to Spain

Salted whole cod

Norway		Iceland		
1990–2009.03	03056200 Torsk, saltet	**1990–2006**	03056209 Torsk, annen, saltet	43
		2007	03056299 Torsk, annen, saltet	43
			03056294 Torsk, flattrykt, i forbrukerpakning, saltet	52
		2008–2009.03	03056299 Torsk, annen, saltet	43
			03056219 Torsk, i forbrukerpakning, annen saltet	47
			03056212 Torsk, i forbrukerpakning, lettsaltede deler med skinn og bein	48
			03056211 Torsk, i forbrukerpakning, lettsaltede deler uten skinn og bein	49
			03056214 Torsk, i forbrukerpakning, andre saltede deler med skinn og bein	50
			03056213 Torsk, i forbrukerpakning, andre saltede deler uten skinn og bein	51
			03056294 Torsk, flattrykt, i forbrukerpakning, saltet	52

Salted cod fillets

Norway		Iceland		
1990–2009.03	03053004 Torsk, saltet filet	**1990–2007**	03053011 Torsk, saltet filet	41
		2008–2009.03	03053032 Torsk, saltet filet ellers	42
			03053022 Torsk, lettsaltet fryst filet ellers	45
			03053012 Torsk, lettsaltet fryst filet i forbrukerpakninger*	53

Norwegian Klippfisk		Icelandic frozen light salted cod fillets		
1990–2008	03055107 Torsk, klippfisk	**2008–2009.03**	03053022 Torsk, lettsaltet fryst filet ellers	45
	03055108 Torsk, atlanterhavs-,			
2009.01–2009.03	klippfisk		03053012 Torsk, lettsaltet fryst filet i forbrukerpakninger*	53
	03055109 Torsk, grønnlands-/stillehavs-, klippfisk			

Table 9. Spanish imports of salted cod and other salted fish (Eurostat)

Year	Cod Product weight (tons)	Cod Share	Other fish Product weight (tons)	Other fish Share
1991	20023	94%	1299	6%
1992	25955	95%	1375	5%
1993	25585	94%	1595	6%
1994	23787	97%	786	3%
1995	23916	98%	436	2%
1996	26663	98%	582	2%
1997	25099	97%	841	3%
1998	22878	97%	670	3%
1999	20750	96%	959	4%
2000	22449	96%	1031	4%
2001	19745	94%	1249	6%
2002	20720	94%	1314	6%
2003	26092	93%	2050	7%
2004	25379	91%	2445	9%
2005	24271	90%	2775	10%
2006	24008	89%	2978	11%
2007	22763	86%	3834	14%
2008	19017	86%	3173	14%
2009	3943	86%	663	14%

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