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## European Trade of Fisheries and Aquaculture Products

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Abstract

The report presents the results of an analysis of the characteristics and evolution of EU seafood trade in the period 2001-2012. The focus of the analysis is on long term seafood trade patterns. The report aims to establish a link between the annual economic reports of the Scientific, Technical and Economic Committee for Fisheries (STECF) and the short term price and trade analyses already regularly provided by the European Market Observatory for fisheries and aquaculture (EUMOFA). The report is structured in the following main sections: International context, EU overview, Examples of trade trends from the national analyses, National chapters.

The analyses consist of a description of trade balance, imports and exports by country, year, main commercial species and preservation and processing groupings.

In addition, the following three indices were used to describe specific aspects of the trade patterns: Trade Competition Ratio (TCR), used to measure the exposure of domestic markets to trade competition; Normalised Revealed Comparative Advantage (NRCA), used to measure the competitive advantage of the exports of a country for a given product; Margin of exports growth, used to measure how a country is increasing its exports (i.e. either by expanding existing trade relations or by getting access to new markets).

The data considered for the analyses cover world seafood exports and imports in value and volume for the period 2001-2012 extracted from COMEXT and COMTRADE databases.

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# 1 Introduction

Internationally seafood commodities are the most traded among agricultural and food commodities. The percentage of fisheries and aquaculture production entering international market was 37% in 2011 (FAO, 2012).

In the case of the EU, international trade has an even more important role considering that as a whole, the EU is by far the largest importer of fish and fisheries products in the world with a negative trade balance for fish deteriorating over the years.

The international seafood market is highly segmented and is expanding rapidly under the influence of an increasing relevance of trade for processing and trade of aquaculture products. In this diversified and dynamic context there are many segments which could offer development opportunities for the EU fisheries and aquaculture sectors. The expansion of the salmon industry in Norway which in few decades became one of the key sectors in the national economy mostly thanks to exports, is the most striking example of the positive effects of focusing efforts in areas of comparative advantage and exploiting opportunities offered by the international seafood market.

The understanding of main patterns of seafood trade gives the possibility of identifying areas which could represent development opportunities for the aquaculture and fisheries sector at EU level and of understanding which segments are more exposed to international competition.

This report presents the results of an analysis of the characteristics and evolution of the EU seafood trade in the period 2001-2012.

The focus of the analysis is on long-term seafood trade patterns. The report aims to establish a link between the annual assessment of the economic performance of the fisheries, aquaculture and fish processing sectors in the EU by the Scientific, Technical and Economic Committee for Fisheries (STECF) (STECF 2014a, STECF 2014b, STECF 2014c) and the short term price and trade analyses regularly provided by the the European Market Observatory for Fisheries and Aquaculture (EUMOFA).

The report is structured in the following main sections:

- International context;
- EU overview;
- Examples of trade trends emerging from the national analyses;
- National chapters for 23 main EU Member States (MS)<sup>1</sup>.

The analyses in the national chapters consist of a description of the trade balance, imports and exports by country, year, main commercial species and preservation and processing groupings. These analyses are purely descriptive. In addition, the national chapters include qualitative considerations on the effects of seafood trade on the performance of the EU processing industry, formulated by National experts during the meeting of the STECF expert working group (EWG 14-15) on the Fish processing industry, held in Ispra during the week 20-24 October 2014 (STECF 2014c).

The following three indices were used to describe specific aspects of the trade patterns:

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<sup>1</sup> Landlocked countries (Austria, Czech Republic, Hungary, Luxembourg and Slovakia) were not considered in the national chapters. Their contribution to seafood trade is limited (in 2012 they represented 0.3% of extra-community exports and 2.7% of extra-community imports, in value).

- Trade Competition Ratio (TCR), used to measure the exposure of domestic production to trade competition, the extent of openness to trade of a country;
- Normalised Revealed Comparative Advantage (NRCA), used to measure the competitive advantage of the exports of a country for a given product;
- Margin of exports growth (MEG), used to measure how a country is increasing its exports (i.e. whether by expanding existing trade relations or by getting access to new markets).

The data used for the analyses covers EU intra and extra-community seafood exports and imports in value and volume for the period 2001-2012 extracted from COMEXT database. For analyses of the world trade of seafood, data for the period 2001-2011 were extracted from COMTRADE database. A more detailed description of data processing and of the methodology to calculate the indicators is given in Annex I.

The report was finalised in December 2014 and is part of JRC institutional research activities on the interactions between aquaculture and fisheries and on the role of seafood for food security and Blue growth.

## 2 The international context

In 2009 fish accounted for 16.6% of the global population's intake of animal protein and 6.5% of all protein consumed (FAO, 2012). In 2011, 10% of the world countries produced 86% of global capture and aquaculture supply. China produced around 35% of global primary seafood supply, with more than two third represented by aquaculture. This unbalanced distribution of resources makes seafood particularly likely to enter international trade.

In the last decades fish exports increased almost continuously, going from an average of 16.5 B Euro in the 80s to almost 62 B Euro in the 00s, with an average annual growth rate of almost 7%.

The share of the total fish production in volume (live weight equivalents) entering international trade increased from 25% in 1976 to 37% in 2011 (FAO, 2012). This share is higher than for animal food commodities, like meat and milk and dairy products, for which respectively 9.8% and 6.7% of production was traded.

As for all other commodities, trends in seafood trade were affected by the global economic crisis of 2008. In 2009, world seafood trade reduced by 6% in value (78.2 B Euro compared to 82.2 B Euro in 2008). In 2010, due to a reversal of trends in prices and consumption, seafood exports reached about 87.9 B Euro, almost twice the value observed at the beginning of the century, and continued to increase in 2011 (+16%). The positive trend was maintained also in the first part of 2012, but the growth was much slower as a result of the reduced demand for fish and the sharp decline of the international prices of fish and fishery products for human consumption, especially those of farmed species (OECD-FAO, 2013)

Developed countries as a whole have a negative fish trade balance, while developing countries as a whole are net exporters. Developing countries' economies are increasingly dependent on fish exports which are exceeding the value of the traditional agricultural exports, such as coffee, tea, cocoa, bananas and sugar.

China, which was eighth in terms of value of seafood exports in 1990, is the largest exporter in the world since 2001. In 2009, its fish exports, worth about 8.4 B Euro, were 8 times higher than in 1990. On the imports side, the increase in the value of Chinese seafood trade was even more pronounced (6.1 B Euro in 2011 against 180.6 M in 1990).

US and Japan have historically been the two largest importing countries of fish products. In 1990, Japanese seafood imports were almost twice as much as US ones (8.7 B Euro against 4.5 B Euro). However, from 1990 to 2010, while in Japan imports increased by 40% (reaching 12.3 B Euro), in USA they have almost tripled (12.5 B Euro). This has made USA the largest importing country of fish and fishery products in the world.

Although, as single countries, the EU MS contribute to the global seafood imports less than USA and Japan, the EU as a whole is by far the largest importer of fish and fisheries products in the world (around 41% of the total value of imports, in 2010), with five countries alone (Spain, France, Germany, Italy and the United Kingdom) accounting for almost two third of the total fish imports.

## 2.1 Projections<sup>2</sup>

It is foreseen that the expansion of world's trade of fish and fisheries products will be maintained during the following years, although at a slower pace (from 3.1% for 2010-2012 to 1.8% in 2022) (OECD-FAO 2013). Aquaculture will be the main responsible for this expansion, as its production is expected to grow 35% in volume by 2022, compared to the average value of the period 2010-2012.

A moderate increasing trend is estimated for capture fisheries, as a consequence of the improved condition of the stocks, better management and lower discards. However, as the estimated rise (+5% in volume) is much lower than the one of aquaculture, in relative terms catches will play a minor role in the growth of world seafood trade.

Asian countries, accounting for around 90% of world aquaculture volumes, are expected to contribute 61% of the additional total fish production in 2022, compared to 2010. Therefore, they will drive the increase of seafood trade, and China will strengthen its leading role, enlarging its share of global aquaculture production from 61% in 2010 to 63% in 2022. It is estimated that, by 2022, developing countries will contribute 68% (in volume) of the world seafood exports for human consumption. Around 53% of total exports will be destined to Asia, which will have the highest rate of increase of average per-capita seafood consumption.

Concerning the direction of commercial flows, south-south trade is also expected to grow, as a result of the increased demand and supply of seafood, as well as of the implementation of free trade agreements in developing countries. On the other hand, the increase in fish demand and imports in developing countries is expected to reduce the level of net exports from developing to developed economies.

## 2.2 International sea food trade drivers

The large growth and transformation in trade relations and composition that has taken place in the international seafood market during the last decades has resulted from a number of different factors which are described briefly below. More extensive descriptions of these trends and drivers are provided in a series of reports and descriptive analyses of international seafood trade (FAO, 2012; Asche and Smith, 2010; FAO, 2009; Anderson, 2003).

### Overexploitation of fish stocks

Since 1974, the share of stocks considered as non-fully exploited has continuously decreased, while the number of overexploited and collapsed fish stocks has increased alarmingly, although at a lower speed from the nineties onwards. Most stocks of the species that give the largest contribution to the total capture production are under threat from overfishing.

The depletion of fish stocks has obvious consequences not only on local fish markets but also on international seafood trade. An example of trade transformations caused by an insufficient availability of fish is represented by the white fish market. Originally, world market of white fish was represented mainly by North Atlantic species, such as cod and haddock. Since overexploitation has started to deteriorate the

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<sup>2</sup> This section is based entirely on the Agricultural Outlook for the period 2010-2019 by OECD-FAO (2013).

traditional stocks, other species originating in the Pacific Ocean have started to gain shares in the world market of white fish.

In the past decades, the increase in the demand for fish by developed countries has not been accompanied by an equal increase in production. Furthermore, developing countries, especially in Asia, have increased their population and overall fish consumption. All this has generated an additional need of fish products which has encouraged the overexploitation of aquatic resources in countries wanting to meet this demand with their exports.

#### Establishment of Exclusive Economic Zones (EEZs)

About 90% of the global fish production originates within the EEZs of coastal States. The establishment of EEZs in 1977 greatly changed the international fishing patterns.

Overall, the creation of EEZs boosted the international trade of fish products. Countries which traditionally fished close to other nations became more dependent on imports, due to the decrease in their production. On the other hand, nations with a large amount of resources within their 200-mile EEZ but with a low demand for fish increased their exports.

One example of the effect of the establishments of EEZs in transforming trade flows can be observed in the rise of USA exports of processed products to Japan. In particular, between 1990 and 1991 USA took full control of the North Pacific Alaska pollock and groundfish fishery in its EEZ, which represents the main source for the surimi Japan imports. USA became, since then, a major exporter of fishery products specializing in fresh/frozen products of capture origin (Sproul 1993).

The introduction of EEZs also contributed to a shift of production in favour of developing countries, which have overtaken developed countries as the main producers of fishery products since the mid-1980s (Mahfuz Ahmed 2006).

Some developing countries, which were not able to invest and develop their own fishing capacities, benefited from the selling of fishing rights and allowing international high sea fleets to exploit their stocks surplus for financial compensation. Some examples are represented by EU pelagic fleets fishing close to the West African coast contributing to the EU exports to Nigeria (almost 25% of external EU exports of small pelagic fish in 2012) or EU fleets targeting tuna and landing frozen fish in Ecuador, Seychelles, the Mauritius and Côte d'Ivoire (70% of EU exports of tuna and tuna species to the third countries in 2012). The expansion of high sea fleets resulted in the exports of frozen and partly processed fish from countries buying the fishing rights to developing countries and in the exports from these to developed countries after processing.

#### Expansion of aquaculture

Global seafood trade expansion observed in the last decades has been greatly determined by the increase in the world aquaculture production. From 1990 to 2010, farmed fish production has grown between four and five times, reaching almost 60 M tonnes (excluding aquatic plants and non-food products), while captures have increased at a slower rate (from 84 to 89 M tonnes). Consequently, the share of aquaculture over the fish production has increased from 13% in 1990 to 40% in 2010.

Aquaculture is the major engine of global fish and sea food production since the late 1980s. In 2010, the aquaculture sector supplied almost half of the world per capita consumption of fish and seafood, while in

the early 1980s less than 2% of the fish supply originated from the farming sector. The major aquaculture fish producers are China, India, Indonesia, Philippines, and Vietnam. Asian countries, already dominant in the global aquaculture production, have strengthened their role of world leaders thanks to technical innovations, private sector growth and increased market demand (Ahmed and Lorica 2002). In 2010, Asia accounted for 89% of world aquaculture production in volume and China alone for more than 61% (FAO, 2012). As a consequence of the expansion of its aquaculture sector, Asia has largely contributed to the increase of the world seafood trade.

The share of aquaculture products traded internationally has increased between 1990 and 2010 and this increase is particularly evident for Norway and Chile, which are two large producers and exporters of farmed Atlantic salmon.

A more recent example is represented by Vietnam, which in few years increased its fish exports to become the fourth largest exporter in the world in 2010. This increase has resulted mainly from the expansion of the aquaculture industry. According to FAO data, during a single decade (2000 to 2010), while Vietnamese catches increased around 50%, its farmed production rose more than five times (from 499 K tonnes to 2.7 M tonnes), driven almost exclusively by the growth of production of Pangasius (1.1 M tonnes in 2010, against only 100 K in 2000).

Another example of the contribution of aquaculture to the expansion of exports can be observed in the case of Indonesia. From 1990 to 2010, the aquaculture output of this country more than tripled thanks mainly to catfishes (243 K tonnes in 2010, 64 times as much as in 1990) and Nile Tilapias (the production of which increased by 35 times over the period), together representing 30% of the total farmed production in 2010, but also to milkfishes (18% of aquaculture volumes), carps (12%) and shrimps (9%).

Another consequence of the expansion of aquaculture is the trade of fish meal and fish oil. China in particular became over the last decade one of the main importer of fish meal, accounting for more than one third of global imports (25.1% of the total value and 36.4% of the total volume of its fish imports).

#### Changes in consumption habits

Worldwide, per capita fish consumption grew from an average of less than 10 kg (live weight equivalent) to almost 19 kg, over the last 50 years (FAO 2012). Part of this growth has been driven by changes of consumption habits in developing countries, which increased their imports of low-value fresh water and pelagic fish (Delgado, Christopher L. et al. 2003). It is expected, that world seafood consumption will continue to grow, increasing the trade flows and exchange of fish between markets (Kearney 2010). China is becoming not only the main fish processing country, but also one of the biggest consumers of fish. Furthermore, fresh water fish and sea food consumption in this country are both expected to increase (Kearney 2010). Changes in consumption habits are at the basis of the penetration in new markets of almost unknown species from aquaculture production. Two examples are the consumption of channel catfish, becoming the fifth most consumed species in USA and Tilapia becoming a familiar product throughout much of the world (Anderson 2003).

#### Improvement of freezing and storage technologies and lower transportation costs

Due to the perishability of fish, the improvement of freezing and storage technologies had an essential role in the increase of global seafood trade observed in the last decades.

In a not too distant past, the fish which was not sold locally was traded in the form of dried or salted products. The development of freezing and refrigeration has changed the international seafood market radically, as freezing has become the most relevant preservation method for many products destined to trade. At the beginning of the 80s, around 34% of the fish exports in volume were constituted of frozen products and this share has even increased over time, reaching almost 47% in 2009. In value, at the beginning of the 80s, exports of frozen fish already represented about 48-50% of the total. However, this share has decreased over time (42% in 2009) and, at the same time, the share of further processed fish (e.g. smoked, dried and canned) has increased.

The salmon market has been heavily affected by technological advances in processing. Originally, farmed salmon was sold only in local markets, together with wild salmon. Thanks to the advancement of technology, as well as to the reduction of transportation costs, salmon farmers started to sell their output over long distances making the market of farmed salmon totally globalised. The United Kingdom and Norwegian salmon was sent, initially, to close markets by truck and then, since air freight has developed, it reached all the main world markets in EU, USA and Japan (Asche and Smith 2010).

Faster transport and better storage and logistics have affected also the trade of non-processed products. For example, live fish exports, accounting for 89.5 M Euro in 1980, increased by 13 times in 30 years, thus gaining significantly also in terms of share of the total exports. During the same period, live, fresh and chilled fish as a whole (including fish, fish meat, molluscs and other aquatic invertebrates) doubled their value share (20% in 2009, against 10% in 1980).

#### Fish processing, production of value-added products and outsourcing

The fisheries supply chain is very complex and value-added processing is one of its key components. In addition, the fish market is now guided by competition dynamics of global markets. These aspects strongly affect the international fish trade. Processing may happen very far from the fish origin, due to costs differentials across countries; furthermore, goods are crossing national borders many times before reaching the final consumers, in order to profit of better market opportunities.

Developing and developed countries are both part of this process. As already seen, most exports originating in developing countries are destined to the developed part of the world and an increasing share of these products consists of processed fish imported as raw material.

The fish processing industry in developing countries is less mature in terms of variety of products and processing technologies, but is growing rapidly. Many countries (e.g. China, Vietnam and Thailand) have already established themselves as important sites for fish processing. This trend has also been fuelled by the aim of developing countries to increase their profits and shifting their exports in favour of high-value processed products.

The expansion of the world processing industry has resulted from the outsourcing of fish processing activities to developing countries, mainly in Asia (e.g. China, Thailand and Vietnam), but also in Central and Eastern Europe (e.g. Poland and Baltic countries) and North Africa (Morocco). This has been driven by comparative advantages in terms of labour costs and, to a lesser extent, by transportation time (Lem and Emerson 2008).

### Trade liberalization

Negotiations of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) for wider market access have significantly contributed to increase fish trade and led to a decline of tariffs on primary fish commodities in the entire world (Mahfuz Ahmed 2006).

During the last decades, the creation of Regional trade agreements (RTAs), such as the Association of Southeast Asian Nations Free Trade Agreement (AFTA), the Common Market for Eastern and Southern Africa (COMESA) and the South American Common Market (MERCOSUR), have increased trade in fisheries and agricultural products between their members. In addition, it is generally recognized that trade liberalization policies will be relevant also to the future of international fish trade within developing countries and between developing and developed countries.

As developing countries have been and are the main participants in these RTAs, sometimes being part of many of them, their implementation has resulted in an increase of south-south trade of fish and fisheries products. This increasing trend is expected to continue, as a consequence of developments in RTAs, as well as of higher demand and supply of seafood (Mahfuz Ahmed 2006).

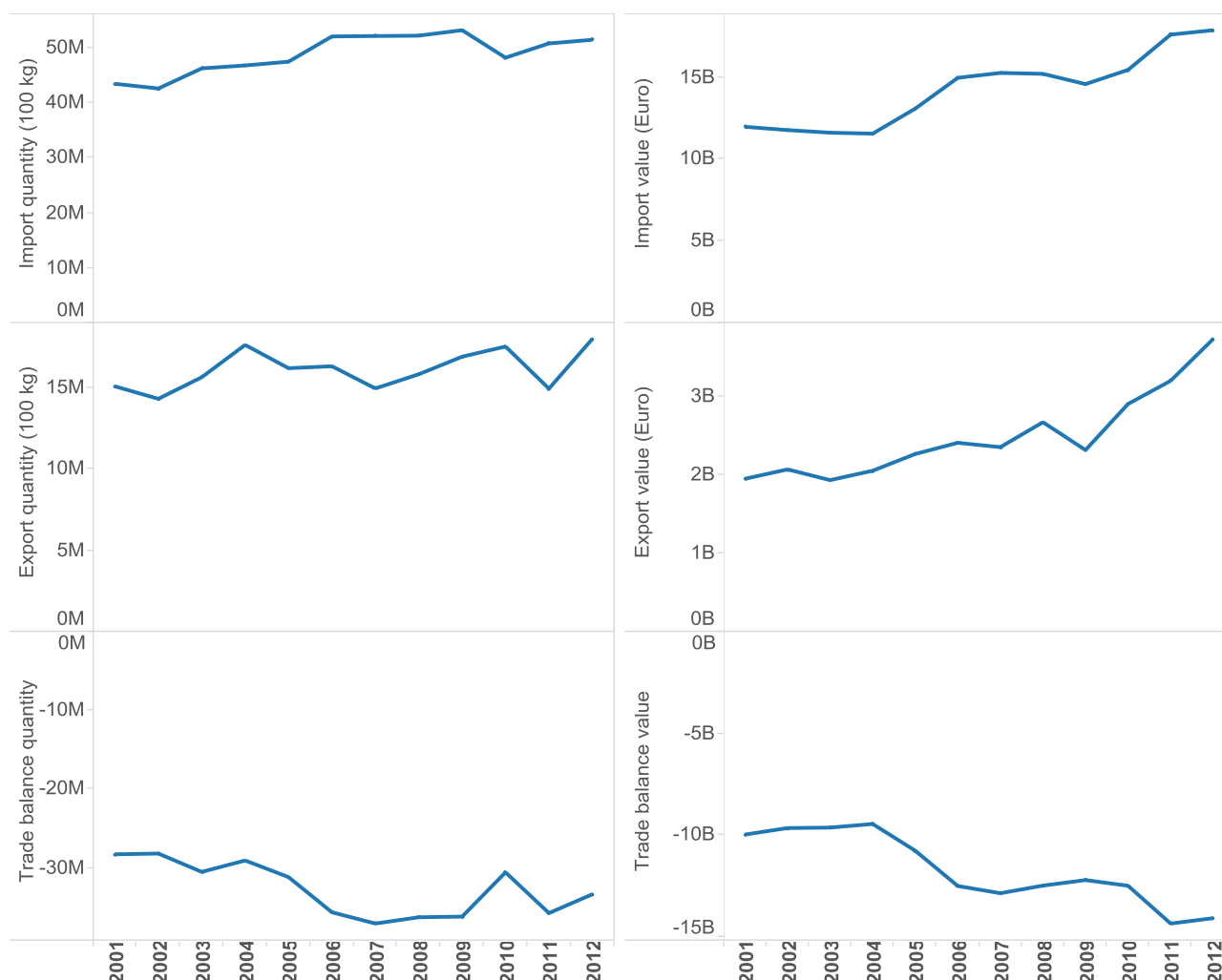
Although tariffs of fish products are reduced with respect to the past, other types of barriers, such as tariff peaks, tariff escalation for processed or value-added fish products and non-tariff barriers (e.g. safety and environmental standards) still represent an important impediment to international trade.



## 3 EU overview

### 3.1 Trade balance and exposure to trade competition

The EU is a net importer of fish and fish products, with a negative trade balance for extra-community trade of -3.3 M tonnes in volume and of -14.1 B Euro in value in 2012 (Figure 3.1.1).



**Figure 3.1.1 - EU extra-community trade and balance in volume and value.**

The top 5 countries with a negative trade balance for extra-community trade in 2012 in terms of value were Spain (-2.4 B Euro), Sweden (-2.3 B Euro), Germany (-1.6 B Euro), the United Kingdom (-1.4 B Euro) and Italy (-1.4 B Euro). These countries respectively represented 17.9%, 11.5%, 9.8%, 9.7% and 7.7% of total extra-community trade in value in 2012.

A positive trade balance was recorded in the case of Ireland (135.6 M Euro), Estonia (50.7 M Euro), Malta (36.6 M Euro), Latvia (34.1 million Euro), Croatia (17.7 M Euro) and Bulgaria (1.0 M Euro). However the trade of each of these countries did not exceed 1% of the total EU extra-community trade.

The top 5 species with a negative trade balance in 2012 were salmon (-2.7 B Euro representing 15.6% of total extra-community trade), miscellaneous tunas (-1.7 B Euro, 9.0%), tropical shrimps (-1.4 B Euro, 7.0%), miscellaneous shrimps (-1.4 B Euro, 7.0%) and cod (-1.3 B Euro, 7.5%).

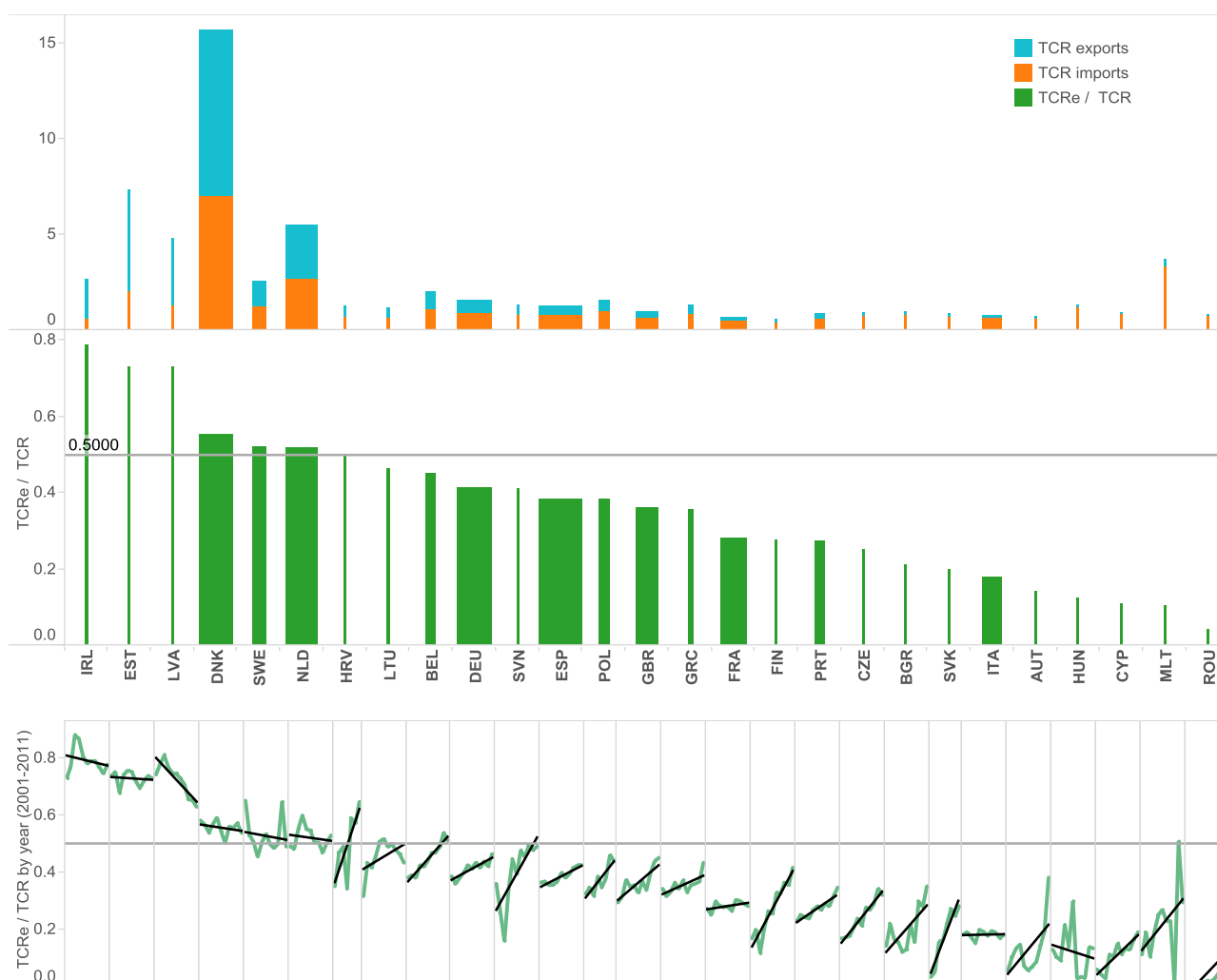
The top 5 species with a positive trade balance were: horse mackerel (217 M Euro, 1.0%), bluefin tuna (122 M Euro, 0.5%), skipjack tuna (92 M Euro, 0.9%), coldwater shrimps (91.2, 1.5%) and miscellaneous small pelagics (66.9, 0.3%).

Total trade has slightly increased in terms of volume over the reference period. In terms of value, there were two main changes in the trade balance trend: between 2004 and 2006 and between 2010 and 2011.

The relevance of trade in relative terms in respect to the volume of production and consumption in each country was assessed through three indexes: Trade Competition Ratio (TCR), Trade Competition Ratio for imports (TCR<sub>i</sub>) and Trade Competition Ratio for Exports (TCR<sub>e</sub>). These indexes are based respectively on the ratio between the total volume of total trade, imports and exports and the apparent consumption of seafood in the country (for more details of the method of calculation of these indexes see Annex I).

Values above one for the indexes result from a volume of total trade, imports or exports exceeding the domestic apparent consumption of seafood. High values of the indexes may be considered as an indication that the country is more open to the international markets and that its domestic production is consequently more exposed to price influences from international trade. The relative position of the TCR<sub>e</sub> and TCR<sub>i</sub> in respect to the total TCR indicates if the country has as exports or imports driven exposure to trade competition.

The charts in Figure 3.1.2. show the average values for the TCR<sub>i</sub> and TCR<sub>e</sub> by MS, the average ratio between TCR<sub>e</sub> and TCR and the evolution of this ratio over the years.



**Figure 3.1.2 - Imports and exports trade competition ratio by country.** First two charts show values averaged over the period 2001-2011 with size of the bars proportional to the total volume of trade. The lower chart shows the evolution of the exports TCR to total TCR by years. The countries are ordered by decreasing ratio between exports TCR and total TCR.

The countries with values for the TCR greater than 2 in the period 2001 -2012 were Denmark (15.6), Estonia (7.3), the Netherlands (5.4), Latvia (4.8), Malta (3.7), Ireland (2.6), Sweden (2.5) and Belgium (2.0). The total volume of trade in these countries is the double of the domestic consumption. Given the high value of TCR, the domestic primary producing sectors has a high exposure to international markets.

Countries that are highly exposed to international trade by effect of imports were Denmark (with a TCRi of 7.0), Malta (3.2), the Netherlands (2.6), Estonia (1.9), Latvia (1.3), Sweden (1.2), Hungary (1.1) and Belgium (1.1).

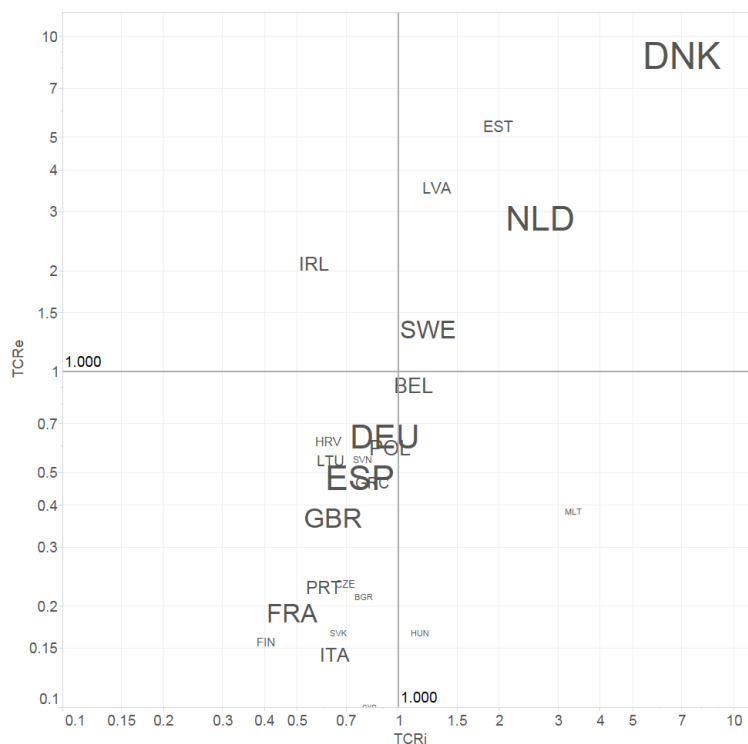
On the contrary, a high ratio between the exports TCR and the total TCR gives an indication that the country is more open to the international market through exports. Values greater than 0.5 for this ratio were recorded in Ireland (0.78), Estonia (0.72), Latvia (0.72), Denmark (0.55) and Sweden (0.51).

The trend lines in the lower chart in Figure 3.1.2. indicate if there was over time a greater openness and exposure to the international markets driven by exports. For the most traditionally exporting countries, the trend is negative and corresponds to a worsening of the trade balance. Positive trends are present in traditionally importing countries with the exception of Italy. The positive trend is corresponding to positive trade balances in 2012 in the case of Croatia, Malta and Bulgaria.

Based on the values of the trade indexes, the MS can be divided in the following five groups represented in the four quadrants in Figure 3.1.3 -:

- Denmark, Estonia, Latvia and Sweden have a high exposure to trade, driven by imports and exports. In these countries, exports and imports of seafood are both higher than the national apparent fish consumption;
- Ireland has a high exposure to trade driven by exports;
- Malta, Hungary and Belgium have a high exposure driven by imports;
- all the other countries have a less pronounced exposure to trade, which is mostly driven by imports.

The exposure from imports in countries in the last group is particularly significant in the case of Romania, Cyprus, Austria and Italy which have high values of the TCRI compared to the TCRE.

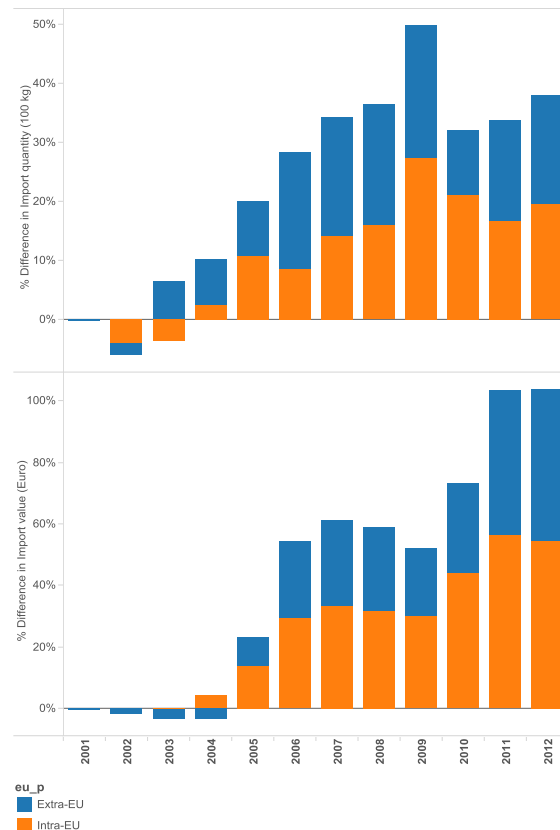


**Figure 3.1.3 - Positioning of countries on the basis of their openness to international trade through imports (TCRI) and exports (TCRe). Size of the labels is proportional to the volume of total trade. Values are averaged across years in the period 2001-2011.**

## 3.2 Imports

In 2012, the EU as whole imported from third Countries around 5.1 M tonnes of seafood for a value of 17.8 B Euro (Figure 3.1.1). Extra-community imports represented around 54% of total imports in volume and 54% in value.

Figure 3.2.1 shows the percentage difference of extra and intra-community imports in volume and value in respect to 2001.

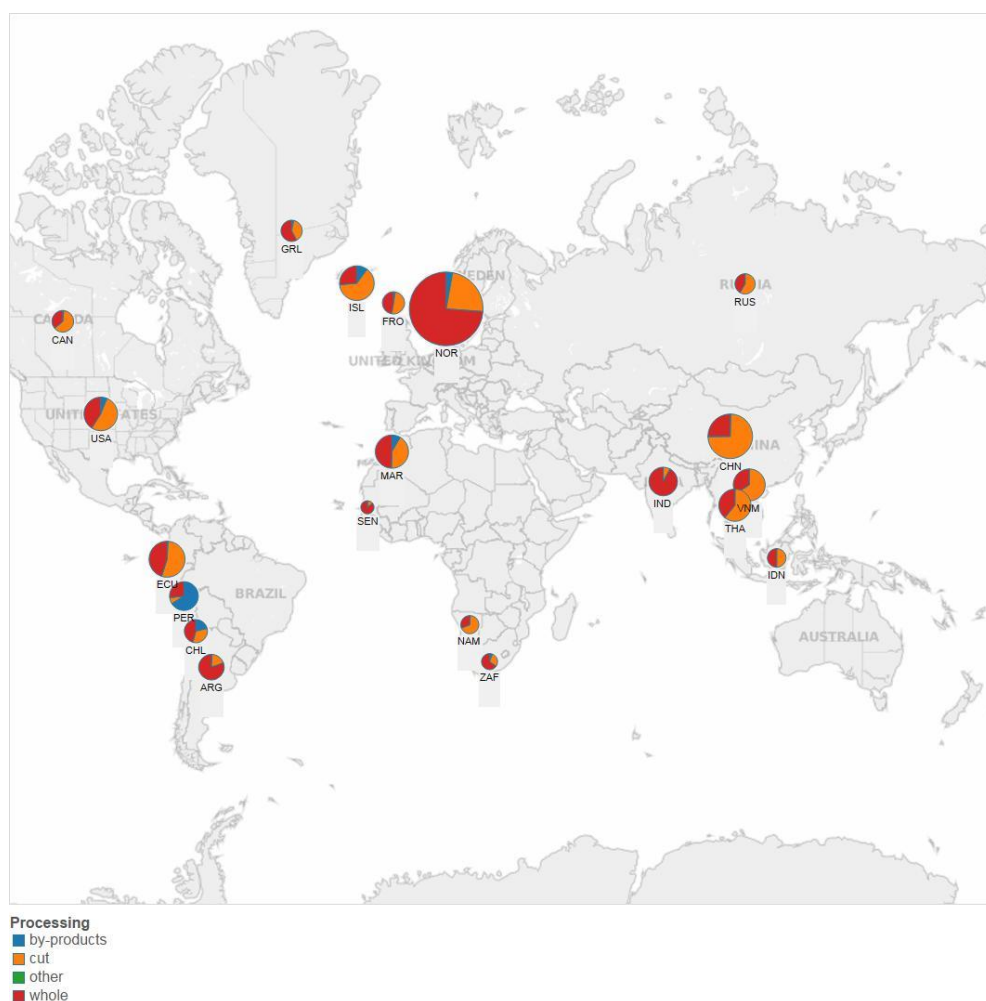


**Figure 3.2.1 - Percentage difference of EU extra and intra-community imports in volume and value in respect of 2001.**

The figure indicates that most of the expansion in volume took place until 2009. Since 2009, there was a strong expansion of imports in value and a decrease of imports in volume.

Extra-community imports have expanded between 2001 and 2012 by 18.4% in volume and 49.3% in value, while intra-community imports have expanded respectively by 19.6% and 54.6%.

Figure 3.2.2 shows the top 20 main third countries of origin for EU imports in 2012 in terms of value and the share by processing status.



**Figure 3.2.2 - Top 20 third countries of origin for EU imports in value in 2012 and share of imports by processing form.**

The main countries of origin for EU extra-community imports in 2012 were Norway (22.0% of the total volume), China (8.0%), Ecuador (5.2%), Iceland (4.8%), USA (4.6%), Morocco (4.4%), Thailand (4.2%), Vietnam (4.1%), Peru (3.3%) and India (3.3%).

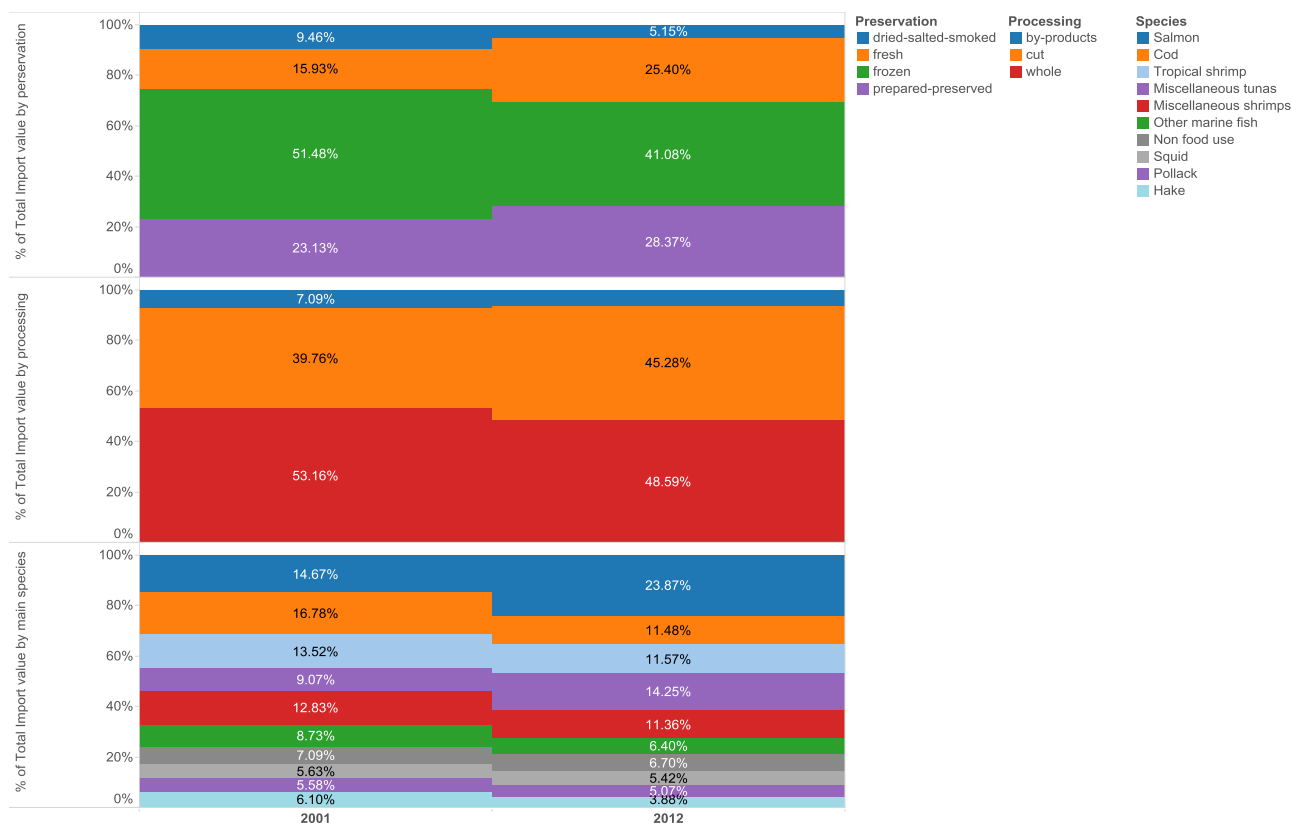
A high percentage of by-products is present in the imports from Peru and Chile, which are mostly consisting of fish meal and fish oil for the aquaculture industry. Whole products represent a high share of imports from Norway (salmon), Argentina (miscellaneous shrimps) and Ecuador (Tropical shrimps).

Between 2001 and 2012, the main positive changes in terms of main suppliers were recorded in the case of Norway (representing 16.4% of total import volume in 2001 and 22.0% in 2012), Ecuador (from 1.8% to 5.2%), Vietnam (from 0.8% to 4.1%), China (from 4.9% to 8.0%), Thailand (3.0% to 4.2%), India (from 2.1% to 3.3%), the Mauritius (from 0.5% to 1.5%), Turkey (from 0.5% to 1.3%) and Peru (from 2.6% to 3.3%).

A decrease in the same period was recorded in the case of Iceland (from 8.4% to 4.8%), Russia (from 4.5% to 1.6%), Argentina (from 4.6% to 2.6%), Faroe Islands (from 3.2% to 2.0%), Senegal (from 1.6% to 0.7%), Malaysia (from 0.9% to 0.07%), Namibia (from 2.2% to 1.3%) and Canada (from 2.7% to 1.9%).

Imports from China, while expanding in absolute terms in all MS, increased in relative terms in particular in the case of the United Kingdom.

Figure 3.2.3 show the evolution between 2001 and 2012 of the share of extra-community imports in value by preservation, processing and main species.



**Figure 3.2.3 - Composition of EU extra-community imports in value in 2001 and 2012 by processing, preservation and main species.**

In the considered period, there was an increase in the share of fresh (15.93% to 25.40%) and prepared-preserved products (from 39.76% to 45.28%), for cut products (from 15.84% to 27.24%) and for salmon (from 14.67% to 23.87%) and miscellaneous tunas (from 9.07% to 14.25%).

Total tuna, salmon and shrimps represented almost 44% of total EU imports in value in 2012.

By looking more in detail at the evolution of imports by processing stage and by origin (aquaculture vs. captured fish) it is possible to identify the following main trends.

- An increasing amount of imports from Norway was directed towards Poland while a reduction was registered for imports to Denmark and the the United Kingdom. In the case of Poland, the imports of unprocessed products from Norway correspond to exports of processed products towards other MS and in particular towards Germany. This is indicative of the increasing importance of fish processing activities in Poland.
- At smaller scale, a role similar to the one played by Poland is emerging in Lithuania. Also in this case, there was an increase of imports of fresh products originating from Sweden and in parallel an increase of exports of processed products towards Germany.
- Portugal and Greece seem to represent exceptions to the high share of aquaculture in the imports from Norway. These exceptions can be explained by the relevance of the following other products in addition to salmon in the trade flow: cod (85% of the overall volume) in the case of Portugal and fish to be used as feed in aquaculture (33%) in the case of Greece.

- The raising importance of Greece, Turkey and Ecuador as main countries of origin for EU imports between 2000 and 2011 can be attributed in great part to the trade of aquaculture products.
- The prevalence of aquaculture in the imports from the United Kingdom is limited at the flow to Poland. This is confirming previous results on the role of Poland as main fish processors specifically for salmon.
- Imports from Argentina and Peru to France have evolved since 2000 shifting increasingly towards aquaculture. In both cases around 70% of the total value of the trade to France is represented by scallop.



### 3.3 Exports

Around 80% of the exports in value from the MS are represented by intra-community trade. In 2012, the EU as a whole exported to EU MS 4.4 M tonnes of seafood, for a value of 16.4 B Euro. Exports to third Countries were around 1.8 M tonnes of seafood, valued at 3.7 B Euro. The five most important destinations for intra-community trade in 2012 were France (17%), Italy (14%), Germany (14%), Spain (9%) and the Netherlands (6%).

In terms of changes over time, the highest expansion between 2001 and 2012 was recorded in the case of Estonia and Poland. Exports to Poland represented 0.8% of the total intra-community exports in 2001 and 4.9% in 2011. In the case of Estonia, the change was from 0.1% to 0.8%. These changes are mostly linked to the trade of whole fish for processing.

Figure 3.3.1 shows the extra-community exports for the top 20 destinations, with indication of the composition of trade by processing group.



**Figure 3.3.1 - Top 20 third countries of destination for EU exports in value in 2012 and share of exports by processing form.**

In 2012, extra-community exports were mostly directed to Norway (390 M Euro, 10.4% of extra-community trade), Switzerland (308 M, 8.2%), China (296 M, 7.9%), Japan (284 M, 7.6%) and USA (251, 6.7%).

Between 2001 and 2012, exports to the top 20 destinations increased in particular in the case of Vietnam (from 0.03% of total exports in value in 2001 to 2.8% in 2012), Norway (from 6.4% to 10.6%), China (from 4.2% to 8.1%) and the Mauritius (from 0.6% to 2.4%), while they decreased in the case of Japan (from 20.3% to 7.6%).

The composition of extra-community exports by species showed an expansion of exports for non-food use (from 6.7% of total exports in value in 2001 to 9.3% in 2012) and of salmon (from 3.6% to 8.0%). A reduction was recorded in the case of miscellaneous tunas (from 12.7% to 5.3%).

Looking more in detail at the composition of the trade by processing, source of production and main commercial species, it is possible to identify the following factors which have characterised the expansion of exports to new markets:

- in the case of USA, the expansion of exports of salmon for final consumption from the United Kingdom;
- in the case of Norway, the expansion of exports of fish for feed use from Germany and Denmark;
- in the case of Poland and Lithuania, the expansion of exports mostly of whole fresh salmon from Sweden for processing and exports;
- in the case of Vietnam, the expansion of exports of unprocessed halibut from Denmark and Spain and toothfish from France for processing and exports.

In the case of Japan, higher exports of bluefin tuna from Croatia (+1.7%), Spain (1.8%) and Malta (1.6%) compensated only partly the reductions registered in particular in the exports from Spain of other tunas (-6.7%), octopus (-1.9%) and other marine fish (-1.1%).

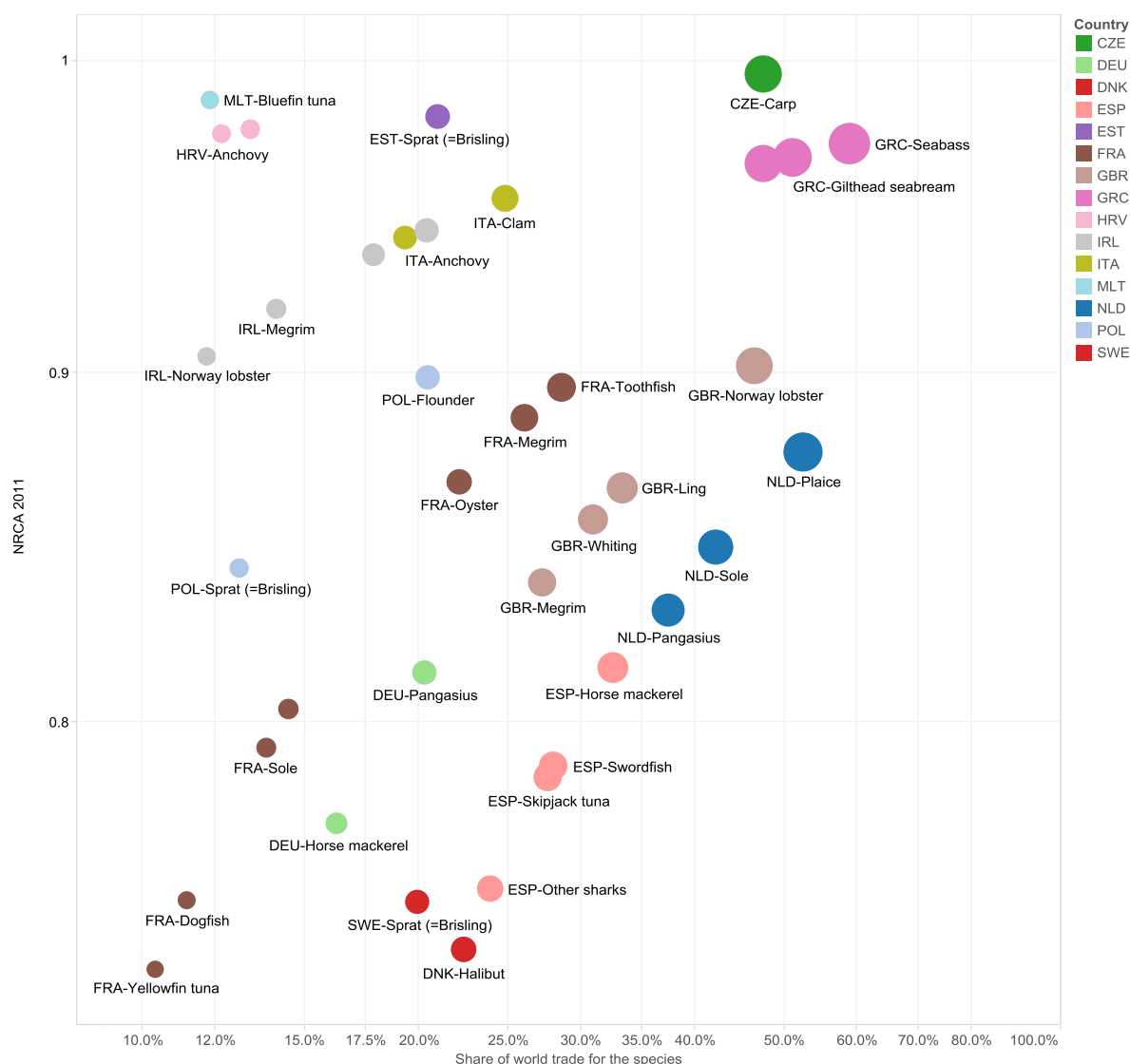
Besides the descriptive analysis of trade flows, two indexes were calculated in relation to exports to assess the comparative advantage on the international market for specific commodities and to decompose the margin of exports growth over the years.

The first index, the Normalised Relative Comparative Advantage (NRCA) index, measures the level of specialization of exports of a country on a given commodity in respect of the world average on the basis of a weighted ratio of exports in respect of total exports of the country and total exports in the world. The index was calculated considering the exports in value for all world countries from the COMTRADE database (for more details on the method of calculation see Annex I).

The index has values from -1 to 1. A value of -1 indicates that a country has no exports for a given product while a value of +1 indicates that a country has the complete monopoly of the international market, being the only one exporting a given product.

A high level of specialisation may be the expression of favourable conditions for exports for a given commodity and can therefore be interpreted as an indirect measure of a comparative advantage on the international market. Since the index is relative to the country total exports, high values are not necessarily indicating that the country is the largest exporter for a given species in absolute terms.

The following Figure 3.3.2 shows the combination of products and species for which MS registered in 2011 values of the NRCA above 0.7 and for which they had also a share in the world exports for the species above 10%. The two values are considered in combination to compensate for the intrinsic tendency of the index to produce high values when the value of total exports is low.



**Figure 3.3.2 - Species for which MS have a high (>0.7%) Normalized Revealed Comparative Advantage index (NRCA) and high (>10%) share of world exports (size of the marks and x axis).**

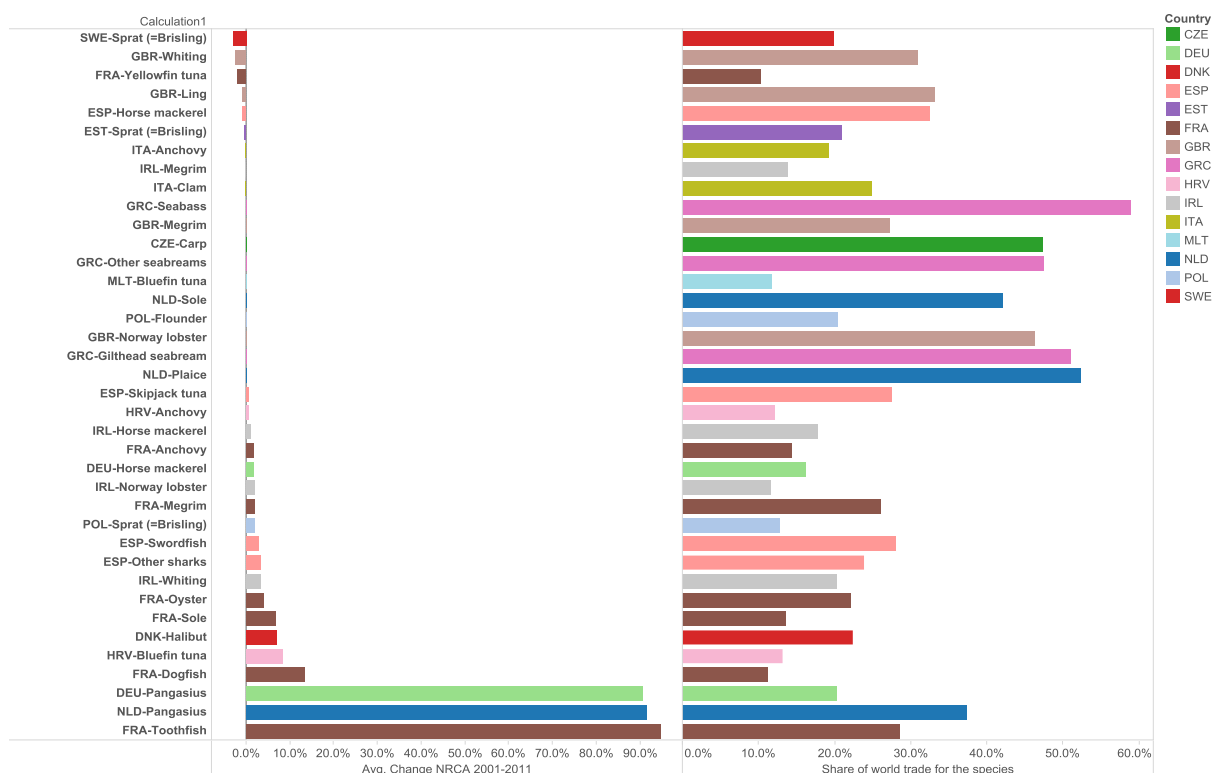
The top 10 combinations of country-species in terms of comparative advantage in 2011 were: Czech Republic-carp (0.99), Malta-bluefin tuna (0.98), Estonia-sprat (=Brisling) (0.98), Croatia-bluefin tuna (0.97), Croatia-anchovy (0.97), Greece-seabass (0.97), Greece-gilthead seabream (0.96), Greece-other seabreams (0.96), Italy-clam (0.95) and Ireland-whiting (0.94).

The species with the highest value of the NRCA in each country are indicated in the table below. These combinations are specific for each country and indicate therefore the species for which each MS has the best opportunities in terms of international trade.

Calculation1	NRCA 2011	Share of world trade for the species
Austria-Flounder	0,9308	0,7%
Belgium-Sole	0,7831	10,0%
Bulgaria-Carp	0,9692	2,3%
Cyprus-Seabass	0,9807	3,0%
Czech Republic-Carp	0,9954	47,4%
Germany-Pangasius	0,8136	20,3%
Denmark-Halibut	0,7409	22,4%
Spain-Horse mackerel	0,8149	32,5%
Estonia-Sprat (=Brisling)	0,9815	21,0%
Finland-Sprat (=Brisling)	0,9892	7,3%
France-Toothfish	0,8959	28,6%
United Kingdom-Norway lobster	0,9020	46,4%
Greece-Seabass	0,9723	59,0%
Croatia-Bluefin tuna	0,9772	13,1%
Hungary-Carp	0,9931	6,3%
Ireland-Whiting	0,9443	20,4%
Italy-Clam	0,9546	24,8%
Lithuania-Carp	0,9057	6,4%
Latvia-Sprat (=Brisling)	0,9744	9,2%
Malta-Bluefin tuna	0,9868	11,8%
Netherlands-Plaice	0,8764	52,4%
Poland-Flounder	0,8989	20,4%
Portugal-Octopus	0,8189	8,9%
Romania-Pangasius	0,9809	3,2%
Slovakia-Pangasius	0,9830	2,0%
Slovenia-Pangasius	0,9597	0,2%
Sweden-Sprat (=Brisling)	0,7529	20,0%

**Table 1 - Species with the highest value of the NRCA in each MS and share of world exports for the species**

To evaluate changes over the years, the NRCA values calculated for the year 2011 were compared with those of 2001. Figure 3.3.3 shows the percentage change for the same combinations included in Figure 3.3.2. The items are ordered by the percentage change between the two years. The chart on the right indicates the share in world exports.



**Figure 3.3.3 - Change Normalized Revealed Comparative Advantage index (NRCA) between 2001 and 2011.**

Large changes in the NRCA index between the two years were recorded in the case of exports of pangasius from the Netherlands and Germany. This reflects the great expansion of trade for this species recorded at world level and for which the Netherlands and Germany contributed as re-exporters after imports originating mainly from Vietnam. The highest change was recorded in the case of exports of toothfish from France (+94.8%).

Other relevant expansions in terms of comparative advantage were recorded in the case of dogfish from France (+13.5%), bluefin tuna from Croatia (+8.4%), halibut from Denmark (+7.1%), sole from France (+6.6%), oyster from France (+4.1%) and whiting from Ireland (+3.3%). On the contrary, a reduction of the index was recorded in the case of sprat from Sweden (-3%), whiting from the United Kingdom (-2.4%), yellowfin tuna from France (-1.8%) and ling from the United Kingdom (-0.9%).

The second index considered in relation to exports, the Margins of Exports Growth (MEG) index, is calculated by decomposing the change in the value of the exports between two periods in the following three main components:

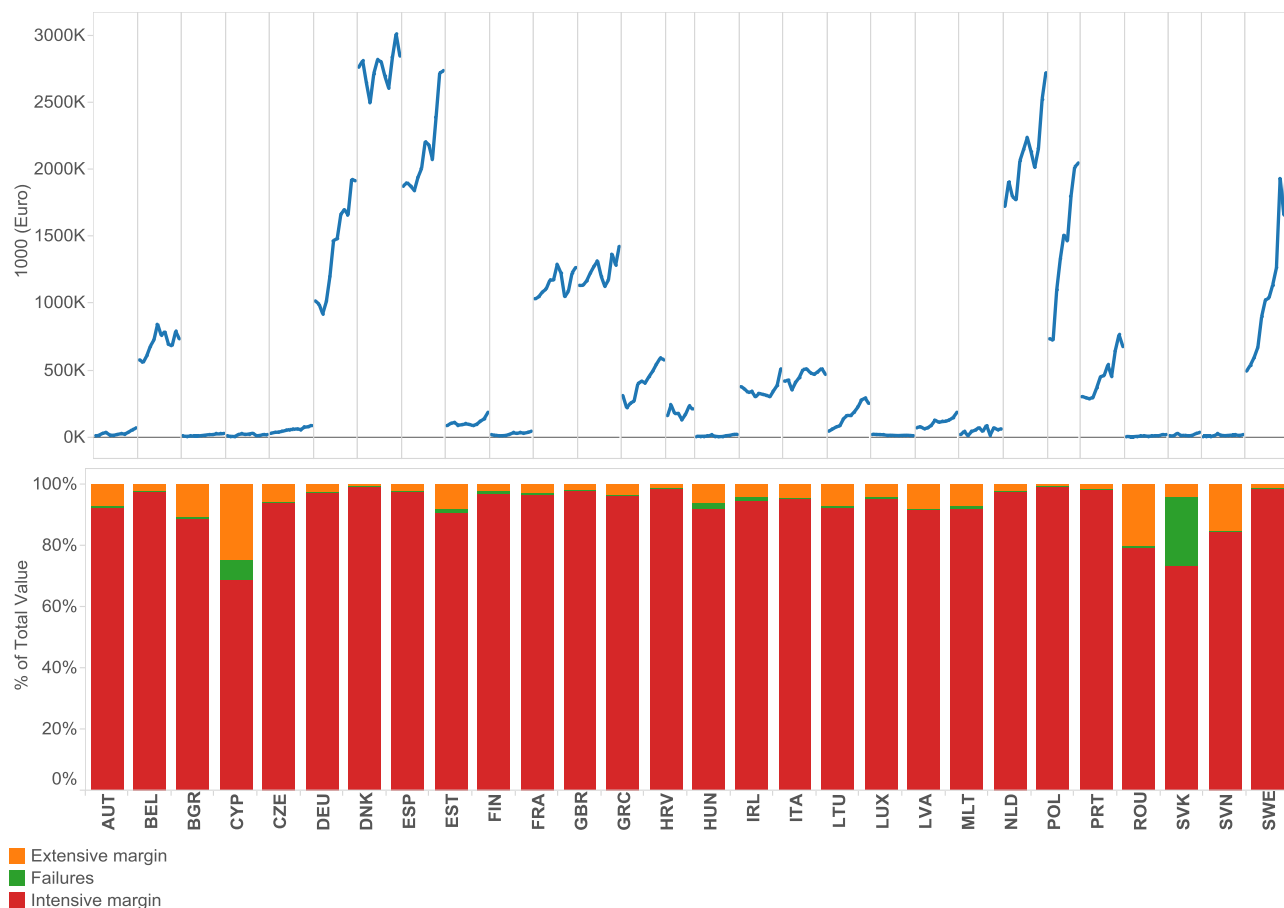
- growth from the activation of new trade flows (extensive margin),
- changes in existing trade flows (intensive margin),
- complete abandonment of existing trade flows (failures).

The margins were calculated considering the combinations of both commodities and destinations and evaluating the changes in the exports of each year in respect to the situation in the period 2001-2002 (more details on the methods of calculation are given in Annex I).

By looking at how the variation of exports is distributed among the different components, it is possible to understand if the country is expanding towards new markets (new products and new destinations),

consolidating existing markets (old products and/or old destinations), or if it is losing competitiveness on the international market by diminishing or completely dropping existing trade relations.

Figure 3.3.4 shows the absolute value of seafood exports by country in the period 2001-2011 and the relevance of the different component which contributed to the change in exports over entire period.



**Figure 3.3.4 - Export value and Margins of Exports Growth by MS country and year.**

In all countries there was a trend for growth in the value of exports (upper chart), which is in line with the general expansion of seafood trade recorded internationally. The highest expansion in exports in absolute terms between 2001 and 2012 was recorded in Sweden (1.6 B Euro), followed by Poland (1.3 B Euro), the Netherlands (0.99 B Euro), Germany (0.89 B Euro) and Spain (0.85).

Most exports expansion, occurring from 2001 to 2012, was related to the expansion of trade flows of existing products towards existing destinations (intensive margin).

The highest changes on the extensive margin over the entire period were recorded for Cyprus (24.9%), Romania (20.1%), Slovenia (15.4%), Bulgaria (10.4%), Latvia (8.1%), Estonia (7.9%), Lithuania (6.9%), Austria (6.9%), Malta (6.8%) and Hungary (6.3%). Failures of above 1% over the entire period were recorded in the case of Slovakia (22.4%) and Cyprus (6.2%), Hungary (1.5%), Estonia (1.5%), Ireland (1.4%) and Malta (1.0%).

Detailed explanations on the products and destinations which are behind these changes in margins of exports are given in the respective national chapters.

## 4 Most interesting examples of changes in trade emerging from the national analyses

The present chapter includes extracts of the most interesting changes in trade emerging from the national chapters. The presented cases are anecdotal. Rather than describing overall national trade trends, they are selected as examples of the high diversification of the seafood trade and to demonstrate the increasing influence of both aquaculture and trade for processing in re-shaping EU seafood trade.

### Spain – reducing negative trade balance through the processing and exports of added value products in the case of tuna products

“During the last years, the Spanish fish processing industry has reoriented its activity towards the production of high value added products. Furthermore, due to the economic crisis and the stagnation of the domestic demand, the industry has increased its efforts to exports these high added-value products to other MS, thus reducing its dependency on the internal demand” (STECF 2014c). The Spanish processing industry went over a transformation with increasing concentration, “while the industry suffered a decrease of 2% in the total income in 2012, big companies increased this variable by 23%, suggesting an increasing effort of concentration in the biggest companies” (STECF 2014c). Besides this concentration there was a specialisation in the creation of value added products. This transformation is particularly evident in the case of tuna products, for which trade evolved from the importing of fresh products for internal consumption to importing already processed products for further processing and exports. The positive trade balance of tuna products has been constantly decreasing until 2009. From 2009 there was a recovery of the trade balance through the creation of value added prepared and preserved products. This transformation was important to address the economic crisis of 2008. Over the period 2008-2012, “the national processing industry has increased 10% its total income, which results in a significant positive evolution in a context of financial crisis. This evolution shows a strong and well organized industry that has been able to recover from the financial crisis faster than other industries of the primary sector” (STECF 2014c).

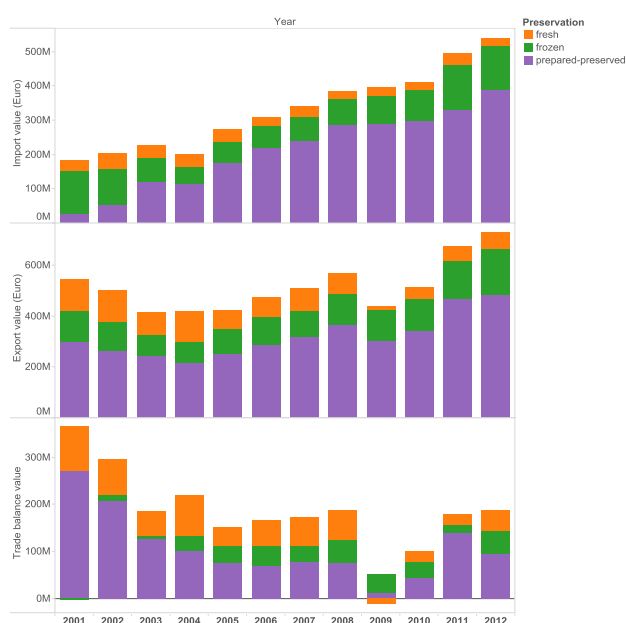
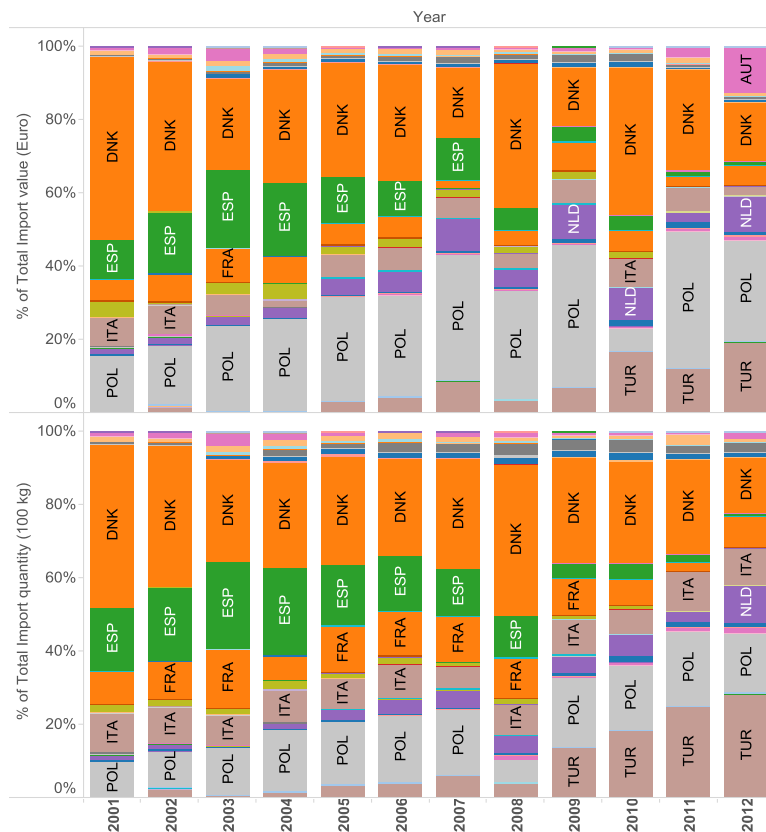


Figure 3.3.1 Spanish imports and exports and trade balance in value for tuna products by preservation form.

### Spain – exports of trout from Turkey eroding shares of trade for Spain on the German market

Between 2009 and 2010, there was a reduction of exports of trout from Spain towards the German markets both in terms of value and volume. This coincided with an expansion of exports from Turkey for the same species, in particular in terms of volume. The crisis of exports for trout corresponded to price reductions and a worsening of the performance of the aquaculture sectors in Spain for this segment (in 2012, trout recorded the lowest GVA of the aquaculture segments and negative EBIT and net profits). This example shows how the lack of expansion of the aquaculture sector in the EU may be also explained through the competition from lower prices and production being established in emerging countries.

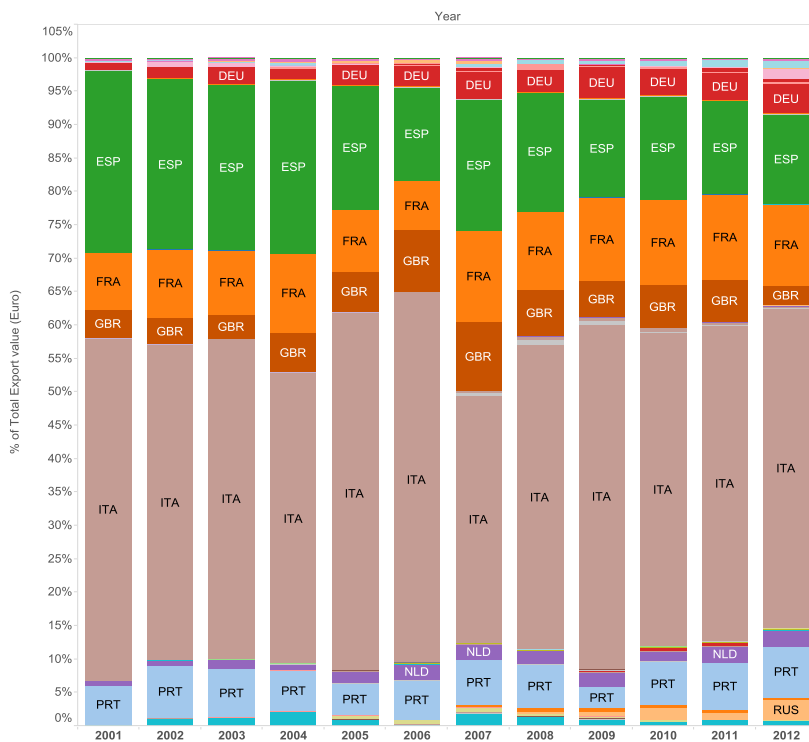


**Figure 3.3.2 German imports in quantity and value of trout by country of origin**



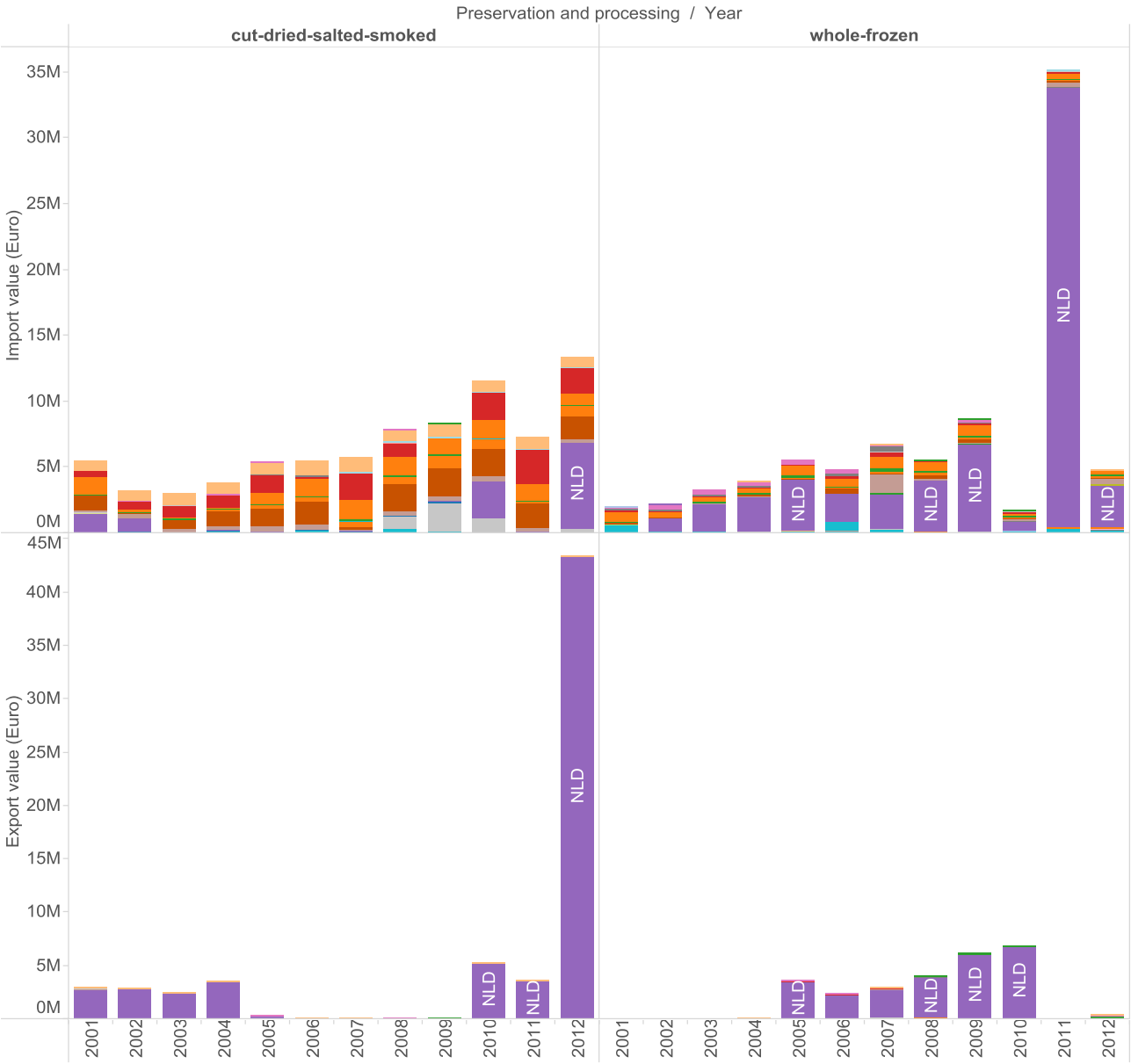
Greece – cyclical crisis for the exports of seabream and seabass to main destination like Italy and Spain and opening of new trade relations with emerging markets

Exports of seabream and seabass from Greece to traditional countries like Italy and Spain have experienced cyclical price crisis, due to excessive supply in particular in 2004 and 2005. Despite limited in absolute terms, it is interesting to note an expansion of exports on the extensive margin from 2006 thanks to the opening of new trade relations with Russia. Seabream and seabass are products not well known in northern countries. Their consumption is often linked to the touristic experience in sea resorts. The activation of new trade flows towards emerging markets like Russia may be put in connection with touristic flows.



**Figure 3.3.3 Share of Greek exports of seabass and seabreams in value, by country of destination**

While great part of exports from Greece is made up of seabream and seabass, a contribution to the improvement of the trade balance between 2011 and 2012 originated also from the exports of processed salmon. Greece does not produce salmon; this product was imported from the Netherlands in 2011 and entirely re-exported after processing as dried/salted/smoked to the Netherlands in 2012. This represents a sporadic episode, which is not sufficient to delineate a trend but maybe indicative of some processing potential for this species.

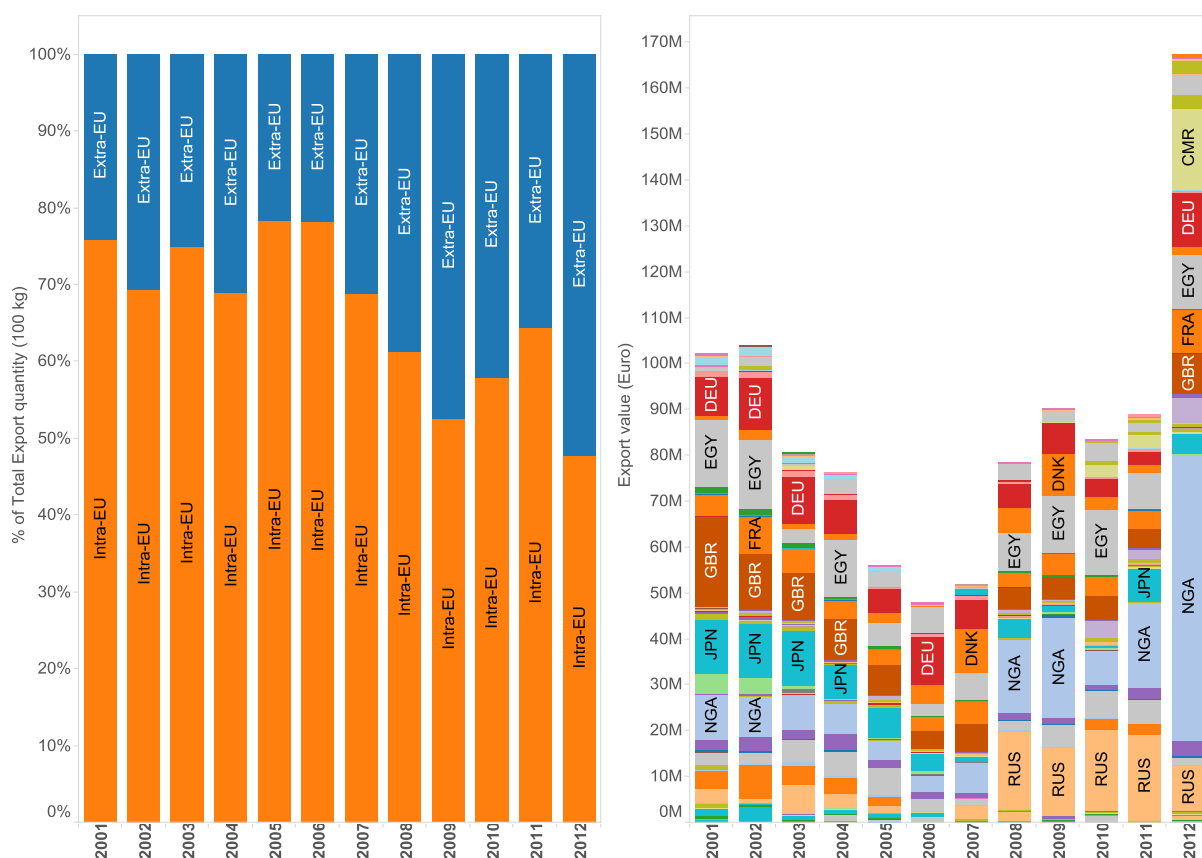


**Figure 3.3.4** Greek exports and imports in value of whole-frozen and cut, dried, salted and smoked salmon by country of origin and destination

### Ireland – redirection of exports of small pelagic fish to Africa for food use instead of eastern countries and aquafeed

Ireland is one of the few net exporters in the EU. Its trade balance improved both in volume (+1%) and value (+32%) between 2011 and 2012. Ireland is also one of the few MS in which the primary production from fisheries and aquaculture has expanded. In recent years, there have been improvements of the turnover of fish processing, the value of sales from aquaculture and of most economic performance indicators for the fishing fleet (Revenue, GVA, Gross profit e Net profit). Exports towards the main EU destinations has remained stable or reduced, with the only exceptions of exports to France and the Netherlands, which remain main destinations. On the other hand, there has been a considerable expansion of extra-community trade. In 2012, almost 60% of the total volume of seafood imports and exports originated outside the EU, while, in 2001, the share of extra-community trade was very limited.

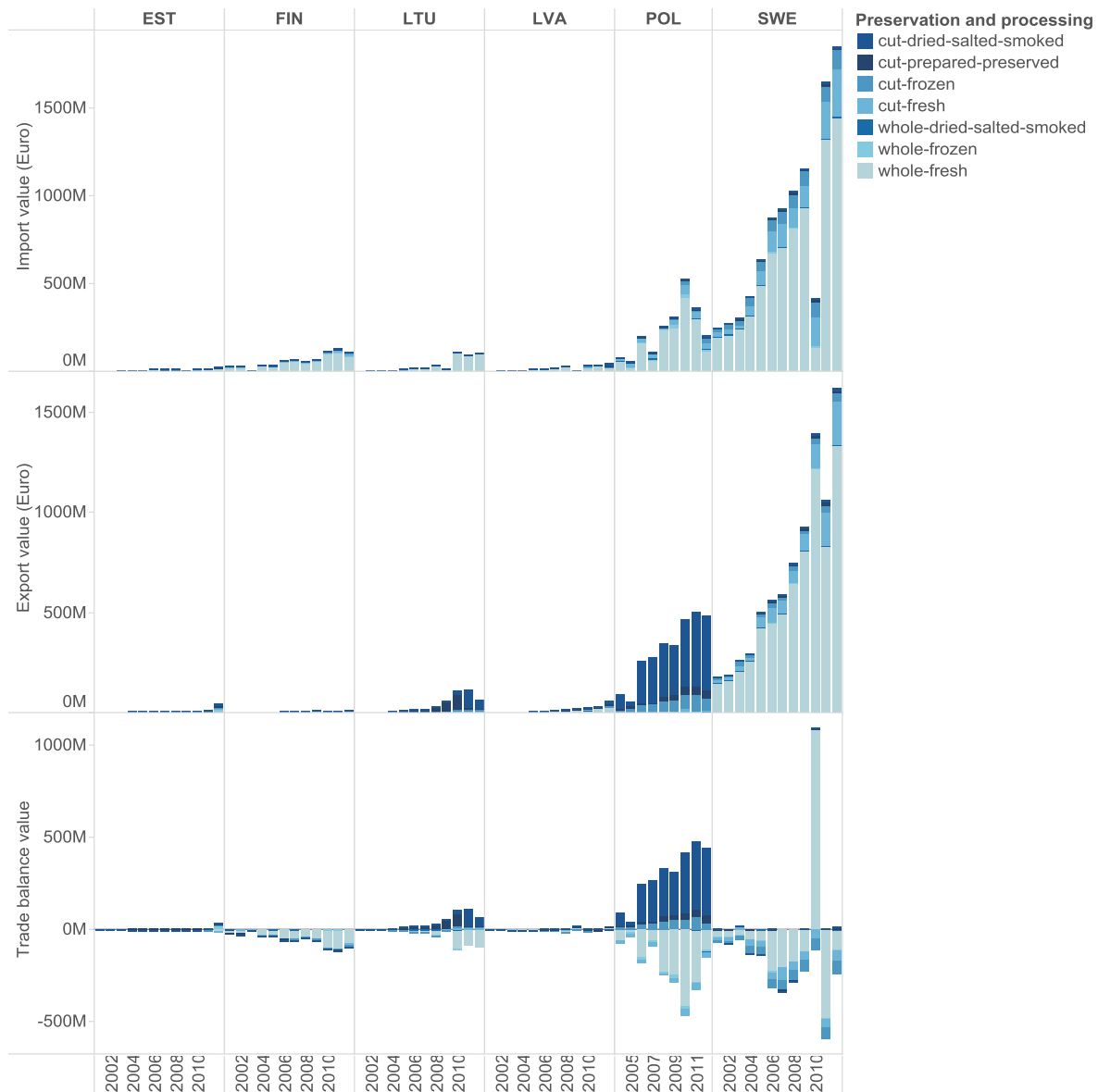
The increase in the extra-community trade in volume has been accompanied by a redirection of trade of horse mackerel, mackerel and blue whiting traditionally destined to the eastern countries and for transformation into aquafeed, to Nigeria and Cameroon for food use. This re-direction of trade represents an important piece of evidence in the discussions on food security and aquaculture at global level. One of the main arguments in this discussion is about the destination of small pelagic fish for aquafeed in the aquaculture industry rather than for food. Evidence from the re-direction of trade in the case of Ireland shows that ultimately the destination is determined by market conditions and that, if the prices are attractive enough, the use for food in low income countries may compete with the use in the feed industry.



**Figure 3.3.5 Share of intra and extra-community exports in volume from Ireland (left chart) and exports from Ireland in value of mackerel, horse mackerel and blue whiting, by country of destination (right chart)**

### Trade for processing of salmon from Norway

Exports of Salmon from Norway represent one of the largest drivers for trade in particular for the EU. Sweden, which has similar values for the imports and exports of salmon and with the same processing form, can be considered simply a transit point for the trade. In the case of Finland, the incoming trade does not correspond to the exports and this is indicating that the imports are destined to domestic consumption. Finally, countries like Poland and, at a smaller scale, Lithuania, Latvia and Estonia, have imports mostly represented by whole frozen and whole fresh products which are exported in processed form. This trade is generating a positive trade balance and sustaining the development of the domestic processing industry.

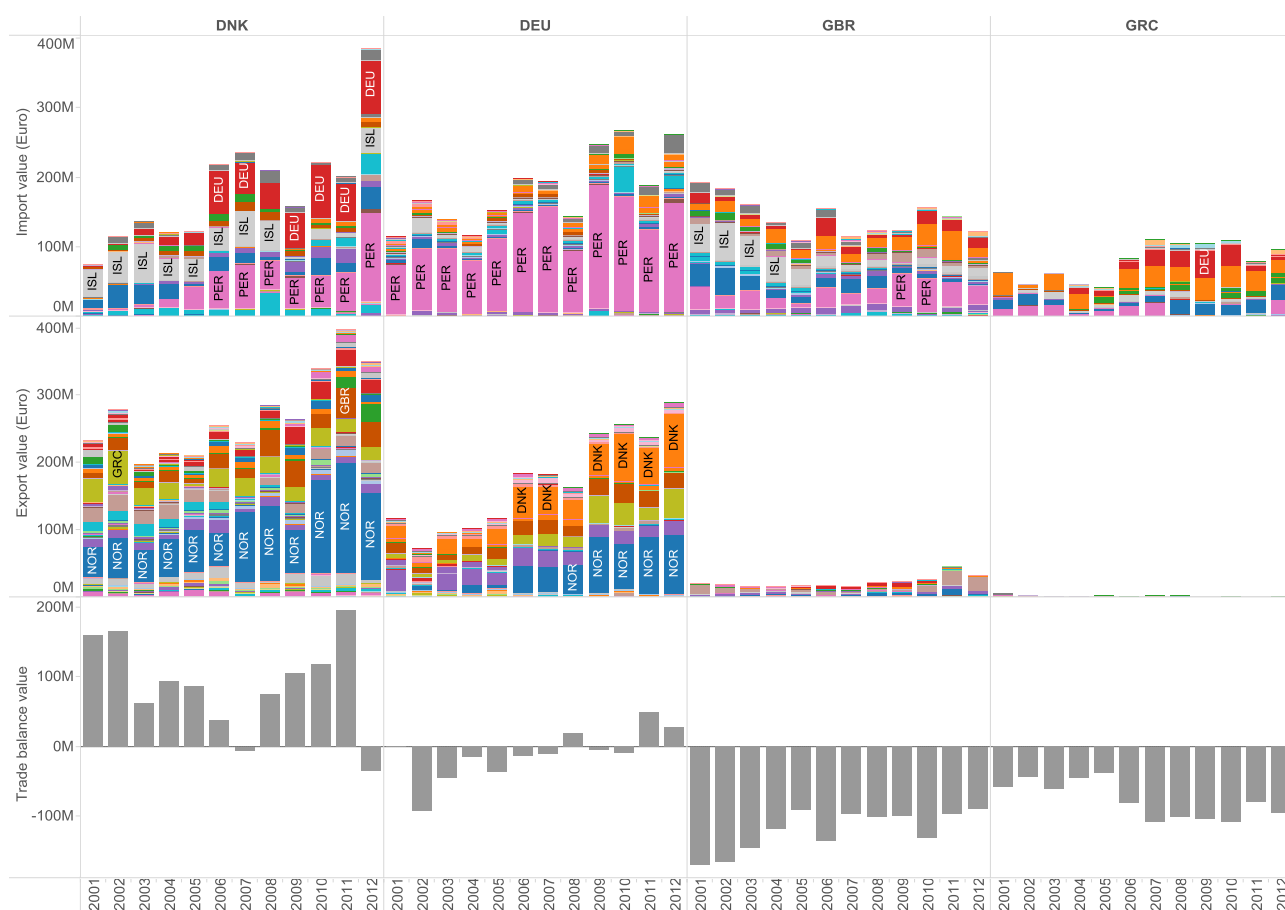


**Figure 3.3.6 Value of the imports and exports of salmon in Estonia, Finland, Lithuania, Poland and Sweden, by preservation and processing form**

### Trade of products for non-human consumption to be used in the aquaculture industry

Denmark and Germany are the main EU importers of products for non human consumption. The imports originate mostly from Peru. Over time, there have been less imports from Iceland and in 2010 and 2012 imports also coming from Morocco. In Denmark and Germany, the products are transformed and exported to major aquaculture producers: Norway, Greece and the United Kingdom. This is generating a positive trade balance, in particular in the case of Denmark. The position of Germany has evolved in more recent years, from representing a simple transit towards Denmark, to establishing a own processing capacity for aquafeed and exporting directly to Norway. In the meantime, Denmark has expanded over time the direct acquisition of raw materials from Peru.

The United Kingdom is partly sourcing the products for its aquaculture industry directly and partly importing them from Denmark and Germany. On the contrary, the lack of exports from Greece indicates that this country has not developed an own aquafeed industry and depends on imports from Denmark and Germany.



**Figure 3.3.7 Value of the imports and exports of fish products for non food use in Denmark, Germany, the United Kingdom and Greece, by main importer and exporters**

## 5 National chapters

### 5.1 Belgium

#### Production

The Belgian fleet, mainly consisting of beam trawlers operating in the North Sea, English Channel and other areas of the North Atlantic, comprised 88 fishing enterprises in 2011, with the vast majority owning a single vessel. The total volume of seafood landed by the Belgian fleet in 2012 was almost 22 K tonnes (+9% compared to 2011). European plaice and common sole are the main species caught (accounting respectively for 28% and 16% of total catches in 2011), followed by monkfish (6%), scallop (4%), cod (4%) and sole (4%). In the same year, common sole and European plaice generated the highest landed value.

The Belgian aquaculture sector is very small (in 2011, it produced only 49 tonnes of fish) and does not include marine and shellfish aquaculture. According to FAO data, Belgian aquaculture production has sharply decreased over the reference period (it was equal to almost 2 K tonnes of fish at the beginning of the decade). Rainbow trout is the main species produced by the Belgian aquaculture sector, representing 73% of total production volume in 2011.

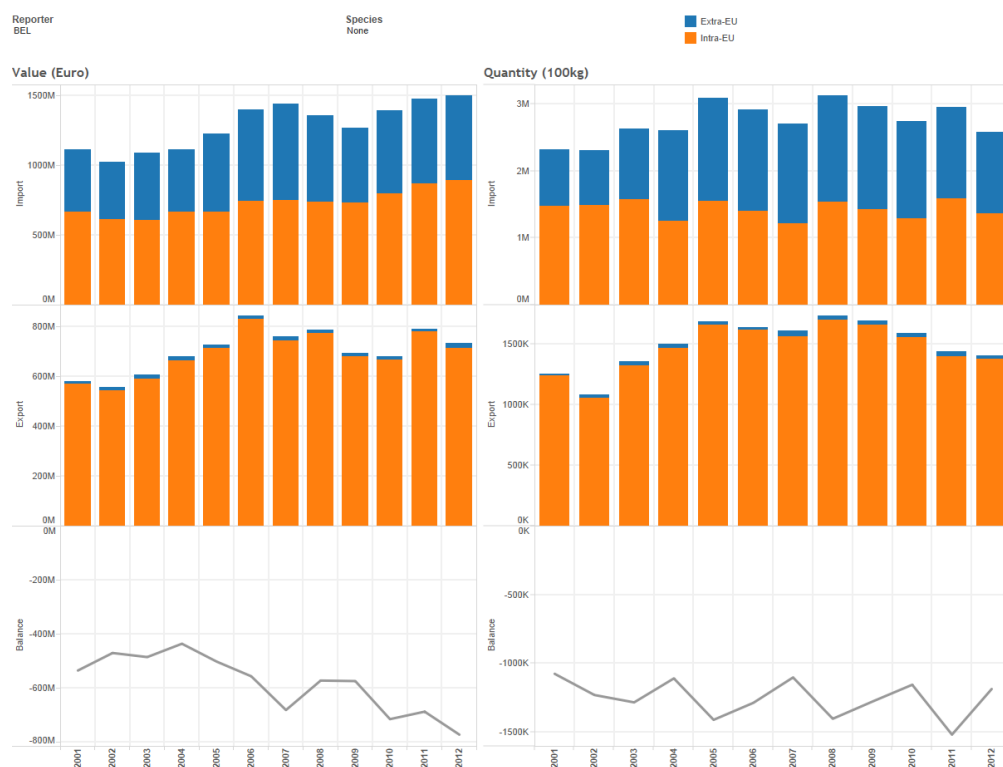
The Belgian fish processing industry is rather developed in comparison to the total fish production of the country and its output is mostly made up of prepared and preserved products. According to FAO, in 2009, the total production of processed and preserved fishery products amounted to 49 K tonnes of seafood, distributed among prepared and preserved crustaceans and molluscs (43%), fresh and chilled fish fillets (22%), minced, prepared and preserved marine fish (8%) and herring (7%), smoked salmon (7%) and a few other products.

#### Trade balance and exposure to trade competition

Given the small size of the fisheries and aquaculture sector, the majority of seafood consumed in Belgium is imported (STECF, 2014c). Furthermore, the Belgian fish processing industry relies heavily on the imports of raw material. As a consequence, Belgium is a net importer of fish and fishery products (Figure 5.1.1). In 2012, its trade deficit was approximately 118 K tonnes of seafood, corresponding to 773 M Euro.

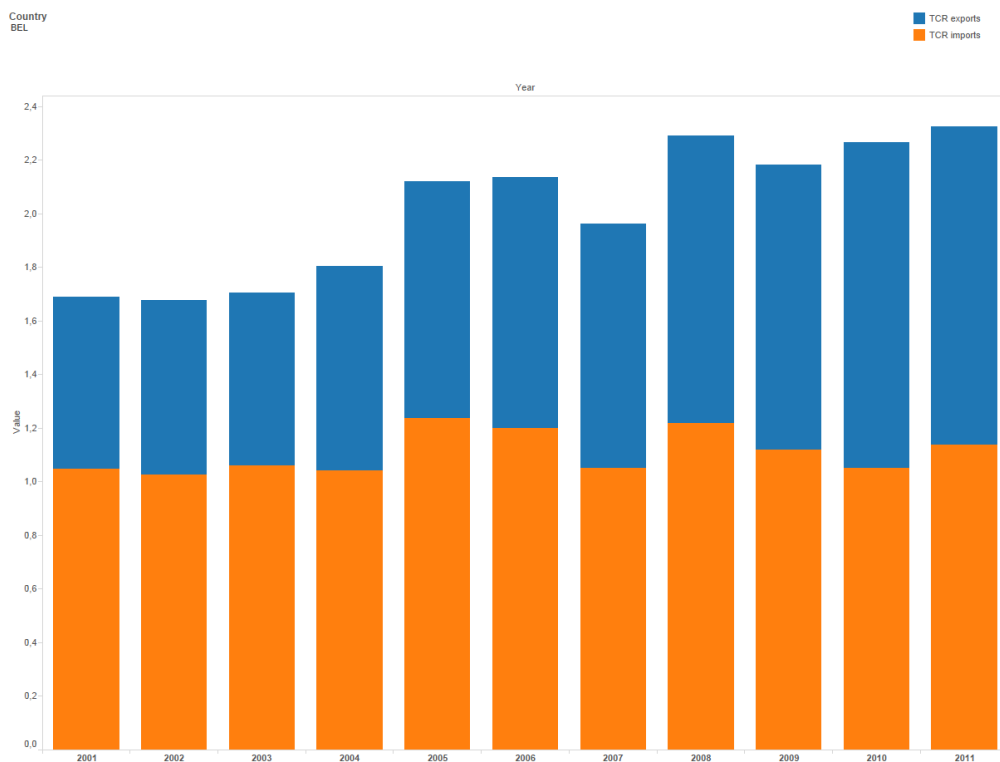
The trade deficit in value has increased significantly over the reference period, going from 535 M Euro in 2001 to 773 M Euro in 2012, while it has remained rather stable in volume. This difference reflects the fact that seafood imports and exports have increased more significantly in value (by 35% and 27%, respectively) than in volume (by 11% and 12%, respectively).

In 2012, almost all Belgian seafood exports were directed to MS, while around half of imports were coming from outside the EU. The volume share of extra-community imports has increased over the reference period from 36% in 2001 to 47% in 2012, while the value share has remained rather stable. Indeed, while the unit value of imports from within the EU has increased 44% from 2001 to 2012, the unit value of extra-community imports has not changed significantly.



**Figure 5.1.1 - Belgian seafood trade balance trends: value (left) and volume (right)**

Belgium is one of the MS with the highest exposure to seafood trade competition, which has increased significantly over the reference period (Figure 5.1.2). In 2011, the estimated value of the Trade Competition Ratio (TCR) for Belgium was 2.32 (against a value of 1.69 in 2001), which indicates that the sum of Belgian imports and exports exceeded the domestic consumption of seafood by around two times. In 2001, the exposure to seafood trade competition was mostly driven by imports, as in the case of most other MS, however the contribution of exports has increased continuously (in 2011 the values assumed by the indices TCR exports and TCR imports were almost equal).



**Figure 5.1.2 - Trend of the exposure to trade competition index for Belgium**

### Imports

Belgium imported 259 K tonnes of seafood in 2012 (corresponding to 1.5 B Euro), 11% more than in 2001 (35% more in terms of value). Over the period, the volume and value of seafood imports grew at an average rate of 1% and 3% p.a., respectively.

Figure 5.1.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover, in average over the period, 71% of the Belgian seafood import volume and value.

The majority of seafood imports come from EU MS (53% of the total volume and 59% of the value, in 2012). The contribution of extra-community trade to the overall import volume has increased from 36% in 2001 to 47% in 2012.

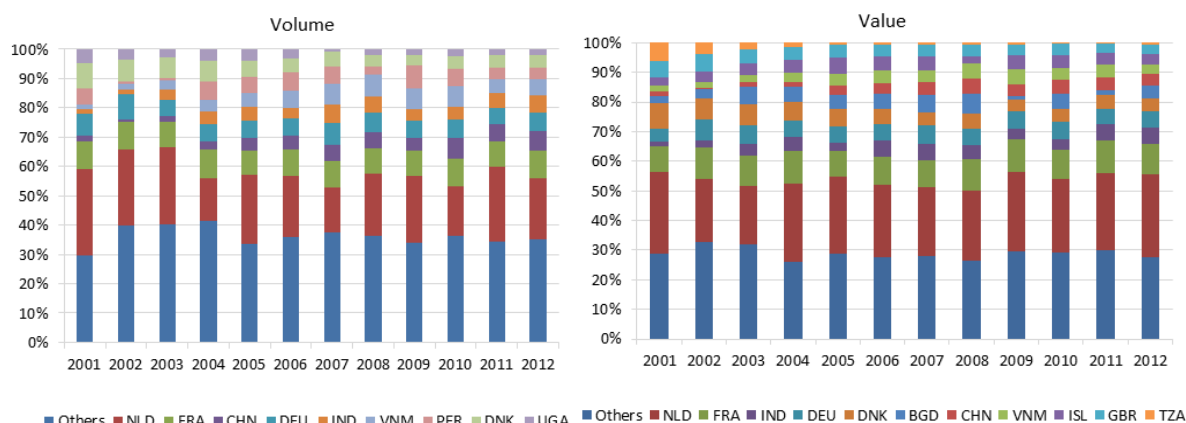
The bordering countries, the Netherlands, France, Germany and Denmark, are the most relevant destinations, as well as some of the most important seafood suppliers for Belgium. In 2012, seafood imports from the Netherlands and France respectively contributed 21% and 10% of the total volume of imports, while the other two countries covered 6% and 5%, respectively. A large part of imports comes also from Asian countries, China (6%), India (6%) and Vietnam (5%), which gained shares in the Belgian market from 2001 to 2012, as well as from several other extra-community countries (e.g. Bangladesh and Ecuador).

The Netherlands is the most relevant seafood supplier for Belgium also in terms of trade value (in 2012, it accounted for 28% of the total imports), followed by France (10%), India (6%), Germany (5%) and Denmark (5%).

Over the reference decade, the volume of extra-community seafood imports has increased by 44%, while intra-community trade has reduced by 8%. On the other hand, the value of intra-community imports has



increased almost as much as extra-community imports (34% vs. 38%). Indeed, the unit value of intra-community imports has increased significantly, while it has remained stable for extra-community trade.

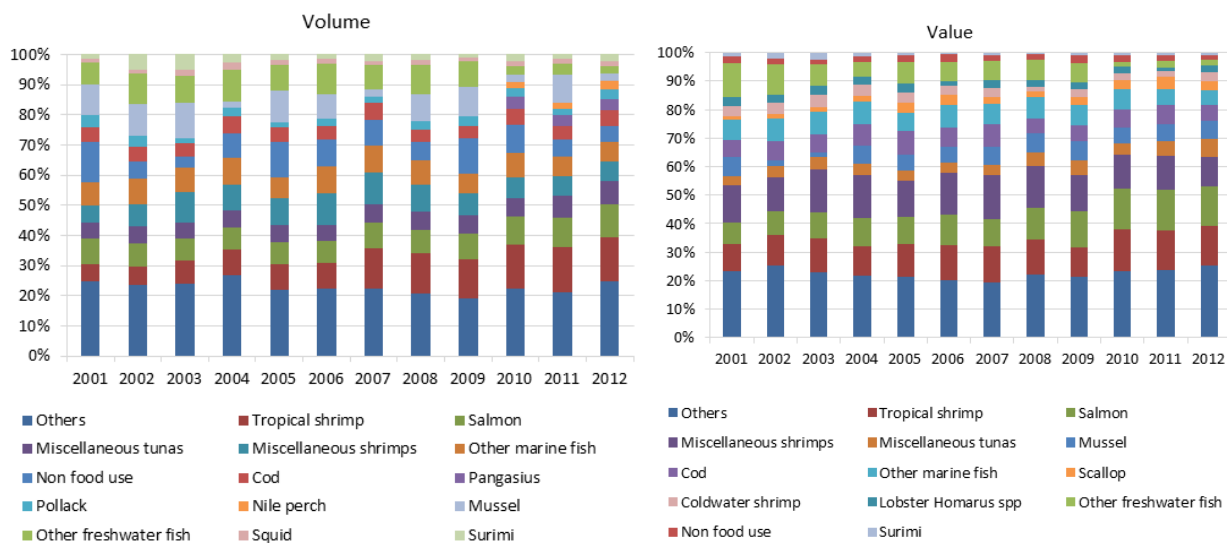


**Figure 5.1.3 - Belgian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.1.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 77% of the total Belgian seafood imports in volume and 78% in value.

Shrimps, salmon and tuna are the most imported commercial species, as well as the main responsible of the overall increase in imports occurred from 2001 to 2012. In 2012, tropical shrimps, salmon, miscellaneous tunas and miscellaneous shrimps respectively contributed 14%, 11%, 8% and 6% of the total volume of imports. Tropical shrimps and salmon were the most relevant in value (each contributing 14% of the total, in 2012), followed by miscellaneous shrimps (10%), miscellaneous tunas (7%) and mussels (6%). Tropical shrimps are imported mostly from India, Bangladesh, Ecuador, the Netherlands and Thailand, while miscellaneous shrimps originate mostly in the Netherlands (44% of the total import volume in 2012) and India (15%). Around 90% of the imported salmon comes from within the EU (especially France, Sweden, Denmark and the Netherlands).

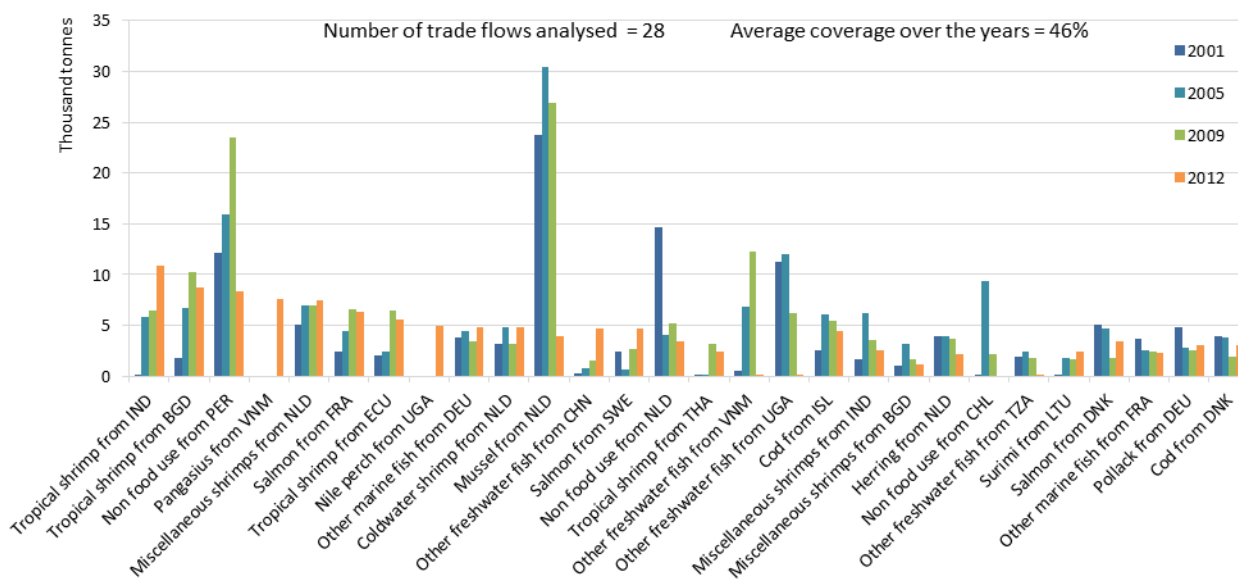
In 2001, fish for non-human consumption and mussels were the most imported seafood products, respectively contributing 13% and 10% of the total volume of imports. However, their imports declined significantly over the reference period (by 53% for fish for non-human consumption and 75% for mussels). On the other hand, the volume of imports increased markedly for tropical shrimps (+193%), salmon (40%), miscellaneous tunas (63%) and miscellaneous shrimps (26%).

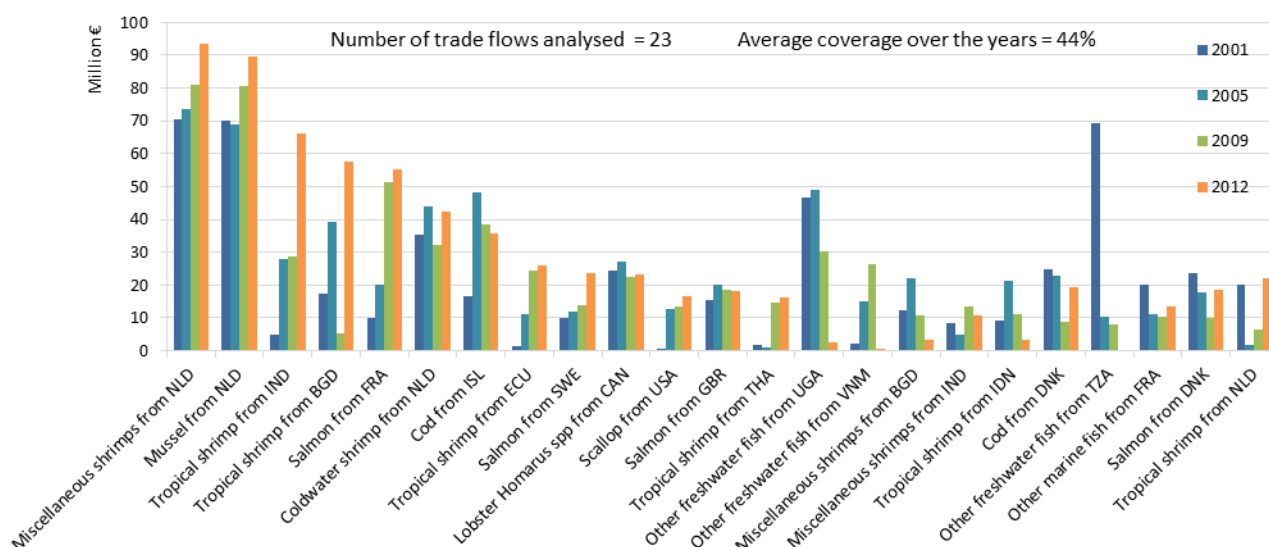


**Figure 5.1.4 - Belgian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

The following figures show the trend of the “top 10” trade flows (combinations “country of origin-species”) for Belgium, in terms of volume (top figure) and value (bottom figure) in the period 2001-2012. These trade flows cover 46% and 44% of the overall trade (in average over the period), respectively in volume and value.

One of the most relevant trade flows for Belgium is the imports of mussels from the Netherlands. The value of these imports has increased continuously over time. On the other hand, the import volume of Dutch mussels has oscillated significantly over the reference period, going from 3.5 K tonnes in 2007 to more than 30 K tonnes in 2007. Other trade flows have shown clearer trends. For example, the imports of tropical shrimps from India, Ecuador and Thailand, miscellaneous shrimps from the Netherlands, salmon from France and cod from Iceland have increased over the period, both in terms of volume and value. These trade flows have contributed significantly to the overall increase of Belgian seafood import volume and value occurred over the period.

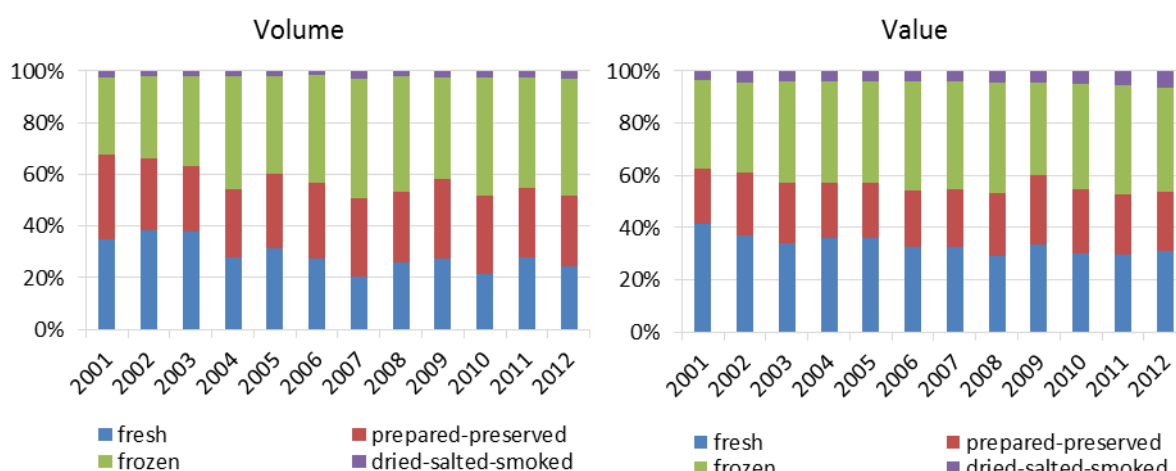




**Figure 5.1.5 - Belgian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

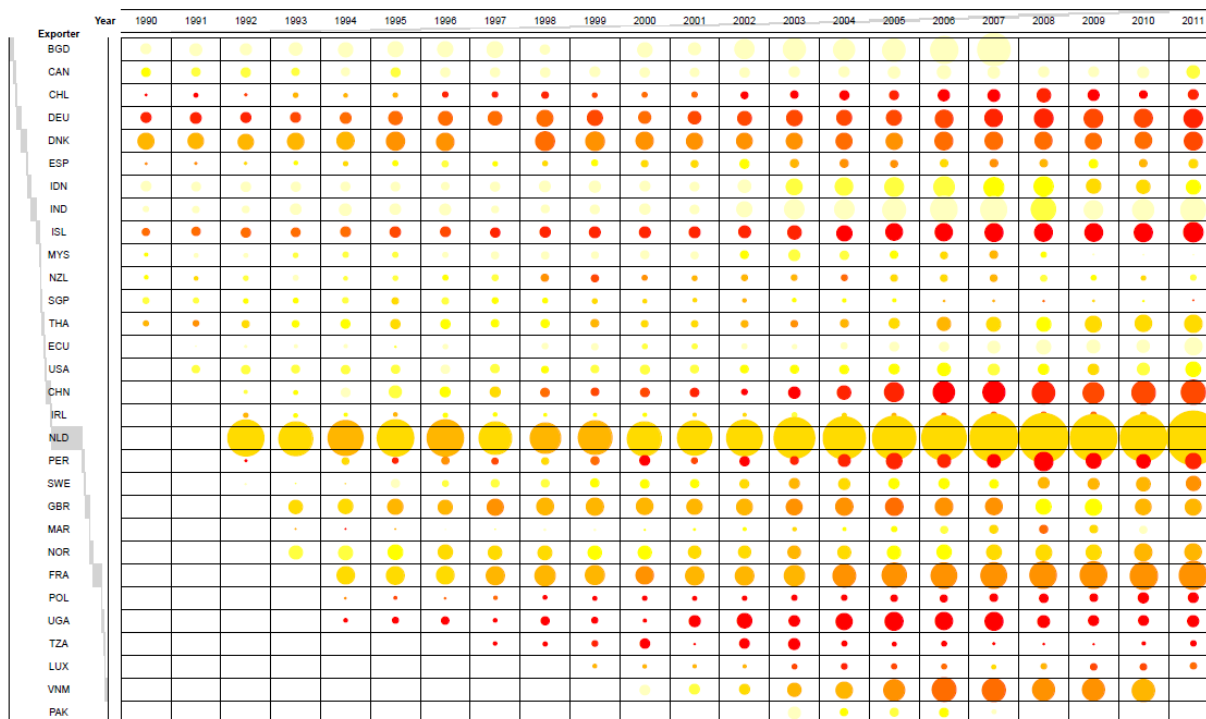
Most seafood products are imported frozen (45% of the total seafood import volume in 2012, corresponding to 40% of the total value). Prepared/preserved and fresh fish represented in 2012 respectively 27% and 24% of the total volume of seafood imports (22% and 31% in terms of value). Over the reference period, the share of fresh products over the total imports decreased from 35% to 24% in terms of volume and from 41% to 31% in value (Figure 5.1.6). This reflects the smaller imports of fresh mussels from the Netherlands and of fresh other freshwater fish from Uganda. At the beginning of the decade, Mussels were imported mostly fresh, while in 2012 a large part of their imports was made up of prepared/preserved products (37% of the total volume of imports, against a share of 5% in 2001). This helps also to explain why the import value of Dutch mussels increased over time, in spite of the unclear trend in volume.

The contribution of prepared/preserved fish and dried/salted/smoked fish has remained rather stable over the reference period; while the one of frozen products has increased substantially (from 30% to 45% in volume and from 34% to 40% in value), mostly due to the increased imports of tropical shrimps.



**Figure 5.1.6 - Belgian seafood imports trends by type of products: share in volume (left) and value (right)**

The contribution of processed products to the total value of imports varies significantly depending on the country of origin. For example, processed products contribute the most to the imports from Germany, China, Iceland and Denmark, much less to those coming from the Netherlands (Figure 5.1.7).



**Figure 5.1.7 - Belgian seafood imports trends by main seafood suppliers and contribution of processed products to total import value (Note: the size is proportional to the import value and the shading to the share of processed products)**

## Exports

In 2012, Belgium exported approximately 140 K tonnes of seafood. Export volume and value increased by 12% and 27%, respectively, from 2001 to 2012. However their trends have fluctuated significantly over the years.

Figure 5.1.8 shows the trend of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 93% of the total seafood exported by Belgium, both in volume and value.

Almost all Belgian seafood exports are directed to EU MS, even if the volume share of extra-community trade has slightly increased over the reference decade. Its main traditional countries of destination for seafood are France (contributing 35% of Belgian seafood export volume in 2012), the Netherlands (32%), Germany (8%), Spain (7%) and Italy (5%). In terms of value of exports, France contributed 37% of the total in 2012, followed by the Netherlands (31%), Germany (9%), Spain (6%) and Luxembourg (4%).

Exports to all the most relevant countries of destination have not increased significantly over the period and, indeed, seafood exports have increased by 12% overall. The value of exports has risen more significantly (by 27% over the period 2001-2012), especially to Spain (+43%) and France (+31%).



Figure 5.1.8 - Belgian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.1.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 84% of the total volume of seafood exported by Belgium and almost 85% of its value.

The most relevant commercial species in terms of value of trade are tropical shrimps (accounting for 20% of the total value of Belgian seafood exports in 2012), miscellaneous shrimps (12%), salmon (9%), miscellaneous tunas (5%) and scallop (5%). Tropical shrimps and miscellaneous shrimps contribute the most also in value (respectively, 16% and 13% of the total, in 2012), followed by fish for non food use (9%), salmon (6%) and other marine fish (5%).

The composition of Belgian seafood trade changed markedly over the reference period. Exports of other fresh water fish and plaice, which contributed 22% and 8% of the total volume of Belgian seafood exports in 2001, reduced by 98% and 40% respectively, while the trade of tropical shrimps, miscellaneous shrimps, fish for non food use and salmon increased sharply (respectively, by 169%, 40%, 51% and 87%).

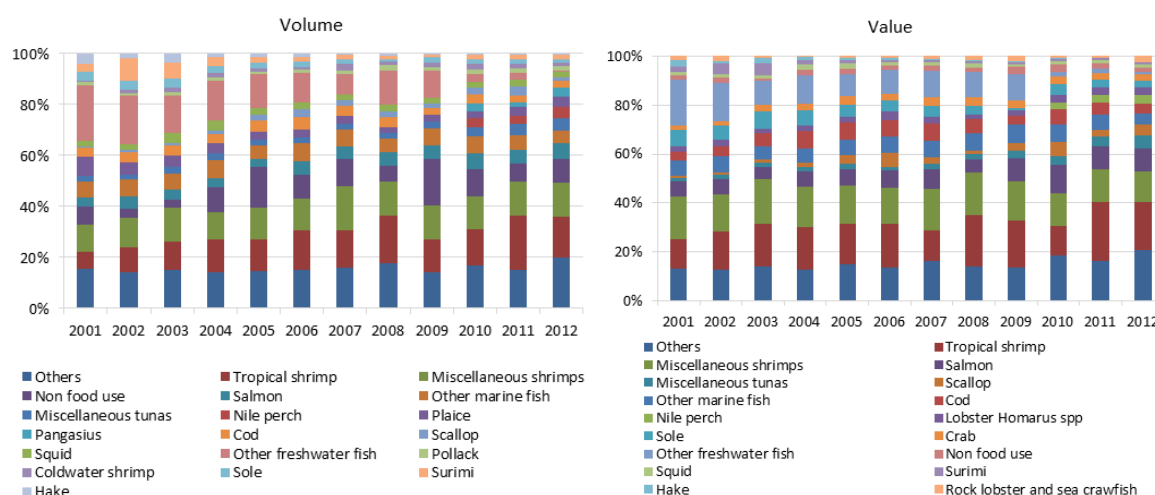
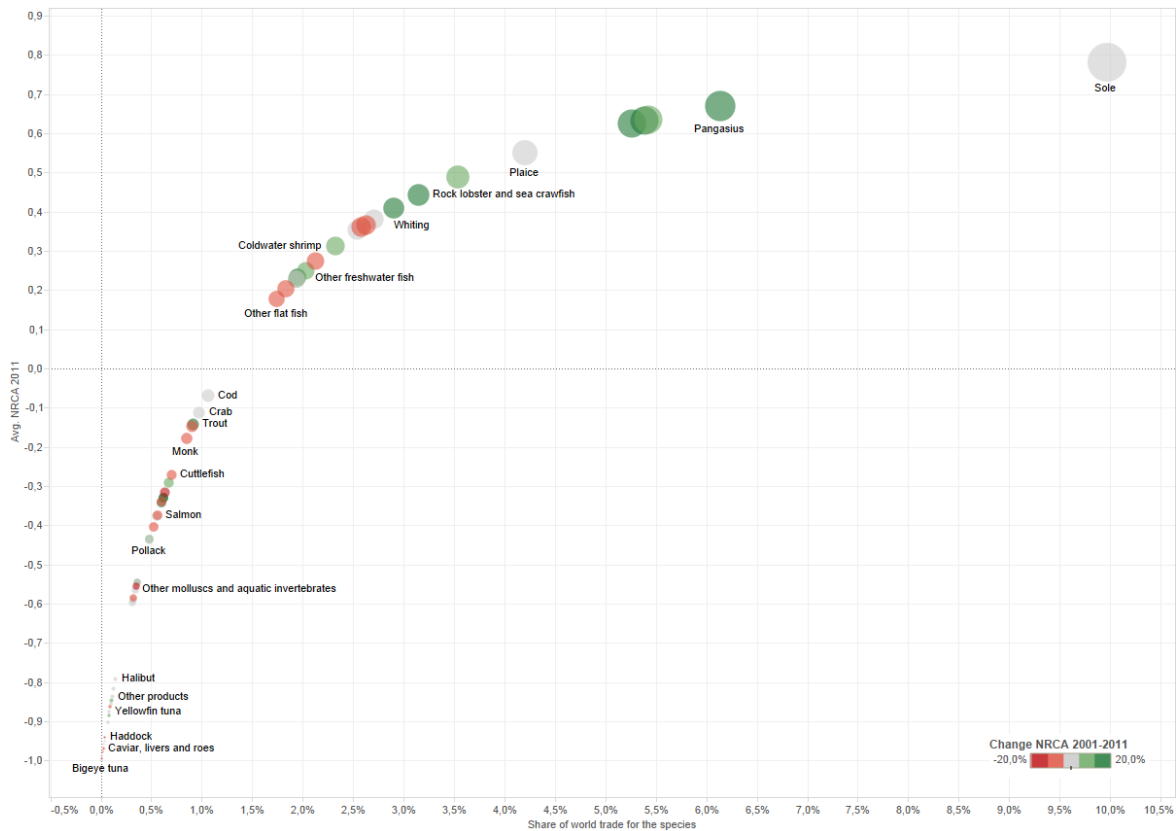


Figure 5.1.9 - Belgian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

As evidenced by trade flows, Belgium has the highest comparative advantage on the international market for sole (NRCA = 0.78) and Pangasius (NRCA = 0.67). The NRCA index for sole has remained stable over the

years, while the index for pangasius has changed significantly (Figure 5.1.10). Belgium, in fact, has started to exports pangasius (mostly to the Netherlands and France) only in 2010.



**Figure 5.1.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Belgium, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

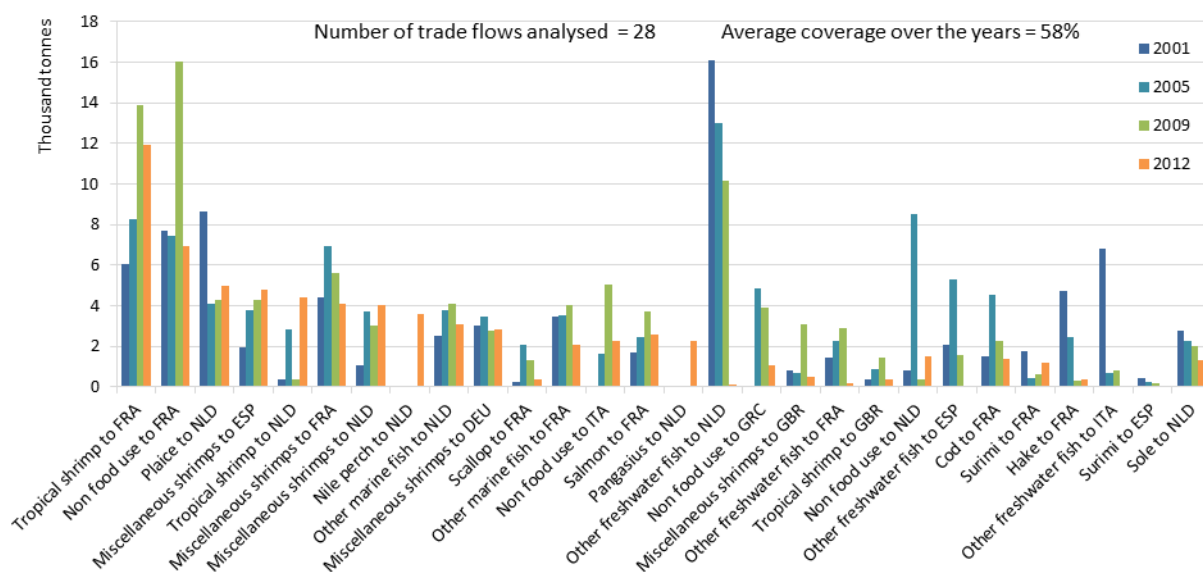
Seafood exports changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.1.11). They increased almost every year at the beginning of the reference period and were rather unstable afterwards. In 2010, a sharp decrease at the intensive margin was counterbalanced by the appearance of new trade flows, which are the exports of pangasius to the Netherlands and France and Tilapia to the Netherlands and Germany. These trade flows rose significantly in the following two years, which explains the relevance of the extensive margin (i.e. activation of new trade flows) also in 2011 and 2012.



**Figure 5.1.11 - Belgian seafood exports margins: 2001-2012**

Figure 5.1.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Belgium, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 58% and 59% of the overall trade (in average over the years), respectively in volume and value.

As mentioned above, the volume of Belgian seafood exports has increased by 12% from 2001 to 2012. This growth has been driven by a sharp increase in the exports of tropical shrimps to France. The volume of several other flows has also increased significantly over the reference period, for example of tropical shrimps to the Netherlands and miscellaneous shrimps to the Netherlands and Spain. These trade flows have increased sharply also in value, as well as the exports of salmon to the Netherlands and France.



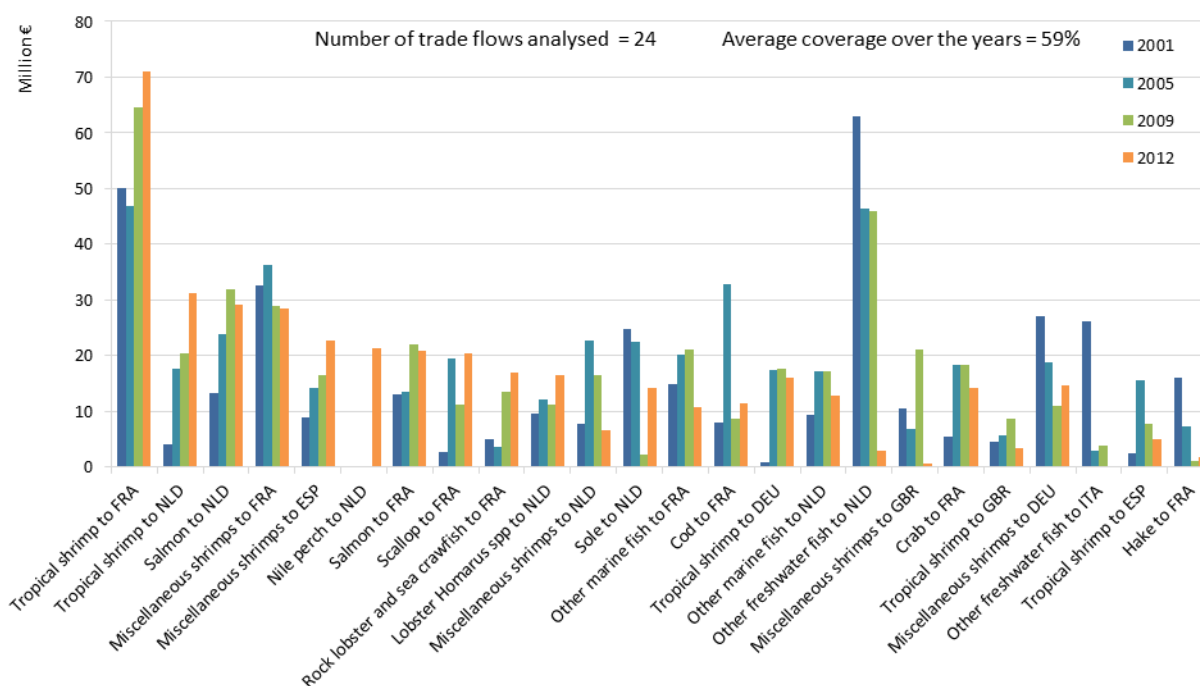


Figure 5.1.12 - Belgian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, the majority of seafood exports were frozen (50% of the total volume and 53% of its value), 28% was made up of prepared/preserved products and 20% was made up of fresh fish (respectively 21% and 23%, in terms of value) (Figure 5.1.13).

Export volume of frozen and prepared/preserved products increased significantly from 2001 to 2012 (by 59% and 41%, respectively), while exports of fresh seafood declined. This reflects, on the one hand, the rise in the exports of shrimps (which are exported mostly frozen) and fish for non-human consumption (which is traded as prepared/preserved seafood) and, on the other, the decrease in the exports of other freshwater fish and several other species (e.g. plaice, sole and cod), a large part of which was traded fresh.

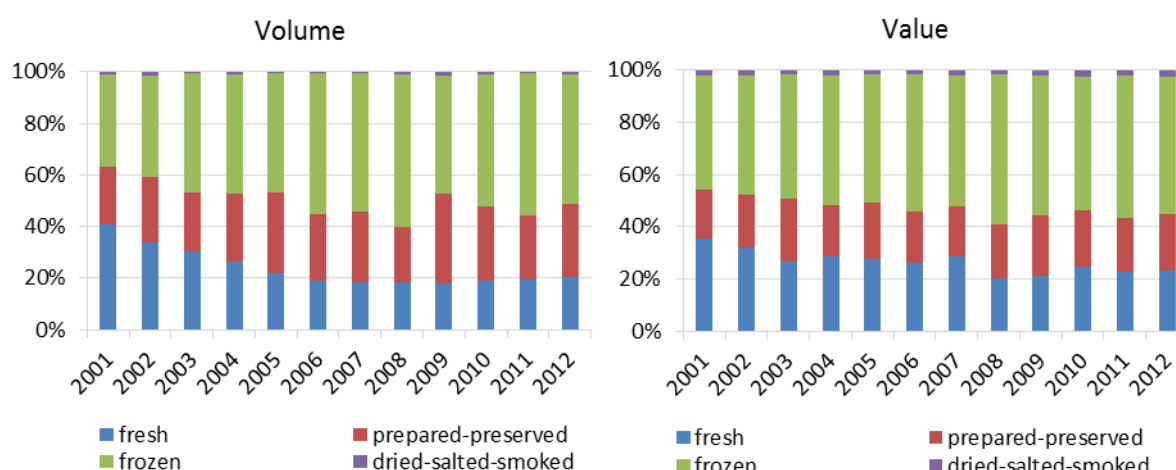


Figure 5.1.13 - Belgian seafood exports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to total export value is rather homogeneous across destinations and has been rather stable over the reference period for most of them (Figure 5.1.14).



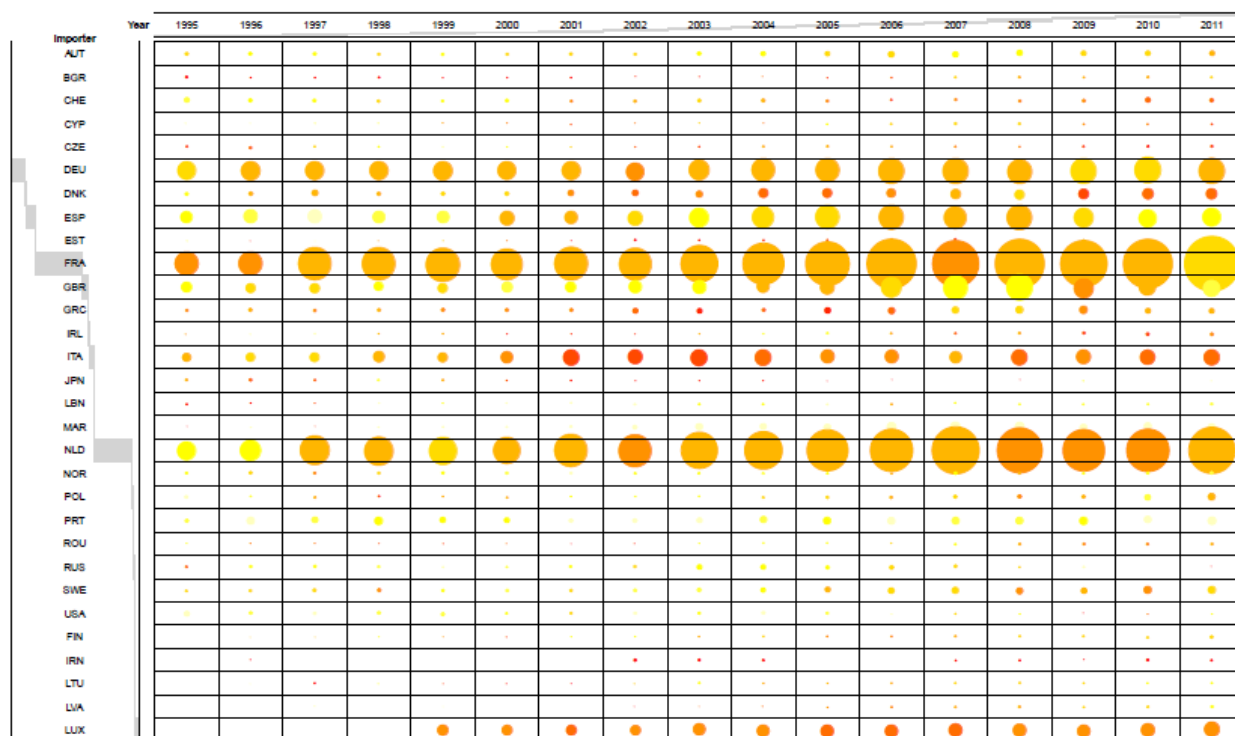


Figure 5.1.14 - Belgian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (Note: the size is proportional to the export value and the shading to the share of processed products)

## 5.2 Bulgaria

### Production

The Bulgarian fleet is rather diversified, with a wide range of vessel types targeting different species mostly in the Black Sea. Around 85-90% of the total number of active vessels belongs to the small scale fleet, which is engaged in small-scale coastal fishing with (anchored) gillnets. The total amount of capture in 2012 was 9.6 K tonnes and the dominant species caught were European Sprat (41% of the total volume) and sea snails (32%).

According to FAO data, the Bulgarian aquaculture sector produced 5.5 K tonnes of fish in 2011 (around 36% of the total production), to which rainbow trout contributed 38%. Other relevant species were common carp (25%) and bighead carp (17%).

The total production of the fish processing industry in 2009 amounted to almost 8 K tonnes of processed products. Frozen fish (including fillets) were the most relevant products (accounting for 36% of the total production), followed by prepared and preserved (not minced) mackerel (28%).

### Trade balance and exposure to trade competition

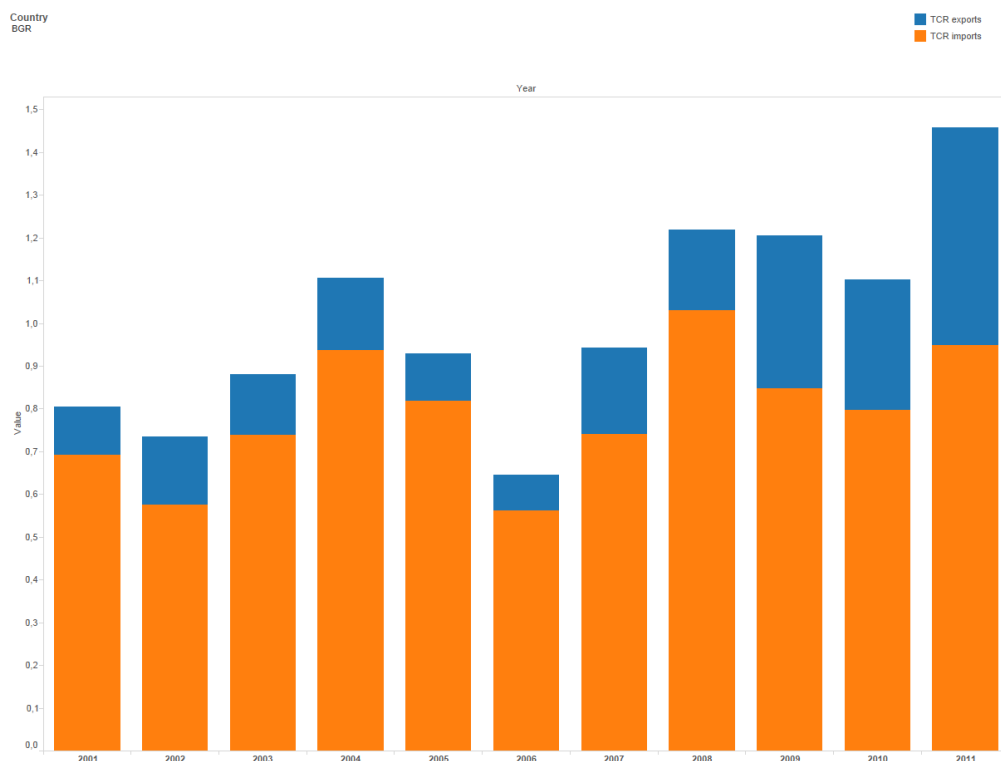
Bulgaria has a negative trade balance for fish and fishery products, which has deteriorated from 2001 to 2012 especially in terms of value (from -8 M Euro to -24 M Euro), but also in volume (from -15 K tonnes to -8 K tonnes).

Extra-community exports were more relevant at the beginning of the reference period than at its end. In 2012, almost 80% of the Bulgarian seafood export volume was traded within the community, against a share of 59% in 2001. On the other hand, the contribution of extra-community trade to the total seafood import volume increased from 27% in 2001 to 31% in 2012. In terms of value, the share of intra-community trade increased both for imports and exports (Figure 5.2.1).



Figure 5.2.1 - Bulgarian seafood trade balance trends: value (left) and volume (right)

As for most other MS, the exposure to seafood trade competition for Bulgaria has increased significantly over the reference period (Figure 5.2.2). In 2011, the estimated value of the Trade Competition Ratio (TCR) for Bulgaria was 1.44, against a value of 0.8 in 2001. The exposure to seafood trade competition is mostly driven by imports, as in the case of most other MS, however the contribution of exports has increased over time. In 2001, the contribution of exports to the TCR was less than 15%, while it was around 35% in 2011.



**Figure 5.2.2 - Trend of the exposure to trade competition index for Bulgaria**

## Imports

Bulgaria imported 28 K tonnes of seafood in 2012, 55% more than in 2001. The value of Bulgarian seafood imports increased more than their volume, going from 14 M Euro in 2001 to 51 M Euro in 2012.

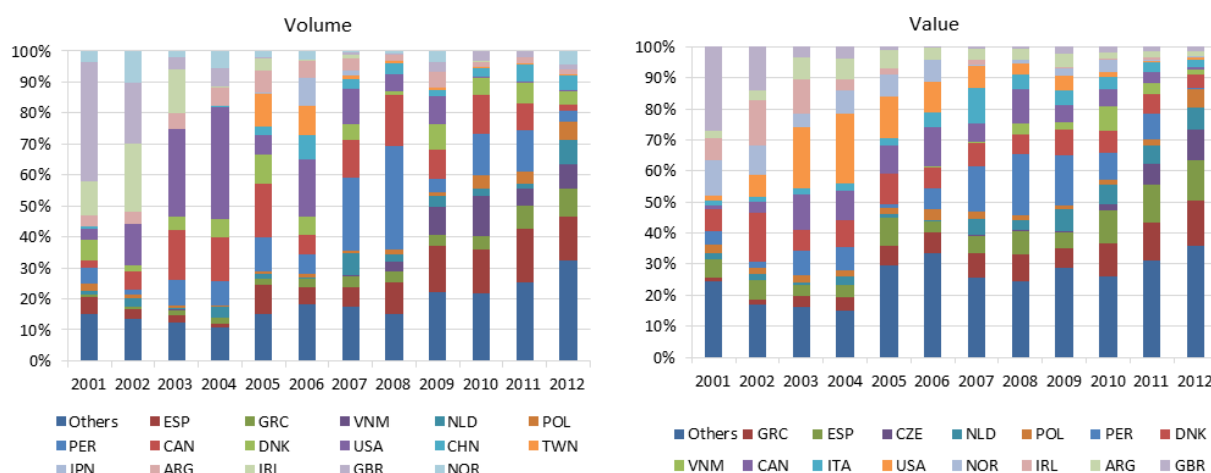
The share of extra-community imports over the total has fluctuated significantly over the period. In the first and last part of the reference period, intra-community imports were predominant, while extra-community imports tended to be prevalent between the years 2003 and 2009.

Figure 5.2.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover, in average over the period, 82% of the Bulgarian seafood import volume and 74% of its value.

Bulgarian seafood import patterns are rather complex: exports are directed to several suppliers, none of which is clearly dominant. In 2012, the majority of imports came from Spain (accounting for 14% of the total volume of seafood imports), Greece (9%), Vietnam (8%), the Netherlands (8%) and Poland (6%). In the same year, the most relevant seafood suppliers in terms of trade value were Greece (15%), Spain (13%), Czech Republic (10%), the Netherlands (7%) and Poland (6%). Fish imported from Vietnam contributed less than 2% to the total value of Bulgarian seafood imports.

Trade patterns changed radically over time. In 2001, the United Kingdom, Ireland and Denmark were the major seafood suppliers for Bulgaria, while Spain and Greece combined accounted for approximately 7% of

the total imports, both in volume and value. As it can be observed from Figure 5.2.3, imports from all the most relevant partners have been rather unstable over the reference period. However, the trend has been clearly increasing for the imports from Spain, Greece, the Netherlands and Poland, especially in value.



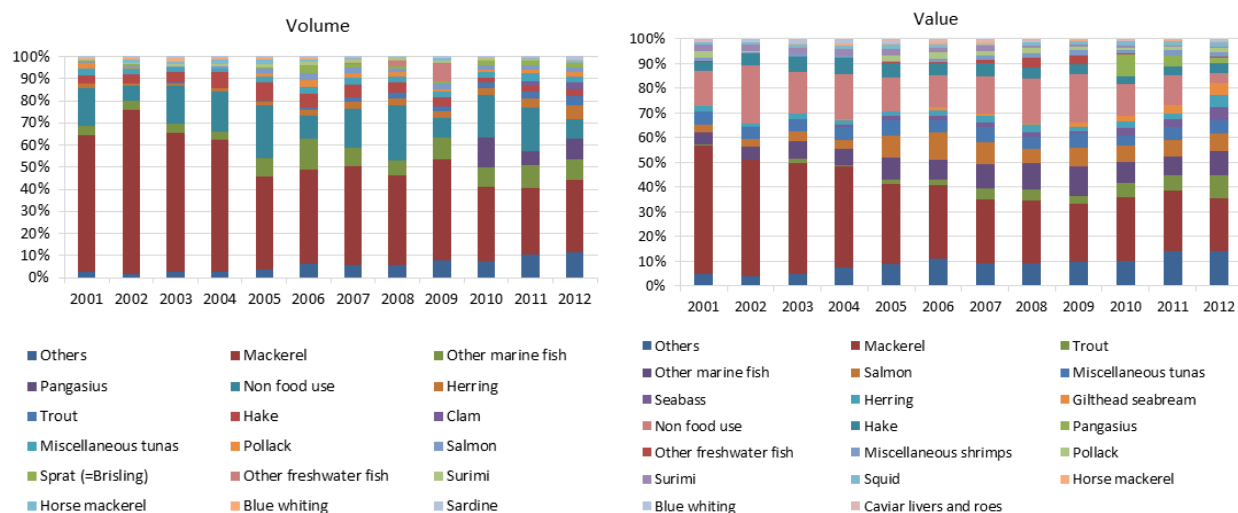
**Figure 5.2.3 - Bulgarian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.2.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 94% of the total Bulgarian seafood imports in volume and 91% in value.

In 2012, 33% of the Bulgarian seafood import volume was made up of mackerel. The other most relevant commercial species were other marine fish (contributing 9% of the total volume), pangasius (9%), herring (6%) and trout (4%). Mackerel was the most important species also in terms of trade value (accounting for 21% of the total in 2012), followed by trout (10%), other marine fish (9%), salmon (7%) and miscellaneous tuna (5%). Imports of fish for non-food uses also contributed significantly to the total trade (9% to its volume and 4% to its value).

The composition of seafood imports has changed radically from 2001, when almost 80% of the Bulgaria seafood import volume (and 66% of its value) was made up of mackerel (mostly imported from the United Kingdom) and fish for non-food uses. The volume of imports of mackerel and fish for non-food uses have reduced by 17% and 20% respectively, from 2001 to 2012. On the other hand the trade of other marine fish, herring and trout has increased significantly. Furthermore, in 2010 Bulgaria has started to imports pangasius from Vietnam.

The increased relevance of Vietnam as seafood supplier for Bulgaria has to be attributed to imports of pangasius.



**Figure 5.2.4 - Bulgarian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.2.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Bulgaria, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 74% and 62% of the overall trade, respectively in volume and value.

The total volume and value of mackerel imports of mackerel fluctuated significantly over the reference period. From 2001 to 2012, the volume has decreased by 17%, while the value has increased by 44%. The imports of mackerel from its original suppliers (i.e. the United Kingdom, Ireland, USA, Canada and Sweden) has declined substantially over time, while its imports from other countries (mostly Spain, the Netherlands, Poland and Norway, but also Romania, China and a few others) has increased sharply.

The import volume of fish for non-human consumption, mostly originated from Peru and Denmark, has fluctuated intensively over the reference period, while its value has increased almost continuously until 2009, when the trend has reversed.

Besides the imports of mackerel from the above mentioned countries, several other trade flows have expanded significantly over the period and have therefore contributed to the overall increase of Bulgarian seafood imports. A few examples are the imports of seabream and seabass from Greece, trout and salmon from the Czech Republic, trout from Spain, Pangasius from Vietnam and other marine species from Lithuania.

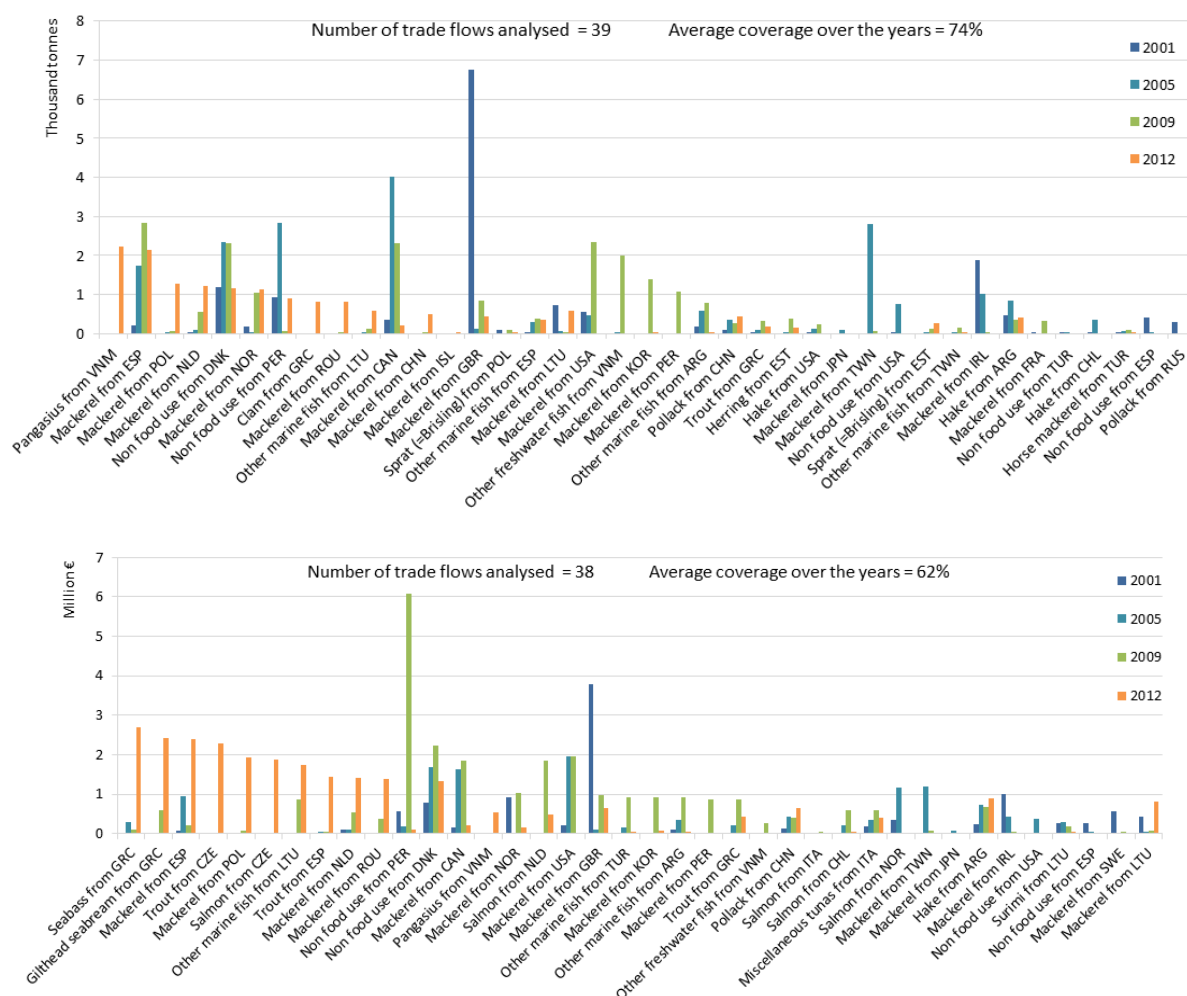
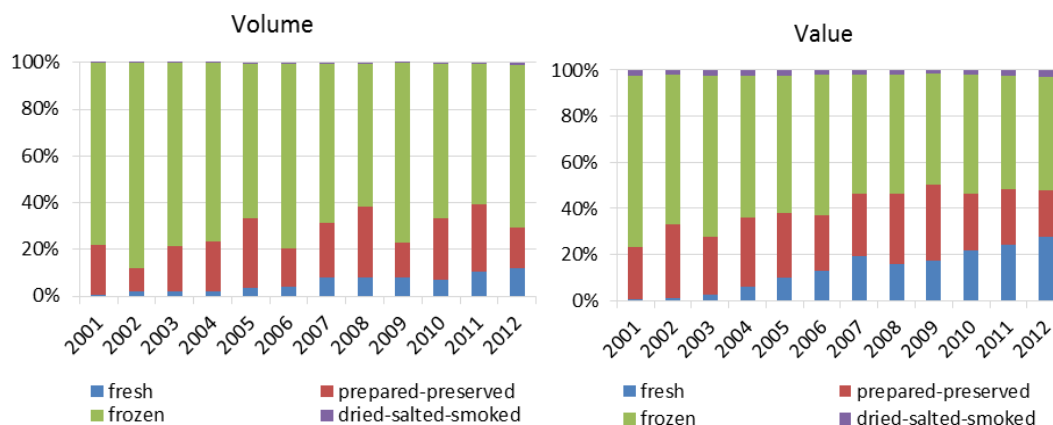


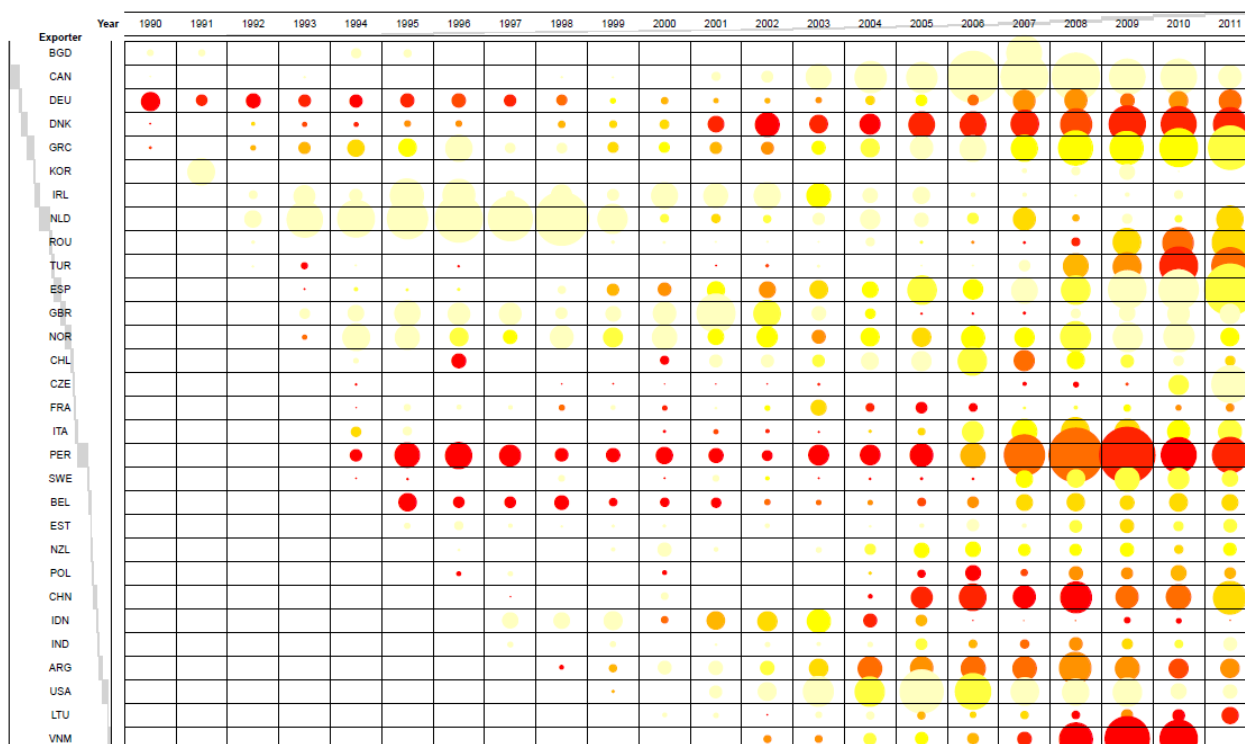
Figure 5.2.5 - Bulgarian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, 70% of the seafood imports were made up of frozen products, 22% of prepared/preserved seafood and almost all the rest of fresh fish. The frozen category was more relevant than the others also in terms of value (accounting for 49% of the total), followed by fresh (27%) and prepared/preserved products (21%). Imports of all types of products have increased substantially from 2001 to 2012. The increase was more relevant for fresh products, which represented around 1% of the total imports at the beginning of the decade, in terms of both volume and value. This resulted from the increased imports of species such as trout, salmon and seabream, which are imported mostly fresh (Figure 5.2.6).



**Figure 5.2.6 - Bulgarian seafood imports trends by type of products: share in volume (left) and value (right)**

The contribution of processed products to the total value of imports varies significantly depending on the country of origin. For example, processed products represent a rather high share of the value of imports from Peru (mostly made up of fish for non-food uses), while they contribute much less to the value of imports from Spain (mostly made up of frozen mackerel and fresh trout), from Greece (mostly made up of fresh and frozen seabass and seabream) and from the Netherlands (almost 90% of which is made up of frozen mackerel, frozen herring and fresh salmon) (Figure 5.2.7).



**Figure 5.2.7 - Bulgarian seafood imports trends by main seafood suppliers and contribution of processed products to total import value (size is proportional to the import value and the shading to the share of processed products).**

## Exports

Bulgaria exported 9.2 K tonnes of fish and fishery products in 2012, valued at 26 M Euro. From 2001 to 2012, seafood exports increased more than three times in terms of volume and almost four in value. The value of fish trade increased continuously during the reference decade, while the export volume increased very significantly in 2008, due to the increased exports of other products to the former Yugoslav Republic of Macedonia and the creation of a new trade flow (i.e. the exports of fish for non-food uses to Greece), and in 2009, due to the expansion of this last trade flow.

Figure 5.2.8 shows the trend of the seafood exports to the most relevant partners shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the reference period, 94% of the total export volume and 88% of the export value.

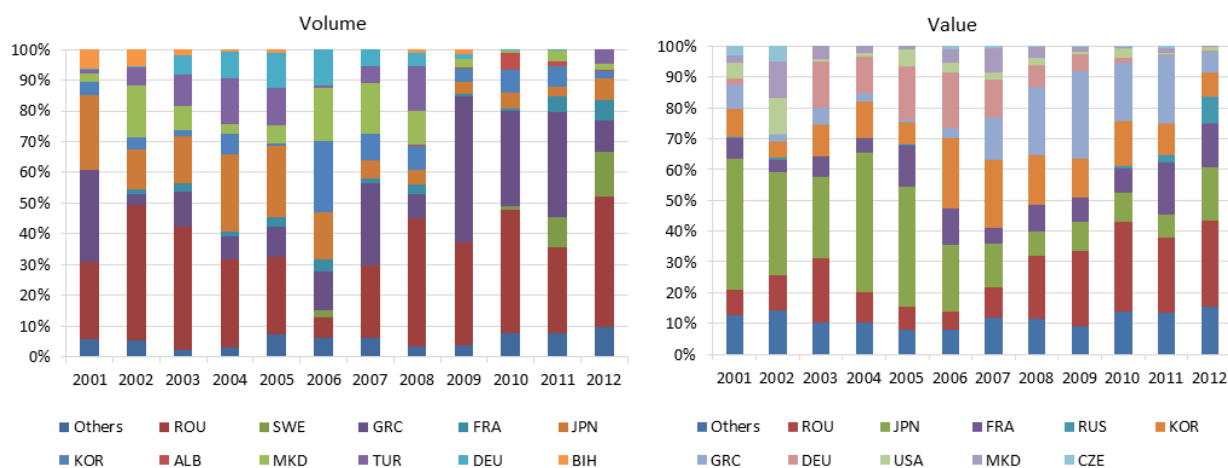
Extra-community exports were more relevant at the beginning of the reference period than in 2012. In 2001, 41% of total export volume (corresponding to almost 70% of its value) was directed outside the EU,

while the majority of seafood exports were directed to MS in 2012 (72% in terms of volume and 62% in value).

Bulgarian seafood exports are rather concentrated. In 2012, the major five countries of destinations covered 80% of the total volume of imports and almost the same share in value. In 2012, the most relevant countries of destination for Bulgaria were Romania (accounting for 42% of the total volume of seafood imports), Sweden (15%), Greece (10%), France (7%) and Japan (7%). Romania was the largest importer of Bulgarian seafood also in terms of volume (accounting for 28% of the total), followed by Japan (17%), France (14%), Russia (8%) and Korea (8%).

In the past, Japan was the most relevant country of destination (accounting for 42% of the total Bulgaria seafood exports in value and 24% in volume in 2001). However, although this trade flow has increased by 60% in absolute value from 2001 to 2012, Japan has lost market shares (it represented 17% of the total value of Bulgarian exports in 2012, against a 42% share in 2001) in favour of Romania (28% against 8%) and France (14% against 7%).

Seafood trade patterns have changed radically over the reference period. First of all, Bulgaria has reoriented its seafood exports within the EU. Intra-EU exports increased by more than 4 times and 7 times, respectively in terms of volume and value, while extra-community trade increased by around 2 times (in volume and value). Second, it has activated new trade flows, for example it has started to exports seafood to Sweden (miscellaneous shrimps and mackerel). Furthermore, it has changed the destinations of specific products, for example it has reduced the exports of products of other molluscs and aquatic invertebrates to Japan (which constituted 24% of the total volume of imports and 42% of its value in 2001) and has redirected part of these products to Greece.



**Figure 5.2.8 - Bulgarian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.2.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Bulgarian seafood imports almost entirely.

The most relevant commercial species exported by Bulgaria in 2012 are mackerel (contributing 17% of the total volume of Bulgarian seafood exports), other molluscs and aquatic invertebrates (13%), miscellaneous shrimps (13%), sprat (9%) and other products (8%).



Other molluscs and aquatic invertebrates contributed the most in terms of value (28%), followed by caviar livers and roes (13%), mackerel (9%), miscellaneous shrimps (7%) and trout (6%).

Trade patterns changed significantly over the reference period not only in terms of countries of destination but also of exported products. In 2001, in fact, almost 90% of the overall volume of exports was made up other molluscs and aquatic invertebrates, other products and sprat (each of them contributed around 30% of the total exports).

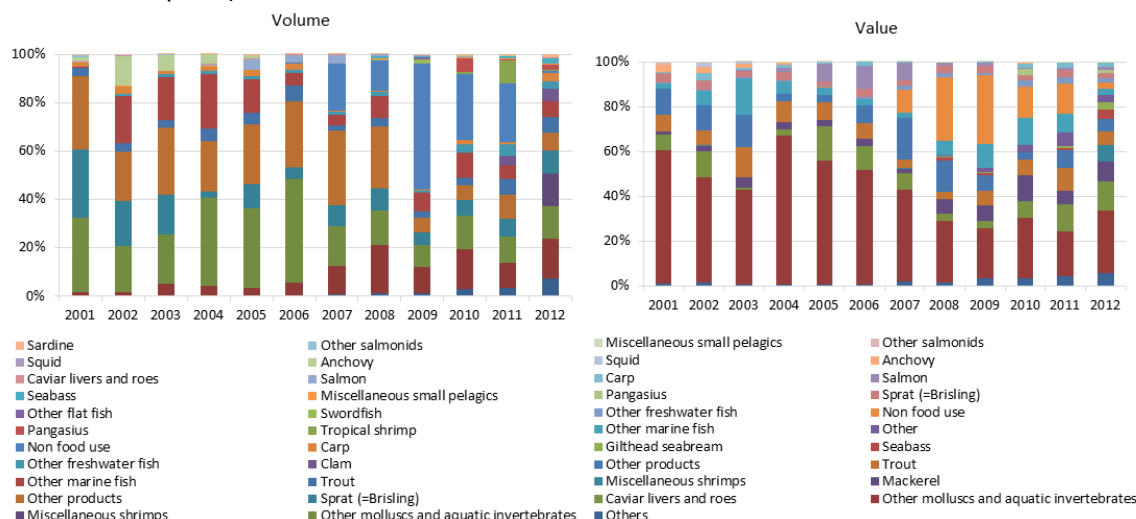
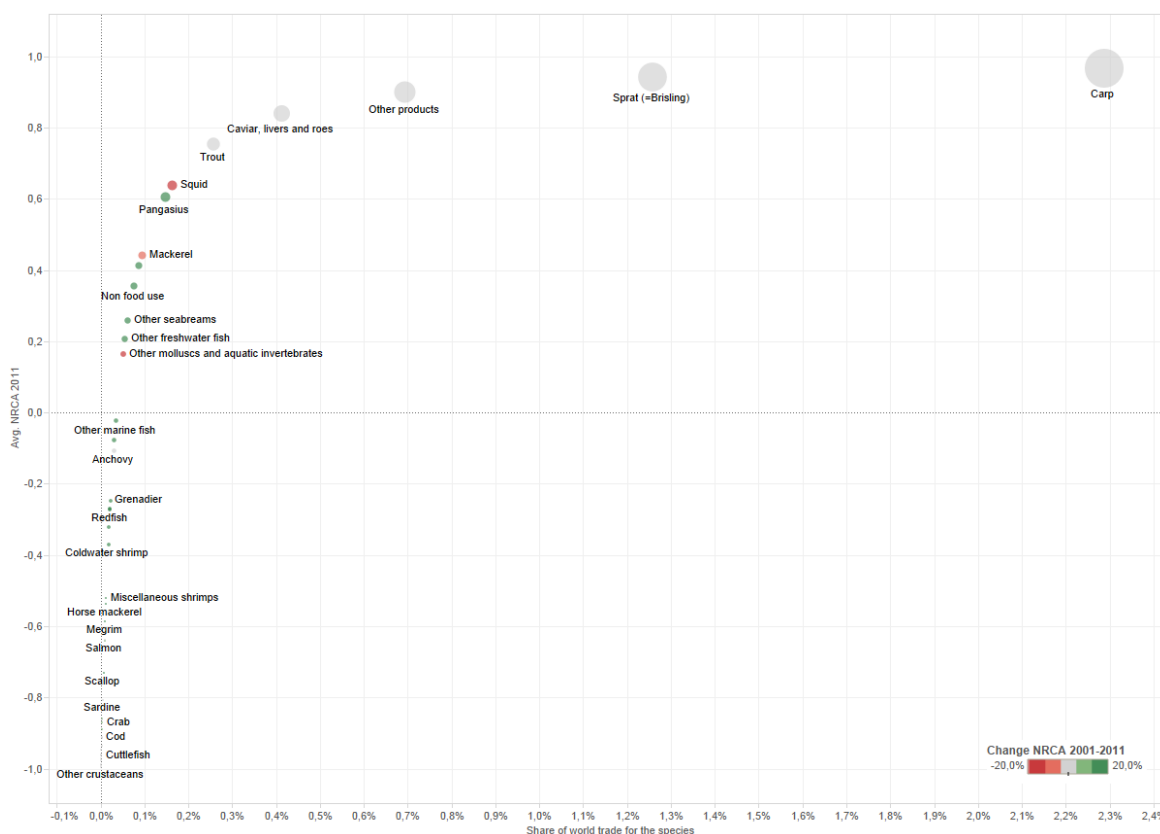


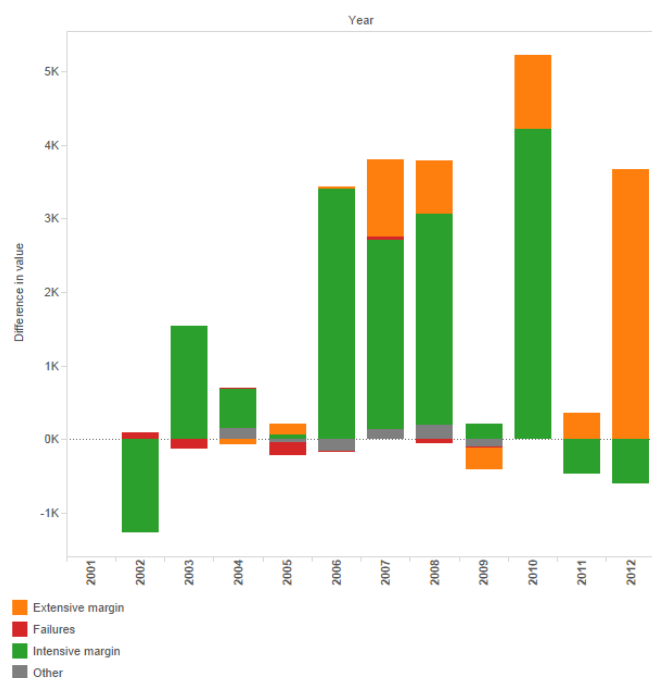
Figure 5.2.9 - Bulgarian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

As evidenced by trade flows, Bulgaria has the highest comparative advantage on the international market for carp (NRCA = 0.97), sprat (NRCA = 0.94) and other products (NRCA = 0.92). The NRCA index for all of them has remained stable over the years (Figure 5.2.10).



**Figure 5.2.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Bulgaria, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Seafood exports changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) and occurred mostly after its accession and the accession of Romania to the EU in 2007 (Figure 5.2.11). Changes at the extensive margin (i.e. activation of new trade flows) were rather relevant since 2007.



**Figure 5.2.11 - Bulgarian seafood exports margins: 2001-2012**

Figure 5.2.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Bulgaria, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 91% and 86% of the overall trade (in average over the reference period), respectively in volume and value.

As mentioned above, seafood trade patterns have changed drastically over time. In 2012, more than one third of the seafood exported to Romania (in volume) was made up of processed mackerel, while this species contributed very little in 2001. On the other hand, the share of sprat over the total export volume reduced from 86% in 2001 (35% in terms of value) to 15% in 2012 (6% in value) and the trade of dried/salted/smoked anchovy, which in 2001 contributed around 40% of the value of trade between these two countries (8% in terms of volume) disappeared at the end of the reference period. The trade with Japan, mostly constituted of molluscs and other aquatic invertebrates, has increased significantly in value. Furthermore, while in 2001 seafood was traded with Japan mostly frozen (almost 90% in value in 2001), several different forms appeared in the market over time. Trade with France has also changed radically. In 2001, molluscs and other aquatic invertebrates contributed more than 70% of the total value of seafood exports to France, while in 2012 more than 70% of it originated from caviar livers and roes.

Overall, seafood exports increased more than three times in terms of volume and almost four in value from 2001 to 2012. The exports to Greece (other molluscs and aquatic invertebrates and other marine fish), Romania (mackerel, trout, carp and several others), Russia (seabream e seabass) and Sweden (shrimps) have contributed the most in terms of volume. The majority of the increase in value can be attributed to the exports of other molluscs and other aquatic invertebrates to Greece, Japan and Korea, caviar livers and roes to France, Mackerel to Romania, trout to Romania, seabass and seabream to Russia and shrimps to Sweden.

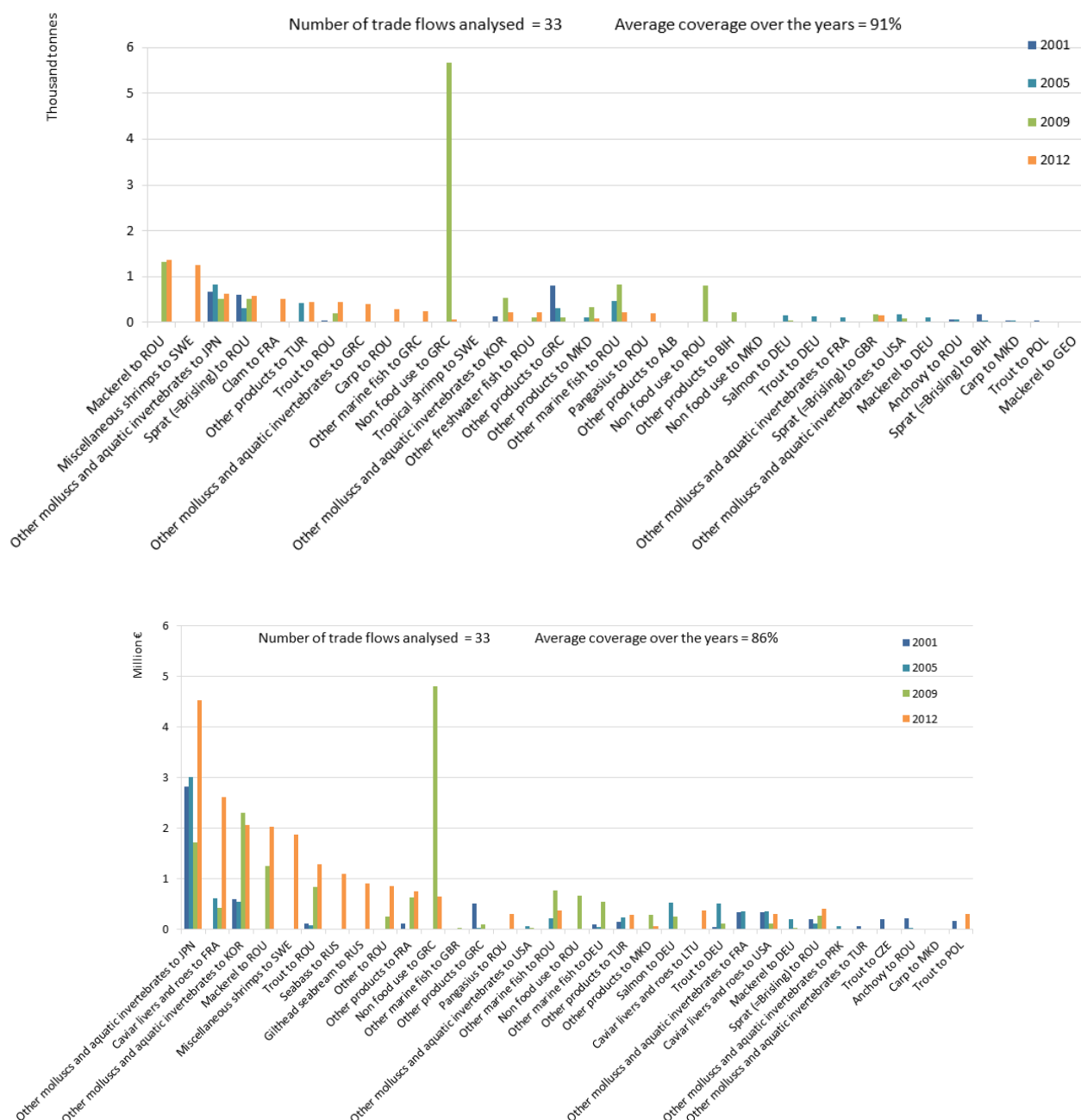


Figure 5.2.12 - Bulgarian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Frozen seafood is the most represented categories in Bulgarian seafood exports, accounting for 41% of the total volume of exports in 2012. Fresh seafood and prepared/preserved products respectively contributed 30% and 23% of the total in 2012. In terms of value, fresh products contributed the most (35% of the total), followed by frozen (28%) and prepared/preserved ones (23%).

Over the reference decade, the contribution of prepared/preserved products to the total seafood exports has increased sharply (from 7% to 23% in value and from 1% to 23% in value), due mostly to the trade of other molluscs and aquatic invertebrates, shrimps and fish for non-food use. The contribution of fresh products increased in terms of trade value (from 14% to 35%) but not in terms of volume, while the one of frozen products reduced (from 59% to 41% in volume and from 59% to 28% in value) (Figure 5.2.13).

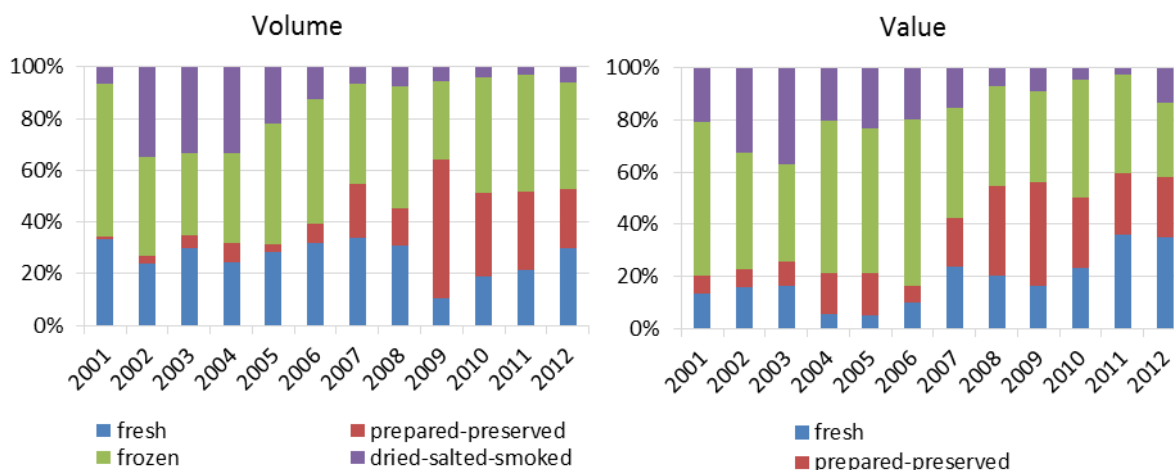


Figure 5.2.13 - Bulgarian seafood exports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to the total value of Bulgarian seafood exports varies significantly according to the country of destination. Exports to Germany, France, the United Kingdom and Greece are mostly processed, while trade with Japan, Korea and Romania is mostly made up of non-processed products (Figure 5.2.14).



Figure 5.2.14 - Bulgarian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)

## 5.3 Croatia

### Production

Marine fisheries, conducted in the eastern part of the Adriatic, have artisanal character and can be divided into coastal fisheries and fisheries in more open waters. Trawling is the key activity in coastal fisheries, while trawling and purse seining dominate in the open seas.

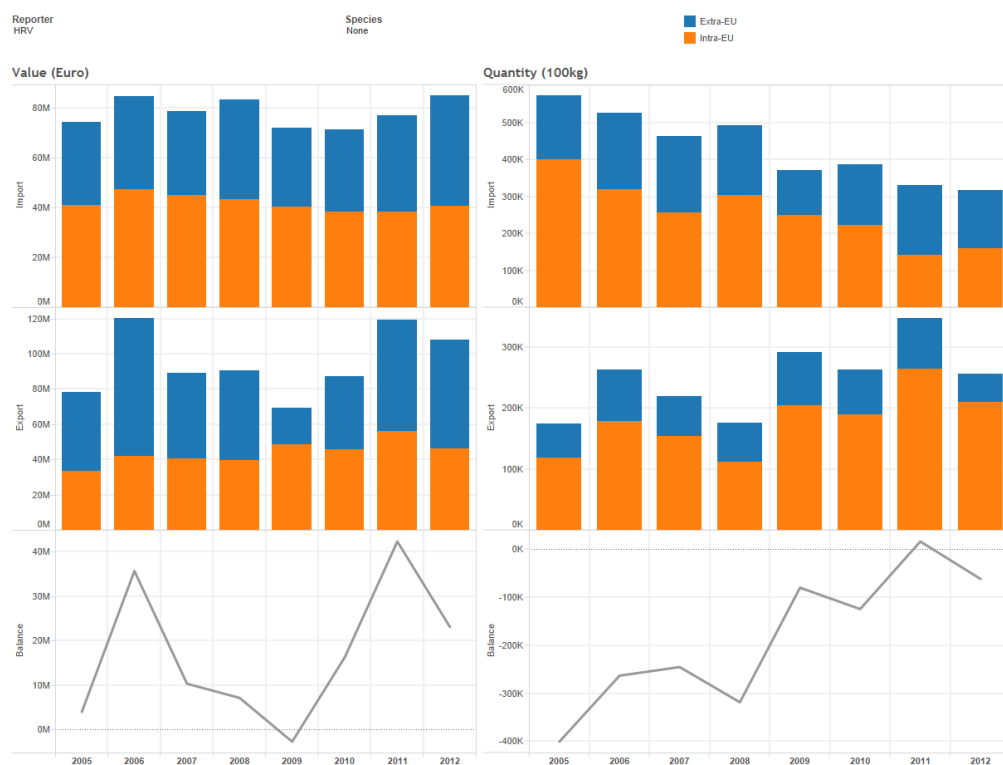
Total catches in 2011 were 71 K tonnes, the largest part of which made up of sardine (65% of the total) and anchovy (20%). A large part of the catches of small pelagic is destined to tuna farms and only a small part is delivered fresh or chilled to fish markets for direct consumption, or is exported chilled or frozen, mostly to Italy and Slovenia (STECF, 2014c).

The most important species in Croatian aquaculture is bluefin tuna, which covered 54% of the total value in 2012 (STECF, 2014b). Bluefin tuna products are exported entirely to Japan. The second most important species is seabass, which is most often farmed in combination with seabream. These three species represented almost 90% of total Croatian aquaculture production in value in 2012. The largest part of the processed production is made up of prepared and preserved sardines and other small pelagic (47% of the total in 2009). Salted (or in brine) fish also constitutes a big part of the total production (31% of the total in 2009), followed by frozen octopus (7%) and prepared/preserved tuna.

### Trade balance and exposure to trade competition

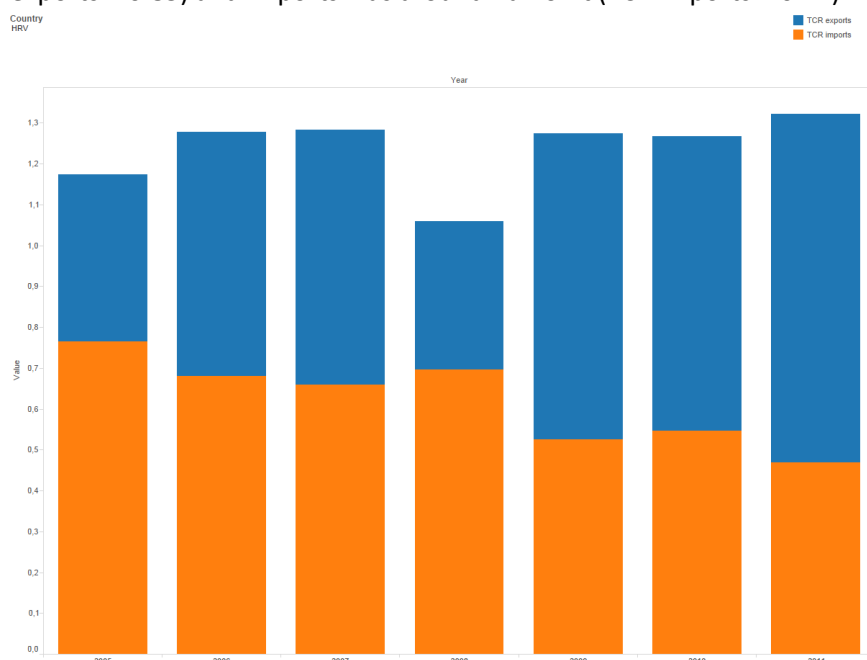
Contrarily to most other MS, Croatia is a net exporter of fish and fishery products in terms of value of trade, with a positive trade balance of 23 M Euro in 2012. This depends mostly on the exports of farmed bluefin tuna, which is one of the most important food commodities traded by Croatia. In 2012, exports of bluefin tuna products to Japan contributed 43% of the total value of Croatian seafood exports and this trade flow, together with the exports of sardines and anchovies to Italy and Spain, covered almost 70% of the total. The seafood trade balance in value has remained always positive during the reference period, except in 2009. Furthermore, after 2009, it has increased sharply, mostly due to the exports of bluefin tuna, the value of which has increased by almost four times from 2005 to 2012. In terms of seafood volume, Croatia has a trade deficit, which, however, has decreased almost continuously over the years. In 2012, the balance in volume was equal to around -6 K tonnes of fish.

In 2012, intra-community and extra-community imports contributed evenly to the total Croatian seafood imports, both in volume and value, while, intra-community imports were prevalent in 2005 (Figure 5.3.1). The contribution of intra- and extra-community exports varied significantly over the period, both in volume and value.



**Figure 5.3.1 - Croatian seafood trade balance trends: value (left) and volume (right)**

The value of seafood trade is smaller than the national apparent seafood consumption, as confirmed by the value of the exposure to trade competition index, calculated as the ratio between trade value and seafood consumption (Figure 5.3.2). In Croatia, seafood exports was equal to 85% of the consumption in 2011 (TCR exports = 0.85) and imports was around half of it (TCR imports = 0.47).



**Figure 5.3.2 - Trend of the exposure to trade competition index for Croatia**

### Imports

Croatia imported almost 32 K tonnes of seafood in 2012. Seafood import volume decreased almost continuously from 2005 to 2012, at an average annual rate of 8% and it contracted by 45% over the entire

period. On the other hand, the value of seafood imports increased by 15%, at an average annual growth rate of 2%, reaching 85 M Euro in 2012.

In 2012, intra-community and extra-community imports contributed evenly to the total volume of seafood imports, both in volume and value. The volume share of extra-community imports was much smaller in 2005, but it fluctuated significantly over the period. The value share also increased from 2005 (45%) to 2012 (52%), but it oscillated less over the years.

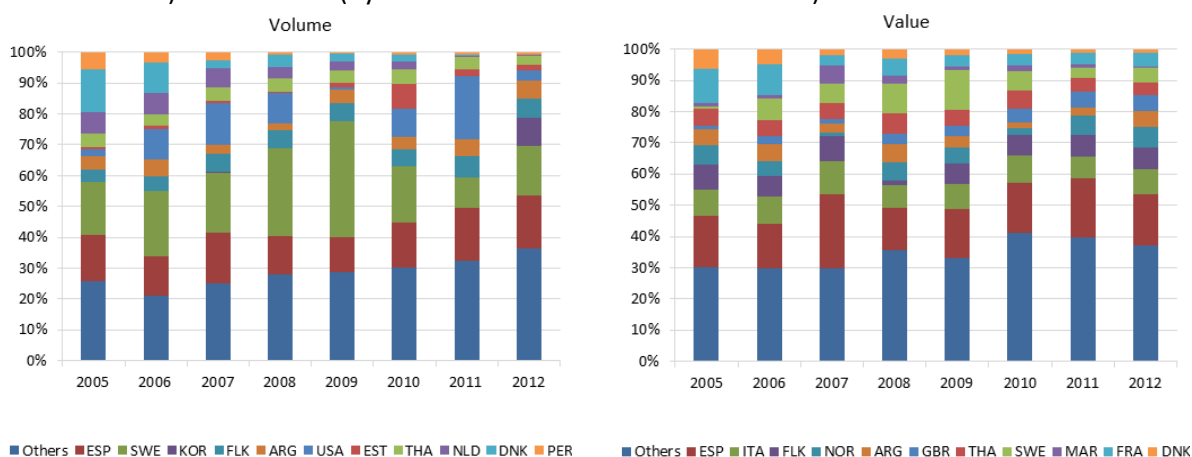
Figure 5.3.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries covered, in average over the years, 72% of the total volume of seafood imported by Croatia and 65% of its value.

In 2012, the most relevant Croatian seafood suppliers in terms of volume were Spain (accounting for 17% of the total imports), Sweden (16%), Korea (9%), the Falkland Islands (6%) and Argentina (6%). Spain was the main supplier also in terms of trade value (16% of the total), followed by Italy (8%), the Falkland Islands (7%), Norway (6%) and Argentina (5%). Imports from these countries integrate the availability of raw material for the Croatian fish processing factories which, however, is mostly dependent on domestic catches.

From 2005 to 2012, the value of imports from almost all the most relevant suppliers has fluctuated sharply and only the imports from the United Kingdom have had a clear increasing trend (+53% in volume and increased by six times in value). On the other hand, imports from several countries, which were important seafood suppliers in 2005 (e.g. Denmark, the Netherlands and Thailand) declined markedly.

In terms of volume of trade, seafood imports from Spain and Sweden have declined significantly over the period, while imports from Argentina and the Falkland Islands have remained more stable.

Furthermore, trade with several extra-community partners have increased considerably over the period, for example Korea (by 91 times in volume and 17 times in value), Vietnam (by 11 times in volume and 14 times in value), China (by five times in volume and six in value), Indonesia (by four times in volume and 19 times in value) and Ecuador (by 28 times in volume and 102 in value).

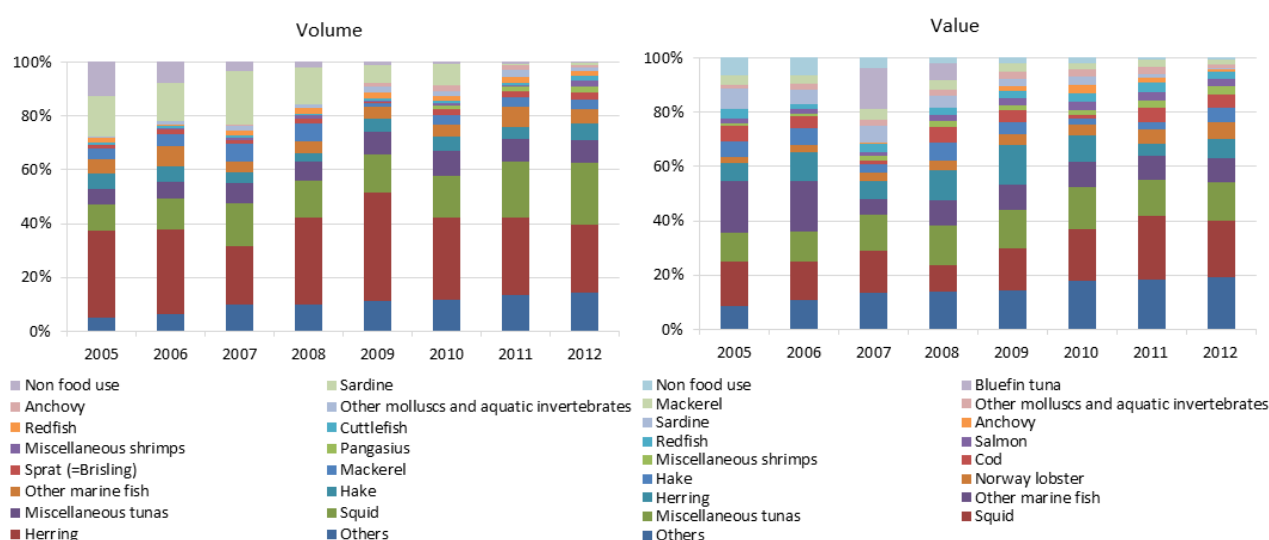


**Figure 5.3.3 - Croatian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.3.4 shows the shares in the trade of the most relevant commercial species. The imports of the species which were the 10 most imported in any year of the period 2001-2012 covered, in average over the years, more than 86% of the total volume of seafood imported by Croatia and almost 77% of its value.

In 2012, almost 50% of the total import volume was made up of herring (26%), mostly originated in Sweden and Korea, and squid (23%), coming for the largest part from Spain and the Falkland Islands. Imports of frozen herring is largely used as fish feed for the tuna fattening farms<sup>3</sup> (STECF, 2014c). Miscellaneous tuna, hake and other marine fish were also relevant (contributing 9%, 6% and 5% of the total volume, respectively). In terms of value, squid was the most relevant one, contributing 21% of the total seafood imports, followed by miscellaneous tuna (14%), other marine fish (9%), herring (7%) and Norway lobster (6%).

Import volume of herring more than halved from 2005 to 2012, while its value picked up in 2009 and started declining afterwards (until 2011). Furthermore, imports of sardine and fish for non-food uses, which were rather relevant at the beginning of the decade, declined significantly, both in volume and value. Import value of squid and miscellaneous tuna increased by 48% and 51% respectively from 2005 to 2012, while their trade volumes remained more stable over the years.



**Figure 5.3.4 - Croatian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.3.5 shows the trend of the most relevant imports flows (combinations “country of origin-species”) for Croatia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively covered (in average over the reference period) 72% and 55% of the overall trade, respectively in volume and value.

The imports of Swedish herring have been one of the most relevant trade flows over the entire reference period. They picked up in 2008-2009, both in volume and value, and reduced afterwards, confirming the general trend already observed for this species.

Among the trade flows analysed, some have increased almost continuously from 2005 to 2012, contributing significantly to the overall increase in seafood imports occurred over the period. Some example are the imports of squid from Spain, Norway lobster from the United Kingdom, pangasius from Vietnam, anchovy and trout from Bosnia and Herzegovina.

<sup>3</sup> These farms are based on the catch of wild juvenile tuna



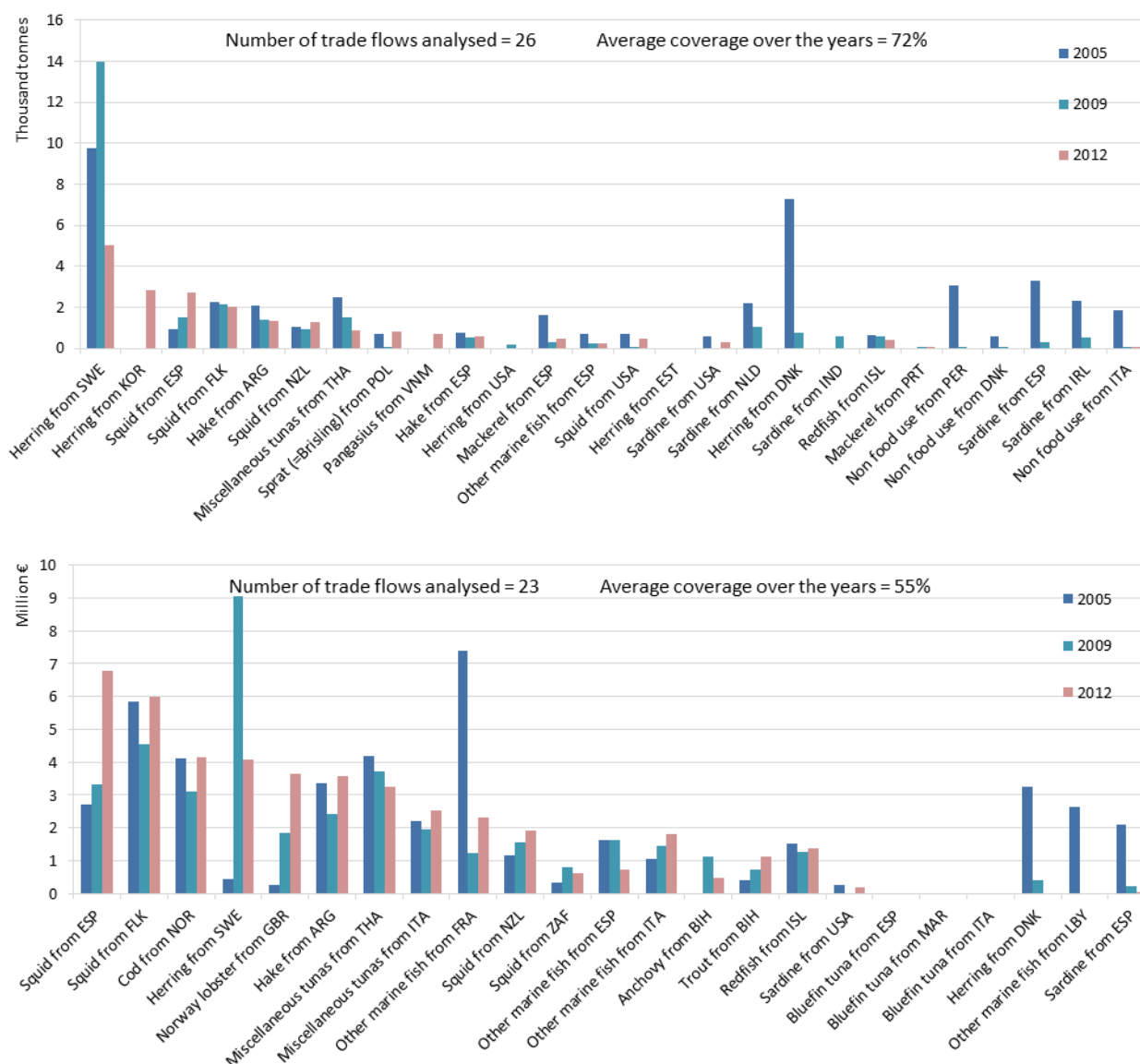


Figure 5.3.5 - Croatian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.3.6 shows the trends in the composition of imports by processing and preservation status. The majority of seafood imports are made up of frozen products (78% of the total volume in 2012, accounting for 54% of its value), as both herring and squid are imported almost only frozen. Prepared/preserved and fresh products also represent a rather large share of the total imports (respectively 16% and 4% of their volume in 2012, 23% and 16% of their value), while dried/salted/smoked products contribute little (2% in volume and 7% in value).

In absolute terms, the import volume of dried/salted/smoked products almost tripled from 2005 to 2012, due mostly to the increased imports of anchovy and cod, while it decreased for all the other types of products. However, their contribution to the overall imports increased only marginally. In value, imports of frozen and dried/salted/smoked increased by 36% and 11%, respectively, while they contracted for fresh and prepared/preserved products.

Processed products represent a very large share of the value of seafood imports from relevant countries of origin, such as Germany, Norway, Argentina and Vietnam. However imports from the two most relevant partners in terms of import value, Spain and Italy, are mainly non-processed (Figure 5.3.7).

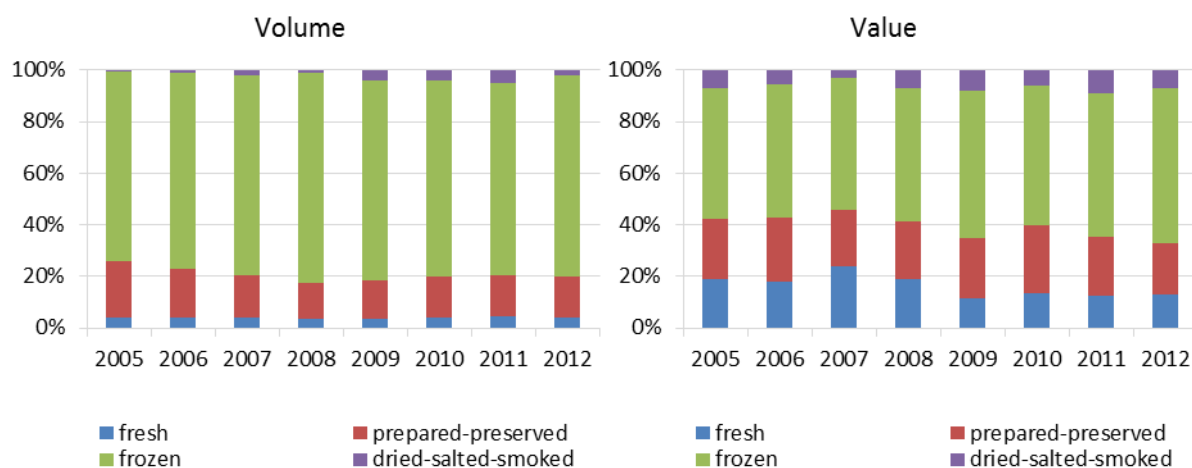


Figure 5.3.6 - Croatian seafood imports trends by type of products: share in volume (left) and value (right)

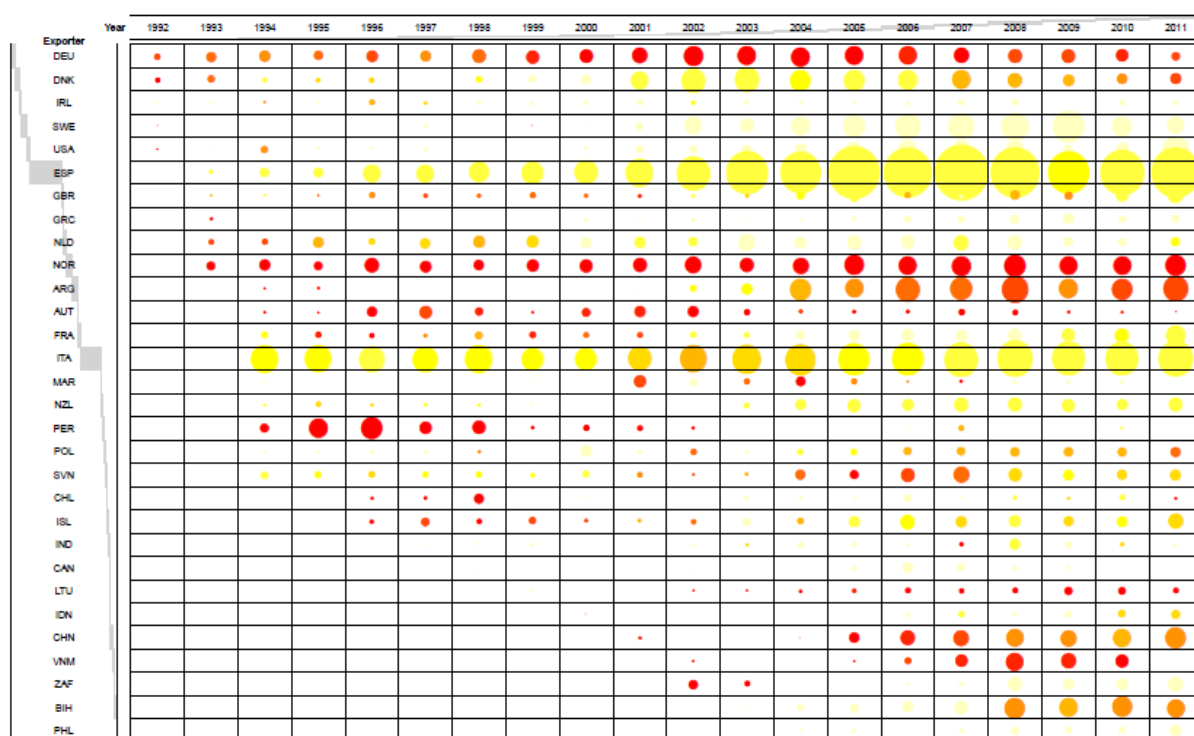


Figure 5.3.7 - Croatian seafood imports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)

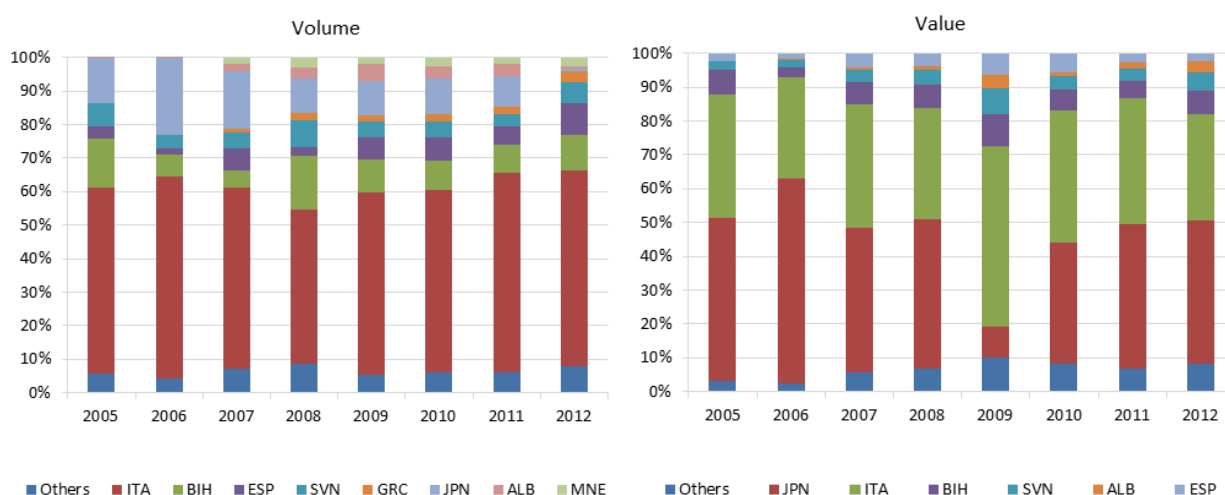
## Exports

In 2012, Croatian seafood exports were equal to almost 26 K tonnes, valued at 108 M Euro, corresponding to a 47% and 38% increase from 2005 in terms of volume and value, respectively.

In 2012, 82% of the Croatian seafood export volume was directed within the EU, while intra-community imports were less than 70% of the total in 2005. In terms of value, extra-EU imports have been more relevant than intra-community trade over the entire period (57% of the total v. 43% in 2012) except in 2005, and their contribution to the total trade has remained rather stable over the years. Figure 5.3.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries covered, in average over the period, 94% of the total Croatian seafood exports, both in volume and value.

In 2012, the most relevant country of destination, in terms of volume of seafood trade, was Italy, to which Croatia directed almost 60% of its seafood exports, followed by Bosnia and Herzegovina (accounting for 10% of the total export volume), Spain (10%), Slovenia (6%) and Greece (3%). These countries have been the most relevant partners for Croatia during the entire period 2005-2012. Furthermore, their contribution to the total trade remained rather stable for all of them except for Spain, which in 2005 accounted for less than 4% of the total exports.

In terms of value, Japan and Italy dominated the market over the entire reference period, even if their shares of the total trade have contracted in favour of several other countries, such as Slovenia, Albania and Montenegro.



**Figure 5.3.8 - Croatian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.3.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, Croatian seafood exports almost entirely, both in volume and value.

In 2012, almost 50% of the total Croatian seafood export volume was made up of sardines and some other 20% of anchovies, mostly in the forms of salted and canned products.

The other most relevant commercial species were other marine fish (contributing 8% of the total seafood export volume), seabass (5%) and seabream (4%). Although, exports of bluefin tuna have more than doubled over the reference period, this species represented less than 1% of the total volume of seafood traded in 2012. On the other hand, this species is the most relevant in terms of value of trade. In 2012, it accounted for 43% of the overall value of Croatian seafood exports, followed by sardines (15% of the total), anchovies (13%), seabass (6%) and other marine fish (5%). Japan is the most important extra-community destination for Croatia. The trade to Japan is represented only by bluefin tuna. Within the EU, Italy and Spain are the main countries of destinations for fresh fish and salted products, respectively. Exports of all the most relevant commercial species have increased in value from 2005 to 2012, especially of bluefin tuna, sardine, seabass and seabream.

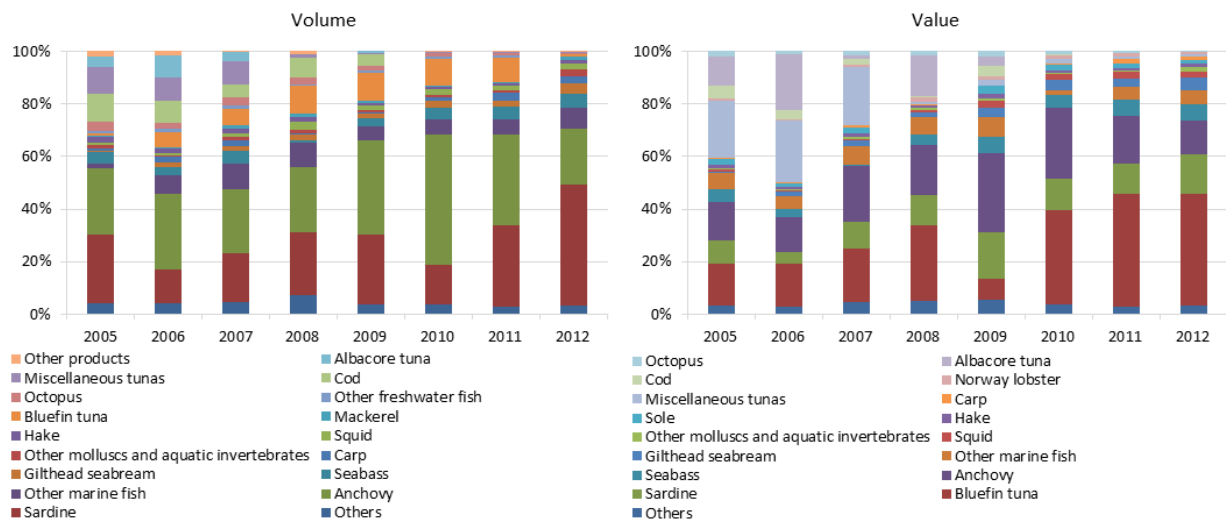


Figure 5.3.9 - Croatian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

Figure 5.3.10 suggests that Croatia has a comparative advantage in all its most relevant commercial species. As evidenced by the trade flows, the highest comparative advantage on the international market is for bluefin tuna (NRCA = 0.98) and anchovies (NRCA = 0.97). Trade of Croatian bluefin tuna, which is exported entirely to Japan, and anchovies are two of the cases for which MS recorded in 2011 the highest value of the index among all world countries. While the NRCA index for anchovies has remained rather stable over the period, its value for bluefin tuna has increased from 0.80 in 2001 to almost 1 in 2011, as a consequence, at least in part, of the sharp increase in the value of Croatian exports of this species.

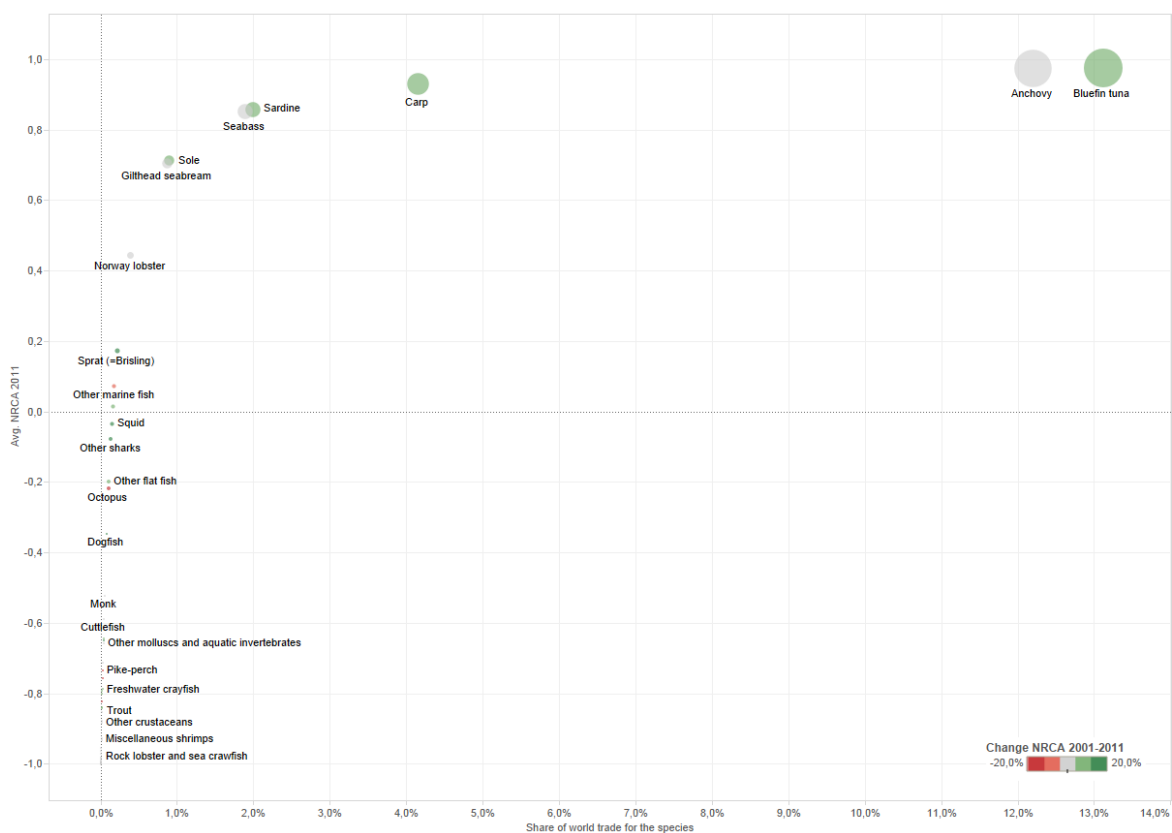
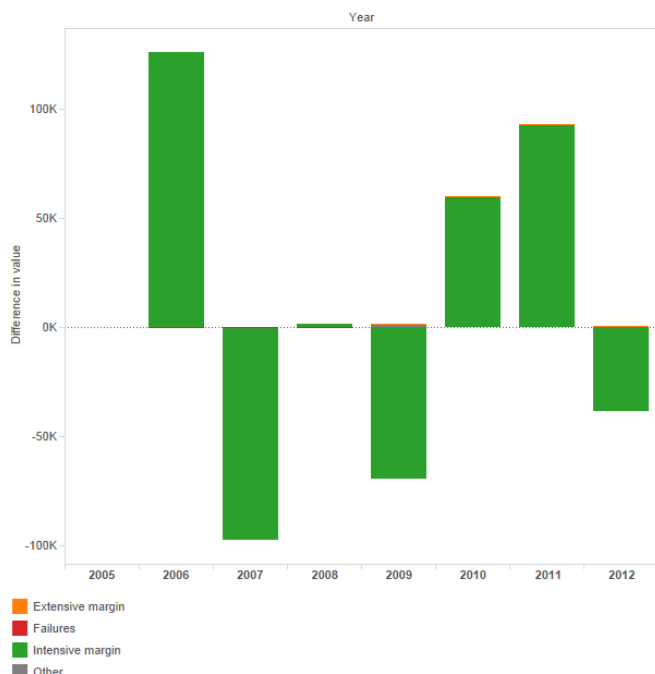


Figure 5.3.10 - Normalized Revealed Comparative Advantage index (NRCA) for Sweden, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011

Exports trends have been rather discontinuous over the years. Seafood trade expanded significantly in 2006, 2010 and 2011, while it contracted markedly in 2007, 2009 and 2012 (Figure 5.3.11). All these changes have to be attributed almost entirely to variations in the exports of the same products to the same set of destination countries (changes at the intensive margin). The activation of new trade flows and the failure of trade flows did not give any contribution.



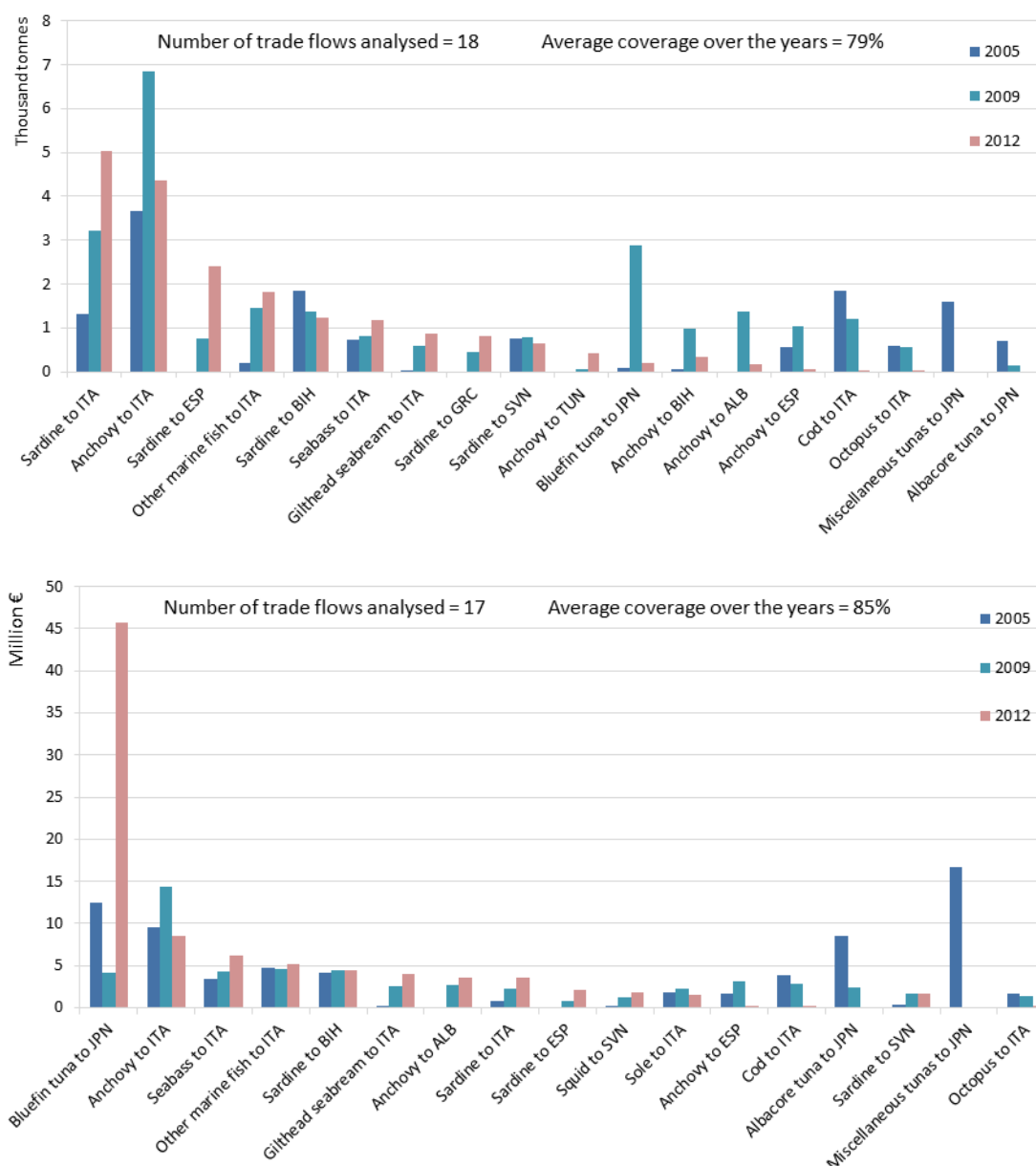
**Figure 5.3.11 – Croatian seafood exports margins: 2001-2012**

Figure 5.3.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Croatia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 79% and 85% of the overall trade (in average over the period), respectively in volume and value.

Almost all Croatian bluefin tuna is exported to Japan, the trade with which is based almost exclusively on this species (Figure 5.3.12). On the other hand, different species contribute to the overall exports to Italy. In 2012, the most relevant in terms of value were anchovy (contributing 25% of the total), seabass (18%), other marine fish (15%) and seabream (12%).

As seen, the overall value of Croatian exports has increased markedly from 2005 to 2012. This has resulted mostly from the increased exports of bluefin tuna to Japan, but also of seabream and seabass to Italy and sardine to Italy, Slovenia and Spain.

In terms of trade volume, the increased exports of sardine to Italy and Spain has contributed the most to the overall trade increase occurred over the reference period.



**Figure 5.3.12 - Croatian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.3.13 shows the trends in the composition of exports by processing and preservation status. The largest part of Croatian seafood export volume is made up of fresh products (50% of the total in 2012). Frozen and prepared/preserved products respectively constituted 22% and 11% of the total export volume in 2012.

Differently than in almost all other EU MS, dried/salted/smoked products are also rather relevant (11% of the total export volume in 2012, corresponding to 17% in terms of value), which reflects the importance of processed anchovies in Croatian trade.

Fresh products contribute the most to the overall value of Croatian fish exports (70% in 2012), because tuna, the Croatian highest-values traded species, is exported almost only fresh. The value of fresh products traded, indeed, increased by almost 60% from 2005 to 2012, reflecting the rise in the trade of tuna to Japan.

Export volume of all types of products increased substantially from 2005 to 2012, with the only exception of dried/salted/smoked seafood, the exports of which declined by 52% in volume. However exports of frozen products rose the most, due almost entirely to the increased exports of sardine. In 2005, this species was traded mostly fresh or prepared/preserved, while in 2012 almost 50% of it was exported frozen.

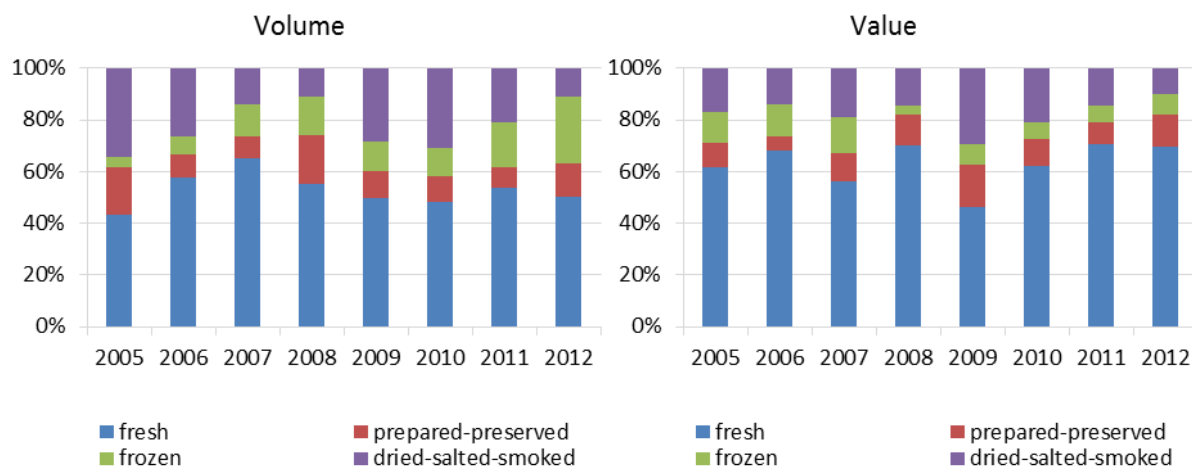


Figure 5.3.13 - Croatian seafood exports trends by type of products: share in volume (left) and value (right)

The share of processed products over the total export value varies depending on the importing country, however the majority of the exports to Italy and Japan are not-processed (Figure 5.3.14).



Figure 5.3.14 - Croatian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.4 Cyprus

### Production

The Cypriot fleet targets different species, predominantly in the Mediterranean Sea. The total volume of landings achieved by the Cypriot fleet in 2011 was around 1.2 K tonnes. Catches are composed by several different species, among which some of the most relevant are albacore, bogue, picarels nei, spinefeet and surmullet (STECF, 2014a).

According to FAO data, aquaculture production has raised by 2.5 times from 2000 to 2011, while captures has become around 2% of the 2000 value. As a consequence, while at the beginning of the decade, total production originated almost entirely from capture fisheries, more than 80% originated from aquaculture in 2011. Aquaculture production is mostly made up of seabream and seabass (respectively contributing 66% and 32% of the total volume, in 2011); however there is also a limited production of rainbow trout and a few other species (STECF, 2014b).

Cypriot fish processing industry is very small, comprising only five small enterprises in 2011 (STECF, 2014c).

### Trade balance and exposure to trade competition

Cyprus has a negative trade balance both in terms of volume and value. In terms of value, the deficit slightly fluctuated around an average value of -25 K tonnes between 2001 and 2008; in 2009 it increased by 51%, as a consequence of the sharp contraction in the exports of bluefin tuna to Japan (-84% in terms of trade volume and -97% in value), and it remained rather stable until the end of the reference period. On the other hand, the deficit in volume more than doubled from 2001 to 2005 and, after a 50% decrease in 2006, it stabilised around a mean value of 13 K tonnes.

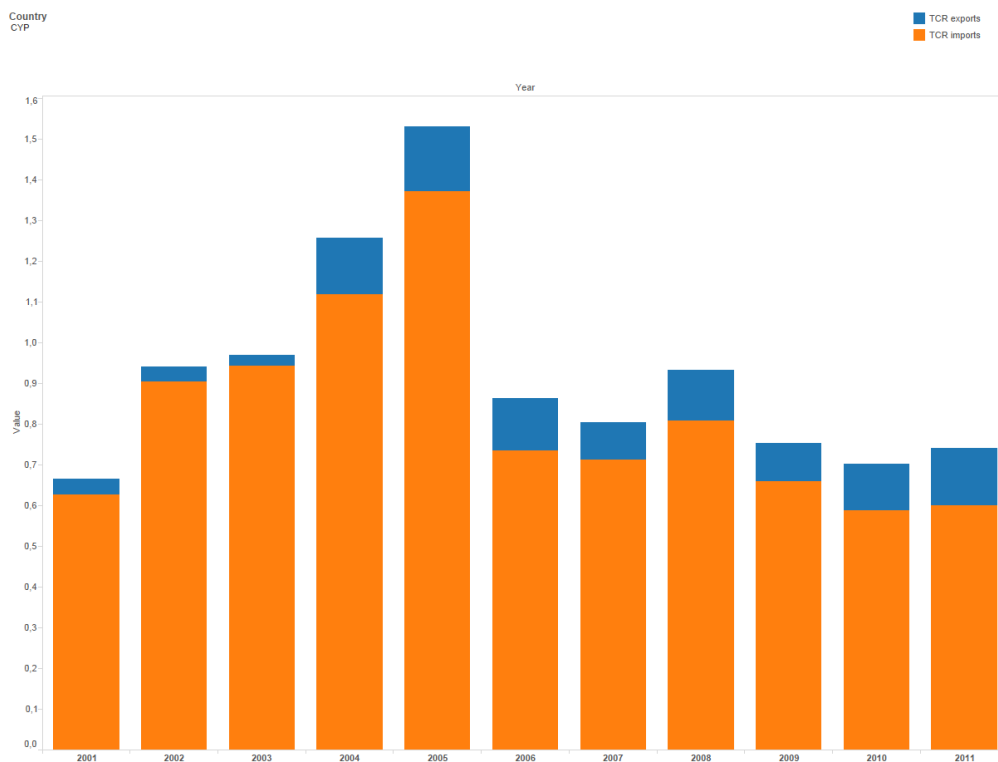
While most other MS imports mostly from within the EU, in Cyprus, intra- and extra-community seafood imports are quite balanced (47% vs. 53% in terms of volume and 50% vs. 50% in value). The share of intra-community imports has been rather unstable from 2001 to 2012, but tended to be higher at the end of the reference period (Figure 5.4.1). Contrarily to most other MS, Cypriot fish exports are mainly destined outside the EU (83% of the total exports in terms of value and 72% in volume, in 2012). The contribution of extra-community trade to the total exports has strongly increased over time in terms of value (from 46% in 2001 to 83% in 2012), but has diminished in volume (from 80% in 2001 to 72% in 2012), which indicates that the average unit value of seafood exported to extra-community countries has increased over time.





**Figure 5.4.1 - Cypriot seafood trade balance trends: value (left) and volume (right)**

The exposure to seafood trade competition has increased significantly from 2001 to 2005, but has reduced almost every year afterwards (Figure 5.4.2). In 2011, the estimated value of the Trade Competition Ratio (TCR) for Cyprus was 0.74, against a value of 1.53 in 2005. The exposure to seafood trade competition is mostly driven by imports, as in the case of most other MS, however the contribution of exports has increased over time. In 2001, the contribution of exports to the TCR was less than 6%, while it was around 19% in 2011.



**Figure 5.4.2 - Trend of the exposure to trade competition index for Cyprus**

### Imports

Cypriot seafood imports were equal to around 14 K tonnes of seafood in 2012, corresponding to a value of 54 M Euro. The value of seafood imports increased 57% from 2001 to 2012, at an average annual growth rate of 5%. The volume of seafood imports increased continuously until 2005, dropped by 44% in 2006 and remained more stable afterwards (overall, it increased by 22% compared to 2001, at an average annual growth rate of 4%).

Figure 5.4.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries covered, in average over the period, 81% of the Cypriot seafood import volume and 70% of its value.

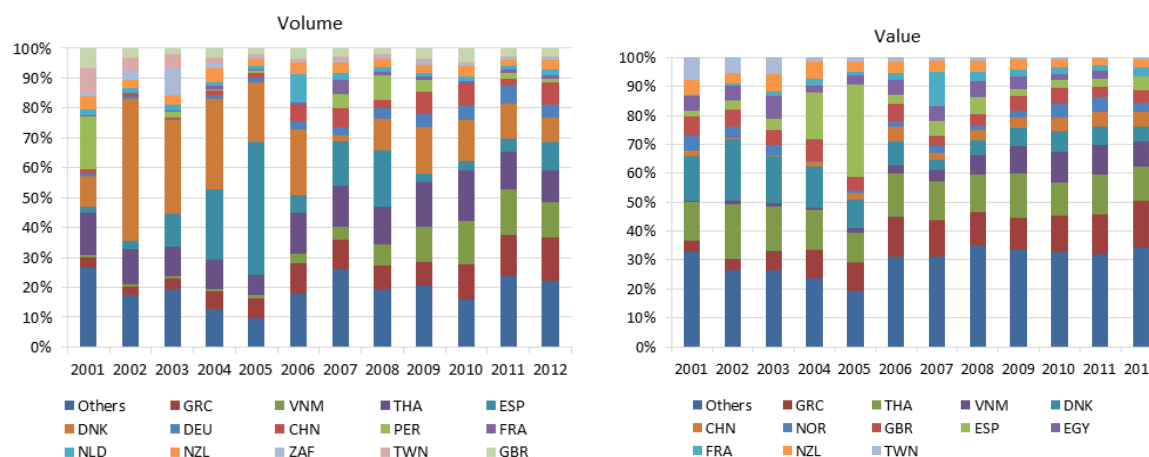
In 2012, the most relevant seafood suppliers were Greece (contributing 15% of the total volume of imports and 16% of its value), Vietnam (12%, 8%) and Thailand (10%, 12%). The following two most important trade partners in terms of trade volume were Spain and Denmark (accounting for 9% and 8% of the total seafood imports, respectively), Denmark and China in terms of trade value (each of them accounting for 5% of the total).

Trade patterns have changed significantly over the reference period. Greece, for example, contributed less than 4% of the total seafood imports in 2001, both in terms of volume and value. In the same year, the largest shares of seafood import volume corresponded to Peru (18% in 2001), Thailand (14%), Denmark (10%) and Taiwan (8%). The same countries, were the most relevant seafood suppliers also in terms of value, with the exception of Peru, which exported to Cyprus mostly low-value fish for non-human consumption.

Over the reference period, seafood imports from Greece and some Asian Countries (Vietnam, China and Thailand) have increased significantly, both in volume and value. The trade with Taiwan, Denmark and several EU MS has remained rather stable in volume but has declined significantly in value.

Trade with Spain has been very unstable over the reference period. It picked up in 2004 and 2005, mostly due to the increased imports of sardine, mackerel and bluefin tuna, and contracted sharply in 2006.

Concerning the trade with Thailand, the increased imports in some species (e.g. squid and shrimps), combined with a decrease for others (e.g. tuna and other marine fish) have resulted in a 10% contraction of the total volume of trade and in a 40% rise of its value.



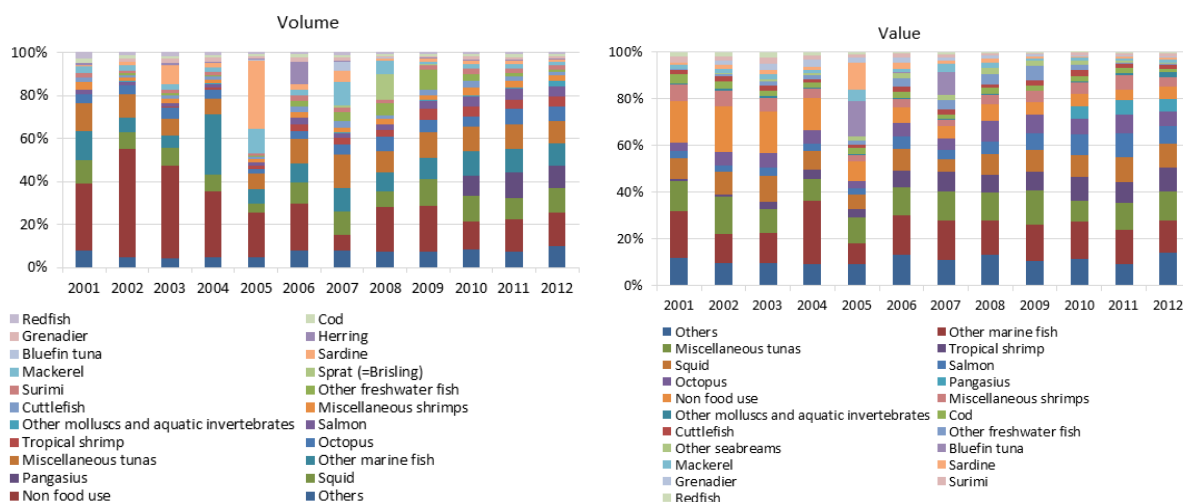
**Figure 5.4.3 - Cypriot seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.4.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species covered (in average over the years) 93% of the total Cypriot seafood imports in volume and 89% in value.

In 2012, seafood imports were made up almost entirely of twenty species. Fish for non-human consumption represented 16% of the total volume of imports, followed by squid (11%), pangasius (11%), other marine fish (10%) and miscellaneous tuna (10%). The most relevant commercial species in terms of value were other marine fish (14%), miscellaneous tuna (13%), tropical shrimps (10%), squid (10%) and salmon (8%).

The main difference between the beginning and the end of the reference period concerns the contribution of fish for non-food uses to the overall trade. In 2001, more than 31% of the total volume of imports was made up of fish for non-food uses, while in 2012 it was 16% of the total. In terms of value, it contributed 5% of the total in 2012, against a share of 18% in 2001.

The value of imports has increased significantly over time for all the most relevant commercial species, while the volume of their imports has remained more stable.



**Figure 5.4.4 - Cypriot seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.4.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Cyprus, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 64% and 51% of the overall trade (in average over the period), respectively in volume and value.

From 2001 to 2012, seafood imports from Greece have increased significantly both in volume and value, due to the increased trade in other marine fish and several commercial species, such as octopus. A few other trade flows have grown sharply over the reference period, such as the imports of pangasius from Vietnam, squid from China and Thailand, and tuna from Italy (especially in value). Over the same period, several other important trade flows have declined. Among the most relevant in volume, some examples are the imports of squid from Taiwan, fish for non-food uses from the United Kingdom and South Africa, and tuna and other marine fish from Thailand. Among the most relevant in value, there are the imports of fish for non-human consumption from Denmark and Peru, squid from Taiwan and other marine fish from Egypt, The United Kingdom, New Zealand and Thailand (Figure 5.4.5).

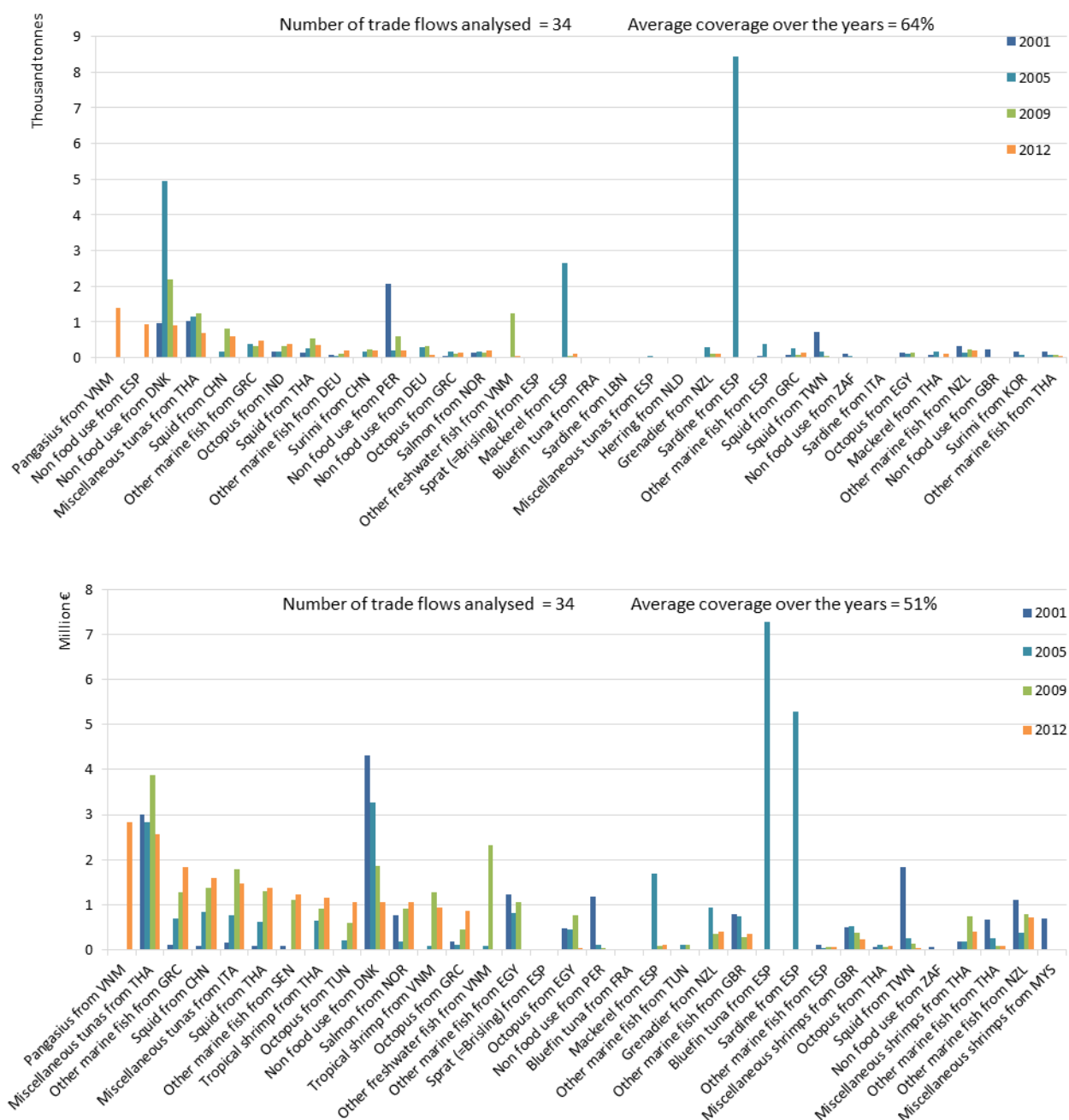


Figure 5.4.5 - Cypriot seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, the majority of seafood was imported frozen (53% of the total in 2012, both in terms of volume and value). Prepared/preserved products represented 40% of the total import volume and 30% of the import value; fresh seafood contributed 8% to the import volume and 14% to the value. Volume and value of imports have increased for fresh and frozen seafood, while diminished for prepared/preserved products, as a result of the contraction in the trade of fish for non-food uses. The share of these products over the total imports has also reduced significantly over time (Figure 5.4.6).

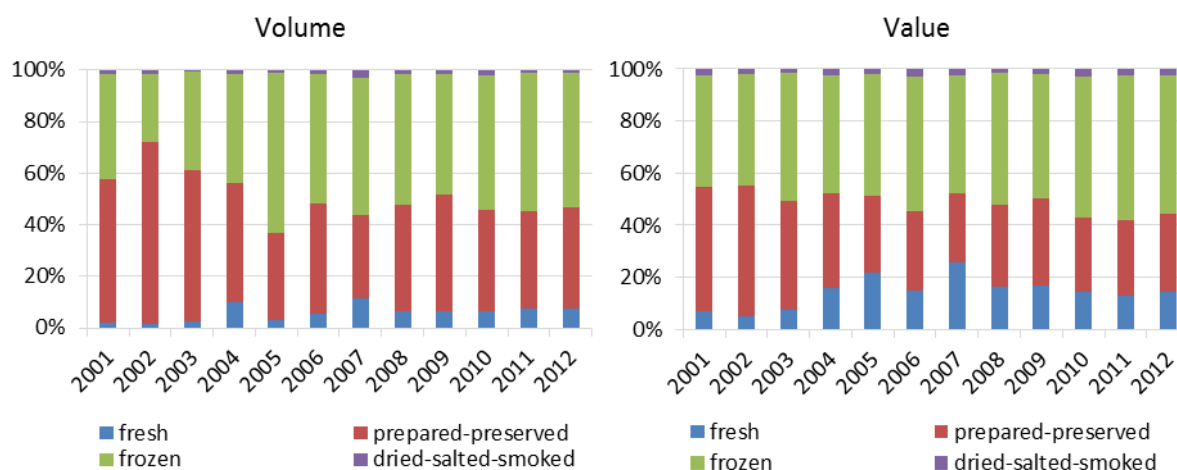


Figure 5.4.6 - Cypriot seafood imports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to the total value of imports varies significantly depending on the country of origin. For example, the value of imports coming from Denmark, Italy, Vietnam and Germany is mostly composed of processed products, while non-processed products contribute the most to the value of imports from Greece, Spain and Thailand (Figure 5.4.7).

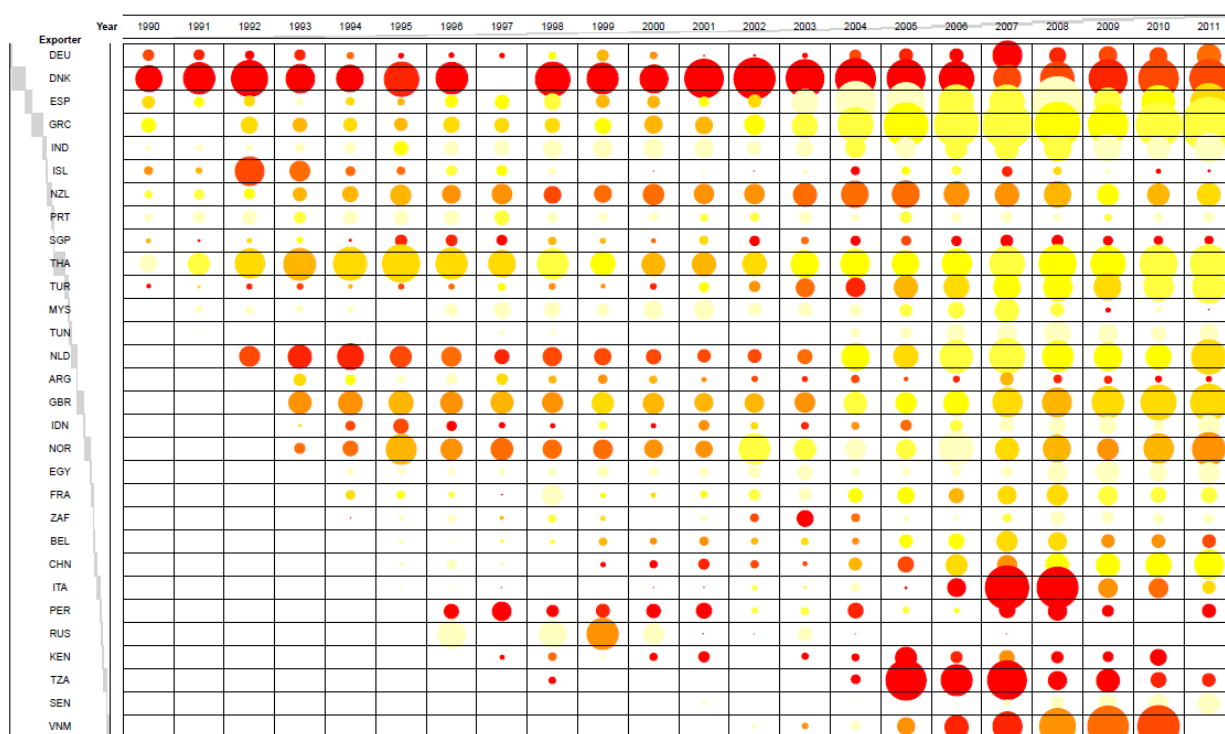


Figure 5.4.7 - Cypriot seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products).

## Exports

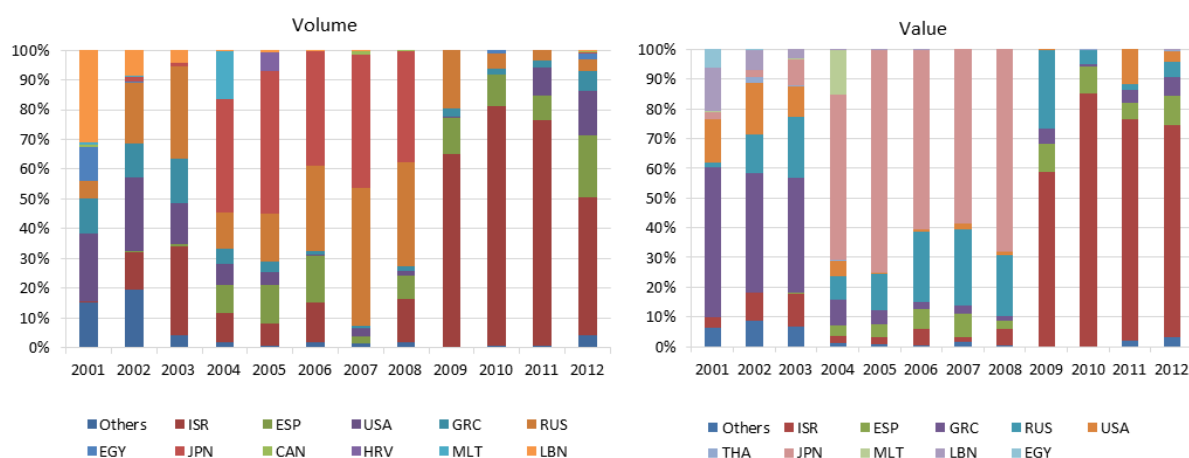
In 2012 Cyprus exported 1.5 K tonnes of fish and fishery products, valued at 15 M Euro. The trend of seafood exports has been extremely fluctuating over the reference period. However, if comparing 2001 to 2012, there has been an increase of 113% in terms of volume and 120% in value. Export value has declined significantly in 2009 and has recovered slowly from then to the end of the reference period. This has resulted mostly from the dramatic decline in the value of exports of bluefin tuna to Japan occurred in 2009.

Contrarily to most other MS, Cypriot fish exports are mainly destined outside the EU (83% of the total exports in terms of value and 72% in volume, in 2012). The contribution of extra-community trade to the total exports has strongly increased over time in terms of value (from 46% in 2001 to 83% in 2012), but has reduced in volume (from 80% in 2001 to 72% in 2012), which indicates that the average unit value of seafood exported to extra-community countries has increased over time.

Cyprus concentrates its seafood exports in very few countries. In 2012, almost all seafood exports (both in terms of value and volume) were directed to only five countries.

Figure 5.4.8 shows the trend of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 96% of the total export volume and 97% the export value.

Trade patterns of Cypriot seafood changed completely over time. In 2012, Israel was by far the most relevant country of destination (importing 46% of the total volume of Cypriot seafood exports, corresponding to 71% of their value). The other most relevant destinations in terms of volume of trade were Spain (accounting for 21% of the total volume of Cypriot seafood exports), USA (15%), Greece (7%) and Russia (4%). The same countries were the most relevant also in terms of trade value, respectively contributing 10%, 3%, 6% and 5% to the total value of imports. On the other hand, in 2001 the first two countries together contributed less than 4% in value and not even 1% in volume, while Greece, Lebanon and USA occupied the first positions (50% of the total value of imports was directed to Greece, 15% and 14% with Lebanon and USA, respectively).



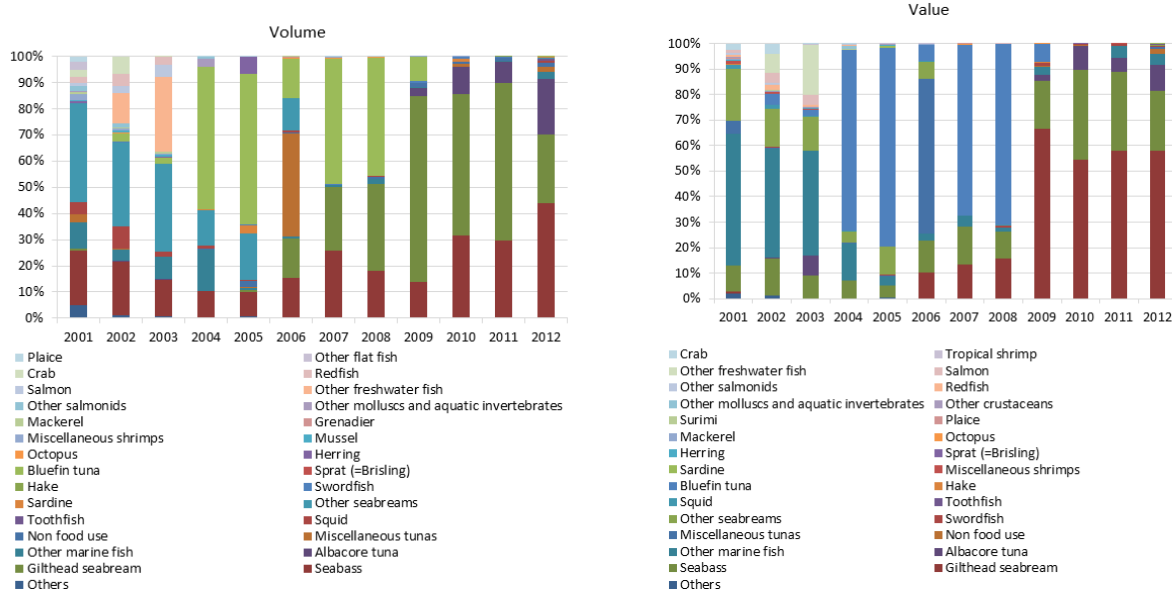
**Figure 5.4.8 - Cypriot seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.4.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Cypriot seafood imports entirely.

In 2012, seabass and seabream contributed the most to the Cypriot seafood exports (58% and 24%, respectively, in terms of value and 44% and 26% in volume). The largest part of the increase in Cypriot seafood trade occurred over the reference decade was due to the enormous growth in the exports of these two species to Israel. Trade of tuna with Spain was also relevant, representing around 11% of the total seafood trade in value and 21% in volume (Cyprus exported to Spain almost only tuna and almost all its tuna was directed to Spain). Exports of other marine fish contributed 3% of the total volume of Cypriot

exports and 4% of their value, while all the other species contributed less than 2%, both in volume and value.

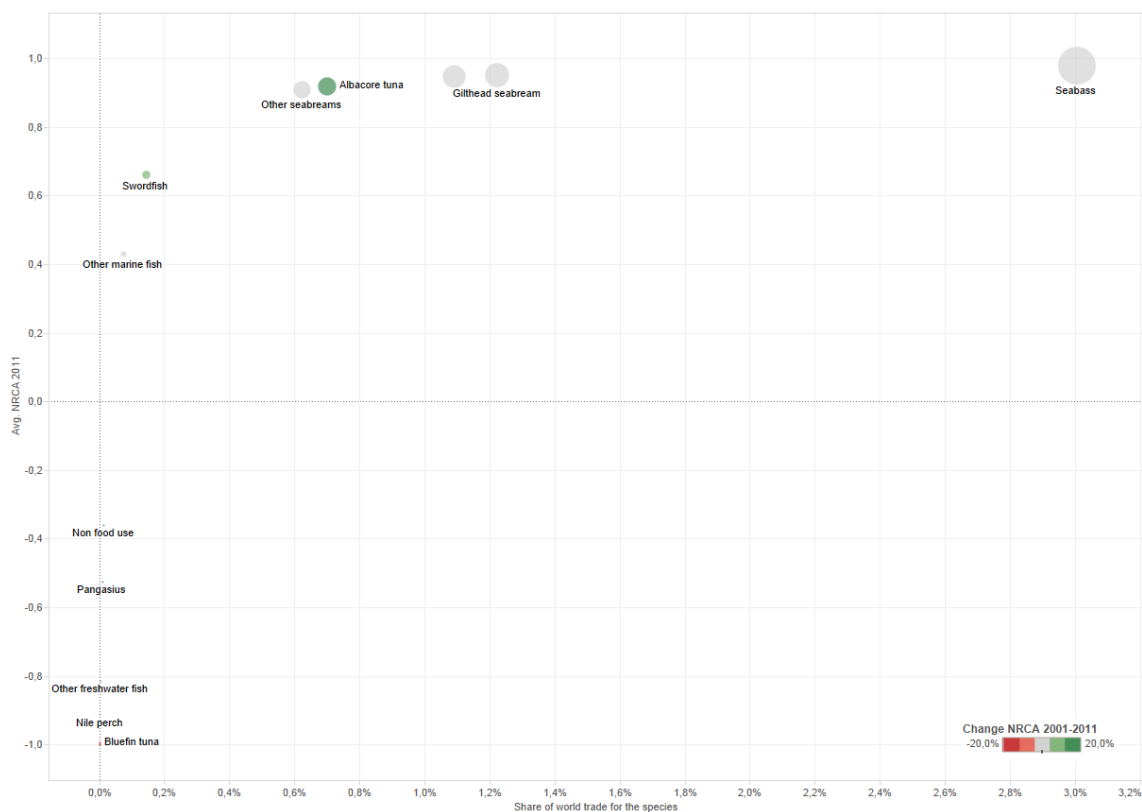
Trade patterns have changed significantly not only in terms of partners, but also of traded items. Seabream and seabass constituted the largest part of the export volume also in 2001 (60% of the total), but they contributed less than one third of its value. On the other hand, more than 50% of the total value of seafood exports was attributable to other marine fish, which was mostly directed to Greece.



**Figure 5.4.9 - Cypriot seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, Cyprus has the highest comparative advantage on the international market for seabass (NRCA = 0.98), seabream (NRCA = 0.95) and whiting (NRCA = 0.95). The NRCA index for all of them has remained stable over the years (Figure 5.4.10).





**Figure 5.4.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Cyprus, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Seafood exports changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.4.11). The value of exports increased significantly in 2004, mostly due to the trade of bluefin tuna to Japan and Malta, and dropped by 66% in 2009, mostly due to the trade of seabass and seabream to Russia. Changes at the extensive margin (i.e. activation of new trade flows) were also rather relevant, especially in 2011 and 2012.



**Figure 5.4.11 - Cypriot seafood exports margins: 2001-2012**

Figure 5.4.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Cyprus, in terms of volume (top figure) and value (bottom figure). The list of the most relevant

trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 94% and 96% of the overall trade (in average over the period), respectively in volume and value.

As mentioned above, the largest part of the increase in Cypriot seafood trade occurred over the reference decade was due to the growth in the exports of seabass and seabream to Israel. The trade of tuna to Spain has been another important driver of the changes in seafood trade patterns. Trade of bluefin tuna with Japan has fluctuated very significantly both in volume and value.

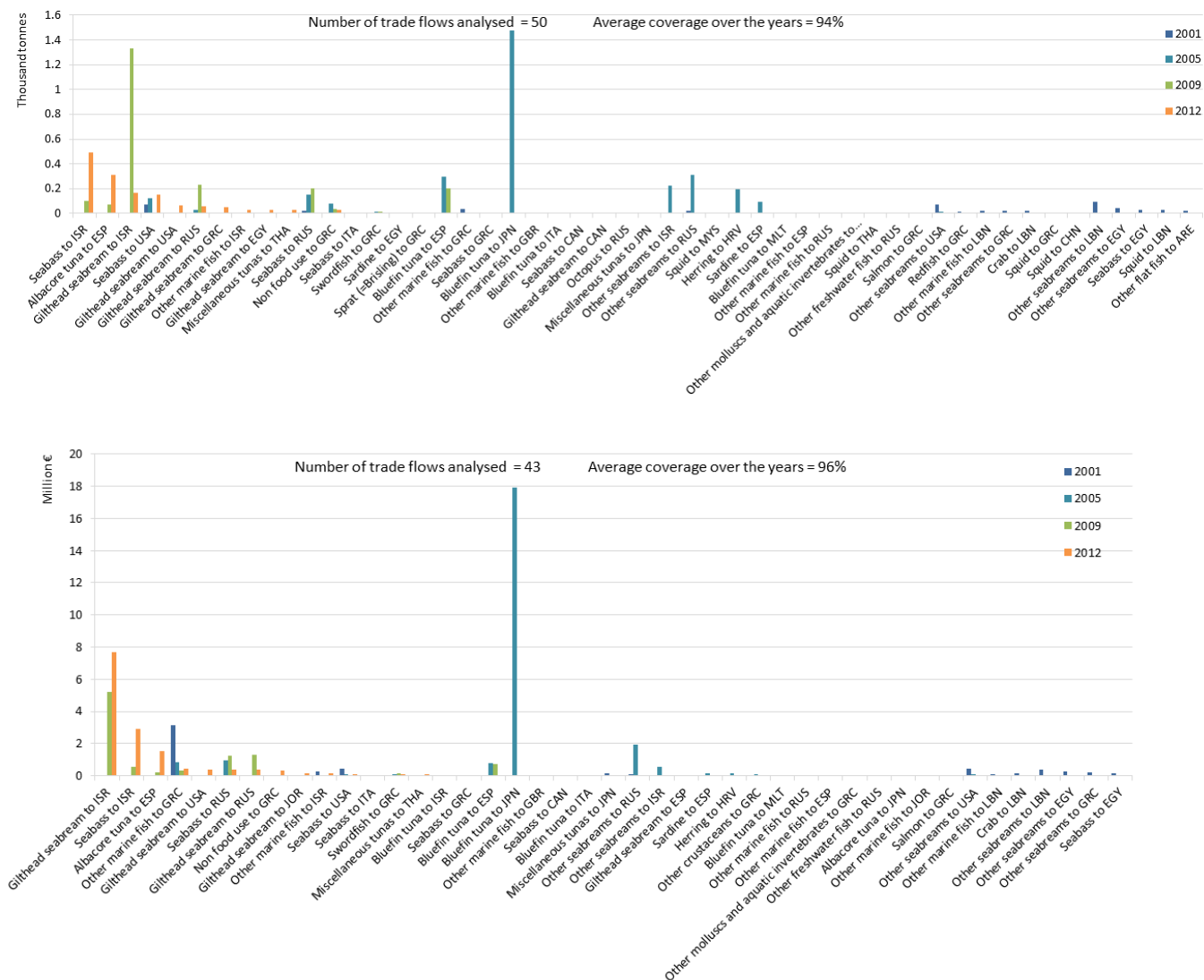


Figure 5.4.12 - Cypriot seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Most fish is traded fresh (97% in value and 95% in volume in 2012) and, differently to what has happened in several other MS, the contribution of fresh fish to total trade has increased from 2001 to 2012, while the share of processed products (including frozen) has decreased (from 29% to 5% in volume and from 14% to 3% in value) (Figure 5.4.13).

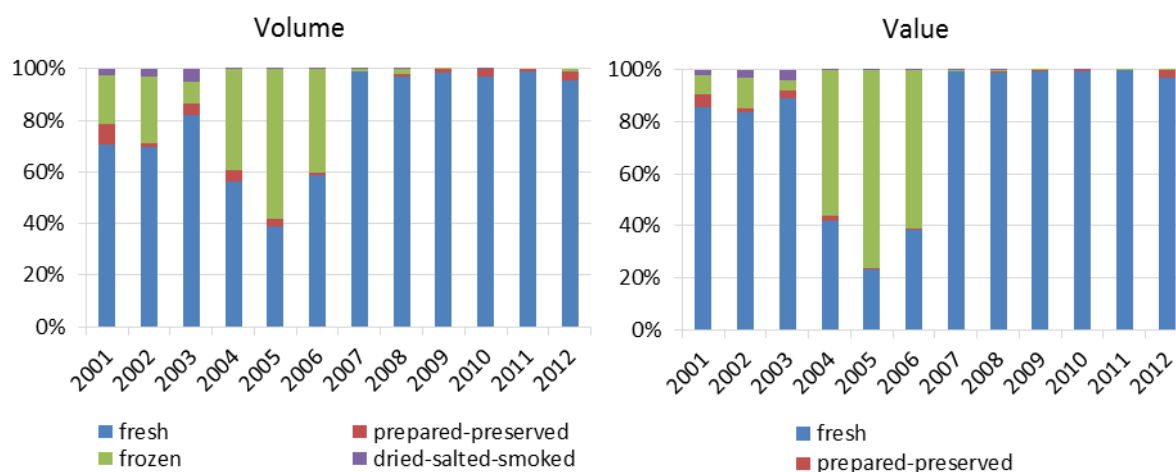


Figure 5.4.13 - Cypriot seafood exports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to the total value of Cypriot seafood exports varies significantly according to the country of destination (Figure 5.4.14).

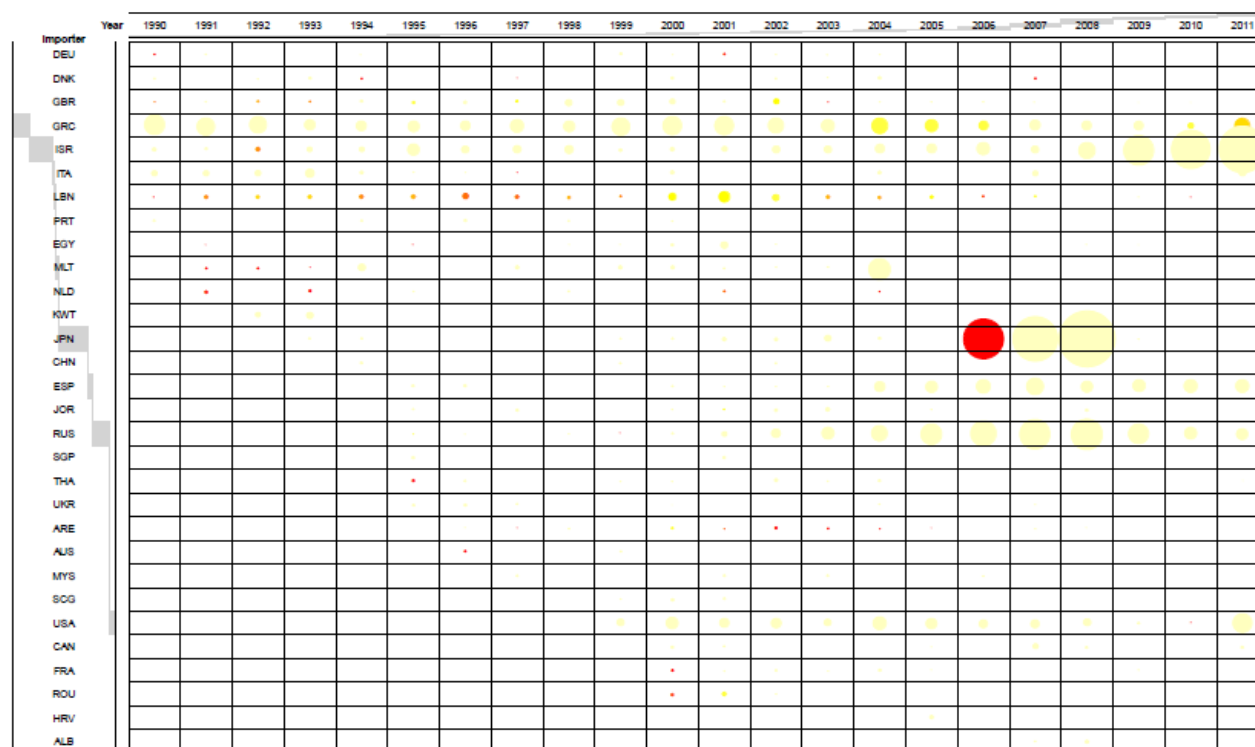


Figure 5.4.14 - Cypriot seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.5 Denmark

### Production

The Danish fleet is represented by small scale fleet for around 70% in terms of number of vessel (excluding inactive vessels). This part of the fleet operates mostly in the Baltic Sea and Kattegat, while the distant-water fleet mainly targets deep-water shrimps in the North Atlantic, capelin in Greenlandic waters and herring in the Norwegian Sea. In 2011 the total volume of fish landed was around 700 K tonnes, almost 75% of which made up of sandeel (39%), sprat (23%) and herring (12%) (STECF, 2014a).

Aquaculture represents a small share of total Danish fish production, with a total production of around 40 K tonnes of fish in 2011. The most relevant farmed species is rainbow trout, representing more than 90% of total aquaculture production. This species is mainly destined to exports; some 90% of trout (around 80% of total Danish aquaculture) is exported to Germany (STECF, 2014b).

The Danish processing industry is dependent on few species (i.e. cod and flatfish; herring and mackerel; molluscs; shrimps and crustaceans; mixed production; salmonoids; fish for fishmeal factories) and relies on the national catches, as well as on the imports of raw material. The most important segment is the fish meal and fish oil industry (closely linked to the fleet fishing fish for reduction), accounting for 68% of the total volume of seafood processed production in 2012 and 31% of its total value. Prepared and preserved products from mackerel and other marine fish are the second most relevant products in terms of volume of sales. However, the second most important segment in terms of value is the processing industry of salmon, which depends mostly on the Norwegian aquaculture industry and exports most of its output to other MS. The fish processing industry has recently outsourced some of its activities to countries with lower salary costs. This has happened in particular in the salmon industry, partially outsourced to Poland (STECF, 2014c).

### Trade balance and exposure to trade competition

Denmark is one of the few MS which are net exporters of fish and fishery products (around 62 K tonnes in 2012, summing up to 559 M Euro). The positive trade balance in volume is explained by the fact that, as mentioned, a large part of the raw material for the processing industry in Denmark comes from the national fishing activities, differently than in many other MS (STECF, 2014c). Furthermore, the considerable amount of value, which is added to the end product through processing activities, explains the positive balance also in value.

Figure 5.5.1 shows that Danish trade balance has deteriorated over time both in volume and value (in 2001, the trade surplus in value was 56% higher than in 2012 and 77% higher in volume). In addition, whilst most other MS strongly increased their seafood exports over the reference period, Danish exports decreased in volume (-17%) and increases in value only slightly (+3%).

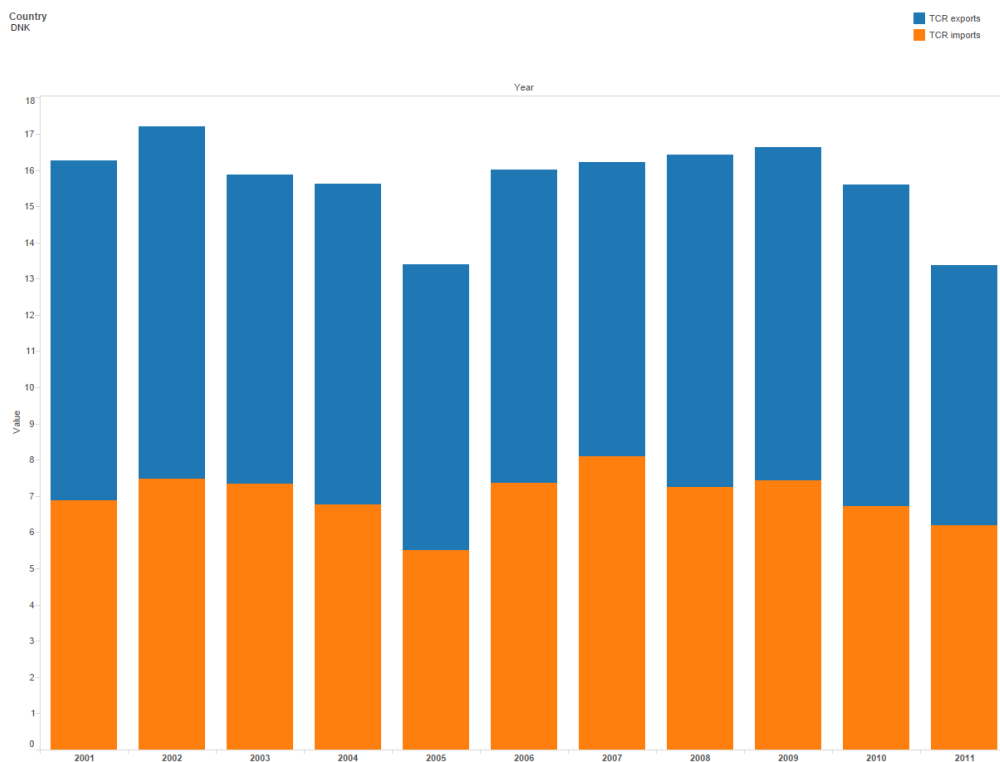
The decline in the volume of seafood exports occurred in the last years of the reference period reflects the reduction of the total production of the Danish fish processing industry. From 2008 to 2012 the Danish production of processed seafood has contracted by 21%, and the reduction of the output for human consumption has been even more significant (-24%).

Contrarily to most other MS, the by far largest share of Danish seafood imports comes from outside the EU (72% in volume and 81% in value, in 2012). On the other hand, the majority of Danish seafood exports are directed within the EU (78% in value and 66% in volume, in 2012). The relevance of exports to non-EU partners increased during the reference decade. In 2012, 34% of the total seafood exports were sold outside the EU, against 24% in 2001; in value, the corresponding share increased from 13% to 22%.



**Figure 5.5.1 - Danish seafood trade balance trends: value (left) and volume (right)**

Denmark is the MS which has the highest exposure to seafood trade competition (Figure 5.5.2). In 2011, the estimated value of the Trade Competition Ratio (TCR) for Denmark was 13.4, which indicates that the sum of Danish imports and exports exceeded the domestic consumption of seafood by more than 13 times. The level of exposure to trade competition remained rather stable over the reference period, as indicated by a value of the TCR ranging between 13.4 and 17.2. Furthermore, the exposure to the international market was more dependent on exports than on imports over the entire period (in 2011, TCR<sub>ex</sub> was equal to 7.2, against a value of 6.2 for the TCR<sub>i</sub>).



**Figure 5.5.2 - Trend of the exposure to trade competition index for Denmark**

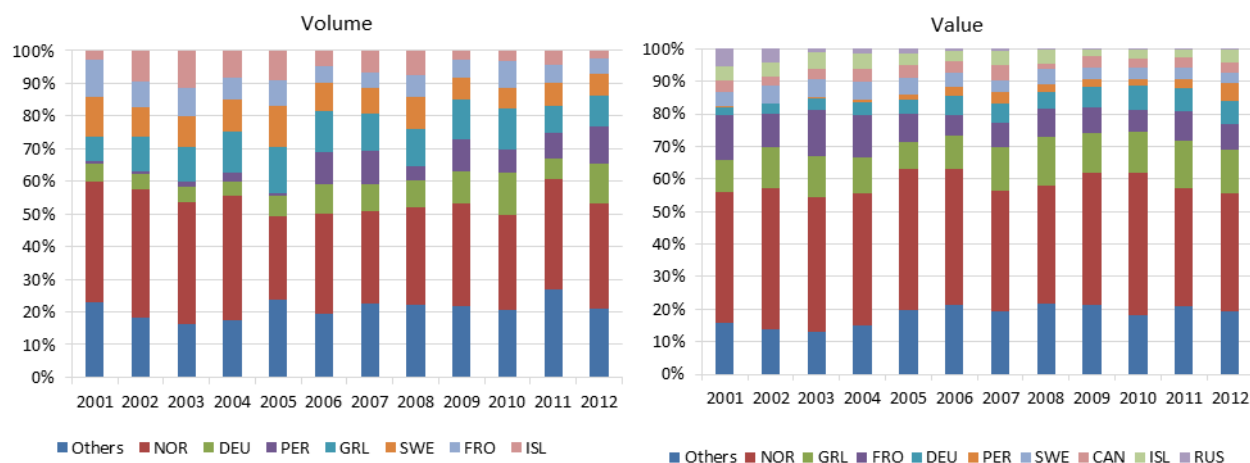
### Imports

Danish seafood imports have been rather unstable from 2001 to 2012, but overall they have increased from 783 to 816 K tonnes of fish, at an average annual growth rate of 1%. In terms of value, they have fluctuated less and, overall, they have grown from 1,731 to 2,288 M Euro, at a rate of 3% p.a..

Figure 5.5.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries covered (in average over the reference period) 77% of the total volume of seafood imported from Denmark and 82% of its value.

As mentioned above, the by far largest share of Danish seafood imports come from outside the EU (72% in volume and 81% in value, in 2012), especially the North Atlantic countries, with the five most relevant suppliers in 2012 in terms of volume being Norway (contributing 32% of the overall imported volume), Germany (12%), Peru (12%), Greenland (9%) and Sweden (6%), and the five most relevant in value being Norway (contributing 36% of the overall imported value), Greenland (14%), the Faroe Islands (8% in value), Germany (7%) and Peru (6%).

Over the reference decade, the increase in seafood imports from Peru has been remarkable (by 17 times in volume and 58 times in value). Imports from Germany also rose significantly (by 128% in volume and 281% in value), as well as their contribution to the overall imports (from 6% to 12% in volume and from 3% to 7% in value), but the growth has been discontinuous over the years.



**Figure 5.5.3 - Danish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.5.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 90% of the total Danish seafood imports, both in volume and value.

In 2012, the largest part of the Danish seafood import volume was made up of fish for non-human consumption (contributing 34% of the total), salmon (20%), cod (8%), herring (8%) and coldwater shrimps (6%). In terms of value, salmon (29%), fish for non-human consumption (17%), cod (11%), miscellaneous shrimps (9%) and coldwater shrimps (5%) contributed the most.

A large part of fish imports from extra-community is destined to the Danish fish processing industry. Indeed, the most relevant product imported from Norway, salmon, is imported as whole fresh salmon, processed in Denmark and exported within the EU, especially to France, Germany and Italy (STECF, 2014c). Imports from Norway represent around 80% of the total imports of salmon, but this species is imported also from other countries, such as the Faroe Islands.

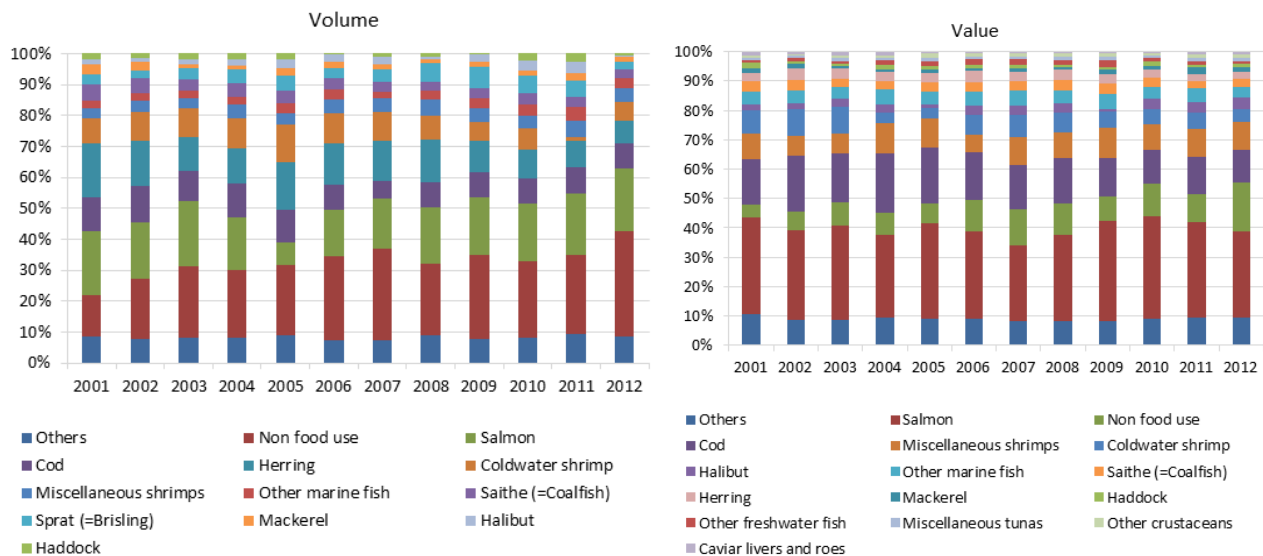
Imports of fish for non-human consumption, which is mostly imported by Peru (34% of the total volume in 2012), Germany (22%) and Norway (14%), contribute to feed the Danish fishmeal and -oil industry, while another part of the raw materials comes from Danish catches of fish for reduction (STECF, 2014c). These products are then exported mostly to countries with larger aquaculture sectors, like Norway, the United Kingdom and Greece (in 2012, more than 50% of the total volume of Danish fish for non food uses was exported to these three countries).

The other relevant commercial species imported, cod, is imported mostly fresh (48% of the total volume in 2012) and frozen (36% of the total volume in 2012), especially from Norway (45% of the total volume), Sweden (12%) and Greenland (10%). Part of the cod imports is consumed in Denmark; part is processed and exported to other MS (mostly to France, Poland, Spain, Italy and the Netherlands). Indeed, cod is also one of the most relevant exported species for Denmark (the fourth in terms of value of trade, as well as in volume).

Miscellaneous shrimps and coldwater shrimps are imported mostly from Greenland and Canada to be consumed locally or processed and exported to several countries within and outside the EU (mostly the United Kingdom, Germany and Sweden in the case of miscellaneous shrimps, Sweden and China, in the case of coldwater shrimps).

Imports of fish for non-human consumption increased sharply from 2001 to 2012, especially in terms of value (by five times). Trade volume of salmon fluctuated over the years but remained rather stable in average. On the other hand, volumes of cod, herring and shrimps declined over the period. Indeed, as mentioned above, Danish overall seafood import volume did not increase significantly.

In value, trade of salmon and miscellaneous shrimps increased by 18% and 42%, respectively, while trade of cod and coldwater shrimps declined by 6% and 26%, respectively.



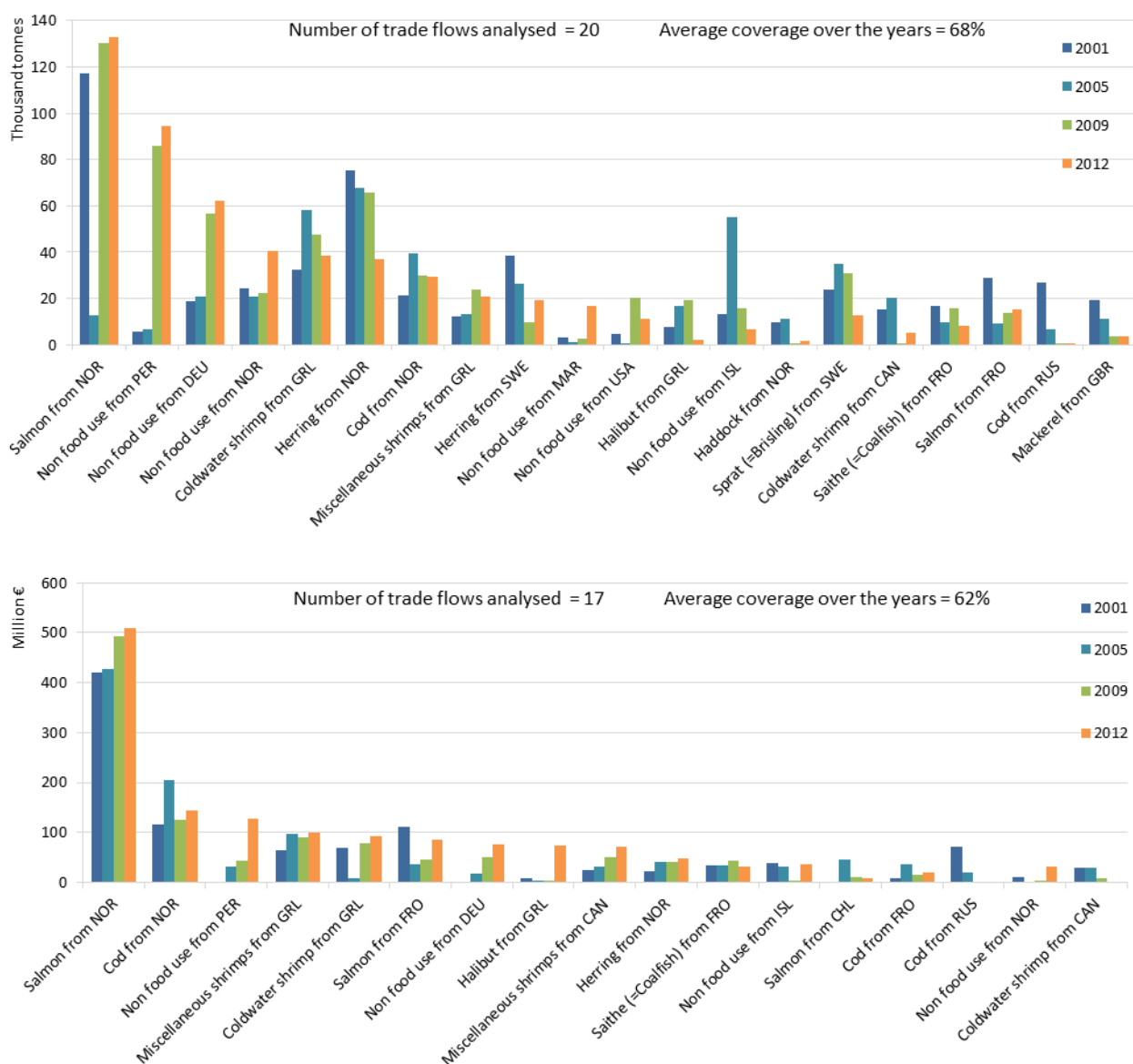
**Figure 5.5.4 - Danish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.5.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Denmark, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 68% and 62% of the overall trade (in average over the period), respectively in volume and value.

As mentioned, seafood imports from Peru increased sharply over the reference period, both in volume and value. This increase has to be attributed almost only to the increased trade of fish for non-human consumption. The increased imports of fish for non-food uses played a significant role also in the overall increase of trade with Germany, in terms of both volume and value. However, other trade flows were also relevant (sprat, cod, haddock and mackerel).

Besides those already mentioned, a few other trade flows contributed significantly to the overall increase in the volume of Danish seafood imports occurred from 2001 to 2012, for example the trade of fish for non-human consumption from Morocco. A few examples of those which contributed considerably in value are the imports of salmon from Norway, shrimps from Canada and halibut and shrimps from Greenland.





**Figure 5.5.5 - Danish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

The majority of seafood is imported by Denmark in the form of prepared and preserved products (43% of the overall volume in 2012, corresponding to 33% in value) (Figure 5.5.6). In 2012, imports of fresh and frozen seafood contributed 35% and 18% to the overall seafood imports respectively (39% and 24% in value).

The imports of prepared/preserved products increased significantly over the reference period (both in volume and value) and, in fact, their share of the total imports increased from 20% to 43% in volume and from 17% to 33% in value.

The rest of the imports has declined in volume and increased in value only by 7%. Therefore, the contribution of frozen fish to total seafood imports contracted from 25% to 18% in volume and from 30% to 23% in value, and the one of fresh fish from 52% to 35% and from 44% to 39% in volume and value, respectively.

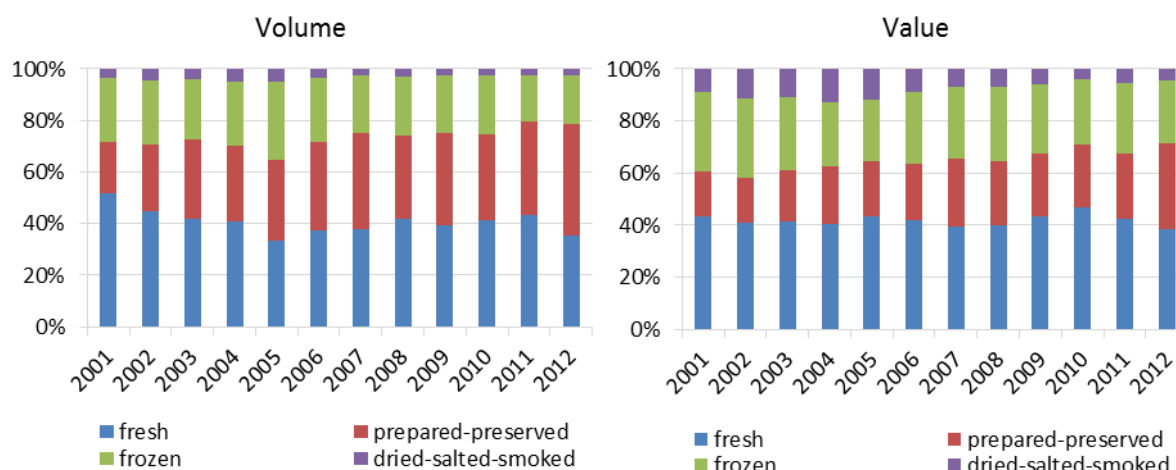


Figure 5.5.6 - Danish seafood imports trends by type of products: share in volume (left) and value (right)

The share of processed products over the total import value largely varies depending on the country of origin and, for some of them, for example Germany, it tended to increase over time (Figure 5.5.7). Imports from Norway and Sweden are mostly made up of fresh products (salmon and cod). Processed products represent 50-60% of the imports from Greenland and the majority of those from almost all the other relevant seafood suppliers (Germany, Iceland, USA, China, Peru, Poland, France and the Netherlands).

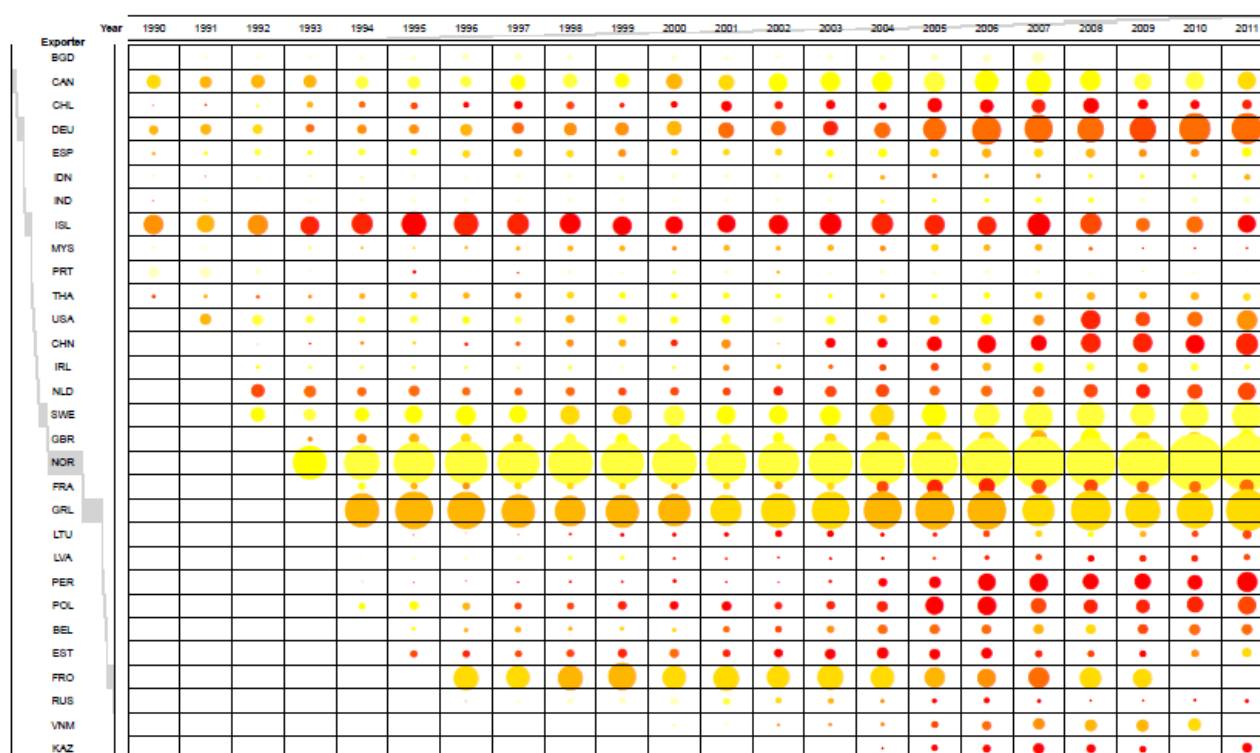


Figure 5.5.7 - Danish seafood imports trends by main seafood suppliers and contribution of processed products to total import value (Note: the size is proportional to the import value and the shading to the share of processed products)

## Exports

Danish seafood exports were 878 K tonnes in 2012, 17% less than in 2001. On the other hand, their value increased by 3% over the period.

As mentioned already, the majority of Danish seafood exports are directed within the EU (78% in value and 66% in volume, in 2012); however the relevance of trade with non-EU partners increased during the reference decade. In 2012, 34% of the total seafood exports were sold outside the EU, against 24% in 2001; in value, the corresponding share increased from 13% to 22%.

Figure 5.5.8 shows the shares of seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 62% of the total volume of seafood exported by Denmark and 70% of its value.

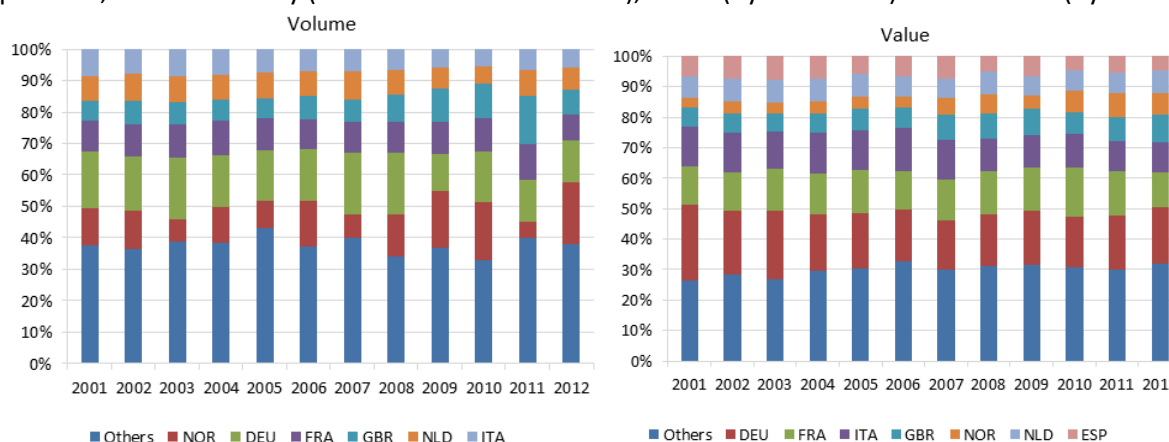
Exports of fish and fishery products is spread across several countries and none of them has a strong prevalence. Furthermore, seafood exports in value are distributed across a larger number of countries in 2012 than at the beginning of the reference period (in 2001, the first five most relevant countries of destination covered around 64% of Danish seafood exports, against a share of 56% in 2012).

In 2012, the most relevant destinations in terms of volume of seafood imported by Denmark were Norway (accounting for 20% of the overall volume of Danish seafood), importing from Denmark mostly fish for non-food uses, Germany (13%), France (8%), the United Kingdom (8%), and the Netherlands (7%). In terms of value, the five most relevant partners were Germany (accounting for 18% of the overall Danish exports), France (12%), Italy (10%), the United Kingdom (9%) and Norway (7%).

The same countries were the most important partner for Denmark also at the beginning of the decade, however most of them have lost market shares over time in favour of other countries, such as Poland and China (in 2001 seafood exports to each of these two countries contributed less than 1% of the total Danish seafood exports in value, 4% in 2012).

As mentioned already, Danish seafood exports declined 16% in volume from 2001 to 2012 and more than 80% of this decrease resulted from the reduced trade with Germany (-40%), France (-31%), the Netherlands (-23%), Italy (-43%), Spain (-49%), Russia (-57%) and Japan (-86%).

Trade with the United Kingdom and the Netherlands increased in value by 52% and 7% respectively. Exports to most main EU partners decreased in value (e.g. -24% for Germany and Italy, -5% for France, -27% for Spain), but it increased impressively for Poland (almost 6 times). Therefore, a large part of the overall 4% increase in the value of Danish exports resulted from the increased trade with extra-community partners, such as Norway (+128% from 2001 to 2012), China (by four times) and Vietnam (by 183 times).



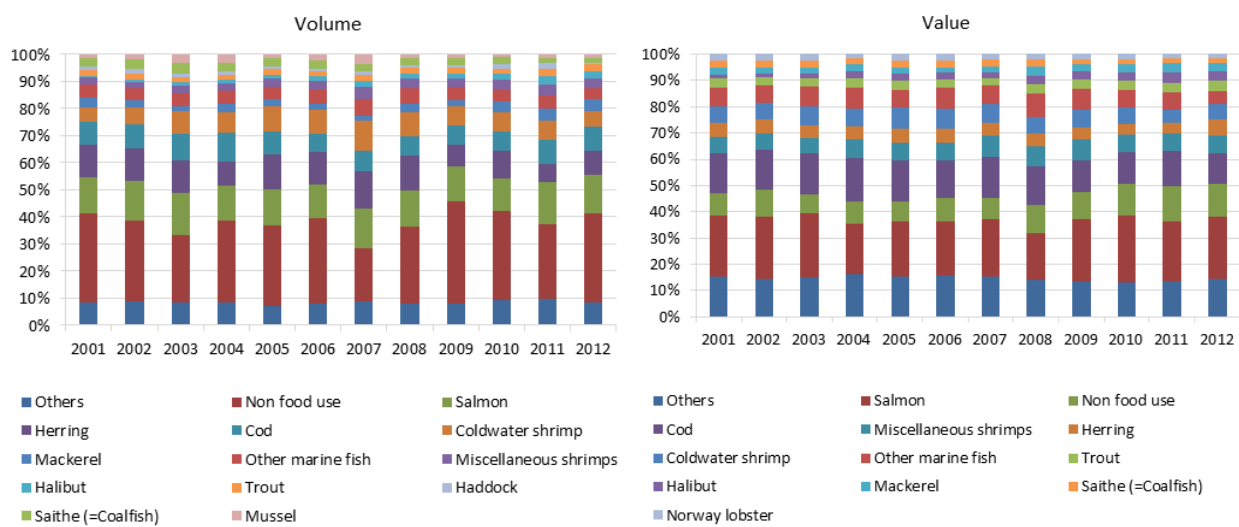
**Figure 5.5.8 - Danish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.5.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in

average over the years, 92% of the total volume of seafood exported by Denmark and almost 85% of its value.

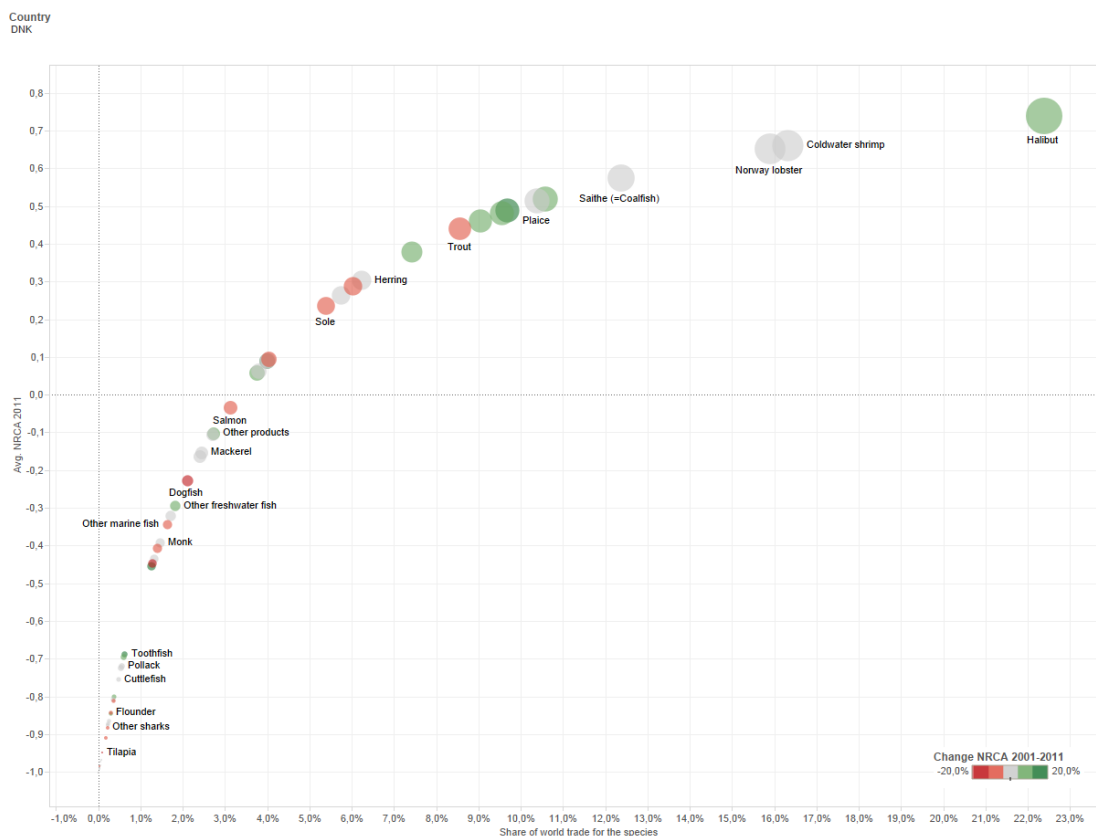
In 2012, the largest part of Danish seafood export volume was made up of fish for non-food uses (33% in volume), salmon (14%), herring (9%), cod (9%) and coldwater shrimps (6%). In terms of value, salmon contributed the most (24%), followed by fish for non-food uses (12%), cod (12%), miscellaneous shrimps (7%) and herring (6%).

The contribution of these commercial species over total exports did not change significantly over the reference period (in 2001, salmon contributed 23% in value and 14% in volume, coldwater shrimps 6% in both volume and value, cod 15% and 8%, herring 6% and 12% and fish for non-food uses 8% and 33%). However, in absolute terms, traded volumes reduced for all the most traded items and values increased significantly only for fish for non-food uses (+49%).



**Figure 5.5.9 - Danish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, Denmark's comparative advantage in most its most relevant exported products (i.e. shrimps, cod, herring and fish for non-food uses) is higher than for the rest of the world (Figure 5.5.10). Denmark has the highest comparative advantage on the international market for halibut (0.74), coldwater shrimps (0.66), Norway lobster (0.65), saithe (NRCA = 0.58) and fish for non-food uses (NRCA = 0.52). The NRCA remained stable between 2001 and 2011 for all of them, except halibut, for which it increased significantly over the period.



**Figure 5.5.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Denmark, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

The evolution in seafood trade patterns is mostly driven by changes at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.5.11). Failures contributed only in the first years of the reference period, especially from 2002 to 2004, and in 2002 their contribution to the annual change in trade was the highest of the entire period (22% of the total decrease). Changes at the extensive margin played a rather relevant role since 2009, but their share of the total change was always lower than 10%.



**Figure 5.5.11 - Danish seafood exports margins: 2001-2012**

Figure 5.5.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Denmark, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 51% and 41% of the overall trade (in average over the reference period), respectively in volume and value.

As mentioned already, the overall volume of Danish seafood exports declined from 2001 to 2012. This resulted from the contraction of the trade with several countries, such as Germany, the Netherlands, Italy, Spain, Japan and Greece. Some of the trade flows behind this decline are: the exports of saithe to Germany, herring to the Netherlands and Germany, fish for non-human consumption to Italy, Greece and Japan, salmon to Germany and Spain.

Trade with several relevant EU partners decreased also in value. In the case of trade with Germany, for example, the contraction was mostly due to salmon, while the decline in the trade of cod was relevant in the case of Italy and Spain. On the other hand, trade in fish for non-food uses, salmon and shrimps played an important role in the increased value of trade with Norway, the Netherlands and the United Kingdom, respectively.



**Figure 5.5.12 - Danish seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Around 46% of the total volume of Danish seafood exports, and 30% of its value, was made up of prepared/preserved products in 2012 (Figure 5.5.13). This is not surprisingly considering that fish for non-food uses, traded by Denmark only in the form of prepared or preserved products, represented almost 35% of Danish export volume and around 12% of its value. In the same year, fresh, frozen and dried/salted/smoked products contributed 34%, 17% and 4% of the overall export volume, respectively. In terms of value, fresh products constituted the highest share (39%), followed by prepared/preserved (30%), frozen (22%) and dried/salted/smoked (9%) seafood.

The relative shares of the different categories of processed seafood in Danish exports reflect the importance that these products have in the fish processing industry's output. In 2012, in fact, prepared and preserved products accounted for 60% of the volume of processed products destined to human consumption, fresh fillet contributed 15% of the total and smoked/salted/dried products and frozen fillets covered 16% and 9%, respectively. Prepared and preserved products were the most important also in terms

of value, contributing 56% of the total, smoked products covered 22%, fresh and frozen fillet made up 16% and 6%, respectively (STECF, 2014c)<sup>4</sup>. Furthermore, if including products for non-food use (fish meal and oil mainly used for animal feeding) in the total output of the processing industry, prepared/preserved products contributed almost 90% of the total volume and around 70% of its value.

In absolute terms, the trade volume decrease for all the categories of products, but their relative shares remained rather stable over the period. In value, trade of prepared/preserved products rose (+29%), as well as their contribution to the total exports, reflecting the increase in the export value of fish for non-human consumption. The value of fresh exports also increased (+9%), while it declined for the other two types of products.

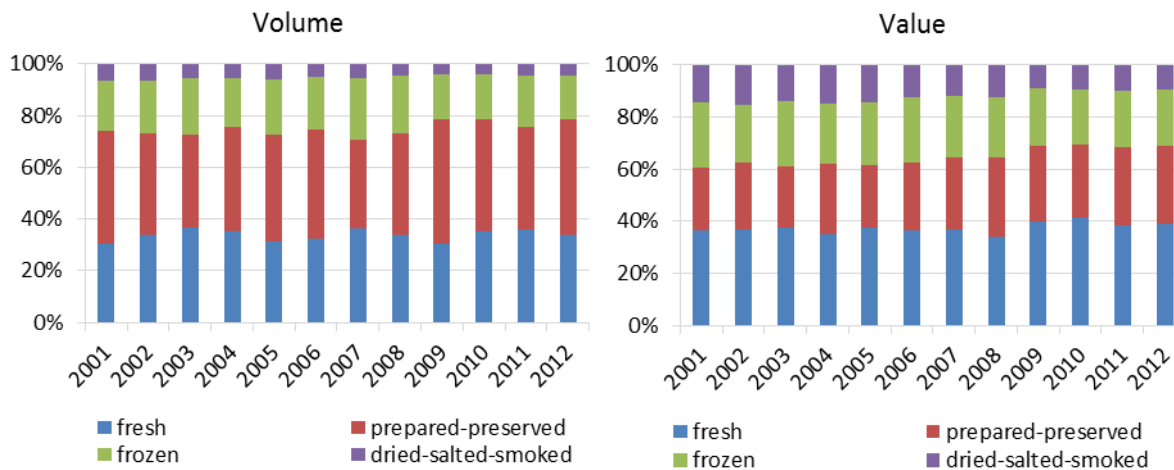


Figure 5.5.13 - Danish seafood exports trends by type of products: share in volume (left) and value (right)

In general, the contribution of processed products to the total Danish export value is rather significant. However, there are some exceptions, such as the value of trade with Russia, almost 60% of which was made up of frozen shrimps, fresh and frozen trout in 2012, and the Netherlands, mostly made up of fresh salmon e cod (Figure 5.5.14).

<sup>4</sup> Percentage values calculated based on data from Statistics Denmark



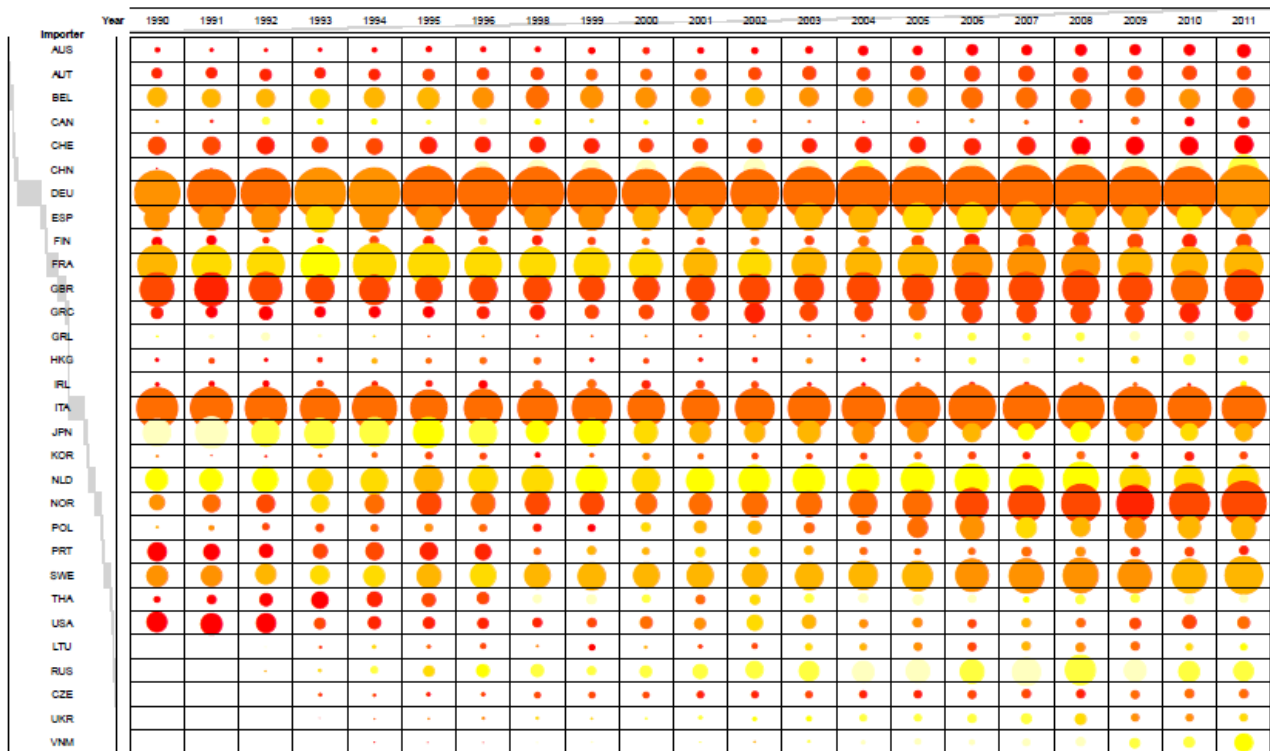


Figure 5.5.14 - Danish seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)

## 5.6 Estonia

### Production

Estonian fleet is mostly represented by small scale boats and pelagic trawlers fishing in the Baltic Sea. The total volume of fish landed by the Estonian fleet in 2011 was 81.3 K tonnes (including some catches in North West and South East Atlantic Ocean). The same year, the landings from the Baltic Sea were valued at 13.8 M Euro (STECF, 2014a).

Aquaculture represents a small share of Estonian fish production, with total production of around 0.4 K tonnes of fish in 2011. The most important farmed species are rainbow trout (accounting for 86% of production in 2011), carp (10%) and sturgeons (3%) (STECF, 2014b).

The turnover of production of the seafood processing industry was nearly 129 M Euro in 2011. Additionally, there were 2 M Euro of turnover, attributed to fish processing by enterprises carrying out fish processing not as a main activity. The fish processing sector in Estonia is very dependent on exports. In 2011, around 76% of the total output of the Estonian fish processing industry was exported. As for the Latvian fish processing industry, Baltic herring and sprat, caught by trawlers fishing in the Baltic Sea, are the most important local raw material also for the Estonian fish processing sector. Fish is sold fresh or frozen (mostly to the eastern markets but also to western fish meal factories), or processed in Estonia before being sold in the local market or abroad. Estonian coastal fishing provides reasonably large volumes of expensive freshwater fish like perch, pikeperch and pike which are used as raw material for fillets. Raw material for ready-made products comes mostly from imports (e.g. oceanic fish) (STECF, 2014c).

### Trade balance and exposure to trade competition

During the analysed period, the Estonian trade balance was always positive. In average over the period 2001-2012, the value of exports exceeded the value of imports by 76% (Figure 5.6.1). While the trade balance in volume has been rather stable from 2008 to 2012, the balance in value has improved significantly. This shows that Estonia has begun to exports higher-value products.

The majority of seafood trade in terms of value occurs inside the EU, while extra-community trade is prevalent in terms of volume. This reflects the lower value of the products exported outside the EU (e.g. frozen herring and sprat).



Figure 5.6.1 - Estonian seafood trade balance trends: value (left) and volume (right)

After Denmark, Estonia is the MS with the highest exposure to trade competition (Figure 5.6.2). From 2001 to 2012, the estimates of the trade competition index ranged between 6.7 (in 2009) and 8.7 (in 2001). Contrarily to most other MS, the trade competition is more driven by exports than by imports.

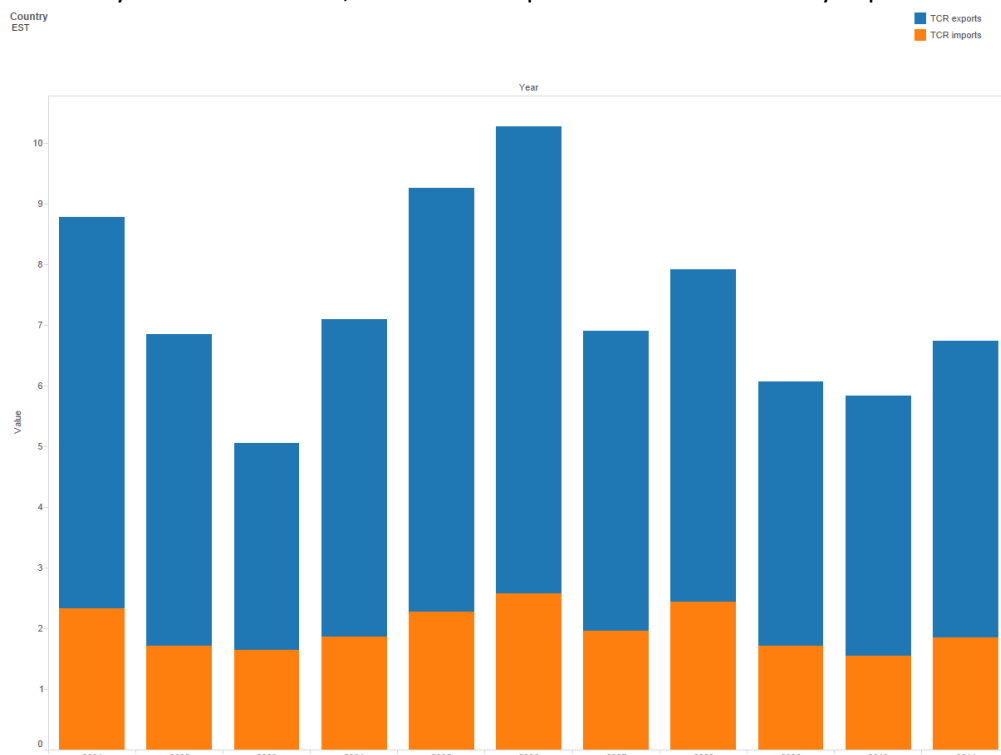


Figure 5.6.2 - Trend of the exposure to trade competition index for Estonia

## Imports

Estonia imported around 51 K tonnes of fish and fishery products in 2012. Import volumes oscillated significantly over the reference period around an average of 42 K tonnes. On the other hand, the value of

seafood imports increased almost continuously, at an average annual growth rate of around 15%. Overall, it rose from 32.4 M Euro in 2001 to more than 126 M Euro in 2012. This increase was mainly driven by the increase of prices and changes in the imports structure.

In average over the last decade, Estonian seafood imports from the EU MS represented 63% and 72% of the total imports, respectively in terms of value and volume. The share of intra-community imports grew significantly after Estonia has joined the EU. Their contribution in value went from 39% in 2004 to 89% in 2012, while in volume it rose from 66% to 88%.

Figure 5.6.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 83% of the total volume of seafood imported by Estonian and 85% of its value.

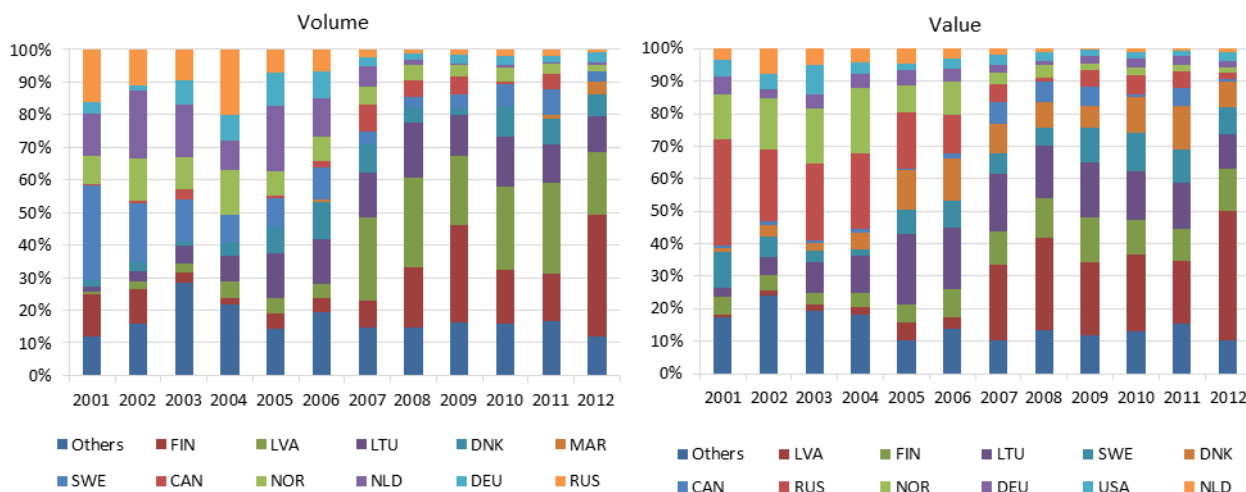
In 2012, the major Estonian seafood suppliers in terms of volume were Finland (contributing 37% of the total volume of seafood imports), Latvia (19%), Lithuania (11%), Denmark (7%), Morocco (10%) and Sweden (3%), but Estonia imported seafood from 37 countries from all over the world. Seven Baltic countries, members of the EU, contributed 82% of the total Estonian seafood imports in volume.

In 2012, Latvia was the most relevant trade partner for Estonia in terms of trade value (contributing 40% of the total imports). Imports from this country increased by 20 times in volume and 14 times in value from 2001 to 2012 and, indeed, in 2001 Latvia contributed less than 1% of the total Estonian imports (both in volume and value). The other most relevant seafood suppliers were Finland (contributing 13% of the total value of seafood imports), Lithuania (11%), Sweden (8%) and Denmark (8%).

The most important third countries which supplied seafood to the Estonian market in 2012 were Morocco (contributing 4% of the total imports in volume and 1% in value), USA (3%, 3%), Russia (1%, 2%) and Norway (2% and 2%).

The value share of trade with Russia and Norway decreased continuously between 2001 and 2007 (from 33% to 6% for Russia and from 14% to 1% for Norway), while the importance of Latvia and Finland as trade partners increased mostly between 2006 and 2012 (over this period, their contribution to the total value of trade increased from 4% to 40% and from 8% to 13%, respectively).

Figure 5.6.3 shows that trade patterns changed significantly especially from 2006 to 2007, when Latvia and Finland became the most important suppliers for the Estonian market, replacing Russia and Norway.



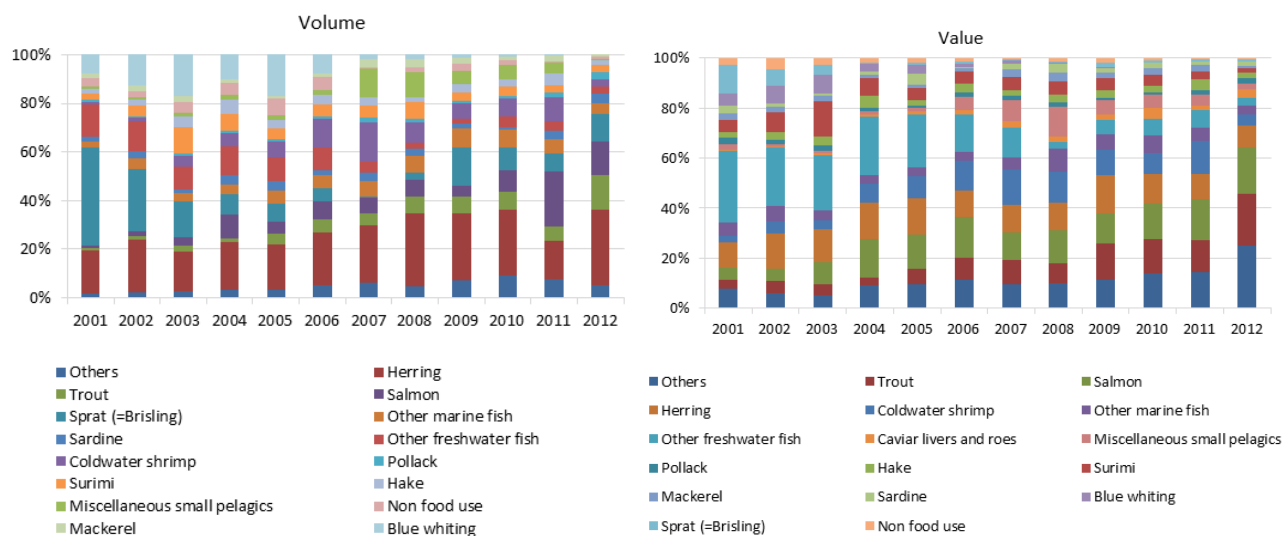
**Figure 5.6.3 - Estonian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.6.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 95% of the total volume of seafood imported by Estonia and almost 93% of its value.

Herring, trout, salmon and sprat were the main species imported by Estonia in 2012, representing 70% of the total imports in volume and 49% of them in value. Overall, salmon and trout imports accounted for 39% of the value of imports and 28% of their volume. The majority of imports of fresh salmon and trout in 2012 were imported from Finland, Latvia and Sweden, while salmon from Lithuania was mostly imported dried, salted or smoked.

In 2012, the small pelagics (herring and sprat), contributing around 10% of the overall value of imports and 42% of their volume, were imported mostly from the neighbouring countries (Finland, Latvia and Lithuania), while coldwater shrimps were supplied from Denmark and Canada. In 2012, 51% of the total volume of imports from Denmark was made up of frozen coldwater shrimps; however frozen trout and frozen salmon were also relevant (they accounted for 17% and 13% of the total, respectively).

The contribution of salmon and trout to the Estonian seafood imports increased since 2001, when they accounted only for 8.5% of their value and less than 2% of their volume. The volume share increased significantly also for herring (from 18% in 2001 to 31% in 2012), while its contribution to the total import value reduced from 10% to 8%.

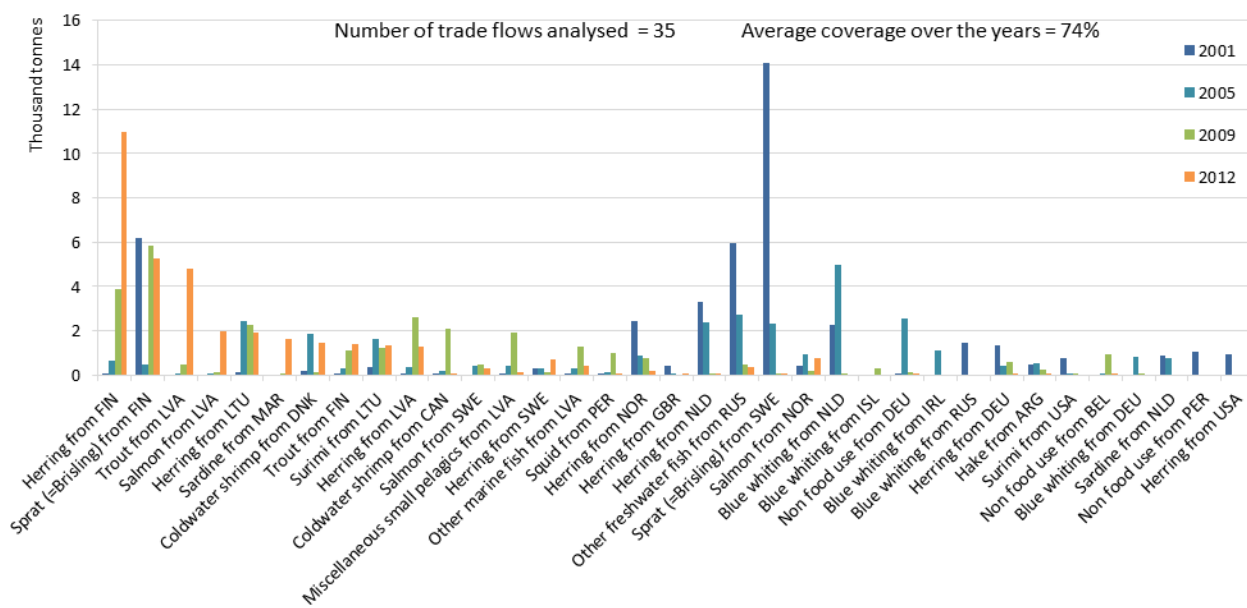


**Figure 5.6.4 - Estonian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.6.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Estonia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover, in average over the reference period, 74% and 67% of the overall trade, respectively in volume and value.

A major change in Estonian seafood trade patterns consisted in a decline in the imports of freshwater fish from Russia and sprat from Sweden, accompanied by increased imports of trout from Latvia and Finland. Another important change was represented by the switch of trade partners for herring from Norway, the Netherlands and Germany, which are the major fishing nations in the North Sea basin, to Latvia, Finland, Lithuania and Sweden, fishing this species in the Baltic Sea Region. This change might have been determined by the decrease of herring stocks in the North Sea, happened during the period 2004-2006.

From 2001 to 2012, there was also a significant increase in the value of imports of salmon from Latvia and Sweden.



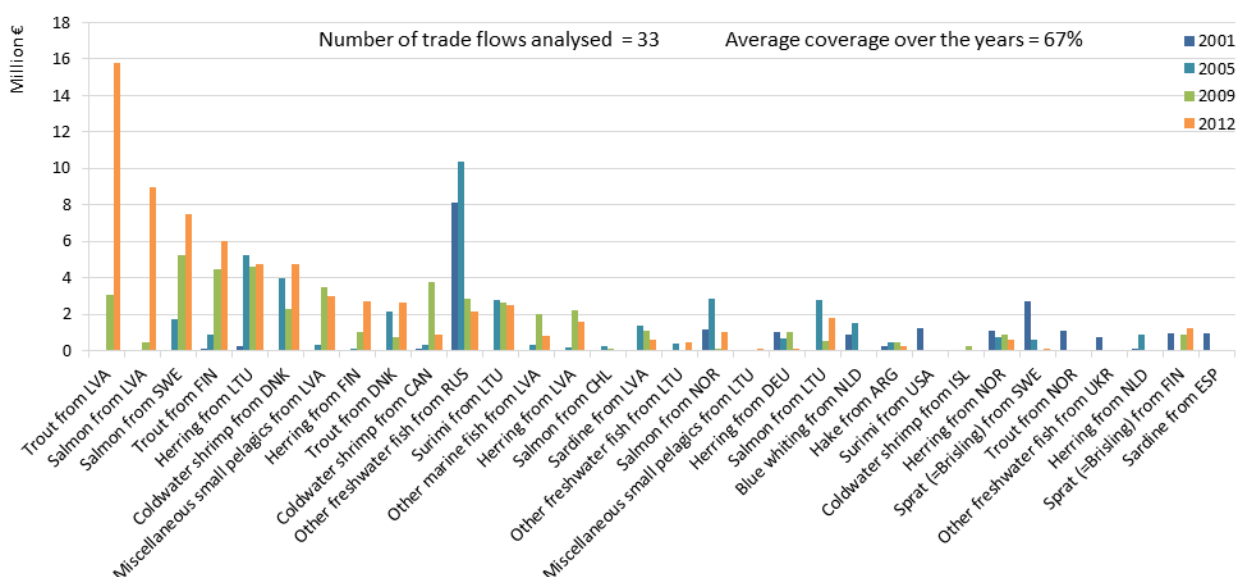


Figure 5.6.5 - Estonian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.6.6 shows the trends in the composition of imports by processing and preservation status. The share in volume of fresh seafood over the total imports increased since 2008. This increase was mostly due to the change from imports of cut freshwater fish from Russia to whole fresh trout from Latvia.

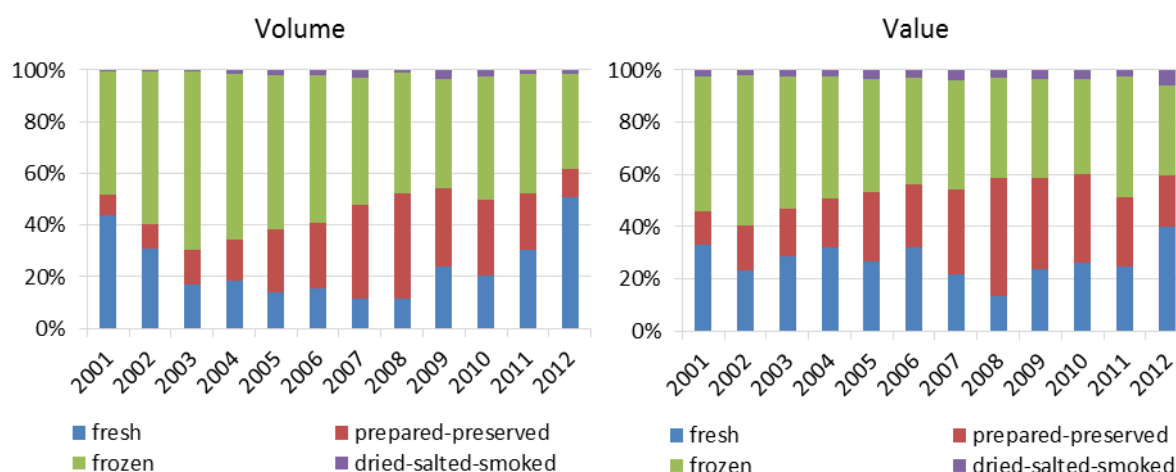


Figure 5.6.6 - Estonian seafood imports trends by type of products: share in volume (left) and value (right)

## Exports

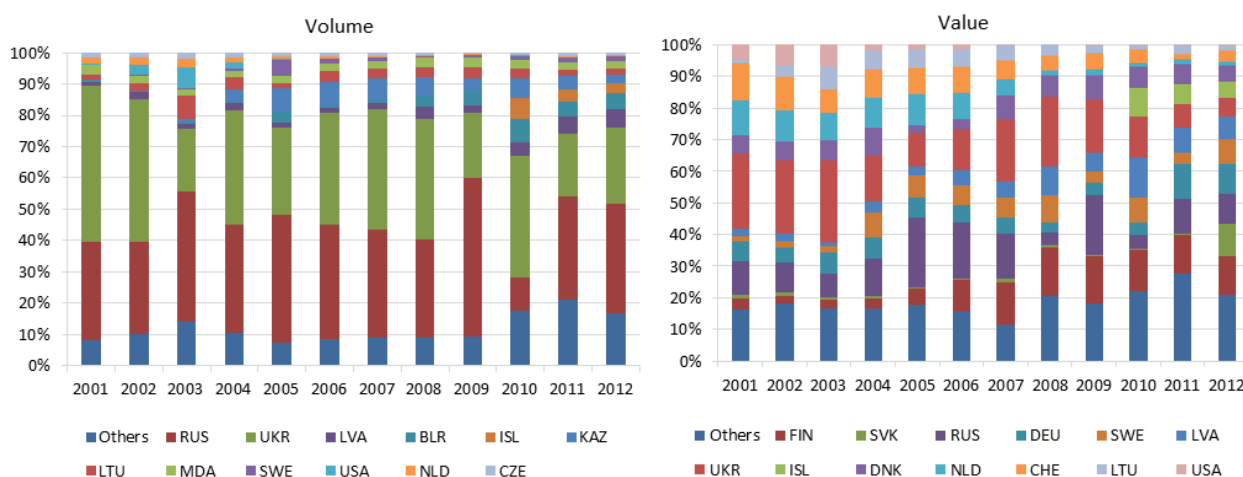
In 2012, Estonia exported 116.5 K tonnes of seafood, valued at 182.2 M Euro. The value of Estonian exports increased every year during the analysed period, except in 2004, 2007 and 2008. Over the entire period, it increased 117%, at an average annual rate of 8%. On the other hand, the volume of exports in 2012 was only 8% higher than in 2001, which shows that the average unit value of seafood increased significantly.

Figure 5.6.7 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 88% of the total volume of seafood exported and 81% of its value.

Overall, the value share of intra-community exports increased from 41% in 2001 to 64% in 2012. This was mostly due to the increased trade with the Baltic countries (Finland, Sweden and Latvia), which was

observed also for imports, and with Slovakia and Norway. From 2001 to 2012, the contribution of Finland, Sweden and Latvia to the total volume and value of exports increased from 3% to 11% and from 7% to 27%, respectively. Over the same period, the value of exports to Ukraine, Switzerland and the Netherlands decreased significantly, as well as its contribution to the total value of Estonian seafood imports, which decreased from 47% in 2001 to 11% in 2012.

In 2012, Estonia exported seafood to 54 countries. The major countries of destination in terms of volume of trade were Russia (accounting for 35% of the total exports), Ukraine (24%), Latvia (6%), Belorussia (5%) and Iceland (3%). The most relevant ones in terms of value of trade were Finland (contributing 12% of the total value), Slovakia (10%), Russia (9%), Germany (9%), Sweden (8%) and Latvia (7%).



**Figure 5.6.7 - Estonian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.6.8 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover (in average over the years) Estonian seafood exports almost entirely, both in volume and value.

Estonian seafood exports are made up mostly of sprat (accounting for 37% of the total volume in 2012), herring (17%), salmon (12%), miscellaneous small pelagics (10%) and cold-water shrimps (8%). Salmon, cold-water shrimps, trout and other freshwater fish are the major commercial species exported by Estonia in terms of value (contributing 23%, 19%, 9% and 9% of the total export value in 2012). In 2001, exports of other freshwater fish contributed 45% of the total value of seafood exports, while salmon, cold-water shrimps and trout together accounted only for 0.8%.

The small pelagic fish (sprat and herring) are exported almost only frozen and they are mostly directed to Russia and Ukraine. Exports to these two countries accounted for almost 60% of the total export volume in 2012. Exports to Germany are mostly made up of salmon and to Finland and Slovakia of salmon, trout and other marine fish. Frozen shrimps are exported to Iceland, Norway and Denmark.



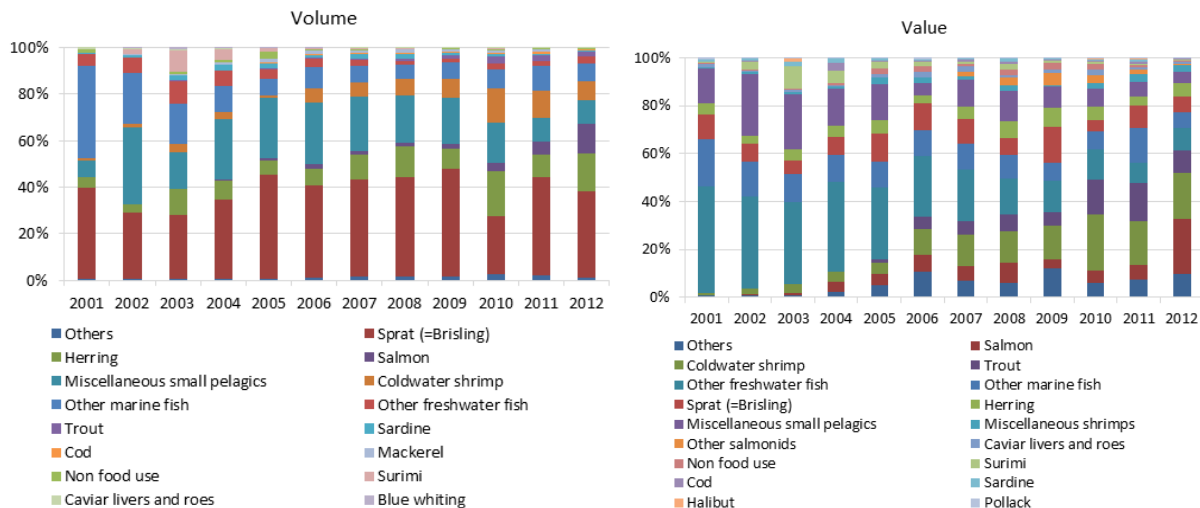


Figure 5.6.8 - Estonian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

As one of the most important countries fishing sprat and herring, Estonia has a comparative advantage in the trade of these species (Figure 5.6.9). The share of Estonian exports of sprat was 22% in 2011. The other important species for which Estonia has a high comparative advantage are trout, cold-water shrimps and pangasius, which are imported from other countries and re-exported from Estonia.

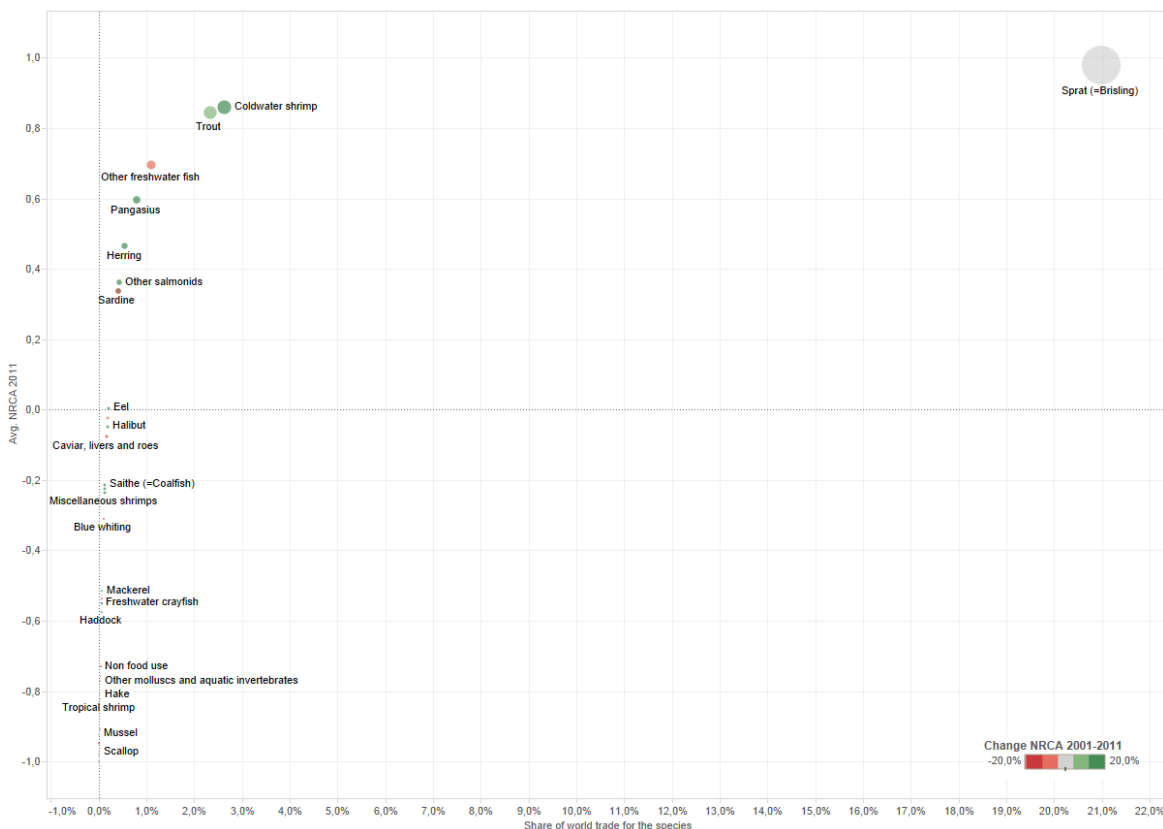


Figure 5.6.9 - Normalized Revealed Comparative Advantage index (NRCA) for Estonia, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011

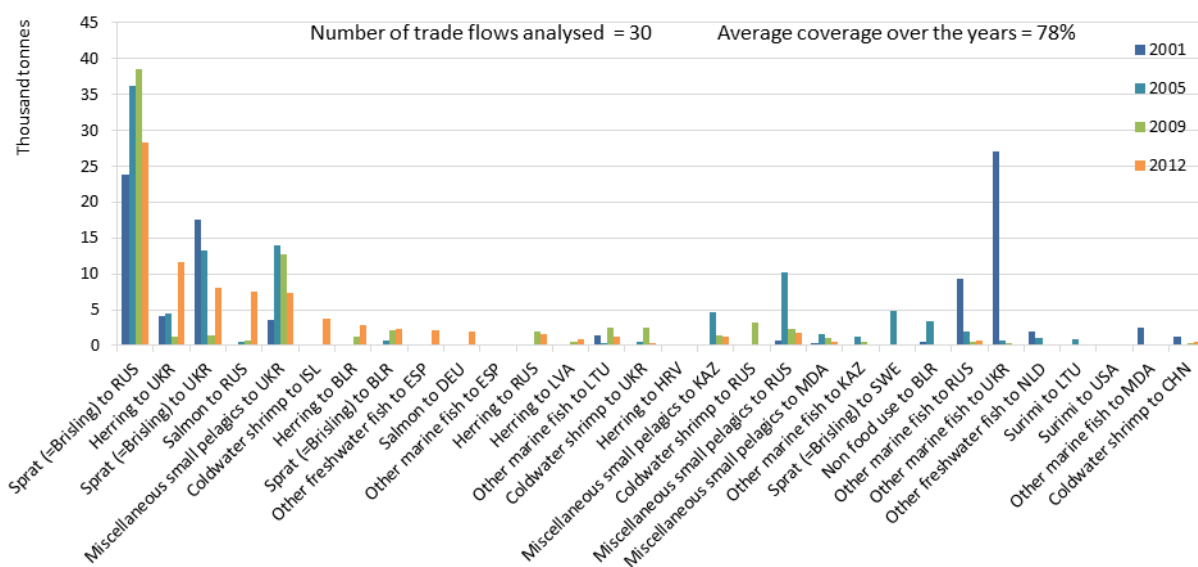
Figure 5.6.10 presents the exports margins of the Estonian seafood exports. The expansion at the extensive margin in 2012 was determined by the exports of trout to Slovakia, while the reduction of the export value,

occurred at the intensive margin between 2003 and 2004, was caused by a reduction in the value of exports of small pelagics to Ukraine.



**Figure 5.6.10 – Estonian seafood exports margins: 2001-2012**

Figure 5.6.11 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Estonia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 78% and 69% of the overall trade, respectively in volume and value. The variations in the export volume are mostly driven by the trade of herring and sprat. Small pelagic fish products are the major products exported in terms of volume and they are mostly exported to the Eastern European market. On the other hand, the largest part of the change of the export value occurred between 2001 and 2012 was related to the increase of trade of cold-water shrimps, trout and salmon to several countries (e.g. Norway, Iceland, Germany, Finland and Latvia) and to the decrease of exports of other marine fish to Ukraine.



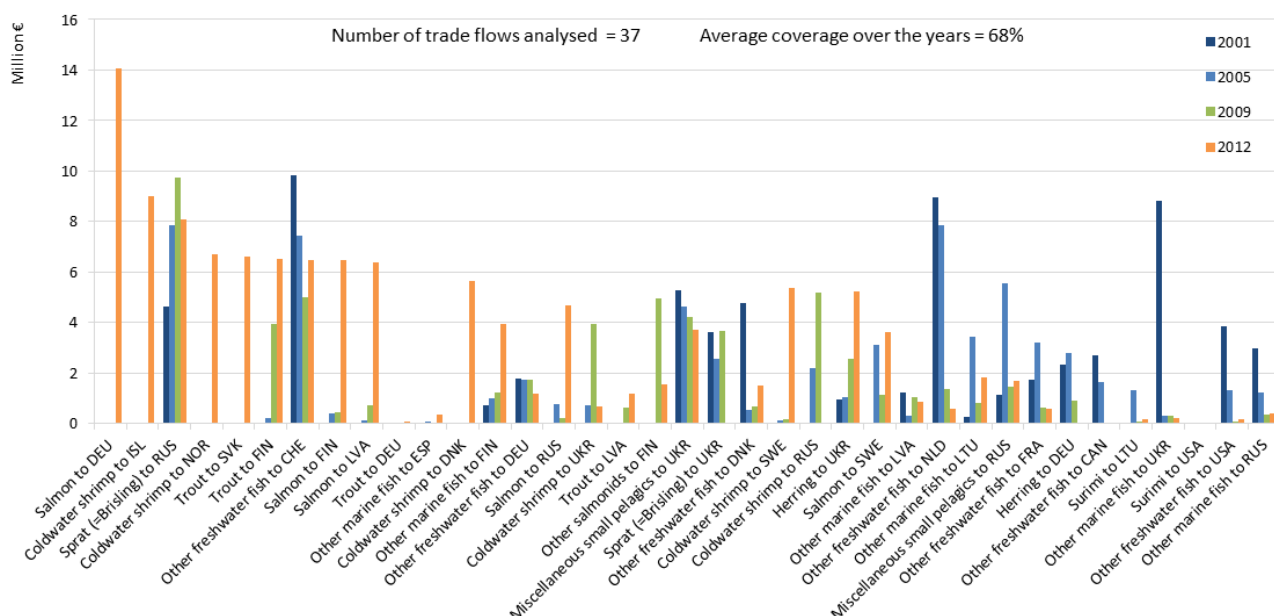


Figure 5.6.11 - Estonia seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.6.12 shows the trends in the composition of exports by processing and preservation status. The share of frozen products increased from around 48% to 78% over the period 2004-2012, reflecting the increase of fish freezing facilities in the country.

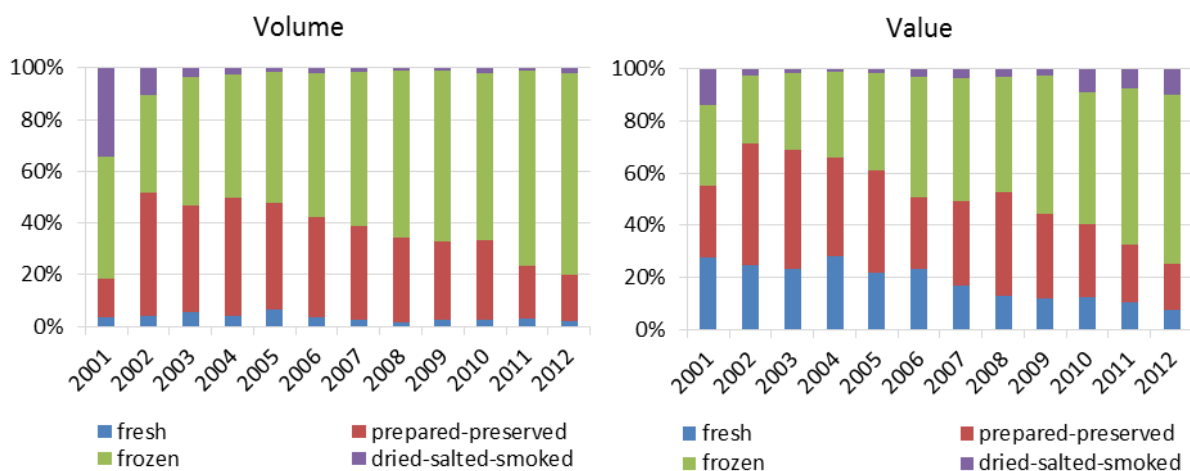


Figure 5.6.12 - Estonian seafood exports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to the value of total exports to Germany changed considerably in 2011 (Figure 5.6.13). This change was driven by the increase of the exports of frozen salmon to this county and the decrease of exports of trout. Exports of salmon contributed 82% of the total value of exports directed to Germany in 2012 and less than 1% in 2011. On the other hand, trout contributed 65% of the total value in 2011 and 0.3% in 2012.

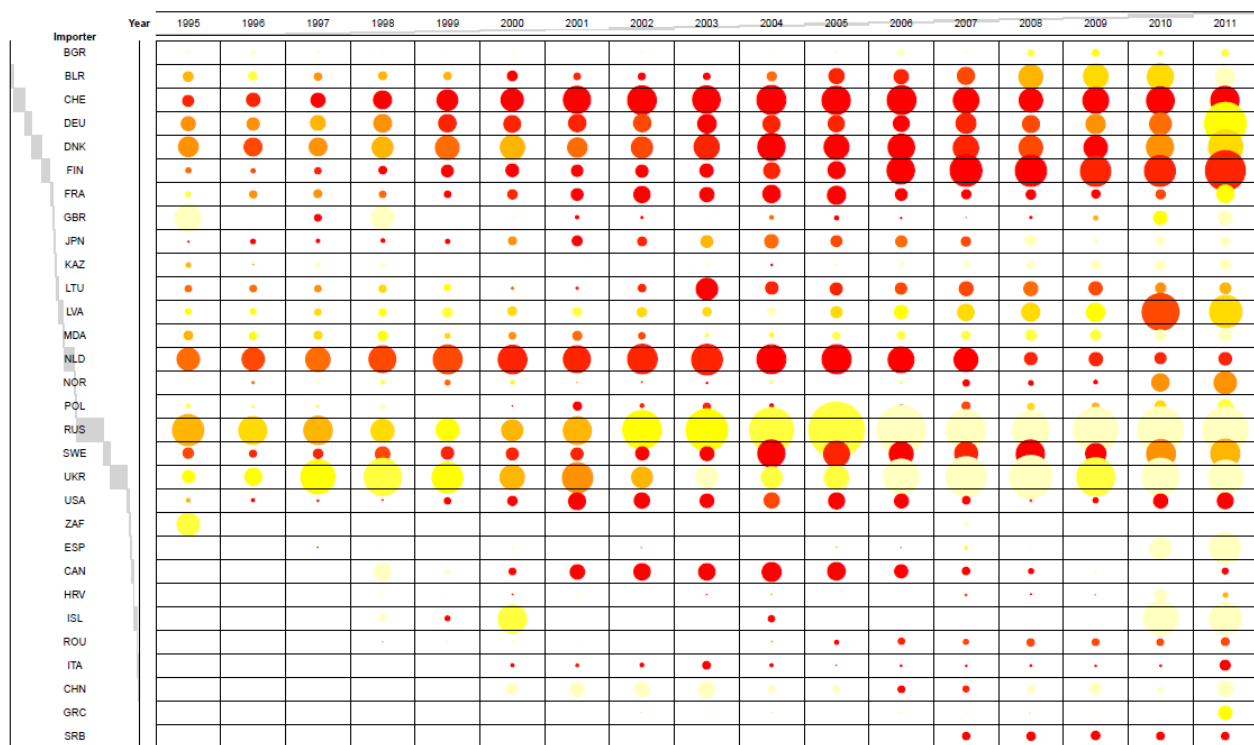


Figure 5.6.13 - Estonian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)

## 5.7 Finland

### Production

The Finnish fleet is mostly represented by small scale vessels, accounting for more than 95% of the total number of active vessels, however most of the production comes from the large scale vessels (>12 m), fishing in the Baltic Sea. This part of the fleet produced around 90% of the overall volume of fish landed by the Finnish vessels and around 70% of the value of production in 2011. Pelagic species are the most important species for Finnish fisheries in terms of landing volume and value. European whitefish and pike-perch are the most important species for the small scale fleet. The total volume of landed fish in 2011 was 119.7 K tonnes, valued 32.5 M Euro (STECF, 2014a).

Aquaculture represents a small share of total Finnish fish production, with a total production of around 10 K tonnes of fish in 2011, valued at 56.7 M Euro. The most important farmed species are rainbow trout, European whitefish, sea and lake trout, representing more than 95% of total aquaculture production in 2011 (STECF, 2014b).

The fish processing industry of the country is mostly based on the local fish supply; In 2013, fish processing enterprises used around 80 K tonnes of fish as raw material, 53 K tonnes were domestic fish and 27 K tonnes were imported. The main fish species processed are: Baltic herring, salmon, rainbow trout and European whitefish. The main processing products are (hot and cold) smoked products of rainbow trout, salmon and herring. There is also a notable production of salted rainbow trout. The strong increase of the processing sector has mainly been based on imported farmed fish, while the consumption of domestic fish and fish products has decreased considerably during the past 10 years. About one thirds of the raw material is now imported. Norwegian salmon constituted the most important imported species for processing, and together with rainbow trout, comprised the most important species in terms of value; production volumes for both species together reached 42 K tonnes in 2013 (STECF, 2014c).

### Trade balance and exposure to trade competition

The trade balance of seafood is negative for Finland. Over the last decade, the Finnish seafood trade was represented by the exports of low valued small pelagic species (herring and sprat), accounting for around 85% of the overall export volume, and the imports of highly valued salmonids (tuna and tuna like species), accounting for more than 50% of the import volume and used by the processing industry. In terms of volume, seafood imports exceeded exports by 54% in 2012, while in terms of value imports were 6.7 times higher than exports (Figure 5.7.1).

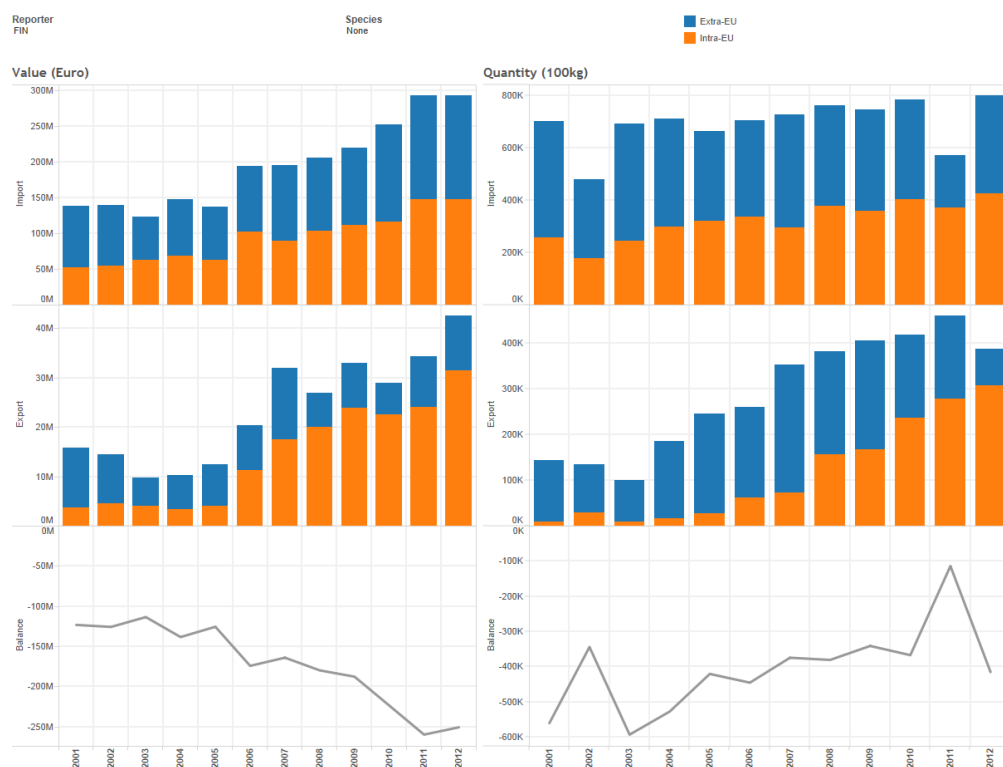


Figure 5.7.1 - Finnish seafood trade balance trends: value (left) and volume (right)

Finland is one of the MS which have the lowest exposure to trade competition (the Trade to Competition Ratio index for Finland was equal to 0.56, in 2012). However, the exposure to trade competition has increased over the period (Figure 5.7.2). The trade competition is mostly driven by imports, as for most other MS, but the contribution of exports has risen over the years (from 17% in 2001 to 41% in 2012).

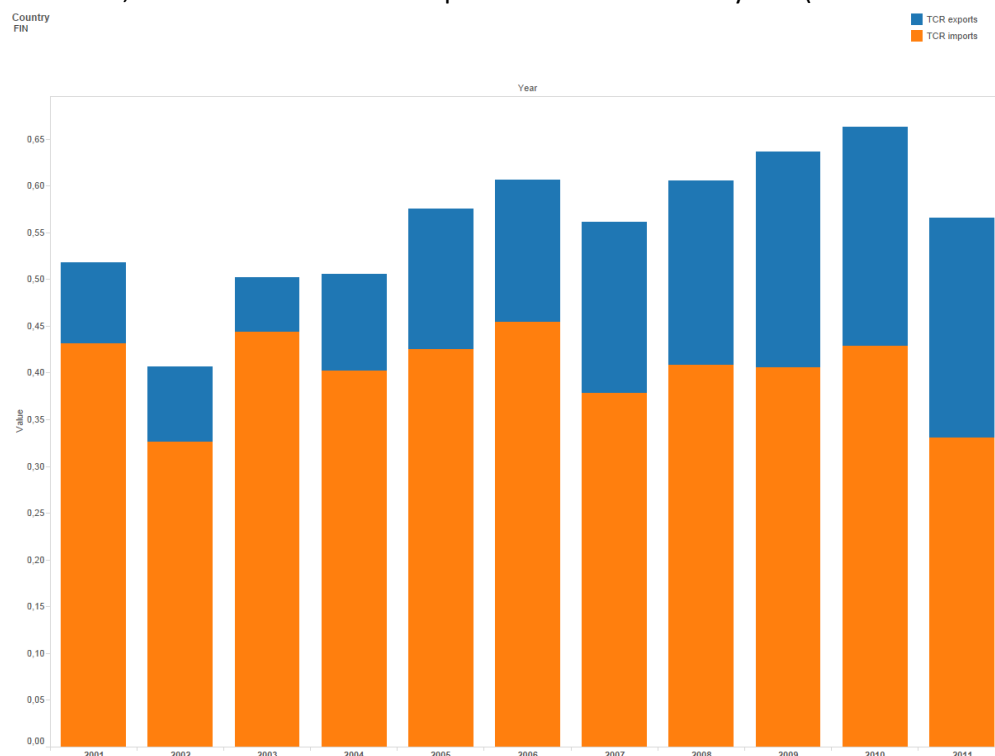


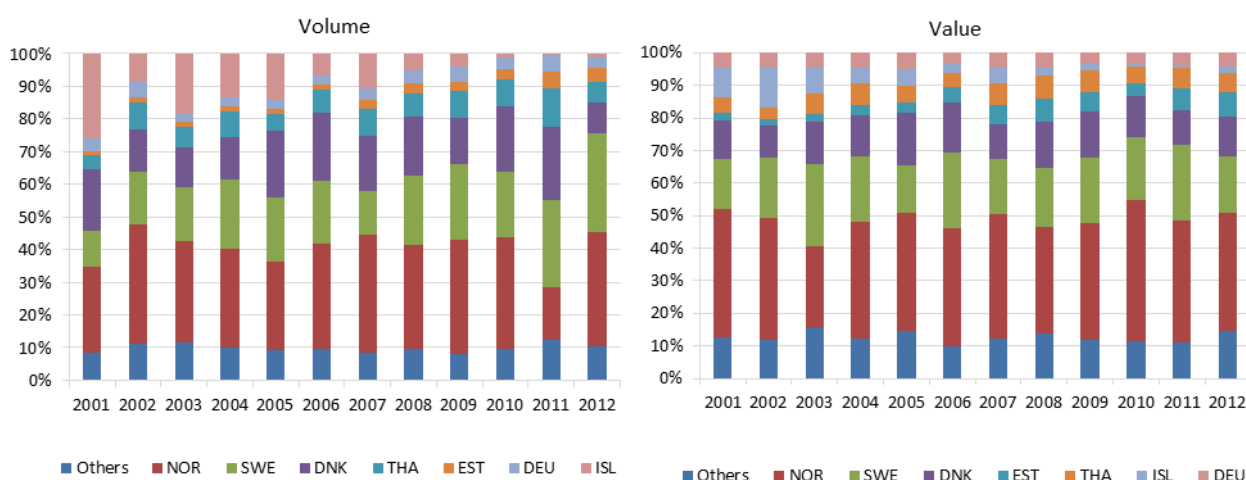
Figure 5.7.2 - Trend of the exposure to trade competition index for Finland

## Imports

Finland imported around 80 K tonnes of seafood in 2012, 10 K tonnes more than in 2001. The value of its seafood imports also increased from 139 to 293 M Euro. The increase of the import value was driven by the increase of prices and the changes in the import structure occurred over the period. The average annual growth rate of import value was around 8%, while volume increased by around 4% annually.

Figure 5.7.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 90% of the total volume of seafood imported and 87% of its value.

Finland imported seafood from 43 countries in 2012. In the same year, 50% of Finnish seafood imports in terms of value and 53% of their overall volume originated in EU MS. The major EU suppliers were Sweden (contributing 30% of the total seafood import volume in 2012, corresponding to 18% in value), Denmark (10%, 12%), Estonia (4%, 7%) and Germany (3%, 4%). The most important extra-community seafood suppliers were Norway (contributing 35% of the total seafood import volume and 36% of the overall value in 2012) and Thailand (6% and 6%). Imports from Iceland decreased drastically over the analysed period and were replaced by other trade flows. The importance of Estonia as supplier to the Finnish market increased, since this country joined the EU in 2004.

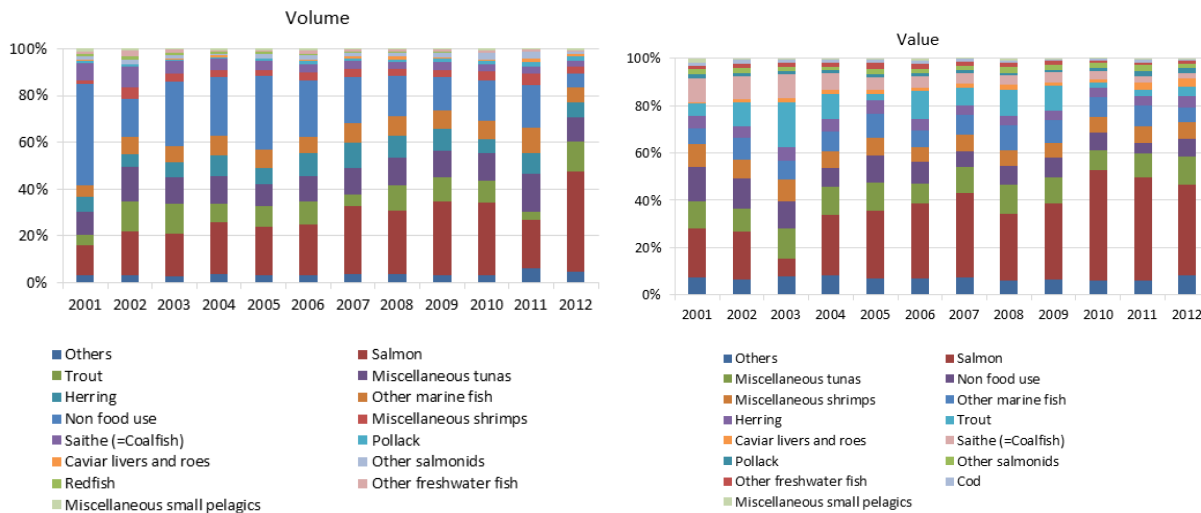


**Figure 5.7.3 - Finnish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.7.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 96% of the total volume of seafood imported by Finland and almost 93% of its value.

Most of the seafood imported by Finland was represented by fresh salmon and trout in 2012, when these species contributed 55% of Finnish seafood imports in terms of volume and 42% in value. The other most important species entering the market was tuna (contributing around 12% of the overall import volume and 11% in terms of value). Tuna was imported mostly in the form of prepared/preserved products. Miscellaneous shrimps represented another 7% of the total value of seafood imports and 3% of their volume. The imports of seafood for non-human consumption represented around 6% of the overall volume of imports and 7% of their value and the major suppliers were Denmark, Great Britain, Iceland and Norway.

The imports of trout and fish for non-human consumption decreased continuously over the reference period, while the imports of salmon (mostly from Norway) increased (Figure 5.7.4).

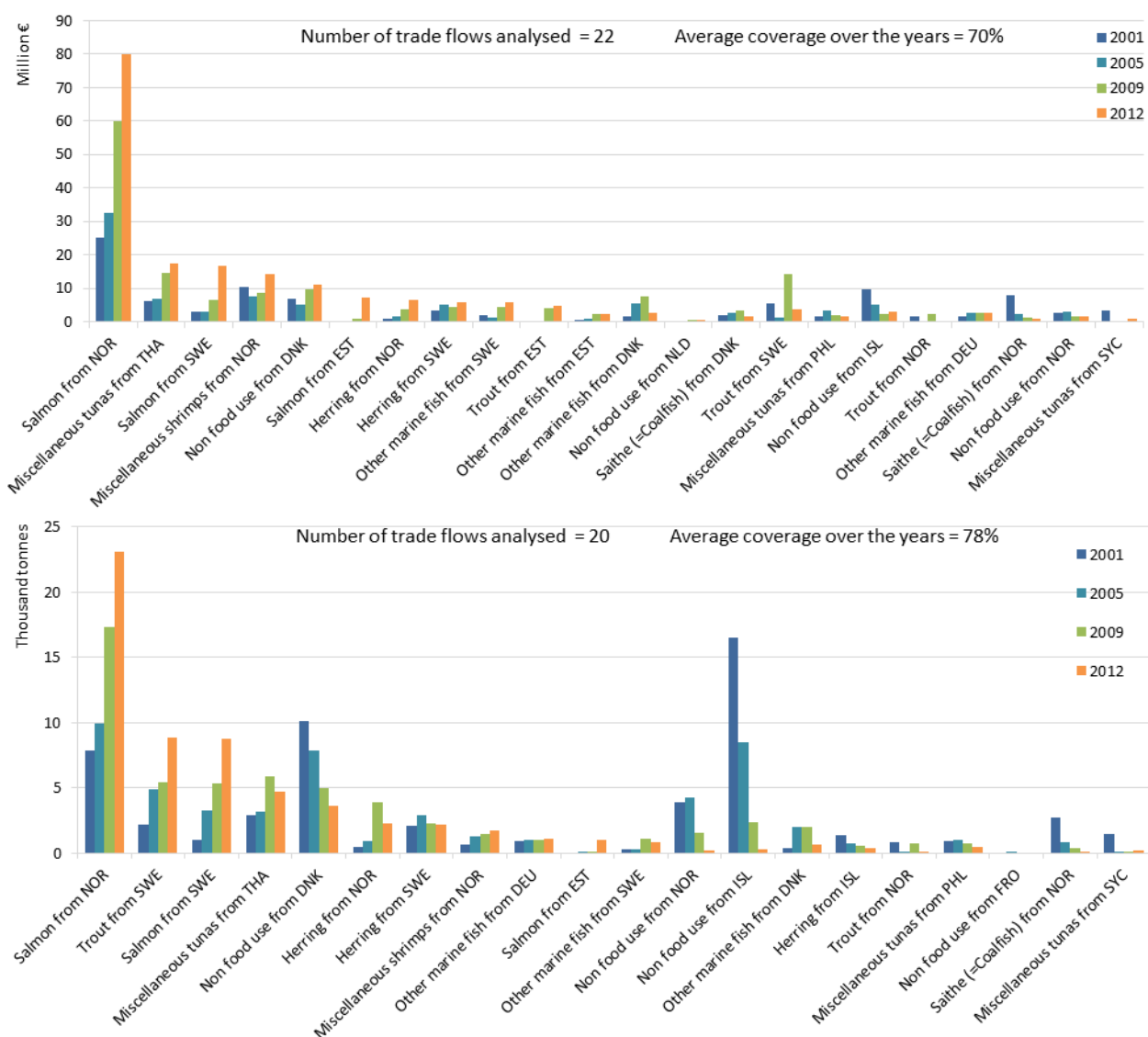


**Figure 5.7.4 - Finnish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Finland, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover, in average over the period, 78% and 70% of the overall trade, respectively in volume and value.

As already stated, the imports of salmon drove the seafood imports expansion occurred during the analysed period. The major supplier of salmon for Finland is Norway, however part of its imports comes from Sweden and Estonia (Figure 5.7.5). From 2001 to 2012, the imports of fish non for food uses from Iceland decreased and, in some of the years, they were replaced by the imports from other countries (Denmark, the Netherlands and the United Kingdom).





**Figure 5.7.5 - Finnish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.7.6 shows the trends in the composition of imports by processing and preservation status. In 2012, fresh products constituted 54% of the total volume of seafood imports and 39% of their value. Prepared/preserved products contributed 34% of the total volume of imports and 41% of the total value. The high relevance of these two categories of seafood reflects the importance of fresh salmon, prepared and preserved tunas, shrimps and seafood for non food use in the Finnish imports.

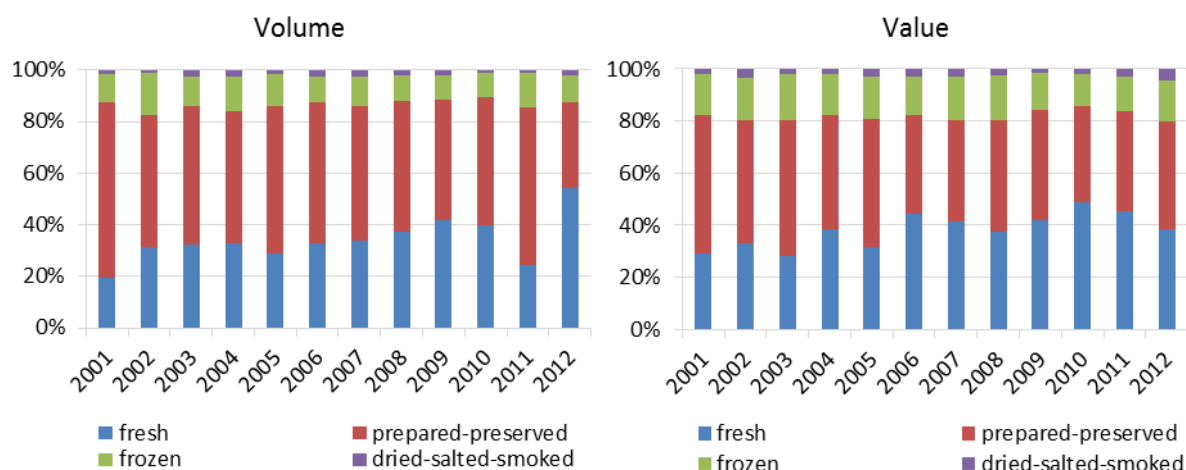


Figure 5.7.6 - Finnish seafood imports trends by type of products: share in volume (left) and value (right)

Figure 5.7.7 shows the long term evolution of the contribution of processed products to total import value by main suppliers. The share of processed products in the imports from Norway decreased progressively.

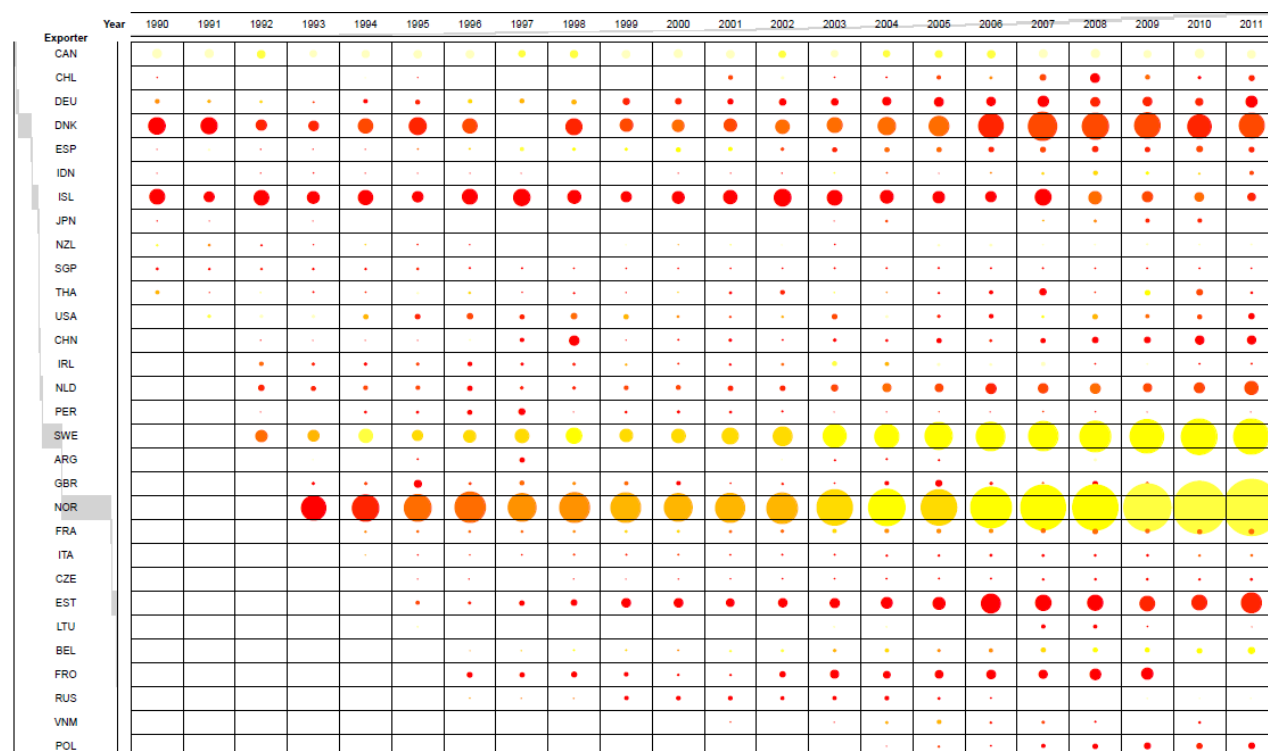


Figure 5.7.7 - Finnish seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products)

## Exports

Finnish seafood exports in 2012 amounted to 38.7 K tonnes in volume and 43.5 M Euro in value. Both export value and volume have increased since 2001. The average annual growth of volume and values was around 13% per year during the analysed period. The increase of exports was accompanied by a significant change of the exports structure. Caviar, livers and roes, which were the major products in terms of value at the beginning of the reference period (they contributed 52% of the overall export value and almost 4% of the total volume in 2001) were substituted by cheaper small pelagic (the value of herring and sprat in the

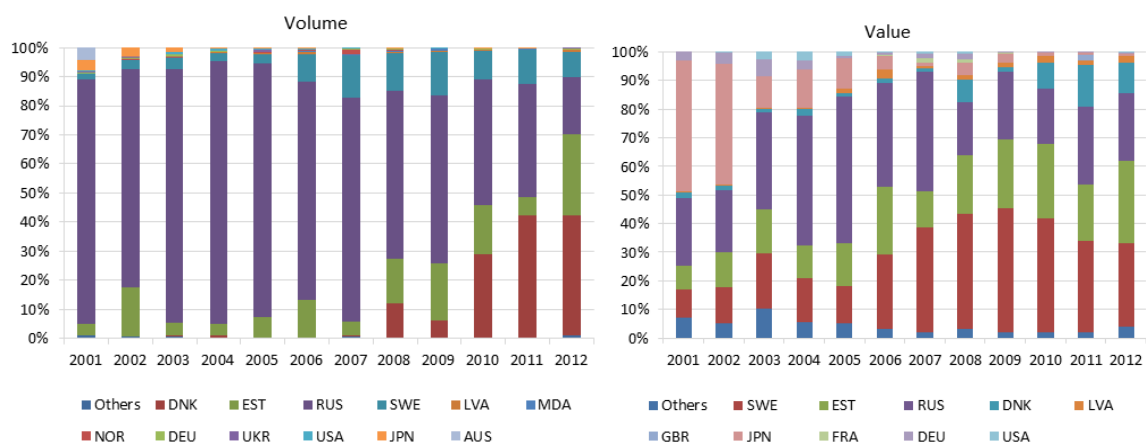
export value composition increased from 22% to 46% from 2001 to 2012) and fresh salmon (export value increased from 2% in 2001 to 24% in 2012).

Figure 5.7.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover almost entirely Finnish seafood exports, both in volume and value.

The geographical distribution of Finnish exports also changed considerably over the last decade. The Japanese market to which almost all caviar, livers and roes products were exported in 2001, was replaced by the Estonian and Danish markets. The share of export value destined to the Estonian market increased from 8% in 2001 to 29% in 2012, while the contribution of the exports to Denmark to the overall seafood export value increased from 2% to 10% over the same period.

While the contribution of exports to Japan to the total value of exports decreased from 46% in 2001 to 1% in 2012, Russia has remained the most important non EU trade partner, contributing around 23% of the export value in 2012. In terms of volume, the share of exports to Russia decreased from 90% in 2004 to 18% in 2012. This change can be explained by a change in the composition of products exported to this country.

The share of trade with the EU MS grew from 24% in 2001 to 74% in 2012 in terms of value and from 7% to 79% in terms of volume. Overall, Finland exported seafood to 42 countries in 2012. The most important countries of destination within the EU were Sweden (contributing 29% in terms of value and 8% in terms of volume), Estonia (28%, 25%), Denmark (10%, 38%), Bulgaria (1%, 5%) and Latvia (2%, 1%).



**Figure 5.7.8 - Finnish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

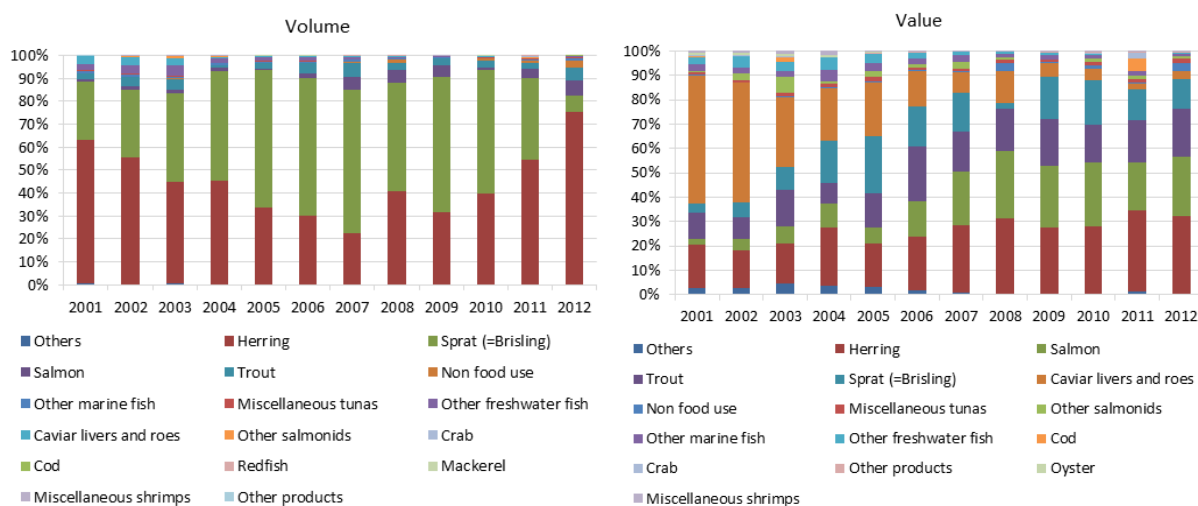
Figure 5.7.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, Finnish seafood exports almost entirely, both in volume and value.

The major EU destinations of Finnish seafood exports are countries of the Baltic region which share with Finland the same stocks. For this reason, some of the trade flows might actually be landings of the Finnish fishing fleets. For example, almost all Finnish exports to Denmark in 2012 were represented by fresh herring and sprat, which were most probably landed in that country (35% of all Finnish export volume and 6% of their value, in 2012).

In 2012, more than 75% of the total volume of Finnish seafood exports was represented by herring. The other most relevant species were sprat (7%), salmon (7%), trout (5%) and fish for non food use (3%). Herring was the most relevant also in terms of value (accounting for 32% of the total), followed by salmon (24%), trout (20%), sprat (12%) and caviar livers and roes (4%).

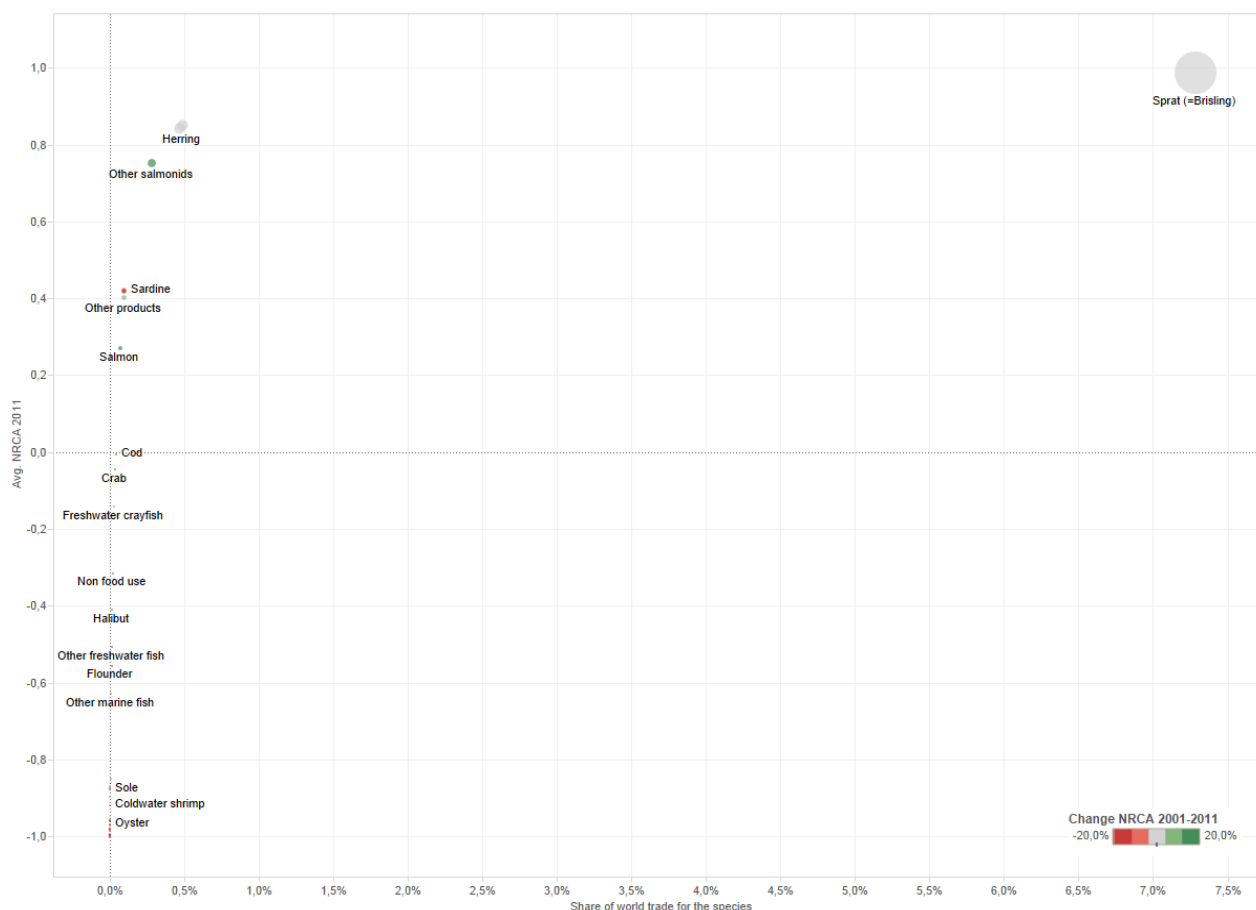
The most important fish species, supplied to the Russian market by Finland are sprat, trout and herring. However, some of the products which were destined to the Russian market in the first years of the reference period, were shared with other countries in 2012. For example, most of the herring (95%) in terms of volume was exported to Russia in 2003, while in 2012, 59% of it was exported to Denmark and 19% to Russia (Sweden and Estonia were also relevant countries of destination, accounting for 15% and 5% of the total volume of exports, respectively). Similar change to the trade patterns can be observed in the case of sprat.

Other species which are economically important for the Finnish seafood exports and production are salmon (contributing 24% of the total export value in 2012) and trout (19%). These species are traded mostly fresh. Most of the salmon is exported to Sweden (14% of total value of exports in 2012), Estonia (5%), Denmark (2%) and Latvia (1%), while trout is directed mostly to Estonia (11% of total export value), Russia (6%), Poland (2%) and Latvia (1%).



**Figure 5.7.9 - Finnish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

Finland has a comparative advantage in the exports of herring and sprat (Figure 5.7.10), which remained rather stable over the reference period. As already mentioned, these are the two major exported species in terms of volume, representing 89% of the total Finnish seafood exports during the period 2001-2012.



**Figure 5.7.10 - Normalized Revealed Comparative Advantage index (NRCA) for Finland, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

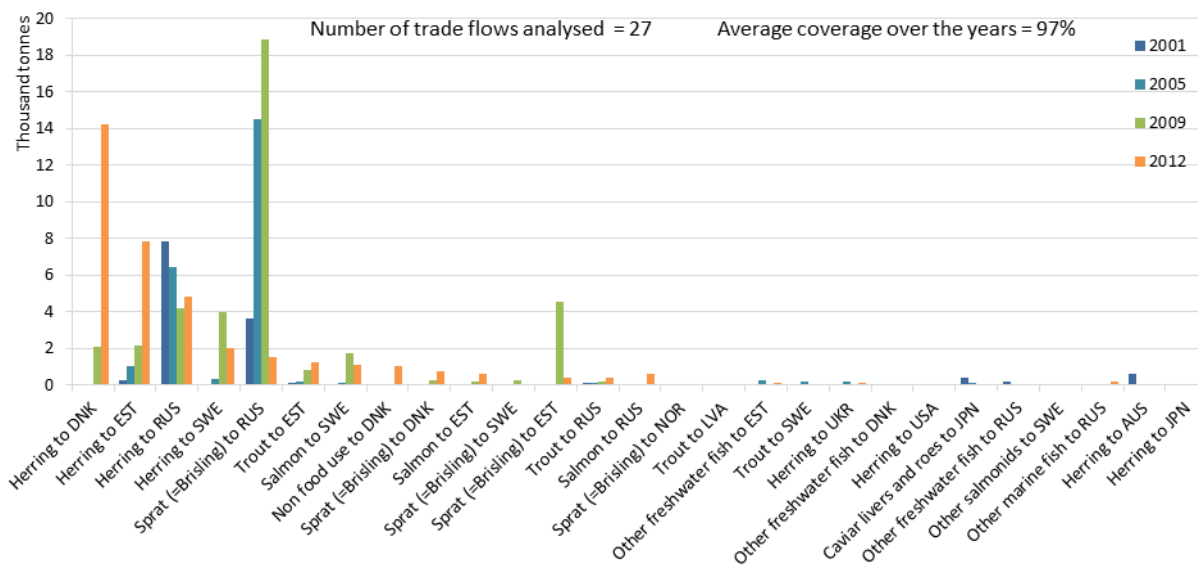
There has been a structural change in the exports of Finnish products over the reference period (Figure 5.7.11). The trade of caviar livers and roes, which was the most important trade flow with Japan in the period 2001-2002, has been substituted by the trade of small pelagic, salmon and trout. Most of the increase of the Finnish exports has been driven by the trade of old products to old destinations (71% of the increased value). Increases at the intensive margin, in particular in 2010, were linked to the trade of Sprat to Denmark (this change may also be due to an anomaly in reporting trade figures: while Denmark reported imports of sprat from Finland also before 2010, Finland did not report exports of sprat to Denmark before 2010). Overall, the exports from Finland remained very localized to the Baltic Sea region (95% of the overall value and 90% of the volume, in 2012).



**Figure 5.7.11 – Finnish seafood exports margins: 2001-2012**

Figure 5.7.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Finland, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 97% and 87% of the overall trade, respectively in volume and value.

As described above, most of the changes occurred over the reference period were due to changes of destination of the small pelagics, salmon and sprat.



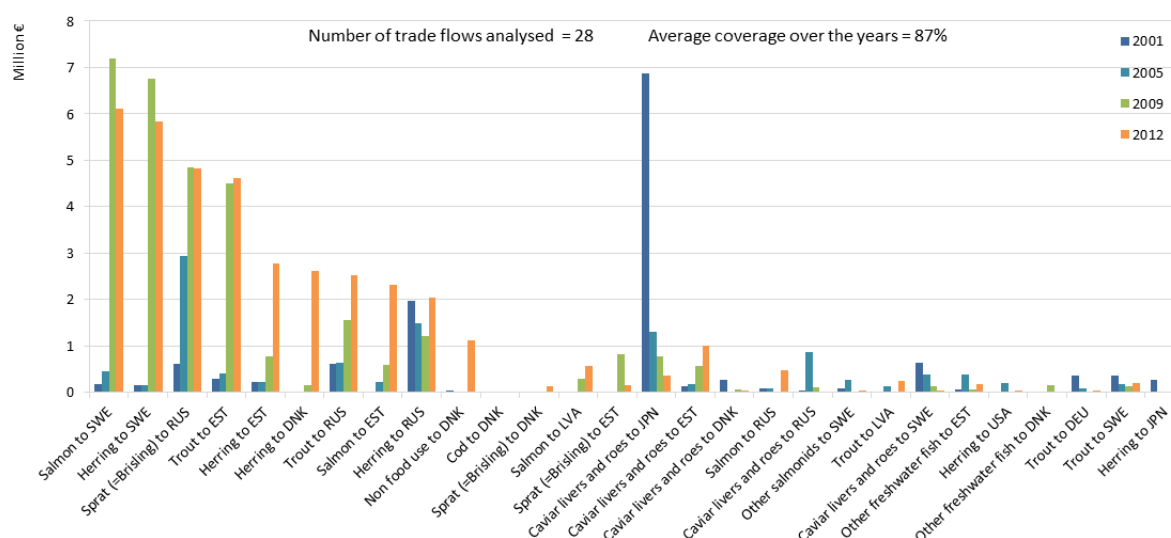


Figure 5.7.12 - Finland seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.7.13 shows the trends in the composition of exports by processing and preservation status. The caviar livers and roes represented most of the dried/salted/smoked exports share in value. Therefore, with the decrease of their trade, the contribution of this type of products to the overall export value also decreased. The increase of the share of fresh seafood exports in volume between 2009 and 2012 can be attributed to the increase of the exports of fresh herring to Denmark, fresh herring and trout to Estonia and salmon to Sweden. These trends are also reflected in Figure 5.7.14, which shows the contribution of processed products to total exports for the main destinations.

Processed products contribute almost equally to the value of Finnish seafood imports and exports. However, the export value of Finnish salmon is 10 times lower than the import value of this species. This seems to indicate that the imported salmon is mostly destined to domestic consumption and that Finland has not developed an industry for the processing of salmon for the export, as Lithuania, Poland and, to a lesser extent, Estonia have done.

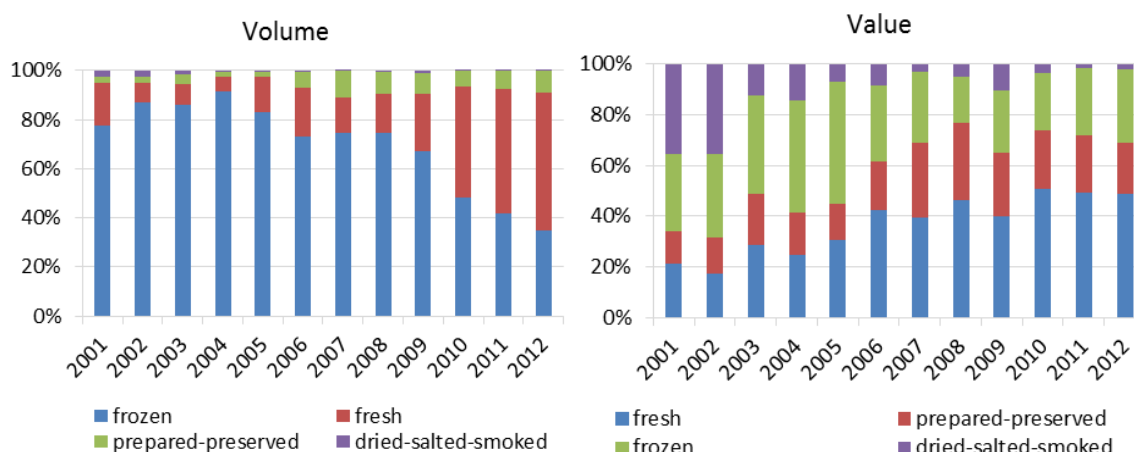


Figure 5.7.13 - Finnish seafood exports trends by type of products: share in volume (left) and value (right)

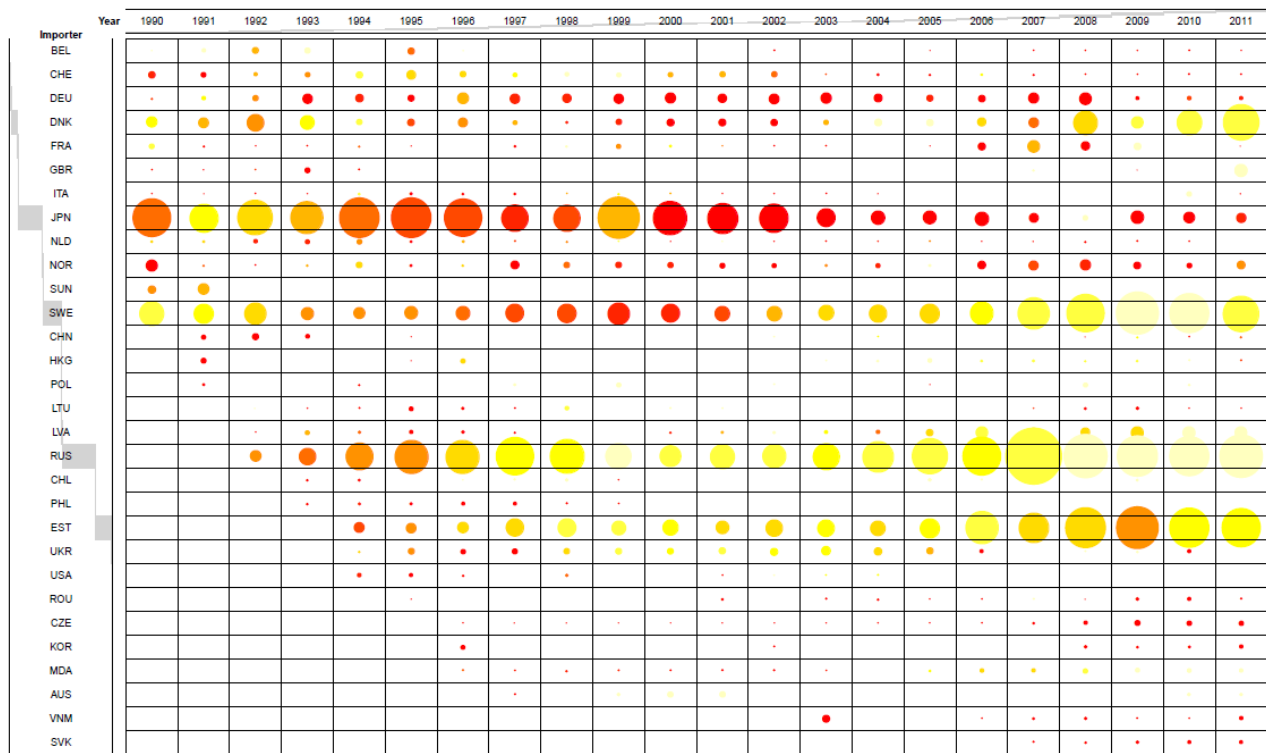


Figure 5.7.14 - Finnish seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)



## 5.8 France

### Production

The French fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the North East Atlantic, but also in the Mediterranean sea and in more distant fisheries. In 2011, French catches were 450 K tonnes (35% less than in 2000), contributing to some 8% of the overall EU capture production. In the same year, tuna represented around 20% of the national catches, while the remaining part was made up of a large number of different species (STECF, 2014a).

The French aquaculture sector is largely dominated by bivalve molluscs farming. In 2011, shellfish farming ranked first with a production of 240.7 K tonnes (85% of the national aquaculture production). The second group was the freshwater fish sector, with a production of 36.1 K tonnes of fish (13%) (STECF, 2014b).

In 2009, the French fish processing industry produced mostly fish fillets (42% of overall volumes), preparations of surimi (15%), smoked salmon (11%) and prepared/preserved tuna (10%). The French seafood processing industry relies heavily on imports. Shrimps and white fish (cod and pollock) are the main imported species used by the processing industry, but the salmon industry is also largely based on farmed salmon imported from Norway (STECF, 2014c).

### Trade balance and exposure to trade competition

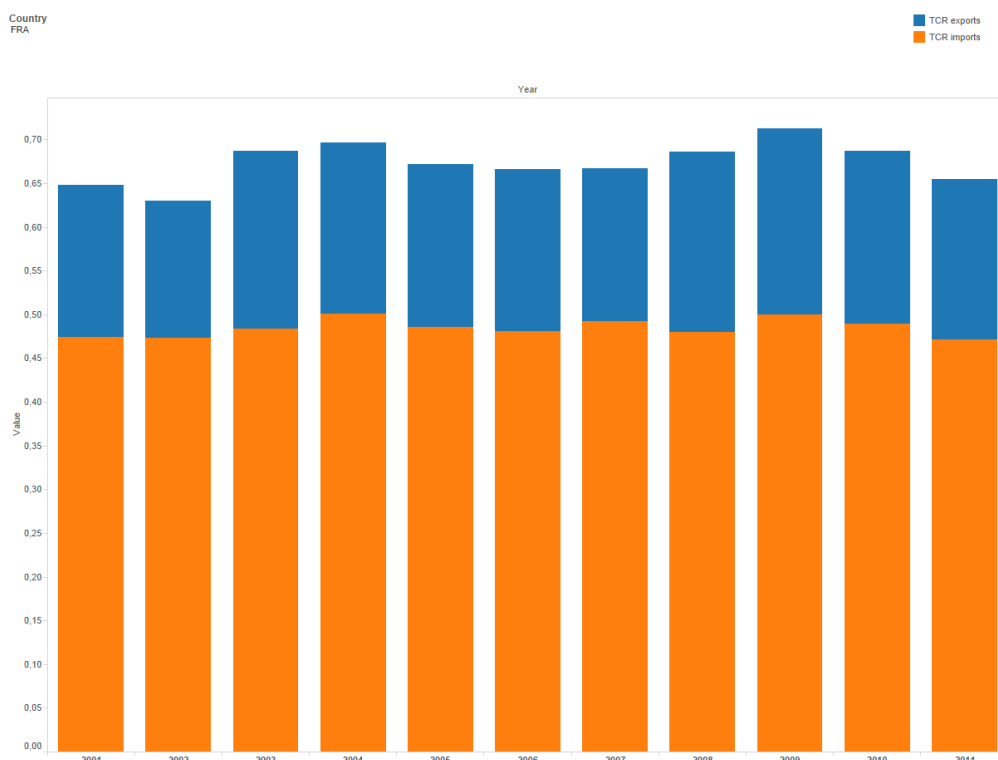
France is a net importer of fish products, with a negative trade balance of 716 K tonnes, valued at 3 B Euro (Figure 5.8.1). The trade deficit deteriorated from 2001 to 2012, by 20% and 28%, respectively in volume and value.

The share of extra-community imports to total imports remained quite stable over the reference decade (61% in volume and 62% in value, in average), while the relative contribution of extra-community exports increased over the reference period, from 19% to 25% in volume and from 29% to 34% in value.



**Figure 5.8.1 - French seafood trade balance trends: value (left) and volume (right)**

France is one of the EU MS which have the lowest exposure to trade competition (Figure 5.8.2). From 2001 to 2012, the values assumed by the Trade to Competition Ratio index ranged, between 0.63 (in 2002) and 0.72 (in 2009). Trade competition is mostly driven by imports, as for most other EU MS.



**Figure 5.8.2 - Trend of the exposure to trade competition index for France**

### Imports

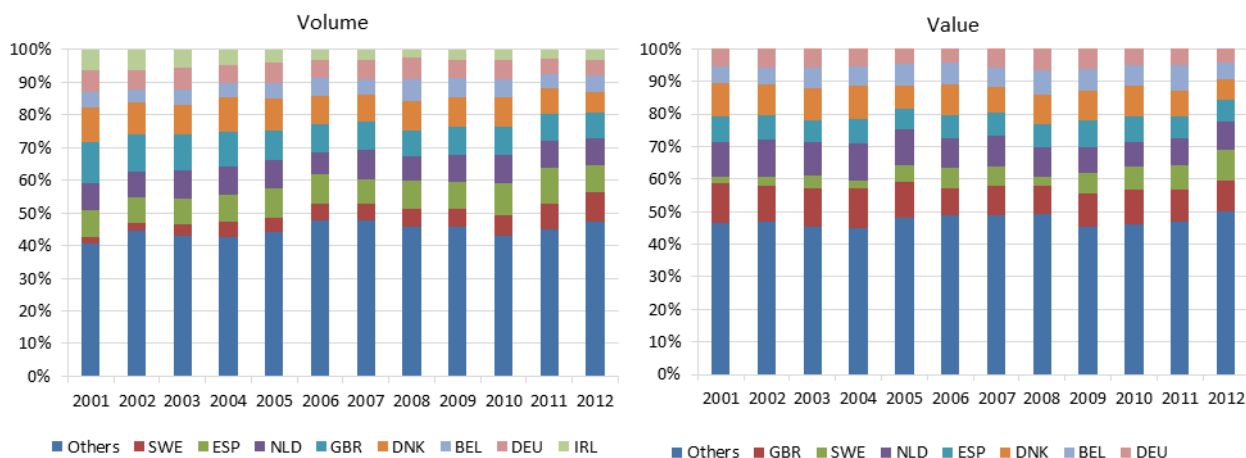
In 2012, French seafood imports amounted to around 1 M tonnes of fish, valued at 4.2 B Euro. Seafood import volume remained rather stable over time and, in 2012, was 8% higher than in 2001. On the other hand, its value increased almost continuously (34% over the entire period, at an annual rate of 3%).

Figure 5.8.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 55% of the total volume of seafood imported by France and 53% of its value.

French seafood imports patterns are rather complex. As mentioned, the majority of seafood is imported from inside the EU and the share of extra-community trade remained rather stable during the reference period. In 2012, French most relevant seafood suppliers in volume were Sweden (accounting for 9% of the import volume), Spain (8%), the Netherlands (8%), the United Kingdom (8%) and Denmark (6%). In value, the most relevant were the United Kingdom (9%), Sweden (9%), the Netherlands (9%), Spain (7%) and Denmark (6%).

Trade patterns changed significantly from 2001 to 2012. Seafood trade with Sweden became more and more intense over time, which made this country the second most relevant seafood supplier in 2012. Seafood Imports from Sweden increased by five times in volume and six times in value over the period.

Imports from Spain, Belgium and the Netherlands also increased in volume and value; imports from the United Kingdom grew only in value and from Denmark declined.

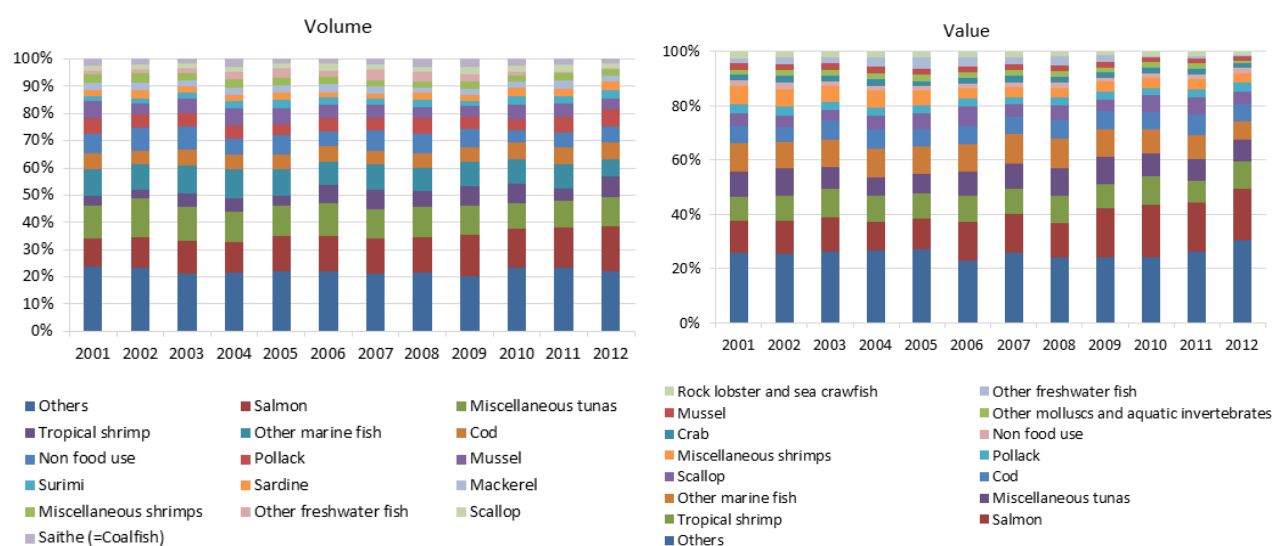


**Figure 5.8.3 - French seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.8.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 78% of the total volume of seafood imported by France and 74% of its value.

In 2012, the majority of French seafood import volume was made up of salmon (16%), miscellaneous tuna (11%), tropical shrimps (7%), other marine fish (6%) and cod (6%). Salmon contributed the most also in terms of value (19% of the total), followed by tropical shrimps (10%), miscellaneous tuna (8%), other marine fish (7%) and cod (6%).

Among the most imported species, imports of salmon increased the most from 2001 to 2012 (73% in volume and 113% in value). Imports of tropical shrimps also increased in volume (+125%) and value (+56%). Imports of miscellaneous fish decreased 4% in volume and rose 14% in value.



**Figure 5.8.4 - French seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.8.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for France, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows

includes the “top 10” in volume and value for each year of the period 2001-2012. As French fish imports patterns are very complex, the two lists cover only 36% and 34% of the overall trade (in average over the reference period), respectively in volume and value.

French imports of fresh fish consist mainly of salmon from Sweden (346 M Euro in 2012), the United Kingdom (104 M Euro) and Denmark (71 M Euro). The sharp increase of seafood imports from Sweden occurred over the period can be entirely attributed to the increased trade of salmon. This trade flow was the main responsible also for the overall growth of French seafood import volume and value occurred from 2001 to 2012. It should be noted that part of the increase of imports of fresh salmon from Sweden, which were only worth 42 M Euro in 2008 and reached 346 M Euro in 2012, may have been linked to the lack of compliance to sanitary bans by some importers (STECF, 2014c). Some other examples of trade flows which contributed significantly to the increase of trade values are the imports of tropical shrimps from Ecuador and India, salmon from Poland, cod from the Netherlands and tuna from the Seychelles.

Some trade flows which declined sharply in volume over the reference period are the imports of mussel from Ireland and Spain, tuna from the Ivory Coast and Italy, mackerel from the United Kingdom, salmon from Denmark and miscellaneous shrimps from the Netherlands.

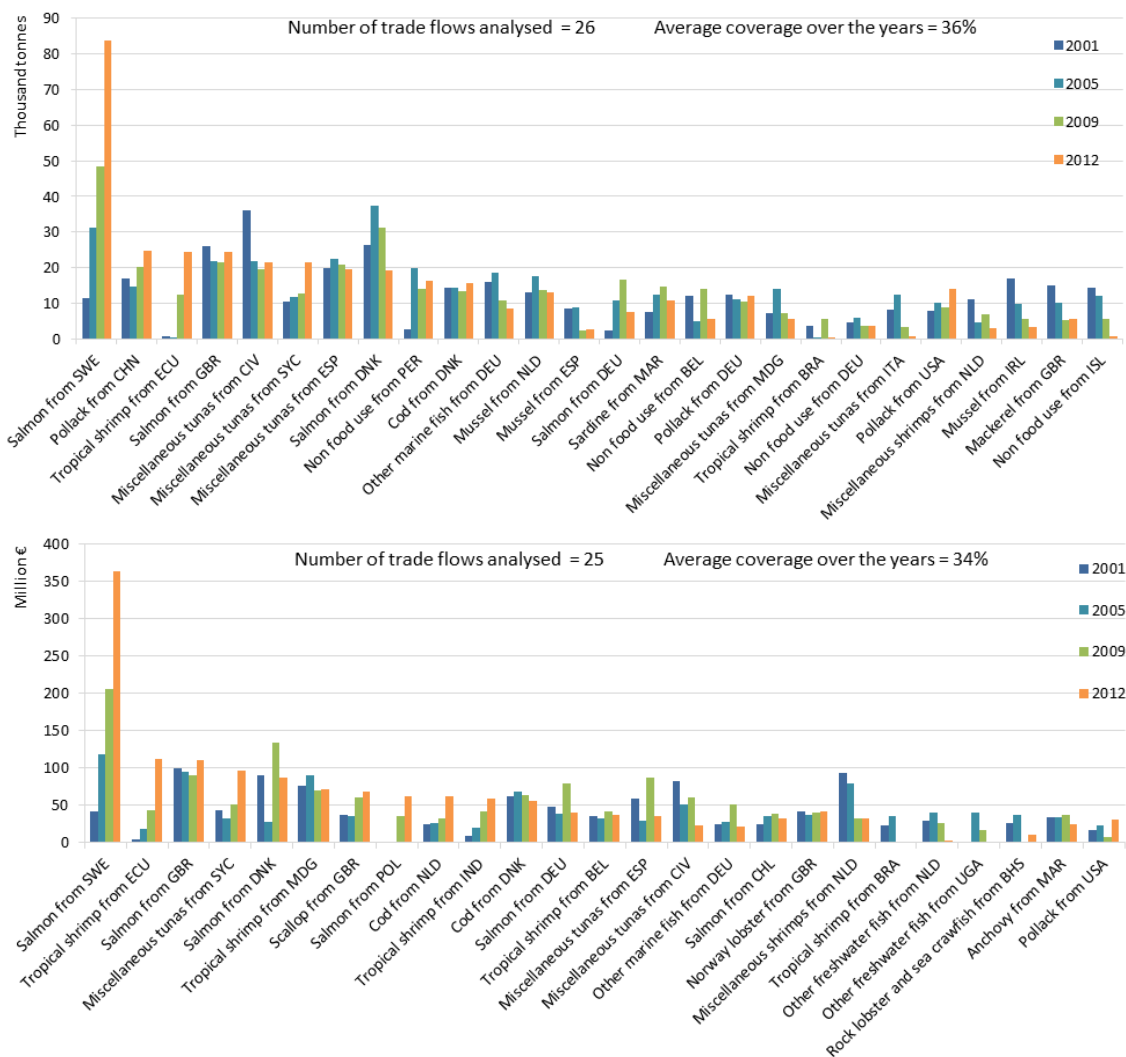
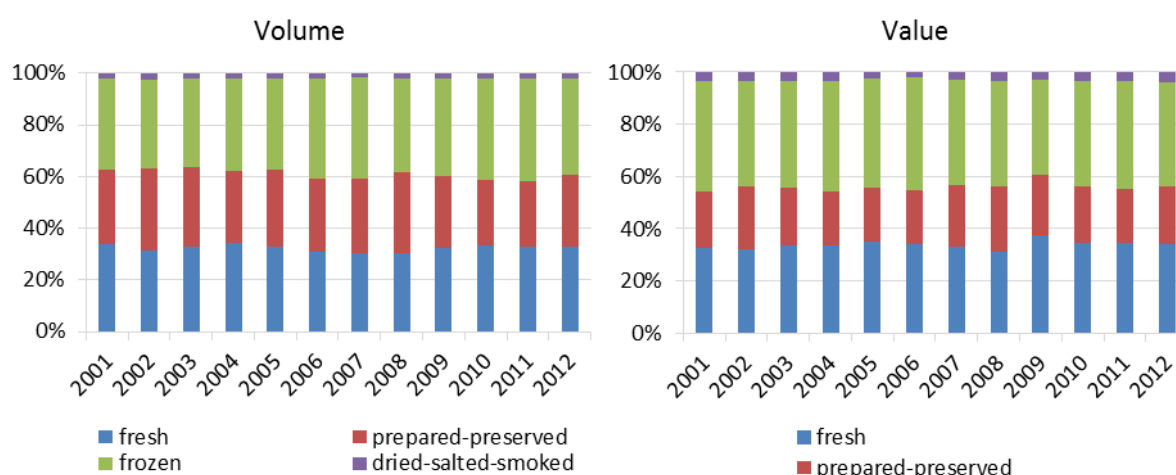


Figure 5.8.5: French seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

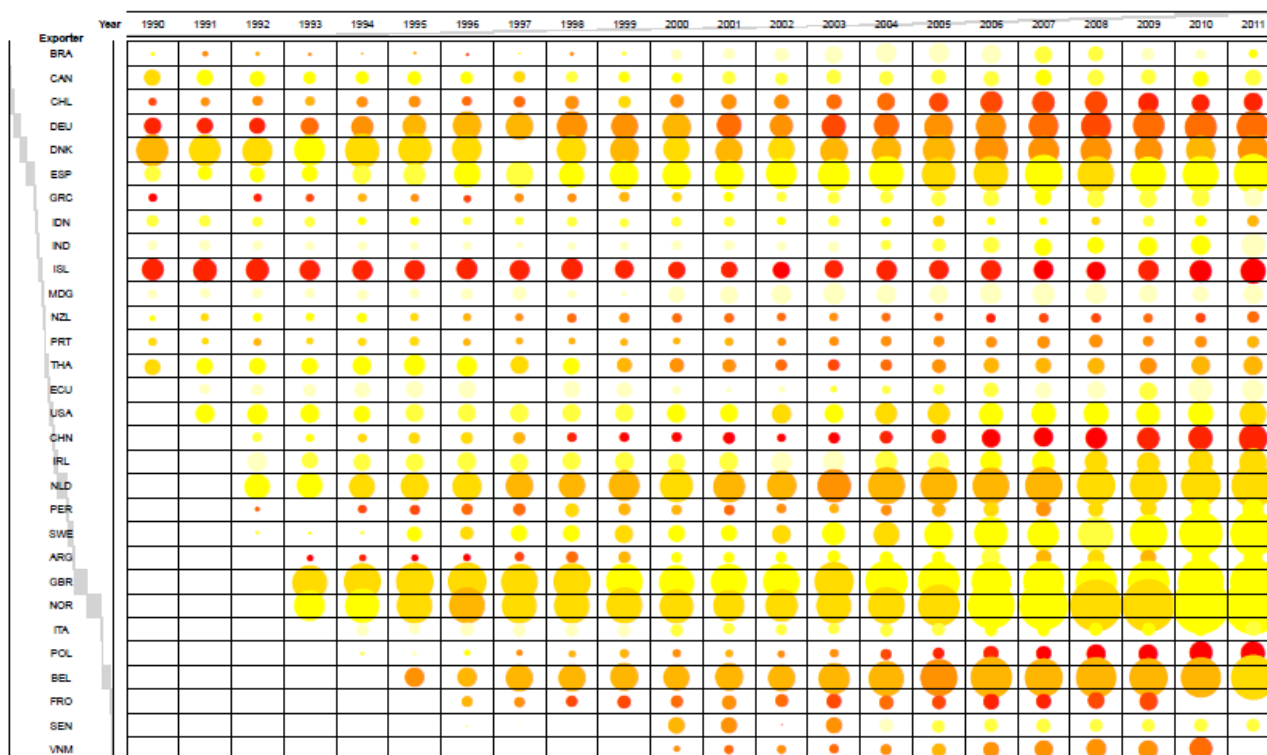
Figure 5.8.6 shows the trends in the composition of imports by processing and preservation status. The majority of seafood imports are made up of frozen seafood (37% of the total volume and 40% of its value, in 2012). In terms of value, these imports are mostly represented by shrimps from Ecuador, Madagascar and India, cod from the Netherlands and China, scallop from Peru, salmon from Chile and pollack from China. Fresh and prepared/preserved products contributed 33% and 28% of the total volume, respectively. As expected, fresh seafood had a more relevant share than prepared/preserved seafood in terms of value (34% vs. 22% in 2012). Imports of fresh seafood are mostly made up of salmon, mostly from Sweden, and scallop from the United Kingdom, while imports of prepared or preserved seafood products include mainly canned tuna from the Seychelles, Ghana, Ecuador, Spain and the Ivory Coast, shrimps from Thailand and the Netherlands and sardine from Morocco and Portugal. Imports increased for all different types of products and their relative contribution to the total remained rather stable over the reference period.



**Figure 5.8.6 - French seafood imports trends by type of products: share in volume (left) and value (right)**

Figure 5.8.7 shows the contribution of processed products to total imports by country of origin. The majority of the products imported from the United Kingdom and Sweden, mostly made up of salmon, as well as from Spain and Norway, are not processed. Furthermore the share of processed products over the total imports from these countries remained rather stable over the years.

The contribution of processed products to the value of total imports from Germany, Denmark, Poland, Iceland, Chile and China is very significant. On the other hand, imports from Spain, Sweden, the United Kingdom and Norway are mostly non processed.



**Figure 5.8.7 - French seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products)**

## Exports

In 2012, France exported 288 K tonnes of fish, valued at 1 B Euro. This corresponded to a 19% decrease in volume and 23% increase in value since 2001. Most seafood exports were directed to MS (66% in volume and 75% in value), but the volume and value shares of extra-community exports were higher than in 2001 (34% and 25%, in volume and value respectively, vs. 29% and 19% in 2001).

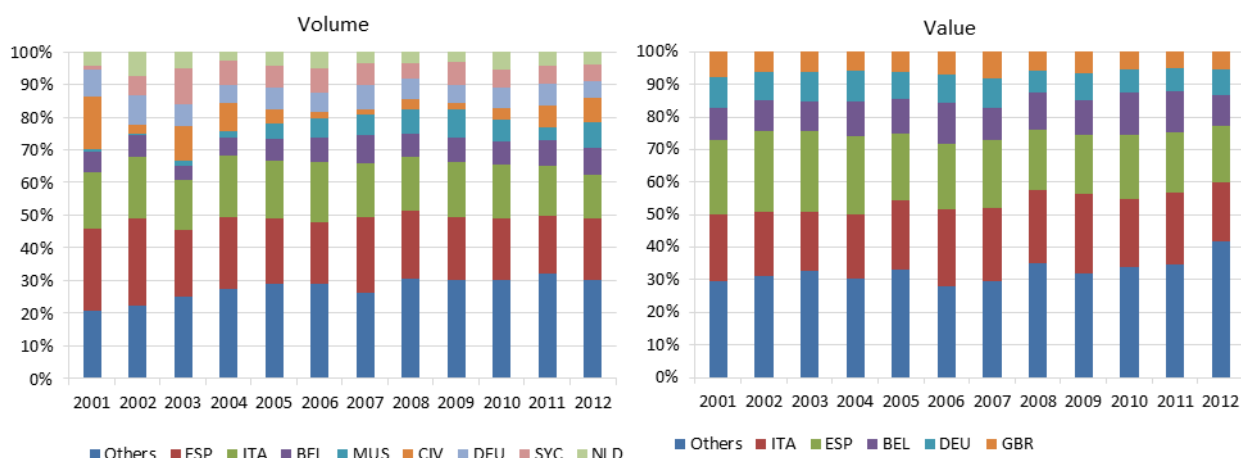
French seafood exports are spread across a large number of countries and the complexity of the trade patterns increased over the reference period. In 2001, the first five most relevant countries of destination imported around 72% of the total French exports in value and 73% in volume, while the corresponding shared in 2012 were 58% and 56%.

Figure 5.8.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 74% of the total volume of seafood exported by France and 67% of its value.

Historically, the most important partners for French seafood trade are Spain and Italy, respectively contributing 19% and 14% of the overall volume of french seafood exports in 2012, followed by Belgium (8%), the Mauritius (8%) and Ivory Coast (8%). Italy and Spain contribute the most also in terms of value (18%, each), followed by Belgium (9%), Germany (8%) and the United Kingdom (5%).

From 2001 to 2012, seafood exports to Spain and Italy decreased by 40% and 37%, respectively, in terms of volume. In value, they decreased for Spain by 5% and increased by only 8% for Italy. On the other hand, trade with several other countries increased substantially, especially outside the EU, such as the Mauritius (by 7 times in volume and 17% in value) and Vietnam (by 37% in volume and 898 times in value). As a consequence, the relative shares of Spanish and Italian seafood exports over the total decreased

significantly from 2001 to 2012 (for Spain, from 25% to 19% and from 23% to 18%, in volume and value respectively; for Italy, from 18% to 14% and from 21% to 18%).



**Figure 5.8.8 - French seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.8.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 80% of the total volume of seafood exported by France and almost 71% of its value.

Yellowfin tuna and skipjack tuna are the most exported commercial species for France (contributing 16% and 14% of the total export volume, respectively, in 2012) but their trade volumes decreased severely over time, both in absolute (by 26% and 23%, respectively, from 2001 to 2012) and relative terms (in 2001, these two species respectively accounted for 18% and 15% of the total French seafood export volume). Exports of fish for non-human consumption, other marine fish and miscellaneous tuna were also relevant: in 2012, they contributed 9%, 9% and 2% of the total, respectively.

The value of exports is spread across several commercial products. In 2012, other marine fish contributed the most (10%), followed by salmon (9%), Yellowfin tuna (8%), cuttlefish (5%) and Skipjack tuna (4%). Although the export volumes of Yellowfin tuna and Skipjack tuna declined sharply over the reference period, their traded value increased 38% and 32%, respectively.

Exports of other marine fish decreased by 7% in volume and 10% in value; exports of salmon and cuttlefish increased substantially (for salmon, by 73% and 116%, respectively in volume and value; for cuttlefish by 30% and 66%, respectively).

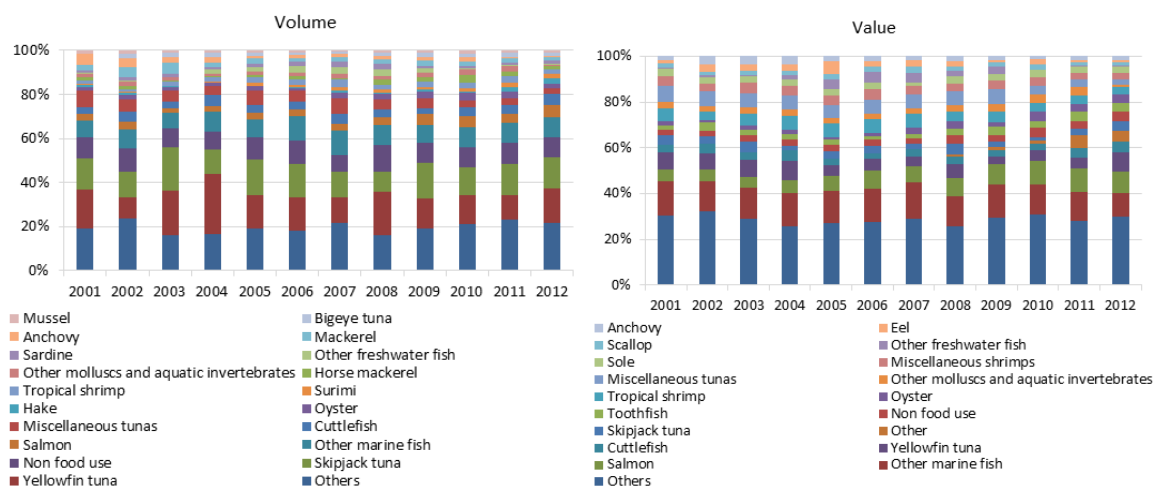
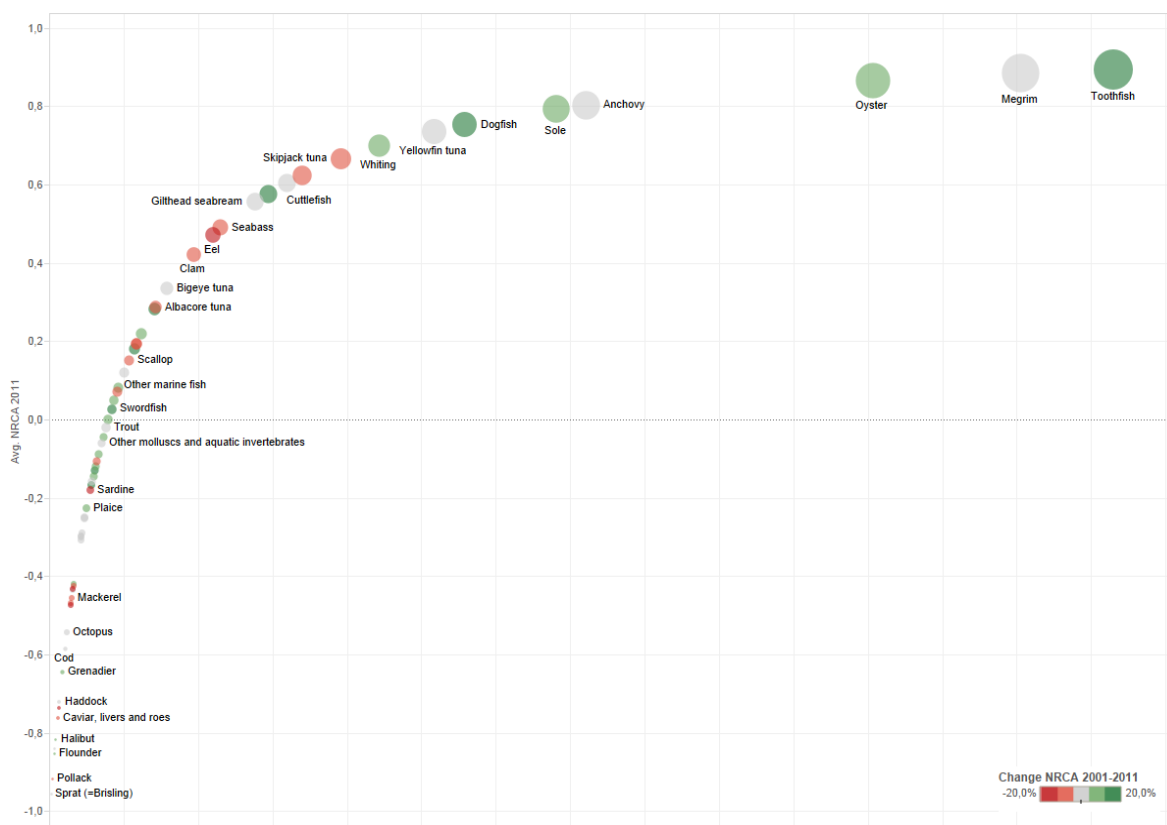


Figure 5.8.9 - French seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

France has a comparative advantage in the trade of several commercial species (Figure 5.8.10). As evidenced by trade flows, the highest comparative advantage on the international market corresponds to toothfish (NRCA of 0.90). Trade of French Toothfish is one of the cases for which the EU MS recorded the highest value of the index among all world countries in 2011. The NRCA index for this species increased significantly from 2001. Exports of toothfish are destined to USA and the Asiatic countries in particular Vietnam, Taiwan, Thailand and Japan. The exports to Vietnam increased in 2011 and 2012 reaching a 50% share of the total value of toothfish exports. Toothfish is caught among others by fisheries operating in the French EEZ of the Kerguelen Islands in the southern Indian Ocean (Division 58.5.1). Other species for which France had a high comparative advantage in 2011 were megrim (0.89) and oyster (0.87). For both of them, the NRCA remained more stable between 2001 and 2011.





**Figure 5.8.10 - Normalized Revealed Comparative Advantage index (NRCA) for Germany, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**



**Figure 5.8.11 - French seafood exports margins: 2001-2012**

The largest part of the exports expansion occurred in 2005, 2007 and 2011 (Figure 5.8.11). On the other hand, French trade contracted significantly in 2008 and 2009. The largest part of the exports changes occurred at the intensive margin (i.e. exports of the same products to the same set of destination countries), but the activation of new trade flows contributed largely to the exports increase in 2010 and 2011. Changes at the intensive margin in 2010 and 2011 were mostly related to the activation on new trade flows of toothfish to Vietnam. The negative values for the intensive margin in 2008 and 2009 were related a general contraction in exports rather than to problems for specific combinations of products and destinations. The failures recorded in 2003, 2004 and 2005 were related to the disappearance of trade flows of yellowfin tuna to Iran and Venezuela which in any case represented a limited 3% each of exports of this species from France.

Figure 5.8.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for France, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 50% and 35% of the overall trade, respectively in volume and value.

Trade flows which showed a decrease in volume over the reference period were exports of tuna to the Ivory Coast, Madagascar, Germany and Italy. On the other hand several relevant trade flows increased sharply in volume, for example the exports of tuna to the Mauritius and the Seychelles and of other marine fish to the United Kingdom.

The overall increase in the export value (23%) was driven by several trade flows. Some examples are the trade of tuna to the Mauritius and Spain, cuttlefish and hake to Spain and salmon to Belgium and Italy.

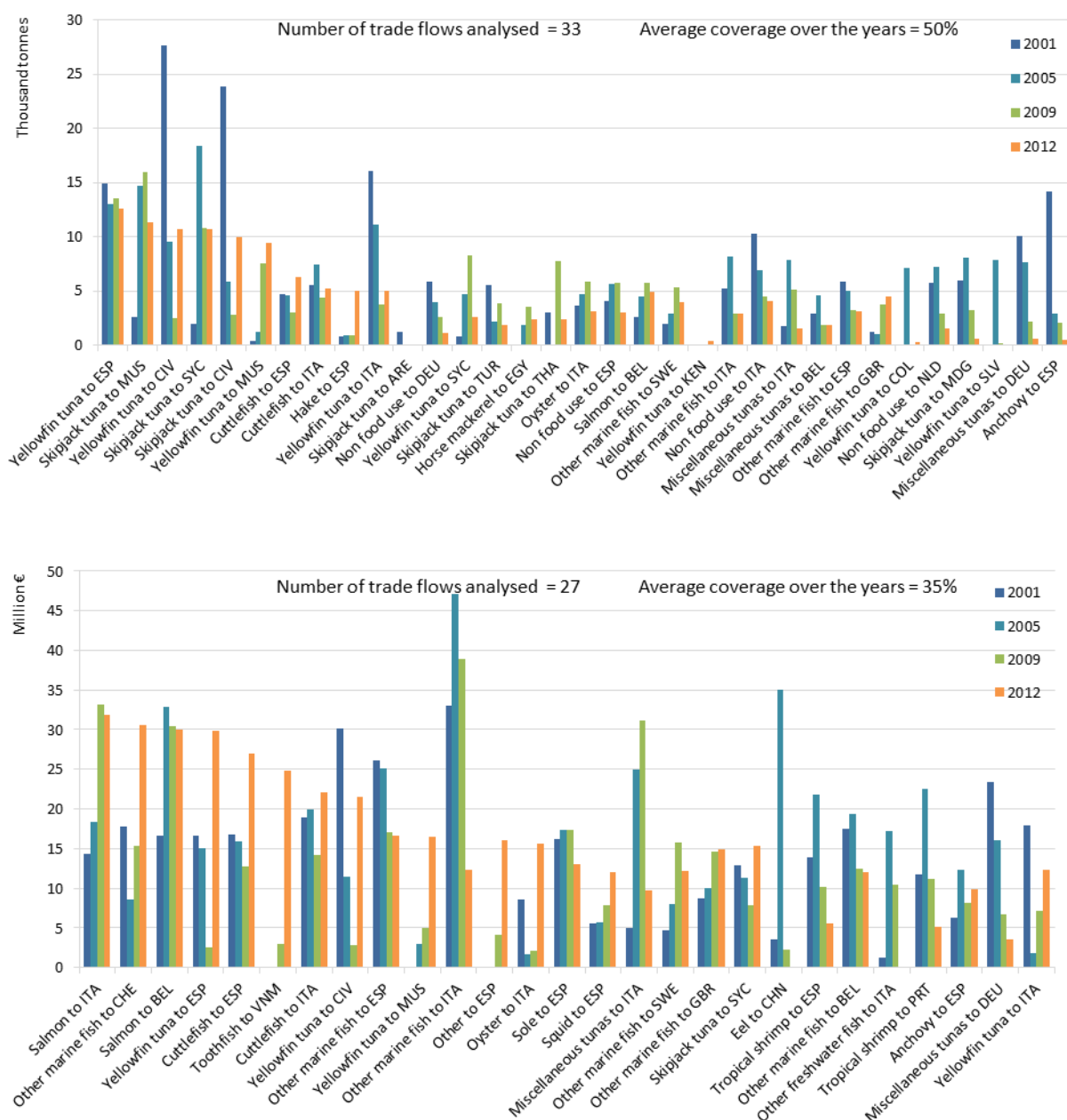


Figure 5.8.12 - French seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, around 45% of French seafood export volume was made up of frozen seafood. Fresh and prepared/preserved products contributed 30% and 22% of the total, respectively. In terms of value, fresh products had the highest contribution (41% of the total), with oyster, cuttlefish and sole being the most relevant commercial species and Spain and Italy the main countries of destination. Fresh seafood is followed by frozen seafood (33%) and prepared/preserved products (20%). Frozen seafood exports are mostly made up of yellowfin and skipjack tuna sold to several countries, especially Spain, the Ivory Coast, the Mauritius, Italy and the Seychelles, while exports of prepared or preserved products consist mainly of non food use products imported by Denmark and canned tuna imported by the United Kingdom, Germany and Italy.

Export volumes declined for all the categories of products and their relative contribution to total exports remained rather stable. In terms of value, trade of all of them increased but the corresponding shares did not change significantly over time (Figure 5.8.13).

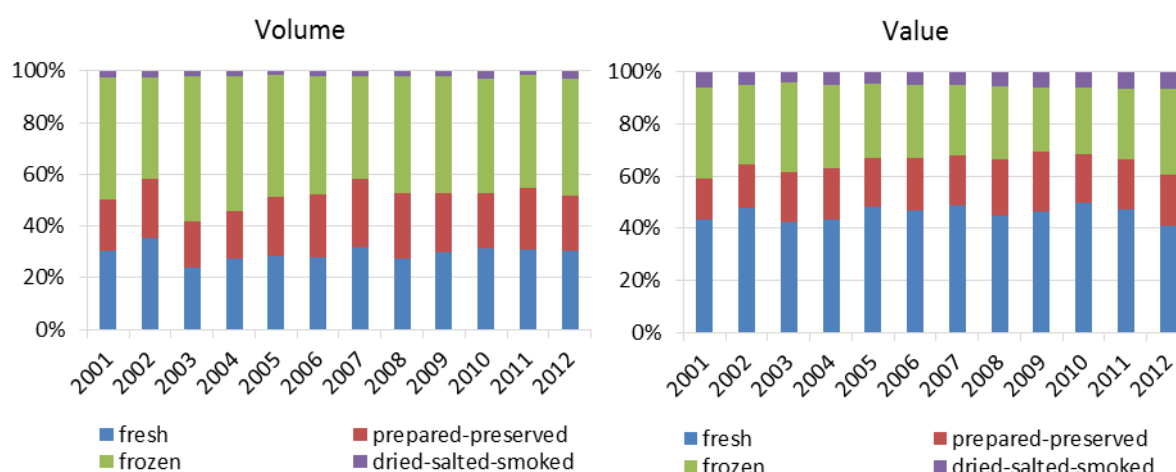


Figure 5.8.13 - German seafood exports trends by type of products: share in volume (left) and value (right)

Figure 5.8.14 shows the contribution of processed products to total exports according to the country of destination. For the two most relevant of them, Italy and Spain, it is rather limited, while processed products are prevalent in the exports to Germany Belgium, Austria and Denmark. Processed products to these four destinations are mostly represented cut salmon.

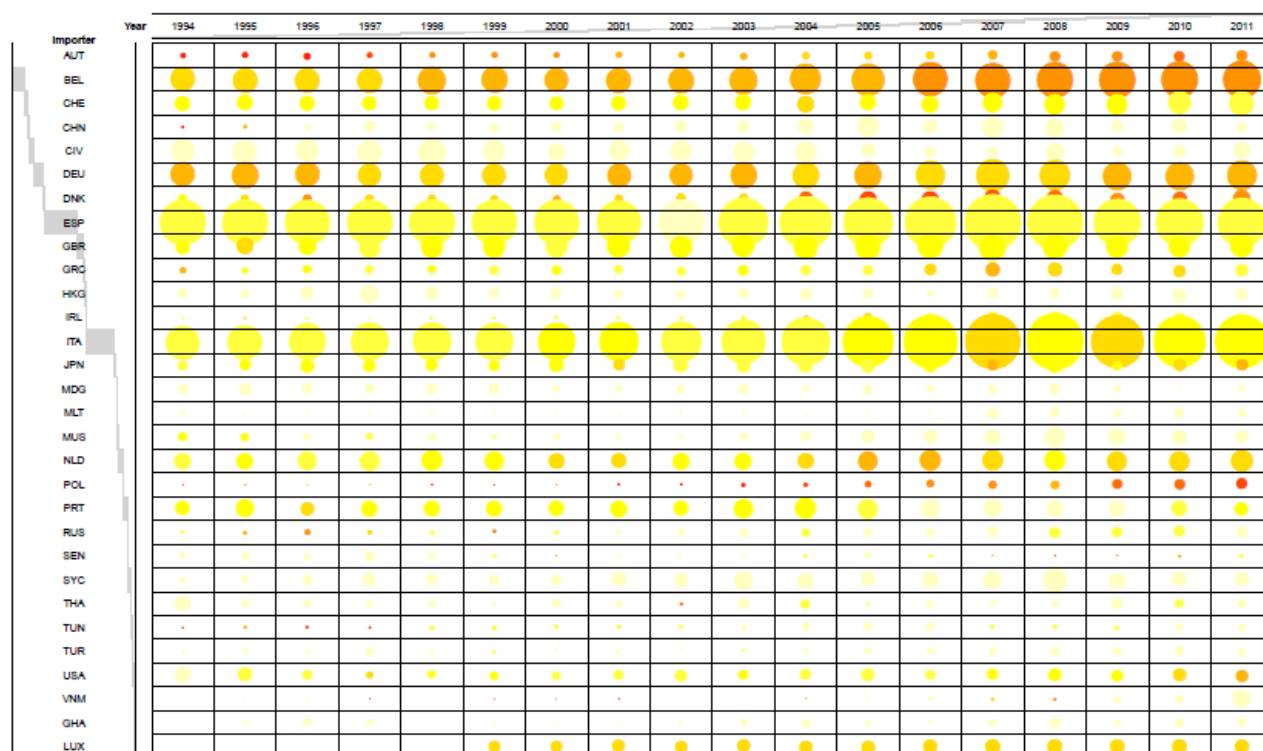


Figure 5.8.14 - French seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.9 Germany

### Production

German fleet mainly operates on high seas (mainly North Atlantic), targeting mostly herring, mackerel, blue whiting, redfish, saithe and cod, in the North Sea (several species are targeted including crangon shrimp, mussels, saithe and flat fish), and the Baltic Sea (herring, cod, flounder, sprat). Total capture production in 2011 was 234 K tonnes (around 5% of the total EU fish production), 25% higher than at the beginning of the decade, but lower than during the period 2004-2010. Total fishery production is spread across several commercial species. In 2011, mackerel constituted the largest part of the total catches (26%), followed by herring (16%), shrimps (7%) and cod (7%) (STECF, 2014a).

In Germany the aquaculture sector is less relevant than fisheries. According to the most recent data (coming from the 2012 aquaculture survey conducted by the Federal Statistical Office), aquaculture production was around 39 K tonnes of fish in 2011 and contributed less than 5% of the EU farmed output. From 2001 to 2011, the overall volume of production reduced by more than 40%, but the output by species fluctuated significantly. In 2011, blue mussel, cultivated in the German North Sea Coast, contributed more than 50% to the total output. The other two most relevant species were trout (24% of total volume in 2011) and carp (13%), while all the others were farmed in small amounts (STECF, 2014b).

The German fish processing sector mostly relies on imports of raw material and its largest suppliers are Poland, China, Norway, the Netherlands and Denmark. Frozen fish is processed into various value added products. In 2011 the main products were fish fingers and breaded fish (STECF, 2014c).

### Trade balance and exposure to trade competition

German seafood domestic production contributes only a small part of the internal demand for fish and fishery products. Indeed, Germany has a negative seafood trade balance, which was equal, in 2012, to 391 K tonnes of seafood, valued at 2 B Euro.

From 2001 to 2012, whilst seafood trade balance in volume improved from -433 to -391 K tonnes, the deficit in value increased by 44% (from 1.4 to 2 B Euro) (Figure 5.9.1). This increase in value is also reflected in the trend of the exposure to trade competition, which also rose over time (from 1.3 in 2001 to 1.8 in 2011).

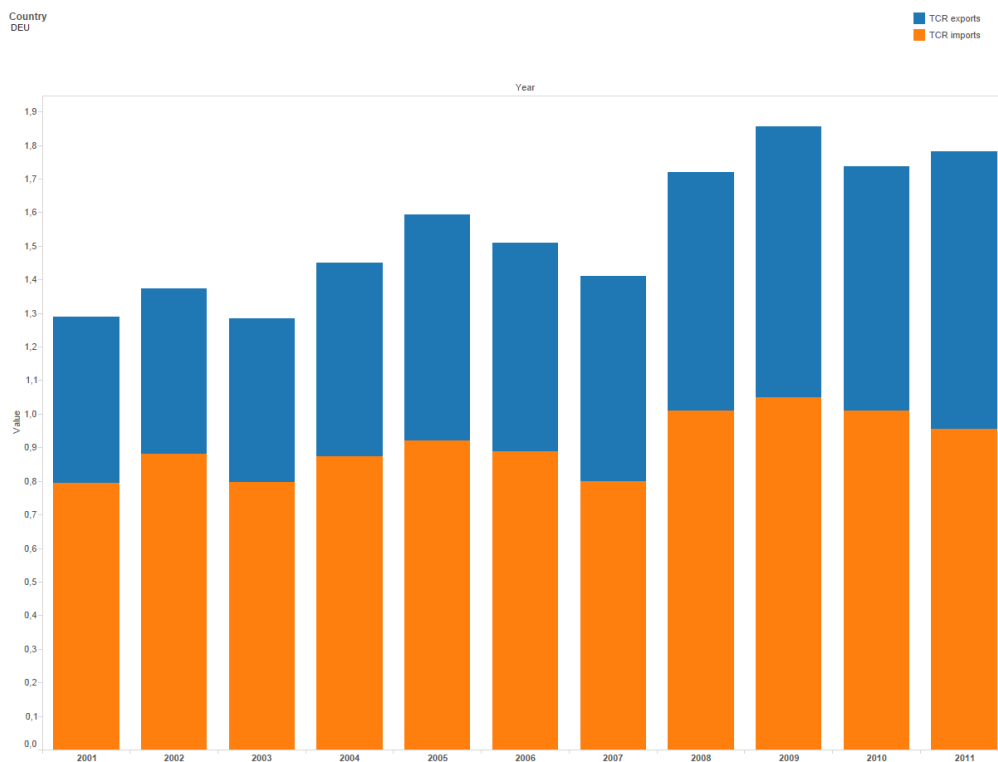
Around half of the German seafood imports (in volume and value) originate from outside the EU, while its exports are mostly directed to EU members (87% in value and 84% in volume, in 2012). However, while the contribution of extra-community imports remained rather stable over the reference period, both in volume and value, the share of extra-community exports increased almost continuously (in 2001, it was 5% in value and 4% in volume).



**Figure 5.9.1- German seafood trade balance trends: value (left) and volume (right)**

The exposure to trade competition is determined mostly by imports (in 2011, TCR<sub>e</sub> 0.82, TCR<sub>i</sub> 0.95); however the contribution of exports increased significantly over time (Figure 5.9.2).

Despite the growth in the exposure to competition, especially for exports (from 0.49 to 0.82 from 2001 to 2011), Germany remains one of the MS for which have not very pronounced values.



**Figure 5.9.2 - Trend of the exposure to trade competition index for Germany**

### Imports

Germany imported around 1.1 M tonnes of seafood in 2012 (valued at 3.9 B Euro). The value of seafood imports increased almost continuously over the reference period (overall, by 62%), at an average annual growth rate of 5%. Import volume also increased from 2001 to 2012 (15%), at an annual growth rate of 2%, but the trend was rather fluctuating. In 2012, intra- and extra-community seafood imports contributed almost evenly to the total in terms of value but extra-community imports contributed slightly more than intra-community imports in terms of volume. These shares remained rather stable over time.

Figure 5.9.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 71% of the total volume of seafood imported by Germany and 59% of its value.

In 2012, the five main countries of origin in terms of volume were Denmark (accounting for 15% of the total German seafood imports in volume), Peru (13%), China (11%), the Netherlands (10%) and Norway (7%). In value, the five most relevant were Poland (15%), Denmark (11%), the Netherlands (11%), China (10%) and Norway (7%).

Denmark has been the main seafood supplier for Germany during the entire reference period; however, it has lost relevance, especially in value, due to the sharp increase in the imports from other countries, such as China and Poland (imports from China increased by 71% in volume and two folded in value; from Poland, they rose 143% in volume and 164% in value).

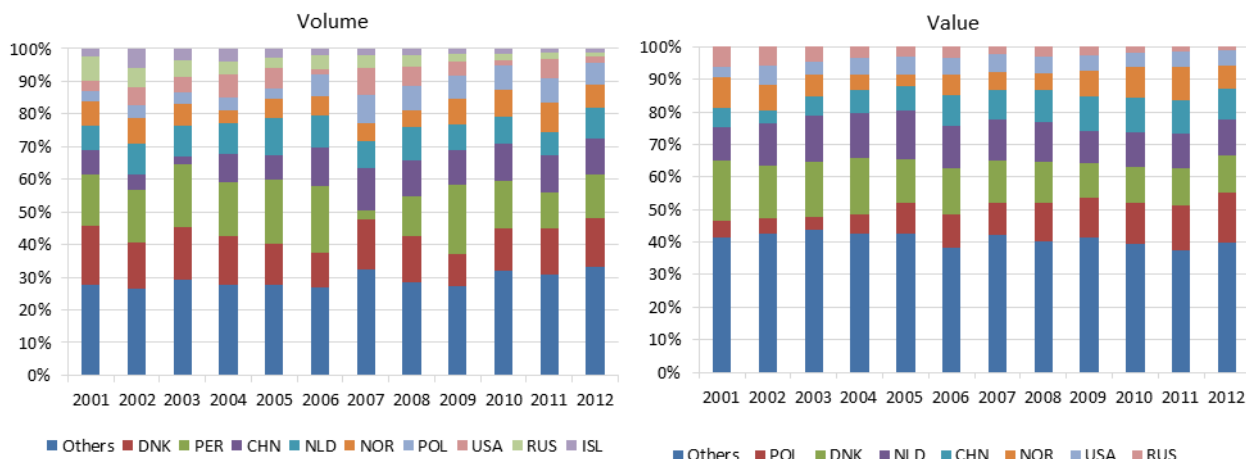


Figure 5.9.3 - German seafood imports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.9.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 92% of the total volume of seafood imported by Germany and almost 81% of its value.

In 2012, seafood import volume was mostly made up of fish for non-human consumption (20% of the total), herring (12%), salmon (11%), pollack (11%) and tuna (6%). In terms of value, salmon contributed the most (21%), followed by pollack (10%), herring (7%), tuna (7%) and fish for non-human consumption (7%).

Import volume of most relevant species fluctuated over the years. The highest increase was observed for imports of salmon and fish for non food uses (41% and 24%, respectively). Import value increased for all the relevant species, but imports of non food uses and salmon showed the highest increase also in value (126% and 133%, respectively).

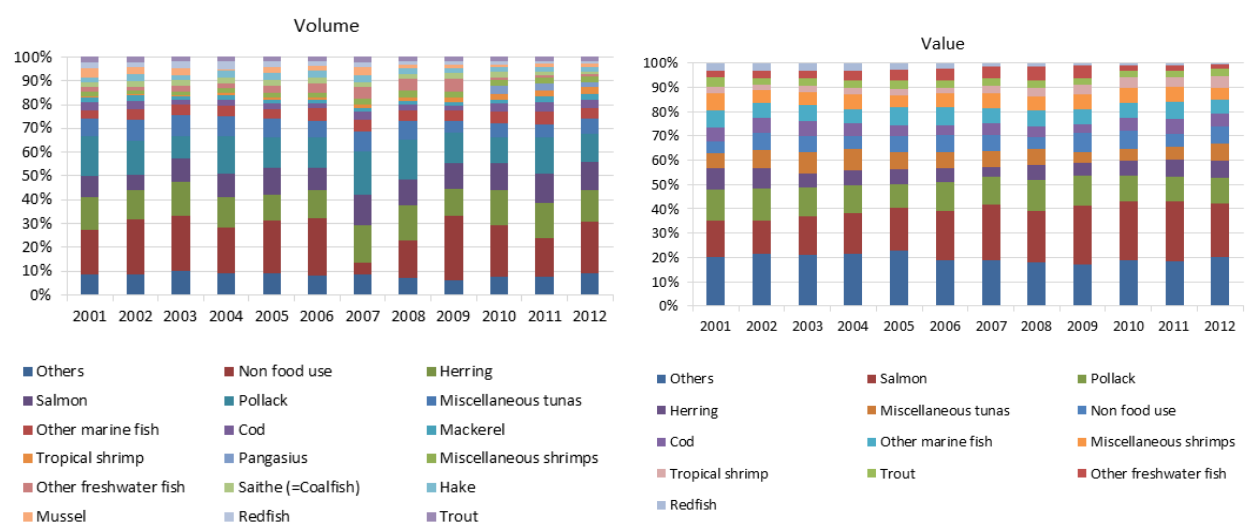


Figure 5.9.4 - German seafood imports trends by most relevant commercial species: share in volume (left) and value (right)

Figure 5.9.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Germany, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade

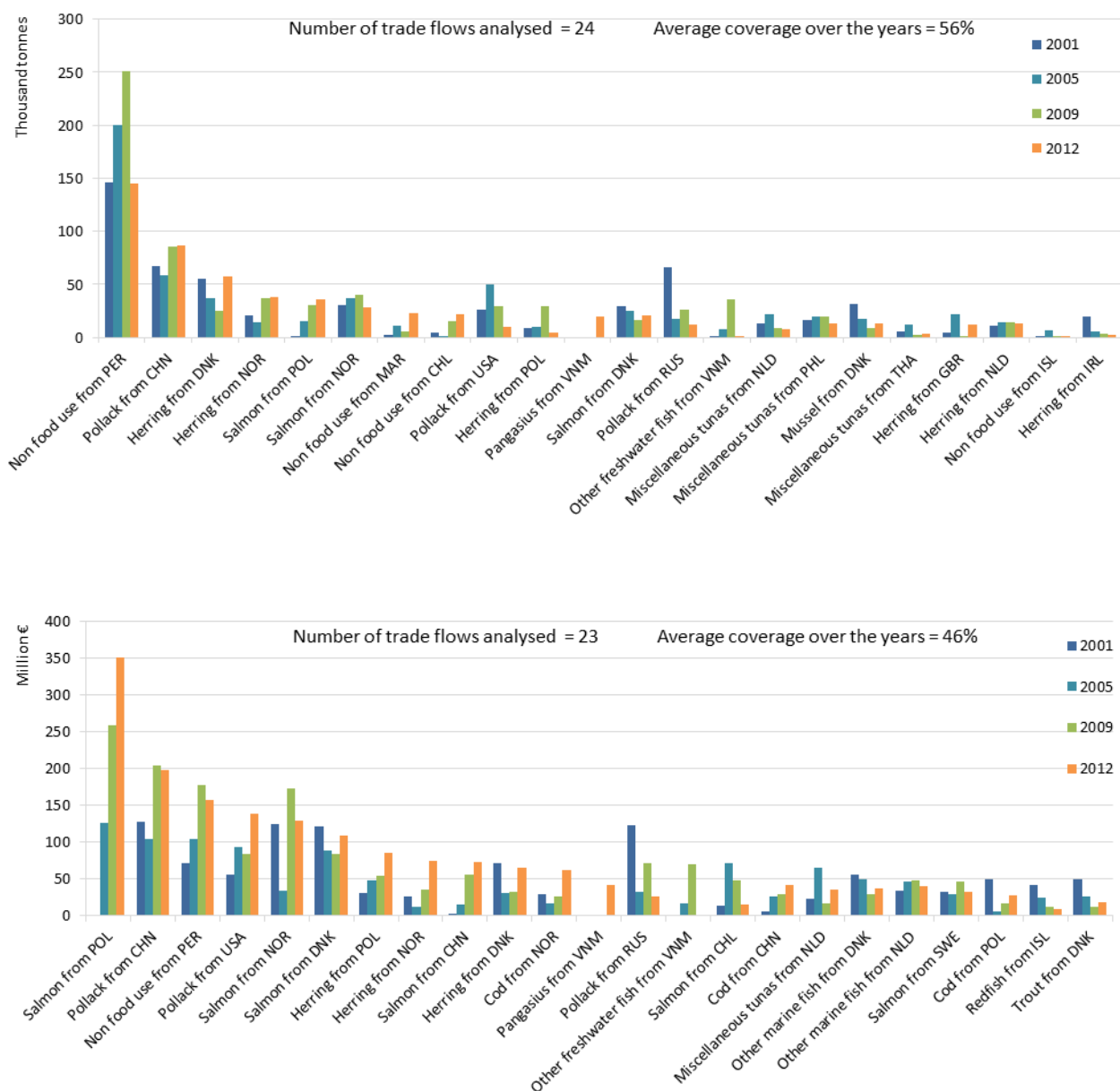
flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 56% and 46% of the overall trade, respectively in volume and value.

As mentioned, trade patterns changed significantly from 2001 to 2012. Seafood imports from Poland increased sharply, mostly as a result of an increased trade of salmon. Other trade flows which increased significantly in volume, were the imports of fish for non-human consumption from Chile, herring from Norway and pangasius from Vietnam (Figure 5.9.5).

Some of the trade flows which contributed significantly to the overall increase in seafood import value occurred over time are the imports of pollack, cod and salmon from China, salmon and herring from Poland and pollack from USA.

The volume of seafood imported from Peru, made up almost only of fish for non-human consumption, fluctuated over the period, while its value doubled.

Import volume from Russia, which was the third most relevant seafood supplier (in volume) in 2001, declined by 81%, mostly because of the contraction in the trade of pollack.

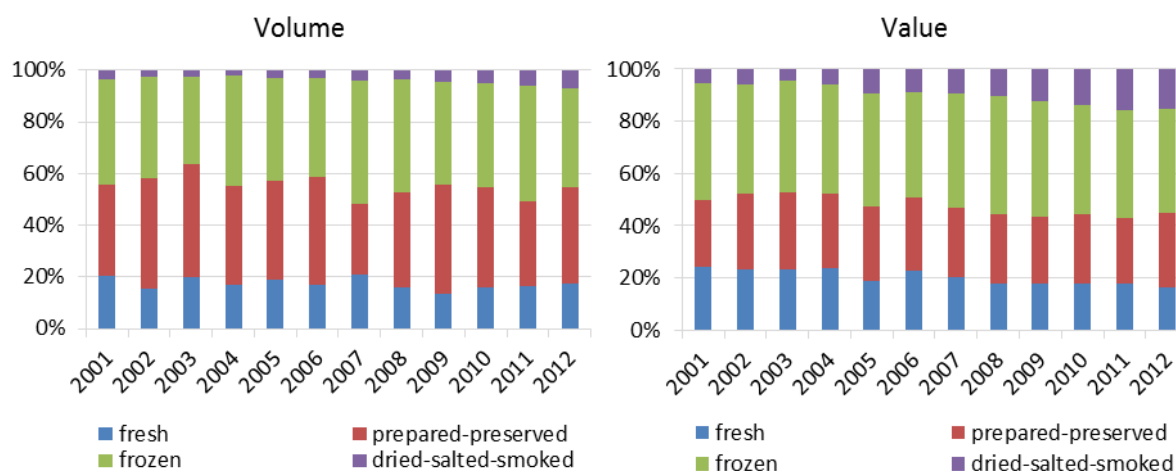




**Figure 5.9.5 - German seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

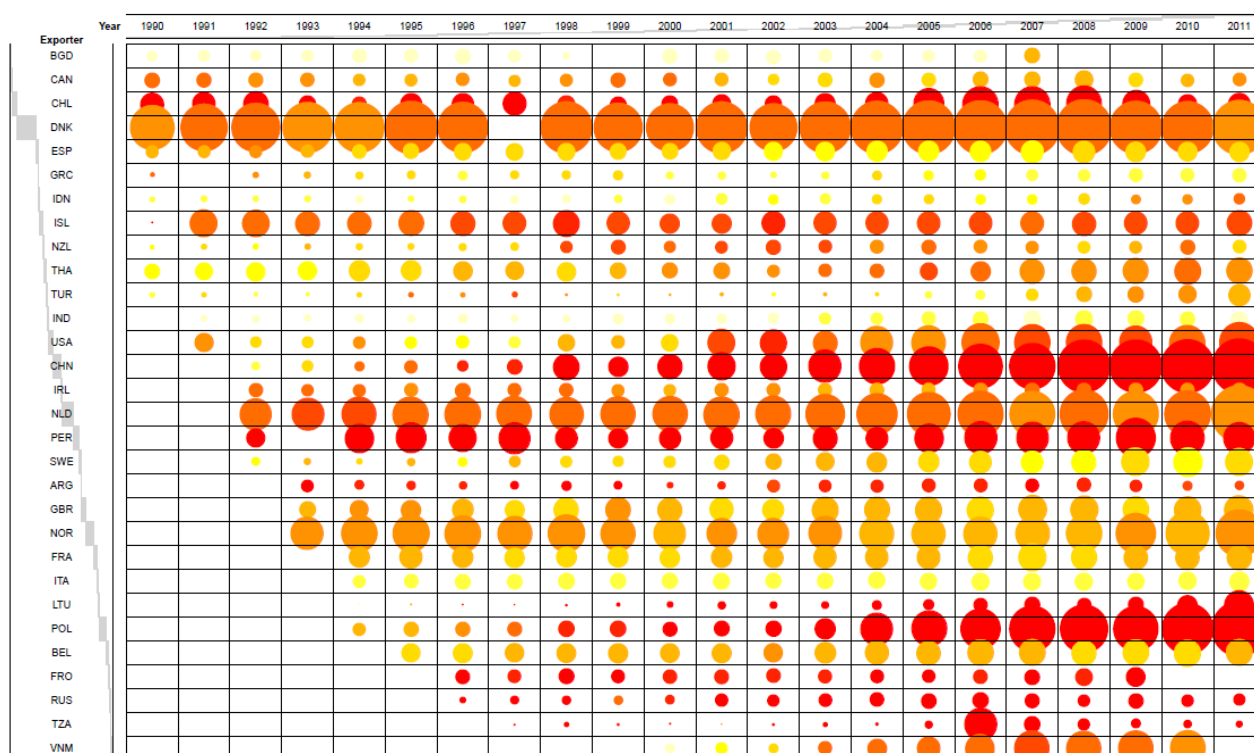
Figure 5.9.6 shows the trends in the composition of imports by processing and preservation status. The largest share of seafood imports is made up of frozen and prepared and preserved products (respectively contributing 39% and 37% of the total volume in 2012, corresponding to 40% and 28% of the total value); fresh seafood is also highly relevant, contributing, in 2012, 18% and 16% of the total seafood imports, in volume and value respectively.

The volume shares of the different types of product have been rather stable over the period. In value, the contribution of fresh fish decreased clearly, while the one of dried/salted/smoked products grew, due almost only to the increased imports of processed salmon (in 2012, around 70% of the value of the value of dried/salted/smoked products was made up of salmon).



**Figure 5.9.6 - German seafood imports trends by type of products: share in volume (left) and value (right)**

The share of processed products over the total imports varies depending on the country of origin (Figure 5.9.7); however, for the most relevant ones, it was higher than 60-70% in 2012, and remained quite stable over time.



**Figure 5.9.7 - German seafood imports trends by main seafood suppliers and contribution of processed products to total import value (size is proportional to the import value and the shading to the share of processed products).**

## Exports

Germany exported 746 K tonnes of fish and fishery products in 2012, corresponding to 1.9 B Euro in value. Seafood exports grew almost continuously over the reference period (by 35% and 88% over the entire period, in volume and value respectively), at an average annual growth rate of 4% in volume and 6% in value.

The largest part of German seafood exports is sold within the EU (87% in value and 84% in volume, in 2012), however the share of extra-community trade increased over the reference period (in 2001, it was 5% in value and 4% in volume).

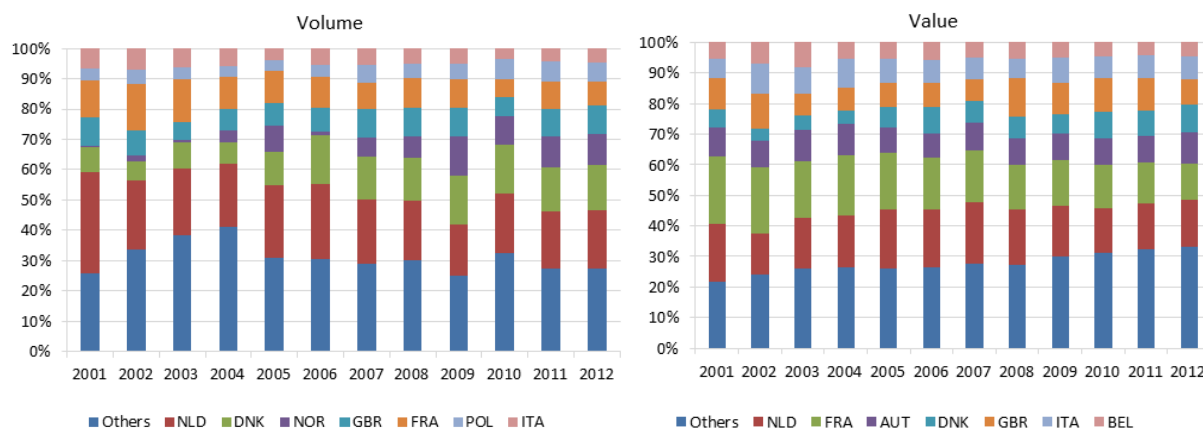
Figure 5.9.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 69% of the total volume of seafood exported by Germany and 72% of its value.

In 2012 seafood exports were spread across several countries and none of them was clearly predominant. In terms of value, the five most relevant partners were Netherlands, importing 15% of total German seafood exports, Denmark (15%), Norway (10%), the United Kingdom (9%) and France (8%). Netherlands was the most relevant partner also in terms of volume (accounting for 19% of the total volume of seafood exported from Germany), followed by Denmark (15%), Norway (10%), the United Kingdom (9%) and France (8%).

While in 2012 no trade partner was predominant over the others, at the beginning of the reference period France and Netherlands were clearly prevalent in terms of value (accounting for 22% and 19% of total German fish exports in 2001, respectively) and Netherlands also in volume (33%).

Trade patterns changed significantly from 2001 to 2012. The volume of trade with Netherlands and France fluctuated largely but did not change significantly over the entire period, while trade with several other countries increased significantly, for example Norway (by 165 times), Denmark (by two times), Poland (by two times) and Greece (by three times).

In terms of value, also trade with France and Netherlands increased (by 54% and 4%, respectively), but much less than trade with other countries, such as Italy (+125%), Denmark (by three times), Norway (by 51 times), and Poland (by three times).

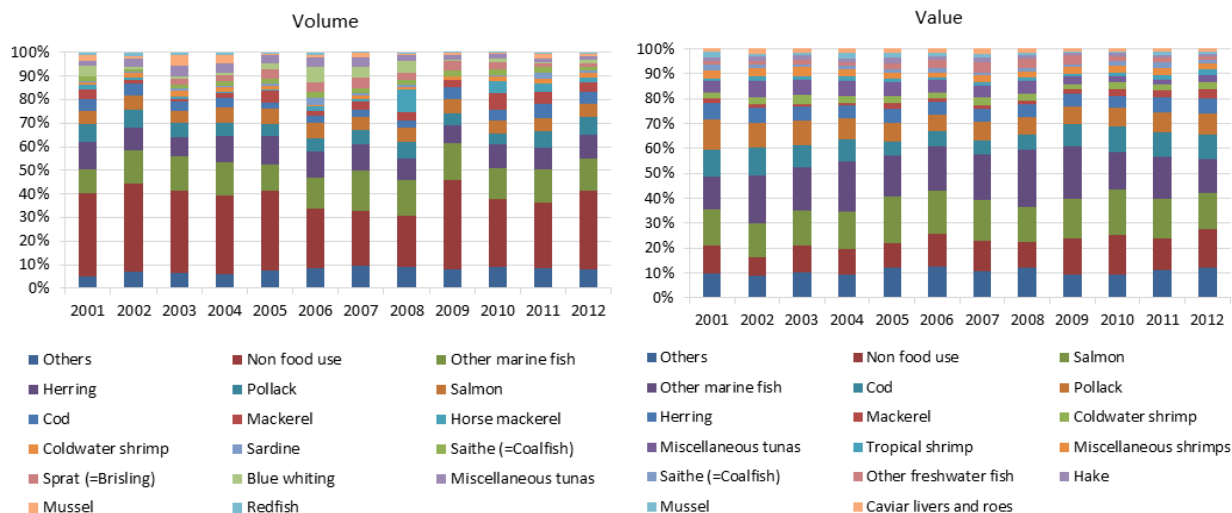


**Figure 5.9.8 - German seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.9.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 92% of the total volume of seafood exported by Germany and 89% of its value.

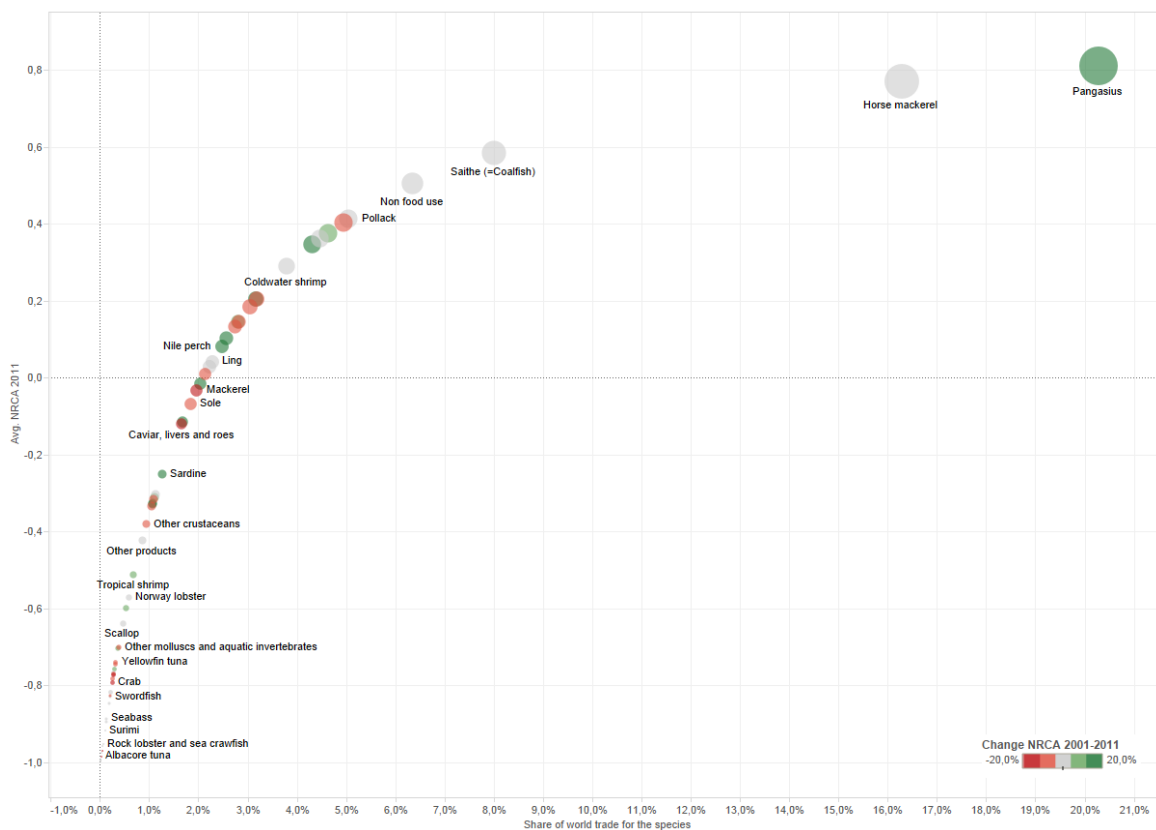
In 2012, around 30% of German seafood export volume was made up of fish for non-food uses and the other 50% mostly of other marine fish (14%), herring (10%), pollack (8%) and salmon (5%). In terms of value, fish for non-food uses contributed around 15% of the total, followed by salmon (14%), other marine fish (13%), cod (10%), and pollack (8%).

From 2001 to 2012, almost all the most relevant trade flows increased in volume, especially exports of other marine fish (+81%). In value, the highest increase corresponded to fish for non-food consumption (+147%).

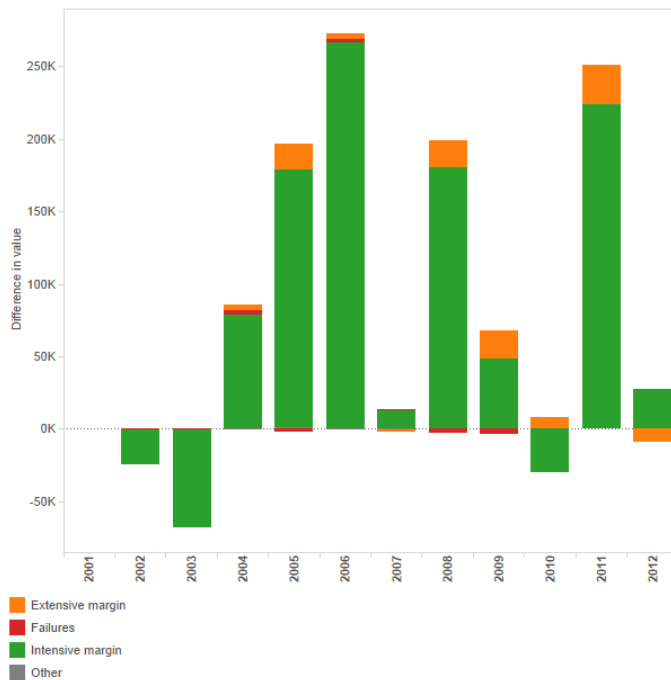


**Figure 5.9.9 - German seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, the highest comparative advantage on the international market corresponds to Pangasius (NRCA = 0.81) (Figure 5.9.10). The NRCA index for this species increased impressively from 2001. Germany has a very high comparative advantage on the international market also for horse mackerel and saithe (0.77 and 0.59, respectively), despite these two species contribute very little to the overall value of German seafood exports (less than 1% and 1.5% in average over the reference period, respectively). For both of them, the NRCA remained stable between 2001 and 2011. For all the other species, the 2011 value of the comparative advantage index (NRCA) was below 0.5.



**Figure 5.9.10 - Normalized Revealed Comparative Advantage index (NRCA) for Germany, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

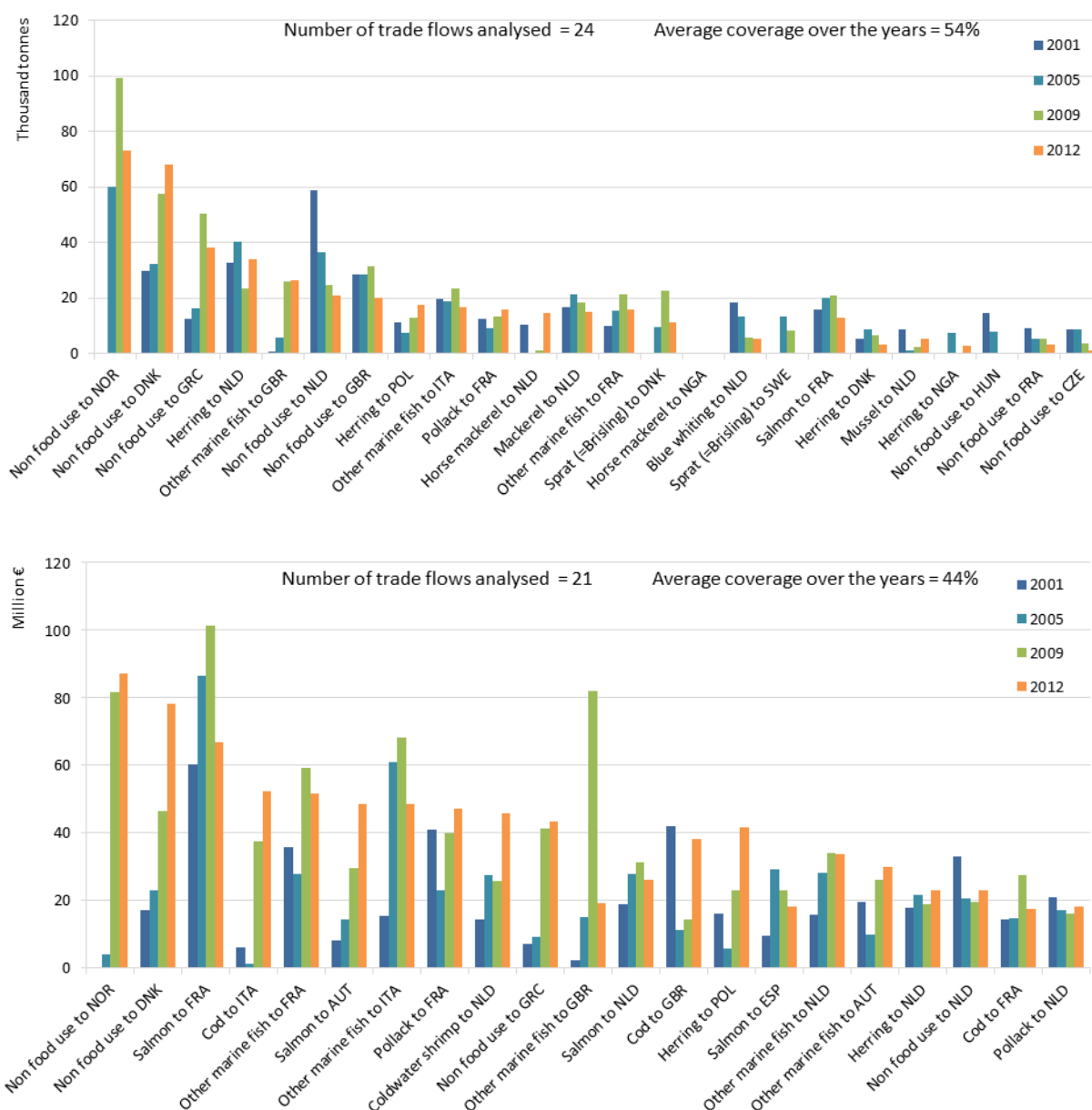


**Figure 5.9.11 - German seafood exports margins: 2001-2012**

Over the reference period, Germany expanded its trade mainly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.9.11). The increase in the exports at the extensive margin (i.e. activation of new trade flows) played a rather relevant role only since 2005. Failures accounted for a small part of the exports change over the entire period.

Figure 5.9.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Germany, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 54% and 44% of the overall trade, respectively in volume and value.

As already mentioned, from 2001 to 2012, seafood exports rose by 35% in volume. This increase was mostly driven by an increased trade in fish for non-food uses, especially to Norway, but also to Denmark and Greece (Figure 5.9.12). The growth of trade of fish for non-human consumption contributed significantly also to the increase of export value occurred over the period. However several other trade flows also contributed significantly, for example the exports of salmon to Austria and Netherlands, Switzerland and other marine fish to the Netherlands and Italy.



**Figure 5.9.12 - German seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.9.13 shows the trends in the composition of exports by processing and preservation status. In 2012, the largest amount of seafood was traded as prepared/preserved (56% of the total) and frozen (29%) products. These types of products also gave the by far largest contribution to the overall value of fish exports (respectively, 45% and 30%).

The volume shares of the different types of product fluctuated over the period, while the shares in value remained rather stable.

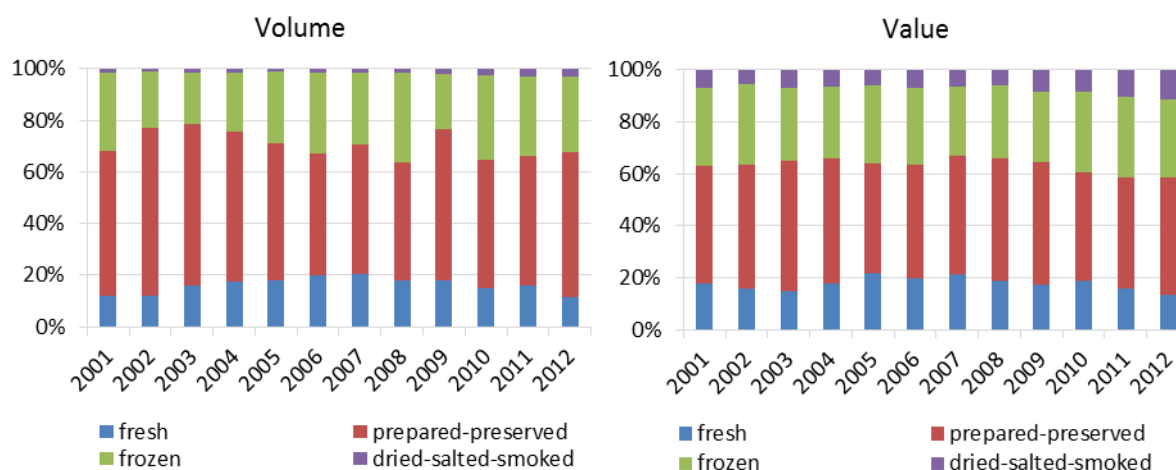


Figure 5.9.13 - German seafood exports trends by type of products: share in volume (left) and value (right)

Germany exports mostly processed products, regardless the country of destination. However exports to Spain and Netherlands tend to be less processed than the average (Figure 5.9.14).

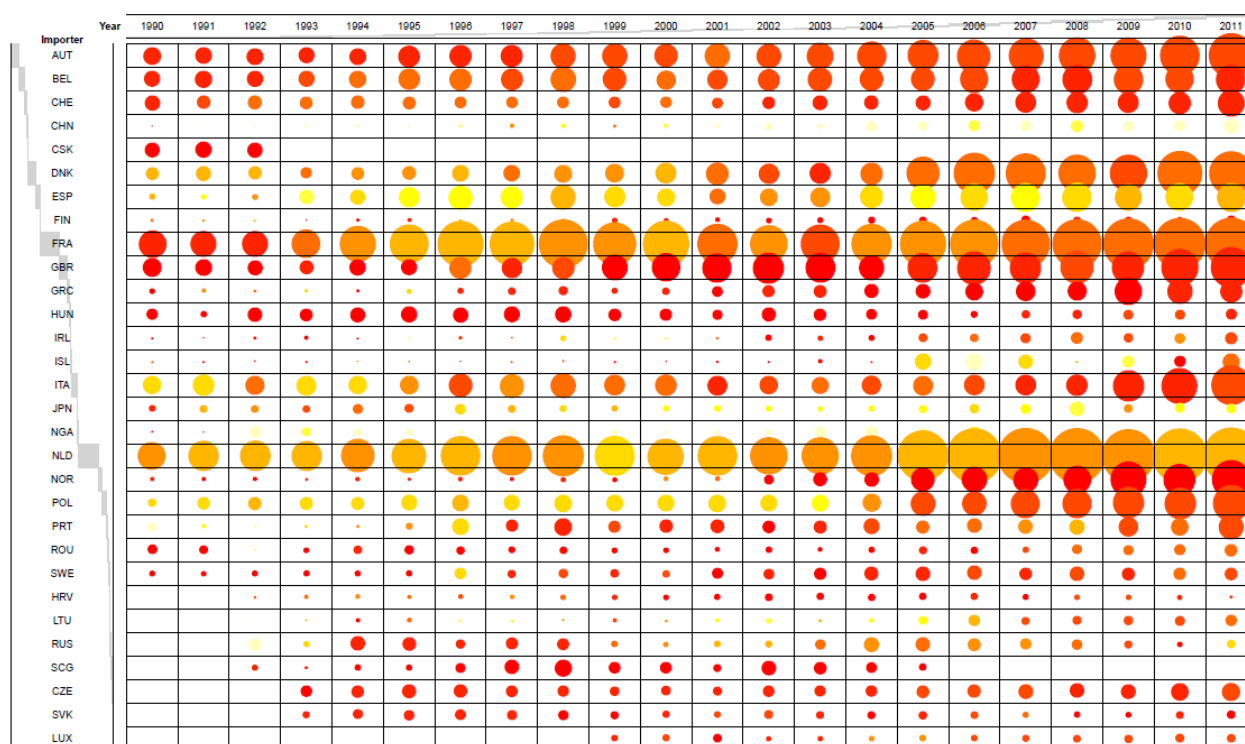


Figure 5.9.14 - German seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.10 Greece

### Production

The Greek fleet is highly diversified with a broad range of vessel types, typically multi-gear, targeting several different species in the Mediterranean Sea. Total catches in 2010 were equal to 70 K tonnes of fish, to which anchovy contributed the most (17%), followed by sardine (9%), mackerel (8%), hake (7%) and bogue (5%) (STECF, 2014a).

Greek aquaculture industry includes marine and freshwater aquaculture, producing in total 121 K of seafood in 2012. The main species in 2010 were seabream (47% of the total production) and seabass (33%). Shellfish-farms mostly cultivate mussels (making up 14% of the overall farmed production in 2010), while freshwater aquaculture produces mainly trout (2%), but also eel, carp and salmon (STECF, 2014b).

Fish processing in Greece, which relies heavily on imported raw material, includes freezing, processing (filleting, salting, drying, smoking, marinating, cooking and canning) of fish, and the de-shelling of mussels. Overall processed production in 2009 was equal to 8 K tonnes of fish, the largest part of which made up of prepared and preserved crustaceans and molluscs (22%), sardine (21%), tuna (17%), mackerel (7%) and anchovies (7%) (STECF, 2014c).

### Trade balance and exposure to trade competition

In 2012, Greece had a negative trade balance in volume of 55 K tonnes of fish while the trade balance in terms of value was positive (equal to 160 M Euro) (Figure 5.10.1). Seafood trade balance fluctuated significantly from 2001 to 2012 in both volume and value but, while seafood imports always exceeded exports in volume, import value was higher than export value only since 2010. A clear trend in the improvement of the trade balance in value was registered between 2007 and 2012. The improvement of the seafood trade balance results from the decrease of the imports, due to the economic crisis, and by a sharp increase of the exports, which is mostly attributable to seabass and seabream. These two species, in fact, contributed around 80% of the overall increase in the trade value occurred over the reference period is attributable to these two species. Another 15% of the difference between the value of seafood trade in 2001 and 2012 results from the trade of salmon. This species is imported, frozen or fresh, mostly from the Netherlands and Italy (respectively accounting for 61% and 12% of the total volume of imports), to be processed and exported as dried/salted/smoked fish to the Netherlands.

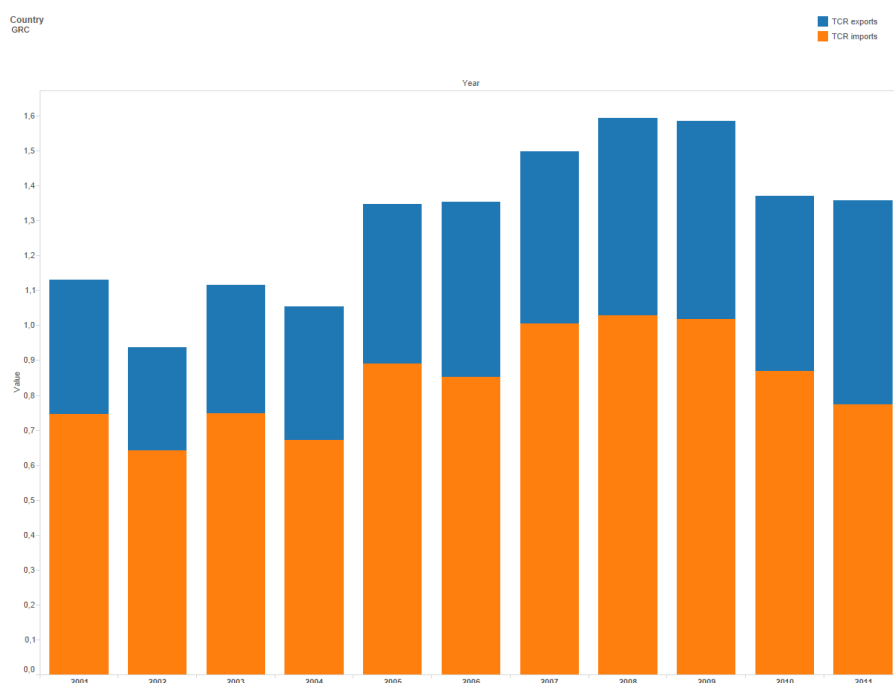
The share of intra-community imports of fish and fishery products slightly exceeded the share of extra-community trade in 2012. On the contrary, the largest part of seafood exports was directed within the EU (91% of the total volume in 2012, corresponding to the same share in terms of value). The volume and value shares of intra-community seafood imports over the total remained rather stable over the reference period while the share going outside the community increased from 5% in 2001 to 9% in 2012 (both in volume and value).





**Figure 5.10.1 - Greece seafood trade balance trends: value (left) and volume (right)**

The values of the TCR index tended to increase over the reference period (from 0.94 in 2002 to 1.59 in 2008) (Figure 5.10.2). Trade competition is mostly driven by imports, as for most other MS; however the contribution of exports increased from around 30% in 2001 to almost 45% in 2012.



**Figure 5.10.2 - Trend of the exposure to trade competition index for Greece**

### Imports

The value of Greek seafood imports increased almost continuously until 2007 and declined afterwards, reaching in the value of 419 M Euro in 2012. Overall, it increased 16% from 2001 to 2012, at an average

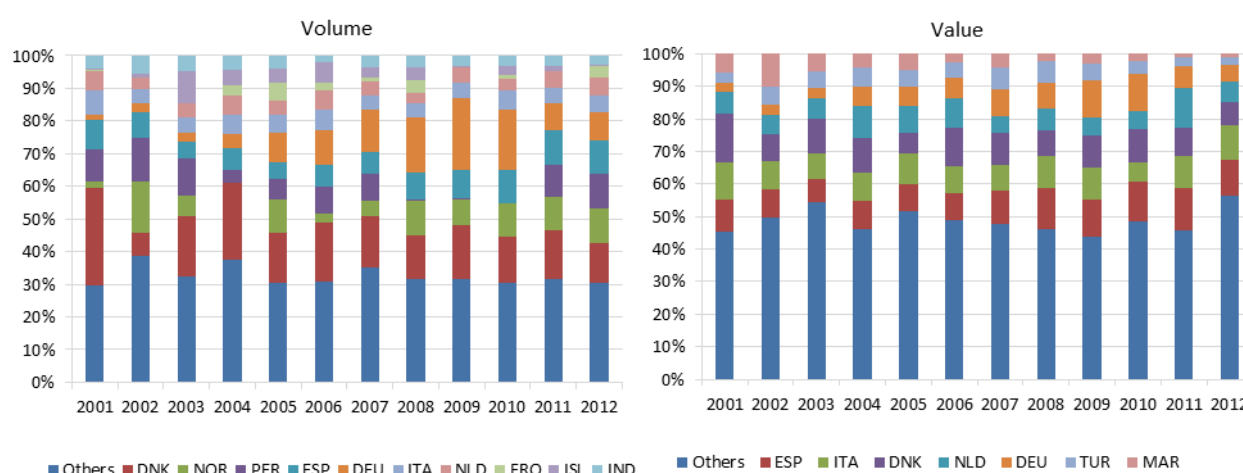
annual growth rate of 2%. In terms of volume, the trend was similar but less pronounced. Over the entire period, import volume decreased 1%, at an annual rate of 1%, and in 2012 it was equal to 176 K tonnes of seafood.

In 2012 the share of intra-community seafood imports was equal to 53% of the total, both in terms of volume and value. The contribution of extra-community imports remained rather stable over the reference period, both in volume and value, and, especially, during the last few years.

Figure 5.10.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 68% of the total volume of seafood imported by Greece and 51% of its value.

In 2012, the five most important seafood suppliers for Greece in terms of volume were Denmark (accounting for 12% of the overall import volume), Norway (11%), Peru (11%), Spain (10%), and Germany (9%). In value, the most relevant were Spain (11%), Italy (11%), Denmark (7%), the Netherlands (6%) and Germany (5%). Denmark was the most relevant country of origin at the beginning of the decade, both in terms of trade volume and value (in 2001, it accounted for 30% of the total volume of seafood imported by Greece and for 15% of its value). However, seafood imports from this country reduced by 59% in volume and 47% in value over the entire reference period.

In general, trade patterns fluctuated markedly from year-to-year and the volume of imports from all the most relevant suppliers varied significantly over the years. On the other hand, the values of trade tended to increase for all the most seafood suppliers.



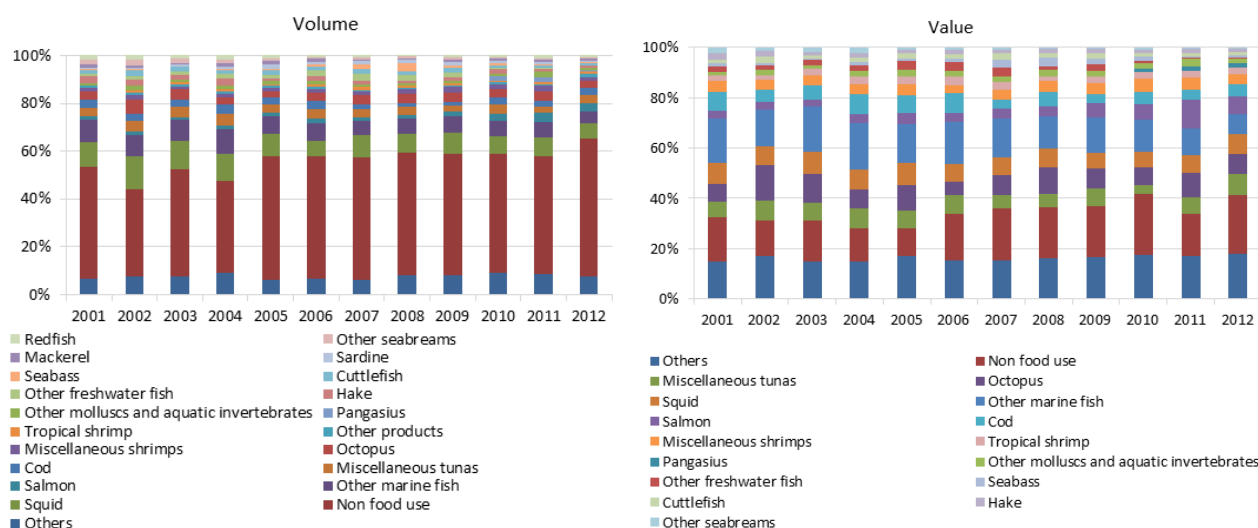
**Figure 5.10.3 - Greek seafood imports trends by most relevant suppliers: share in volume (left) and value (right).**

Figure 5.10.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species covered, in average over the years, more than 92% of the total volume of seafood imported by Greece and almost 84% of its value.

In 2012, almost 60% of the total volume of Greek seafood imports was made up of fish for non-human consumption, followed squid (6%), other marine fish (5%), salmon (4%) and miscellaneous tuna (3%). Fish

for non-human consumption was the most relevant also in value (accounting for 23% of the total imports), followed by miscellaneous tuna (8%), octopus (8%), squid (8%) and other marine fish (8%).

In 2012, the volume of imports of fish for non-human consumption was 22% higher than in 2001 and their value was 52% higher. Imports of salmon and tuna also increased over the reference period: imports of salmon grew by three times in volume and more than doubled in value, of tuna by 6% in volume and 60% in value. On the other hand, trade in other marine fish, cod, squid and octopus reduced (for squid and octopus, only in volume).



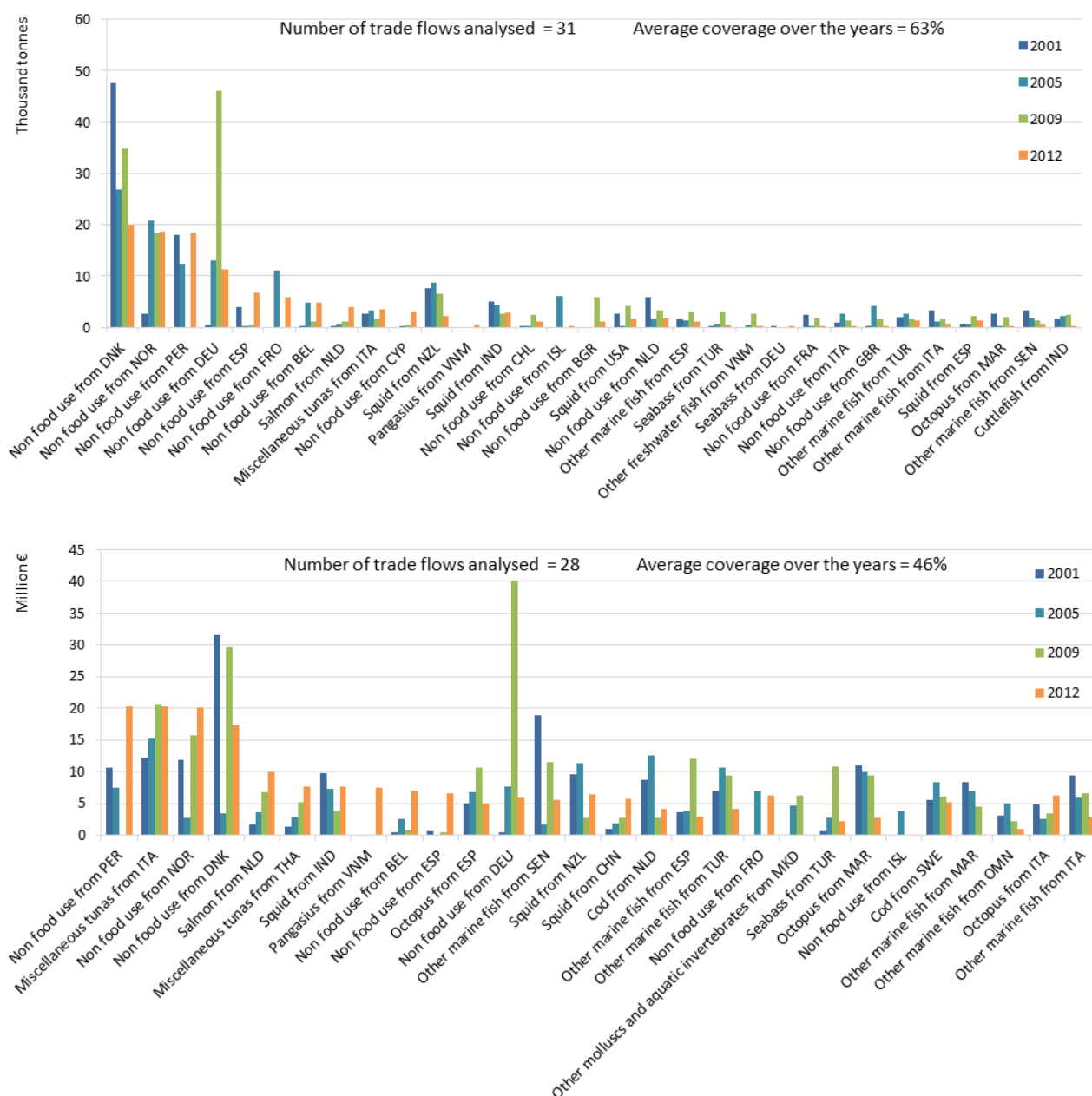
**Figure 5.10.4 - Greek seafood imports trends by most relevant commercial species: share in volume (left) and value (right).**

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Greece, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 63% and 46% of the overall trade, respectively in volume and value.

Among the trade flows analysed, some increased sharply from 2001 to 2012, in both volume and value, for example the imports of salmon from the Netherlands, octopus from Senegal and Tunisia, pangasius from Vietnam; others increased especially in value, for examples the imports of tuna from Italy (+65%) and Thailand (+471%).

As already observed, the volume of seafood imported from Denmark declined markedly. The largest part of this contraction resulted from a reduction in the imports of fish for non-human consumption. On the other hand, the volume of seafood imports from Norway increased by around six times, and also on this case fish for non-human consumption was the main determinant. Imports of fish from non-human consumption from Germany increased significantly only until 2009, to decline afterwards.

Imports of fish for non-human consumption from Denmark declined significantly also in terms of value, as well as the imports of other marine fish from Italy, Senegal, Turkey and Morocco. Squid from India and New Zealand and octopus from Morocco are examples of trade flows which have contracted sharply in both volume and value (Figure 5.10.5).



**Figure 5.10.5 - Greek seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.10.6 shows the trends in the composition of imports by processing and preservation status. Fish for non-food uses, which is mostly traded prepared or preserved, is predominant in the Greek seafood imports. Therefore, preserved and prepared products represent the largest share of Greek imports (64% of the total in 2012, corresponding to 38% of their total value). Frozen and fresh seafood respectively contributed 24% and 7% of the total import volume in 2012 (corresponding to 38% and 14% of its value).

Imports of prepared and preserved products increased in volume from 2001 to 2012 (by 20%), while imports of the other types of seafood products declined over time; therefore, the contribution of prepared/preserved products to total imports increased from 53% to 64%.

The value of trade increased for all the product categories, except for fresh seafood, but the contribution of prepared/preserved products to the total imports increased also in terms of value (from 28% in 2001 to 38% in 2012).

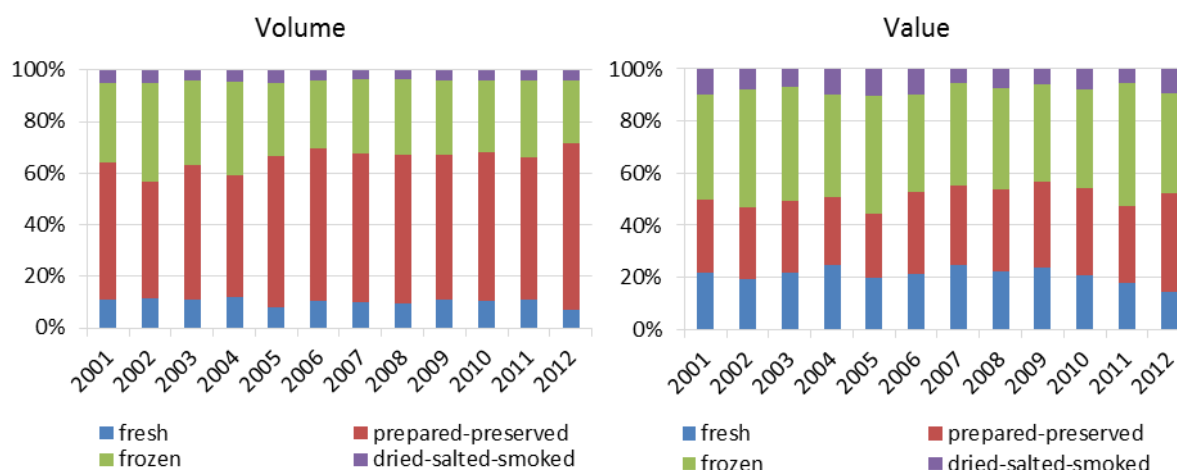


Figure 5.10.6 - Greek seafood imports trends by type of products: share in volume (left) and value (right)

The share of processed products to total imports varies strongly depending on the country of origin, and, for each of them, remained rather stable over the years (Figure 5.10.7). Imports from Germany, Denmark, Iceland, Sweden, Norway and some other less relevant countries are made up almost only of processed products. On the contrary, non-processed products represent the majority of the imports from Spain, Italy, Turkey, France and several others.

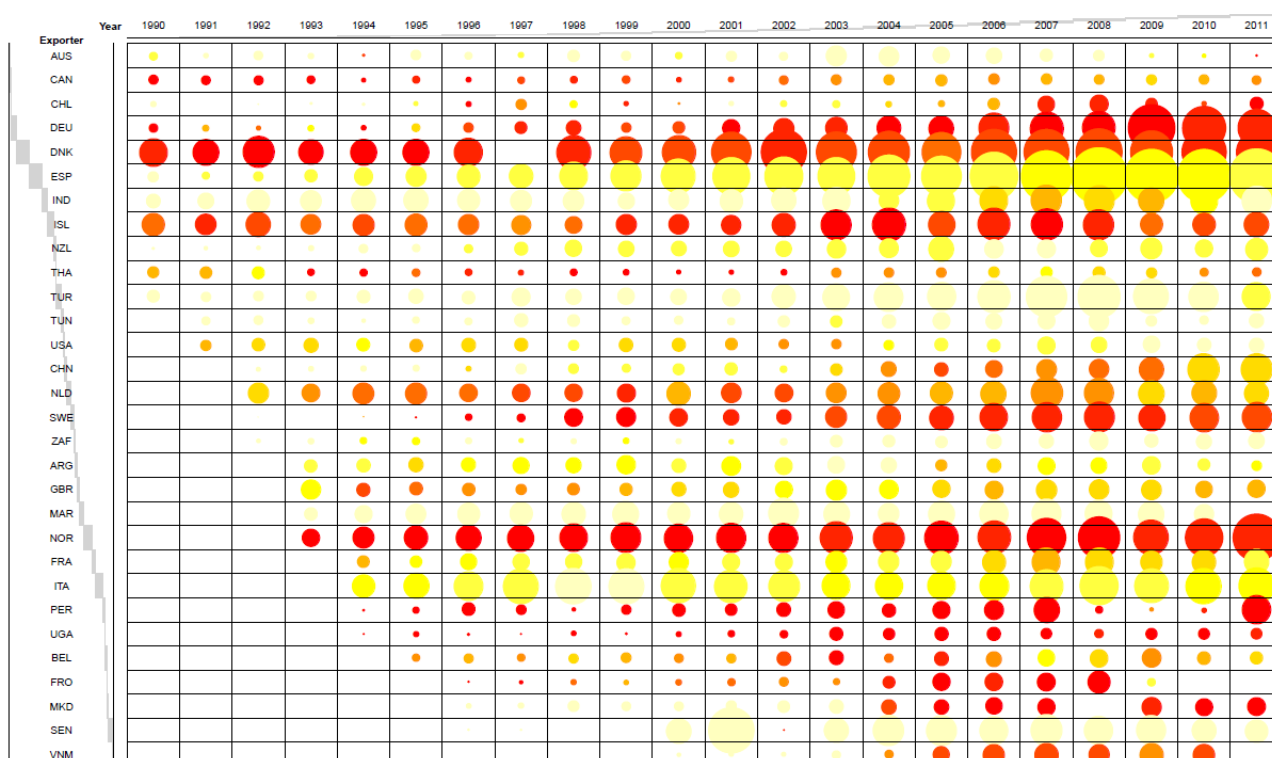


Figure 5.10.7 - Greek seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products).

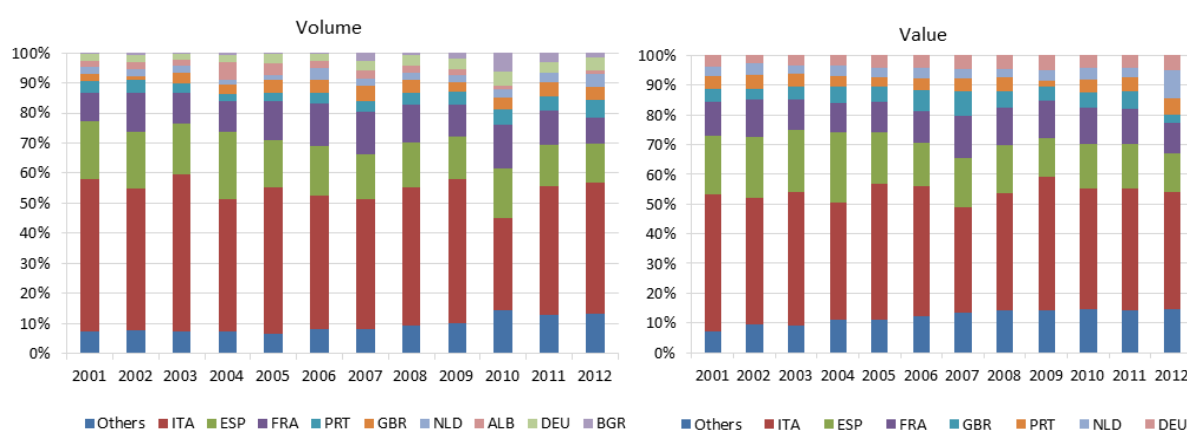
## Exports

Greece seafood exports in 2012 were equal to 120 K tonnes (valued at 579 M Euro), 31% more than in 2001 (89% more in value). The majority of seafood exports are directed within the EU (91% of the total volume in 2012, corresponding to the same share in terms of value); but the share of seafood going outside the community increased from 5% in 2001 to 9% in 2012, both in volume and value.

Figure 5.10.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 91% of the total volume of seafood exported by Greece and 88% of its value.

The historically most relevant destinations for Greek seafood exports are Italy (43% of the overall Greek seafood export volume), Spain (13%) and France (9%). Exports to these countries consists mostly of seabream and seabass. Other important countries of destination in terms of volume in 2012 were Portugal (contributing 6% of the total) and the United Kingdom (4%). At the beginning of the decade almost 80% of the overall Greek export volume was directed to Italy, Spain and France (and 77% of its value), while in 2012 only 65% of it was exported to them (63% in value). This resulted from the significant increase in seafood exports to several other countries within the EU (e.g. Netherlands, the United Kingdom, Portugal, Germany, Cyprus, Bulgaria, Romania and Switzerland) and outside (e.g. USA, Russia, Turkey and Canada).

Italy, Spain and France are the most important trade partners also in terms of value (contributing 39%, 13% and 11% of the total, respectively), followed by Netherlands (9%) and Portugal (5%).



**Figure 5.10.8 - Greek seafood exports trends by most relevant suppliers: share in volume (left) and value (right).**

Figure 5.10.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Greek seafood exports almost entirely.

Seabream is the main exported species (36% of the total export volume in 2012), followed by seabass (26%), other marine fish (9%), other seabreams (6%) and salmon (3%). These are the five most relevant species also in value, respectively accounting for 32%, 31%, 8%, 5% and 8% of the total. Exports of seabream (including gilthead seabream and other seabreams) and seabass significantly increased from 2001 to 2012 (respectively, 57% and 111% in volume, 80% and 180% in value), but trade of salmon relatively increased much more, both in volume (by 7 times increase) and value (by 15 times).

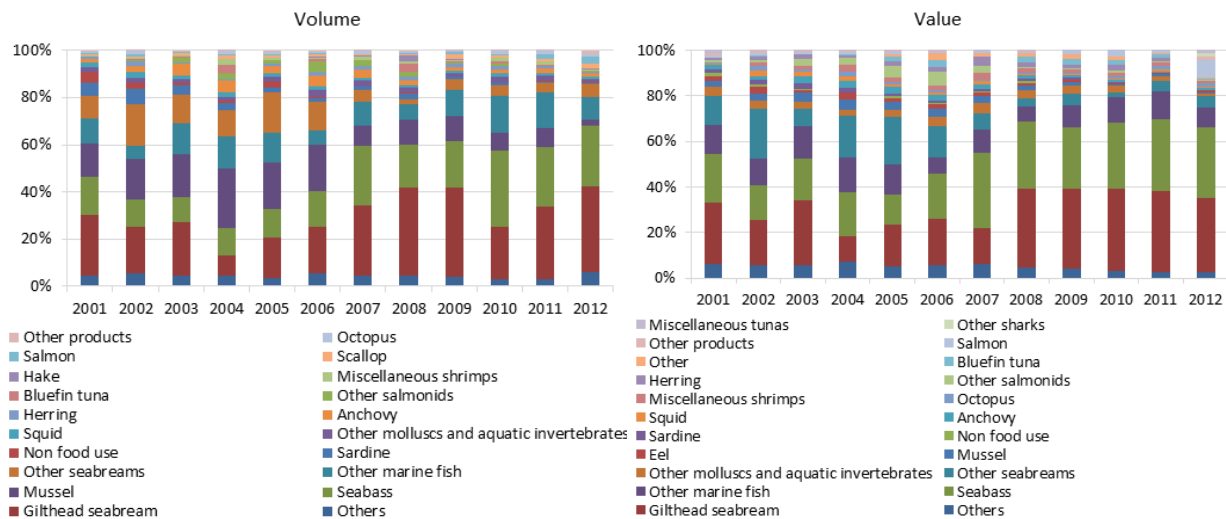
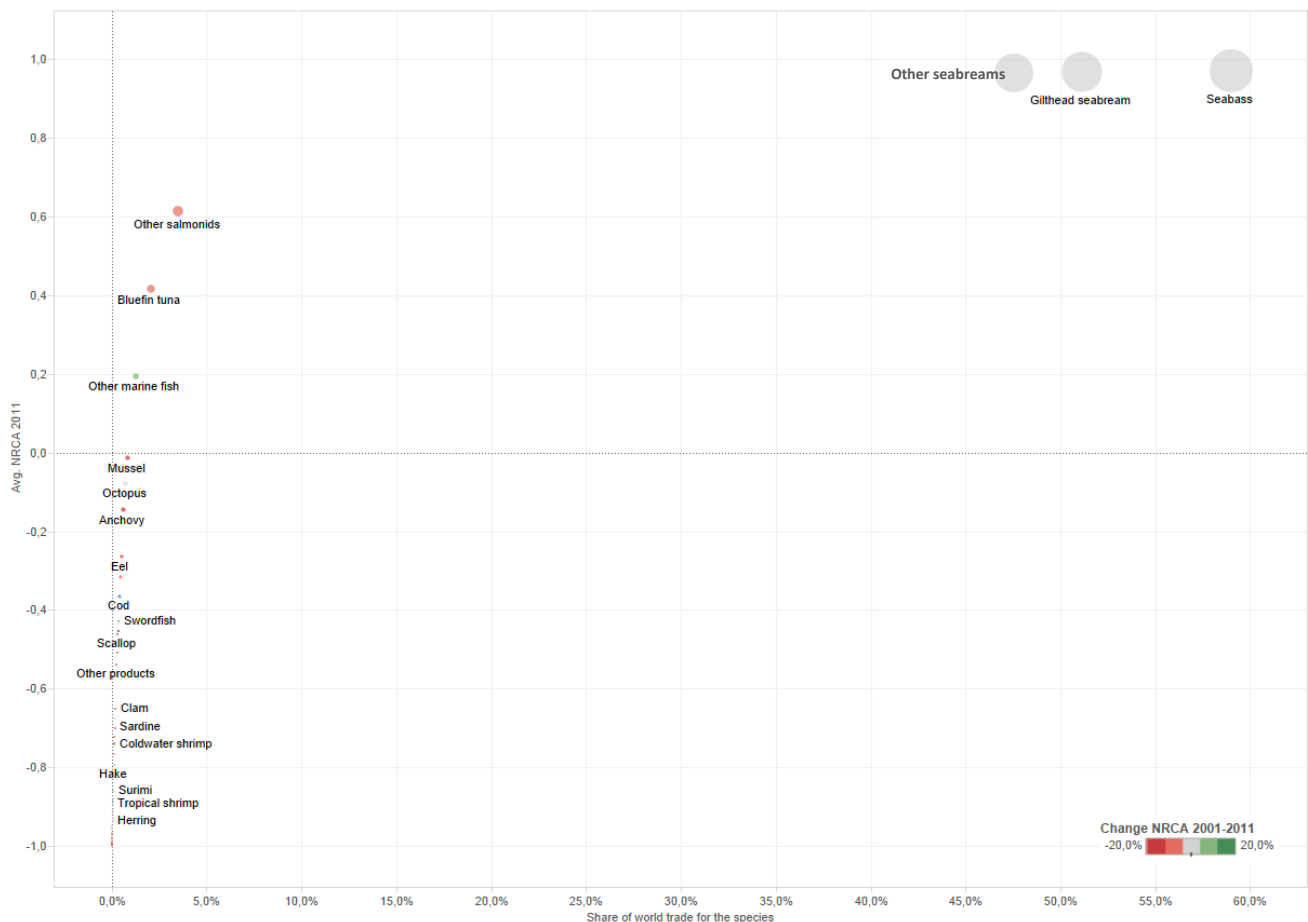


Figure 5.10.9 - Greek seafood exports trends by most relevant commercial species: share in volume (left) and value (right).

As evidenced by the trade flows, Greece has a competitive advantage for few species: seabass (NRCA = 0.97), gilthead seabream (NRCA = 0.97) and other seabreams (NRCA = 0.97) (Figure 4.10). For all of them, the NRCA remained stable between 2001 and 2011 (Figure 5.10.10). Trade of Greek seabass and seabream are two of the cases for which MS recorded in 2011 the highest value of the index among all world countries.



**Figure 5.10.10 - Normalized Revealed Comparative Advantage index (NRCA) for Greece, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Greek seafood trade contracted significantly in 2002 but expanded almost every year afterwards. A large part of the exports increase occurred in 2005 and between 2008 and 2011 (Figure 5.10.11). Reductions in 2002, 2007 and 2012 and recoveries in 2005, 2008-2011 on the intensive margin were all linked to changes in volume and value of exports of seabream and seabass exports to Italy.



**Figure 5.10.11 - Greek seafood exports margins: 2001-2012**

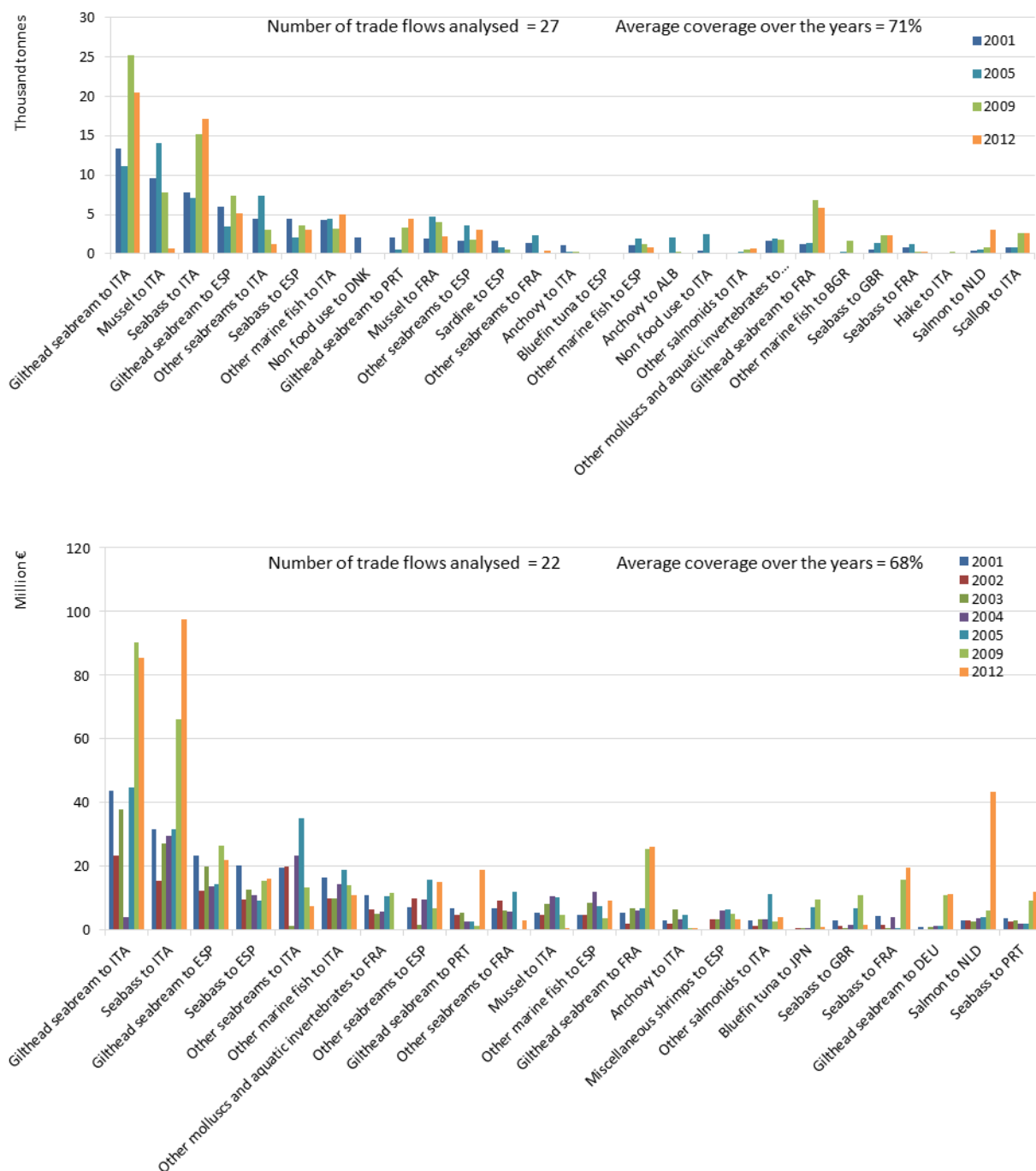
The largest part of the exports changes occurred at the intensive margin (i.e. exports of the same products to the same set of destination countries). Expansion on the extensive margin from 2006 and in particular in 2012 were linked to the opening of new trade relations for seabream and seabass with Russia.

Figure 5.10.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Greece, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 71% and 68% of the overall trade, respectively in volume and value.

As already seen, Greek exports of seafood products increased 31% in volume and 89% in value, from 2001 to 2012. This resulted mostly from the increased trade in seabass and seabream to Italy, but also to other countries, such as France, Spain, the United Kingdom, Portugal, Russia, Germany and USA (Figure 5.10.12). Exports of salmon to Netherland also increased sharply. In 2012, 97% of the total volume of Greek salmon was exported to the Netherlands.

In terms of value, the largest part of the exports increase occurred from 2001 to 2012 can be attributed to the trade of seabass and seabream to Italy and salmon to the Netherlands.





**Figure 5.10.12 - Greek seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.10.13 shows the trends in the composition of exports by processing and preservation status. Most seafood is exported fresh (84% of the total volume of Greek seafood exports in 2012, corresponding to 80% of its value), as seabream and seabass are traded almost only fresh. In 2012, frozen and prepared/preserved seafood contributed 10% and 2% of the total volume of exports, respectively (9% and 2% respectively, in terms of value). Exports of fresh and frozen seafood increased significantly for 2001 to 2012, but the relative increase was higher for frozen products (mostly scallop and other marine fish) (71% vs. 38% for fresh products in volume, and almost 300% vs. 80% in value).

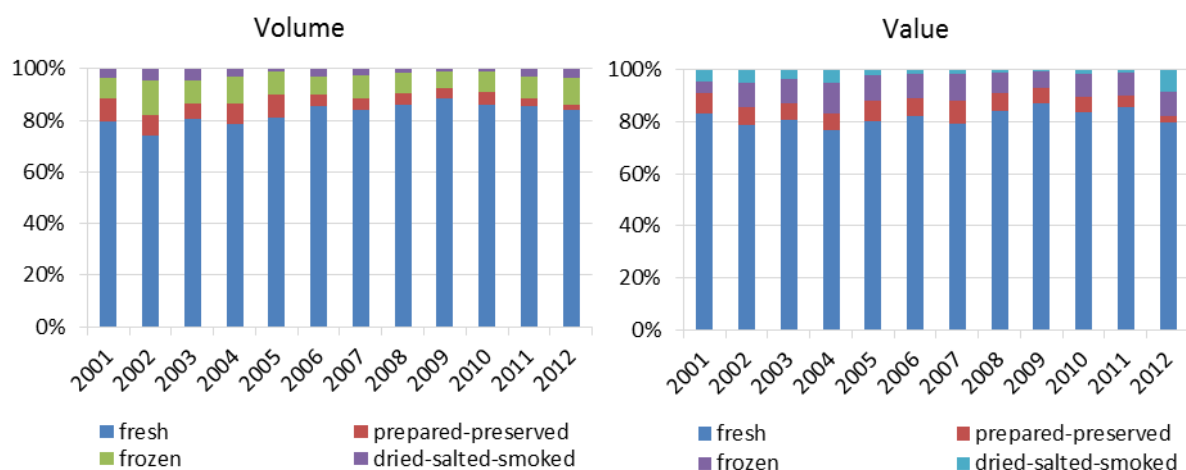


Figure 5.10.13 - Greek seafood exports trends by type of products: share in volume (left) and value (right)

Greek seafood exports are mostly made up of non processed products regardless the country of destination and the contribution of processed products to total exports remained rather stable over time (Figure 5.10.14). In 2011, fresh seabass and seabream contributed almost 70% of the total value seafood exports and only exports to the Netherlands, (made up of seabass and seabream, mostly, but also of dried/salted/smoked salmon and herring) were more processed than the average.

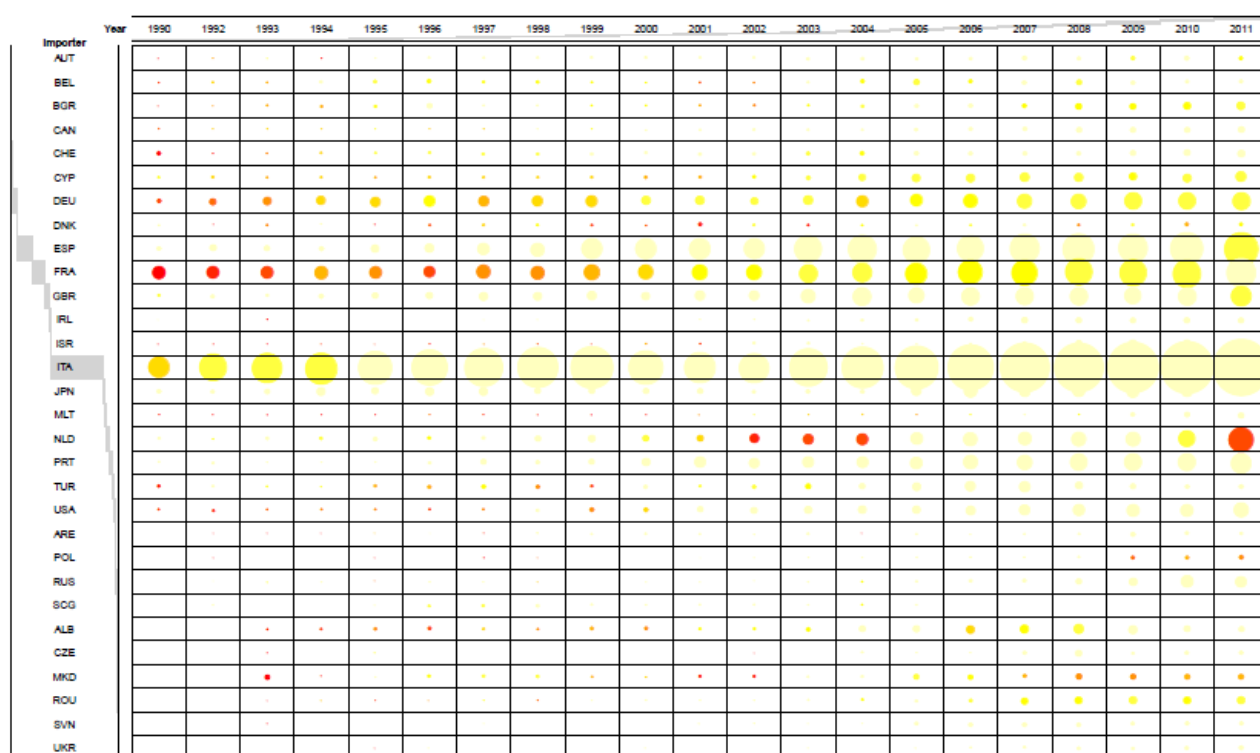


Figure 5.10.14 - Greek seafood exports trends by main seafood suppliers and contribution of processed products to total export value (size is proportional to the export value and the shading to the share of processed products)

## 5.11 Ireland

### Production

The total volume of catches by the Irish fleet in 2011 was 214 K tonnes of seafood, almost 50% of which made up of mackerel. Herring was the following most represented commercial species (12% of the total), followed by boarfish (9%), lobster (4%) and crab (3%) (STECF, 2014a).

Aquaculture production in 2011 amounted to 44 K tonnes of fish and was dominated by shellfish, especially mussels and oysters, representing 69% of the overall volume. Finfish was also relevant. In 2011, the two most important finfish species, salmon and trout, respectively represented 28% and 3% of the total farmed production (STECF, 2014b).

The Irish processing industry is made up of firms specialized in finfish, shellfish, smoked, pelagic and whitefish. Shellfish companies accounted for the largest number of fish processing companies in Ireland. The overall Irish production of fish and fishery products in 2009 was equal to 29 K tonnes, 74% of which made up of frozen fillets (fresh, chilled and frozen) (STECF, 2014c).

### Trade balance and exposure to trade competition

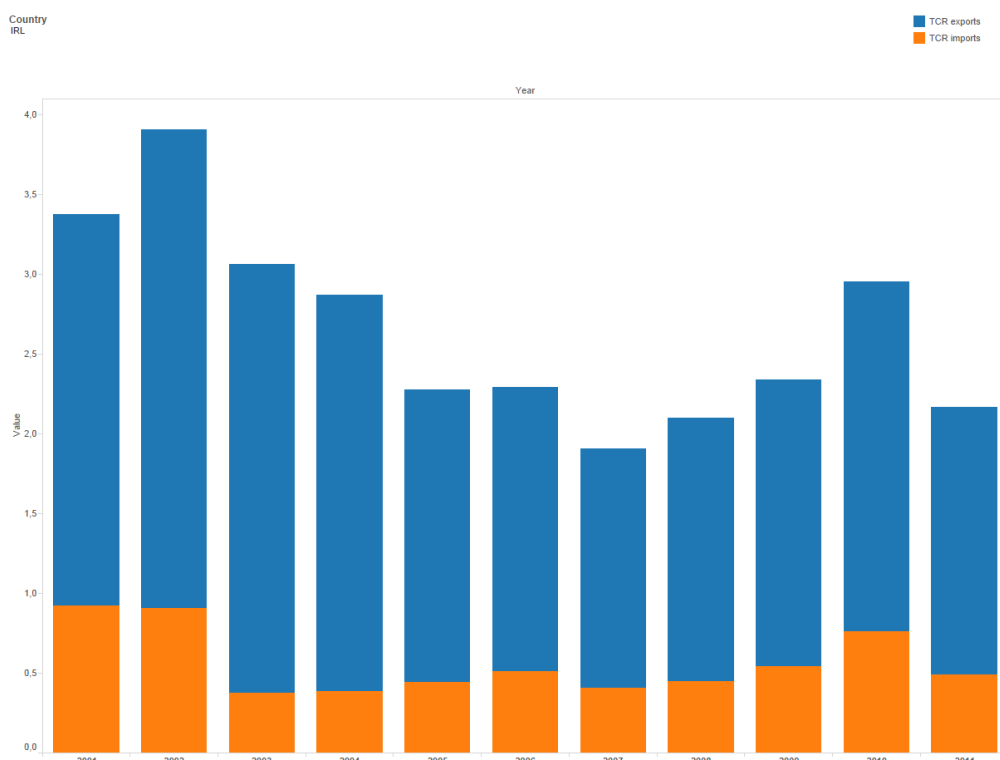
Ireland is one of the few MS with a positive trade balance for fish and fishery products. In 2012, Irish net exports were equal to 146 K tonnes, corresponding to 332 M Euro. Furthermore, its trade balance improved from 2001 to 2012 both in volume (+1%) and value (+32%) (Figure 5.11.1).

In 2012, almost 60% of the total volume of seafood imports and exports originated outside the EU, while, in 2001, the share of extra-community trade was very limited. The share increased in particular between 2011 and 2012. In terms of value, extra-community trade contributed with a lower share during the entire reference period.



**Figure 5.11.1 - Irish seafood trade balance trends: value (left) and volume (right)**

Ireland is one of the MS with the highest exposure to seafood trade competition, which, however tended to decrease over time, especially during the first years of the reference period (Figure 5.11.2). In 2011, the estimated value of the TCR index for Ireland was 2.16, which indicates that the sum of Irish imports and exports exceeded the domestic consumption of seafood by around two times. Differently from most other MS, in Ireland the exposure to seafood trade competition is mostly driven by exports and the contribution of imports has remained rather limited over the entire period.



**Figure 5.11.2 - Trend of the exposure to trade competition index for Ireland**

### Imports

In 2012, Ireland imported 114 K tonnes of seafood (valued at 179 M Euro). Irish seafood import volume increased by 37% from 2001 to 2012, at an average annual growth rate of 11%, while its value rose by 39% at a rate of 4%.

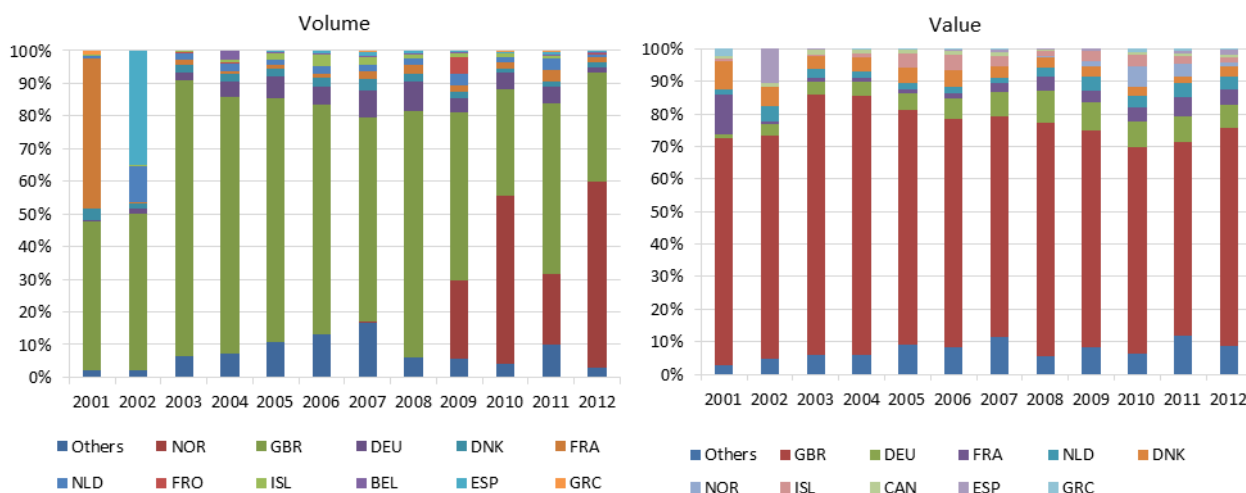
In 2001, seafood imports mostly originated within the EU, while in 2012 extra-community trade was prevalent (contributing 59% of the total import volume). Also the value share of extra-community imports increased over time, but it remained rather small over the entire period (almost 4% in 2001, 9% in 2012).

Figure 5.11.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover almost entirely Irish seafood imports both in volume and value.

In 2012, the by far most relevant seafood suppliers for Ireland in terms of volume were Norway (accounting for 57% of the total volume) and the United Kingdom (33%), while all the other countries together contributed less than 2% to the total seafood imports. The United Kingdom contributed much more than any other country in terms of value (67% of the total), followed by Germany (7%), France (5%), the Netherlands (4%) and Denmark (3%).

Trade patterns changed significantly over the reference period, both in terms of partners and trade composition. In 2001, France and the United Kingdom were equally important in terms of volume of seafood exported to Ireland, while imports from Norway were not very relevant. From 2001 to 2012, whilst import volume from France decreased (-96%) and from the United Kingdom remained rather stable, trade with Norway increased sharply.

In terms of value, the United Kingdom contributed 70% of the total imports in 2001, followed by France (12%) and Denmark (8%). Over the reference period, trade with the United Kingdom, the Netherlands and Germany increased by 33%, three times and more than eight times, respectively, while the trend of imports from France and Denmark was rather discontinuous.



**Figure 5.11.3 - Irish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

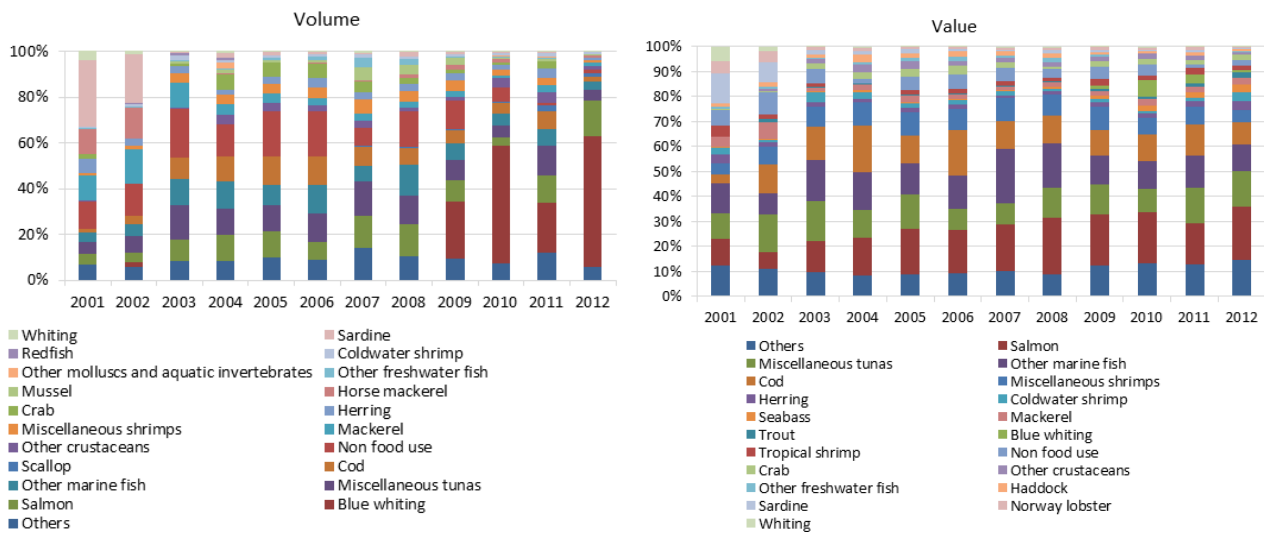
Figure 5.11.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 91% of the total Irish seafood imports in volume and 89% in value.

In 2012, almost 60% of the total volume of Irish seafood imports was made up of blue whiting. Other relevant species were salmon (15%), miscellaneous tuna (5%), other marine fish (4%) and cod (2%). In terms of value, salmon was the most relevant (21% of the total), followed by miscellaneous tuna (14%), other marine fish (11%), cod (9%) and miscellaneous shrimps (5%). On the other hand, blue whiting contributed only 1%.

As mentioned already, trade patterns changed significantly in terms of trade composition from 2001 to 2012. In 2001, in fact, seafood imports were mostly made up of sardine (29% of the total volume), fish for non-human consumption (12%), horse mackerel (11%), mackerel (11%) and herring (7%). Over the years, the import volume of all of them contracted by between 82% and 99%, while trade of blue whiting, salmon, tuna, other marine fish and cod increased significantly.

In terms of value, salmon, miscellaneous tuna and other marine fish contributed significantly to the total also in 2001, while cod contributed only 4%. Around 12% and 6% of the overall 2001 import value were made up, respectively, of sardine and fish for non-human consumption, which were not very relevant in 2012. In fact, from 2001 to 2012, the value of their imports decreased by 92% and 52% respectively. On the

other hand, trade in salmon, miscellaneous tuna and other marine fish increased by almost three times, two times and 25%, respectively.

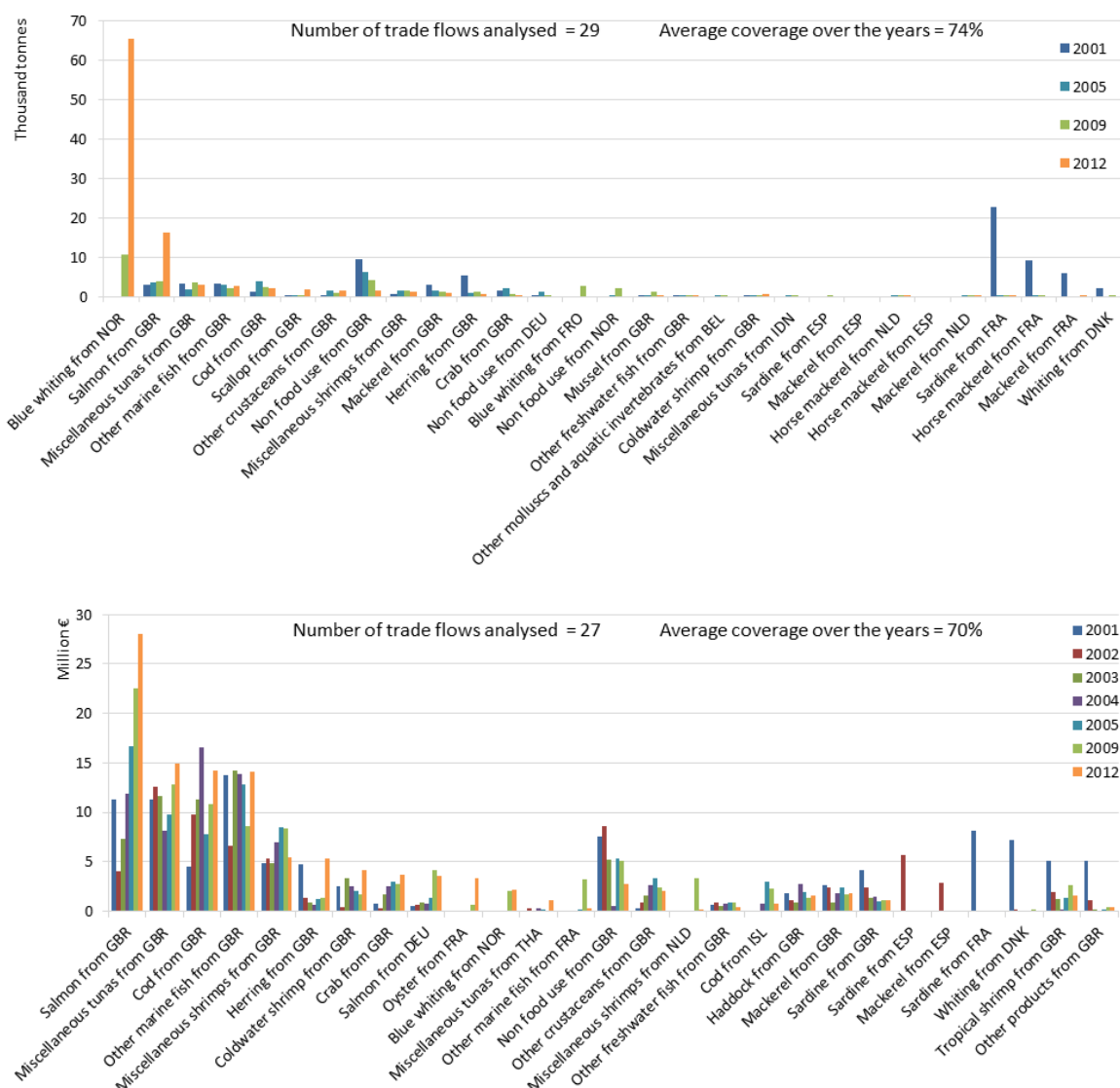


**Figure 5.11.4 - Irish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.11.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Ireland, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 74% and 70% of the overall trade, respectively in volume and value.

The by far largest part of the increase in seafood import volume occurred from 2001 to 2012 is attributable to the imports of blue whiting from Norway and, to a lesser extent, of salmon from the United Kingdom. On the other hand, several trade flows have contributed to the rise in terms of value. Some of those contributing the most are the imports of salmon especially from the United Kingdom, but also from Germany, of several other commercial species from the United Kingdom (e.g. cod, tuna, shrimps and crab) and oyster from France.

Over the same period, the volume of several trade flows decreased sharply, for example of sardine and mackerel from France, herring, mackerel and fish for non-human consumption from the United Kingdom, whiting from Denmark. Some of the flows which declined the most in value are the imports of sardine and mackerel from France, whiting from Denmark and several species from the United Kingdom (e.g. shrimps and sardine).



**Figure 5.11.5 - Irish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2012, the large majority of seafood imports were made up of fresh products (accounting for 70% of the total volume and 31% in value) (Figure 5.11.6). In value, prepared/preserved products prevailed (accounting for 46% of the total), as almost all tuna and a large share of salmon, cod and other marine fish were imported prepared or preserved.

Imports of fresh seafood increased significantly from 2001 to 2012, both in volume and value, mostly because of the increased imports of blue whiting (especially for volume) and salmon. And, indeed, their contribution to total imports increased from 17% to 70% in volume and from 17% to 31% in value.

Trade in dried/salted/smoked seafood also grew sharply (both in volume and value) in absolute and relative terms, reflecting the increased trade of tuna, while imports of frozen fish reduced markedly, mostly due to the contracted trade of mackerel and sardine.

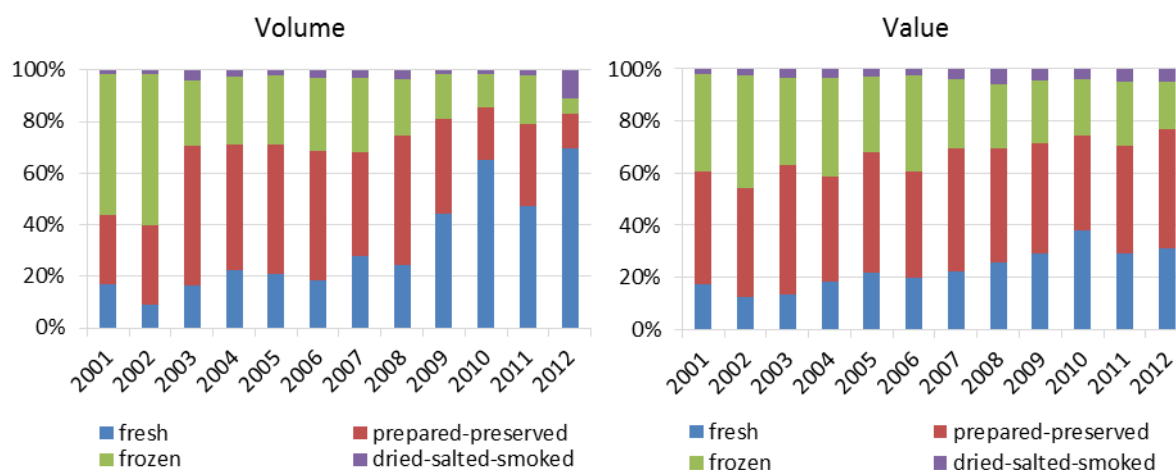


Figure 5.11.6 - Irish seafood imports trends by type of products: share in volume (left) and value (right)

The majority of seafood imports are made up of processed products, the share of which tended to remain rather stable over the reference period (Figure 5.11.7). After 2001 imports of preserved cod where from Norway were replaced whole-fresh by imports of Blue whiting.

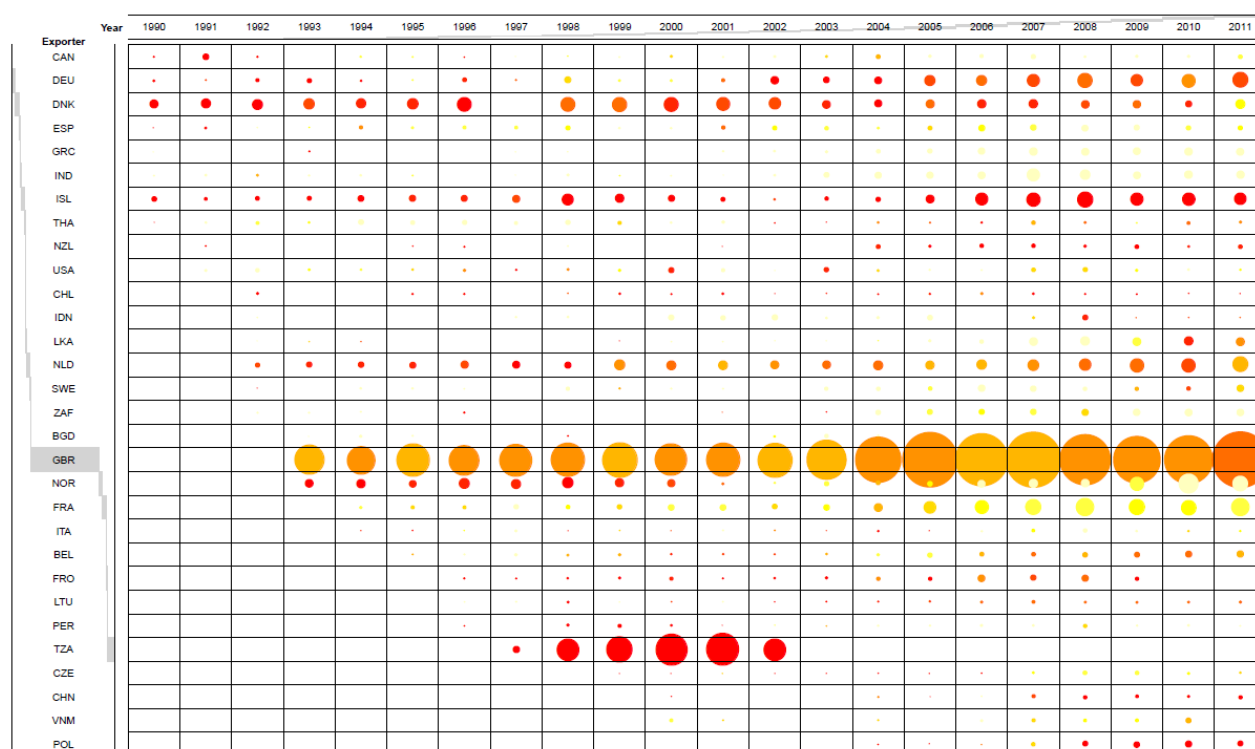


Figure 5.11.7 - Irish seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products).

## Exports

In 2012, Ireland exported 260 K of fish and fishery products (valued at 511 M Euro), 14% more than at the beginning of the decade (and 35% more in value). Most exports was directed to EU members (48% of the total volume, corresponding to 70% of its value), however the share of seafood traded outside the EU was larger than the EU average. Furthermore, this share increased over the reference period from 24% to 52% in volume and from 17% to 30% in value.



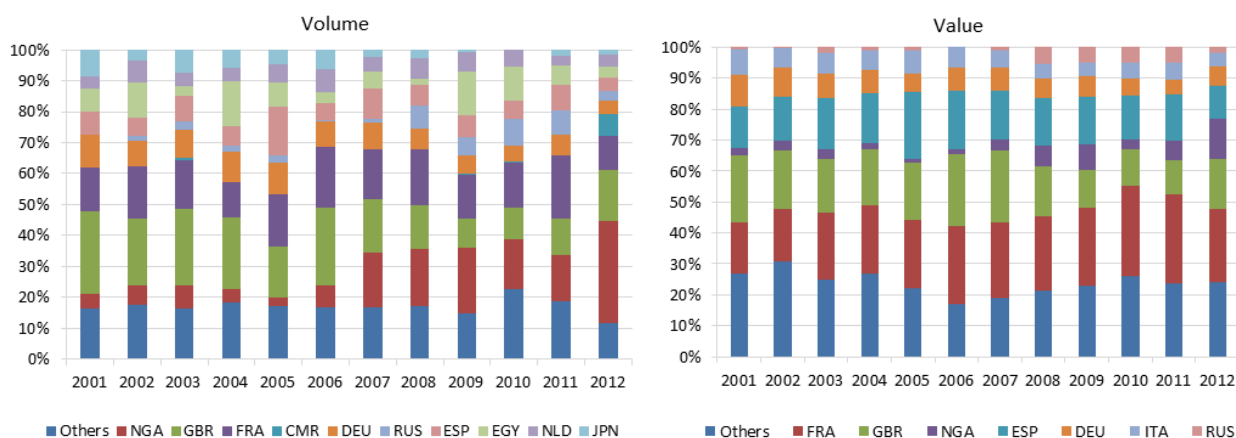
While several other MS have spread their seafood exports across more countries over the years, Irish exports were more concentrated at the end of the reference period than at the beginning. In 2012, in fact, the first five most relevant countries of destination accounted for 67% of the total volume of Irish seafood exports, against a share of 72% in 2001.

Figure 5.11.8 shows the trend of the seafood exports to the most relevant partners shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 83% of the total volume of seafood exported by Ireland and 76% of its value.

In 2012, the most relevant partners for Ireland (in terms of volume of its seafood imported) were Nigeria (accounting for 33% of the total volume of Irish seafood exports), the United Kingdom (16%), France (11%), Cameroon (7%) and Germany (7%). In terms of value, the five most relevant countries of destination were France (23%), the United Kingdom (16%), Nigeria (13%), Spain (10%) and Germany (6%).

The United Kingdom and France were the dominant countries of destination also at the beginning of the decade (respectively accounting for 27% and 14% of the overall Irish export volume in 2001), while other countries, which were important partners in the past, drastically reduced their imports from Ireland over the reference decade, for example Germany, Japan, Spain and Egypt. On the other hand, Irish seafood exports directed to Nigeria increased by 8 times over the period.

In terms of value, exports to the United Kingdom, Spain, Germany and Italy remained rather stable or decreased from 2001 to 2012, while exports to France almost two folded and to Nigeria increased by almost 7 times.



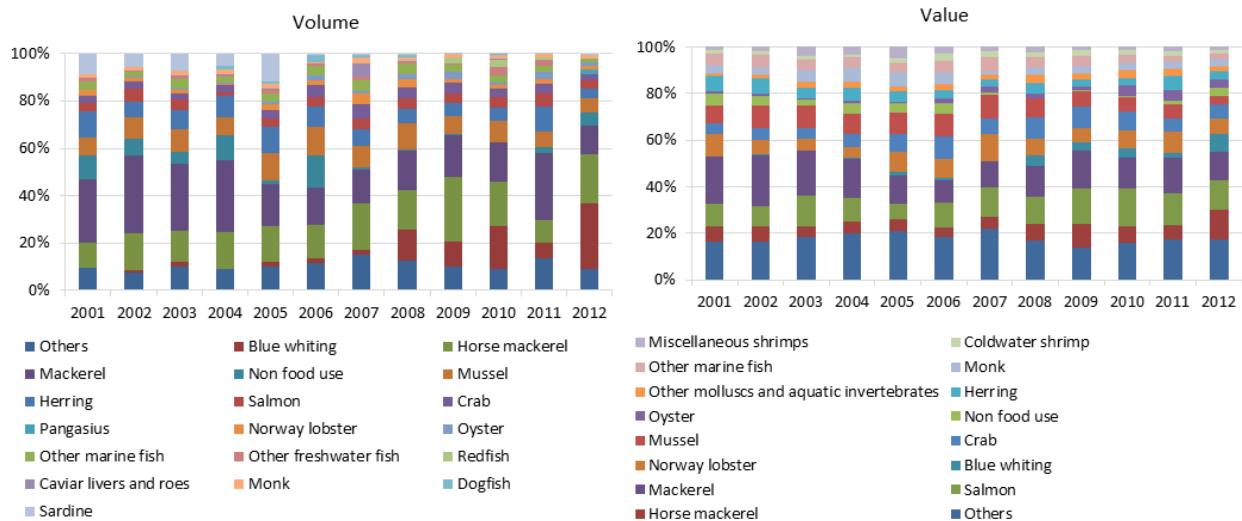
**Figure 5.11.8 - Irish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.11.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 89% of the total volume of seafood exported by Ireland and almost 82% of its value.

In 2012 Irish seafood exports were mostly made up of blue whiting (contributing 27% of the total volume), Horse mackerel (21%), mackerel (12%) fish for non-food uses (6%) and mussels (5%). In value, the five most

relevant commercial species were Horse mackerel (13%), salmon (12%), mackerel (12%), Blue whiting (8%) and Norway lobster (7%).

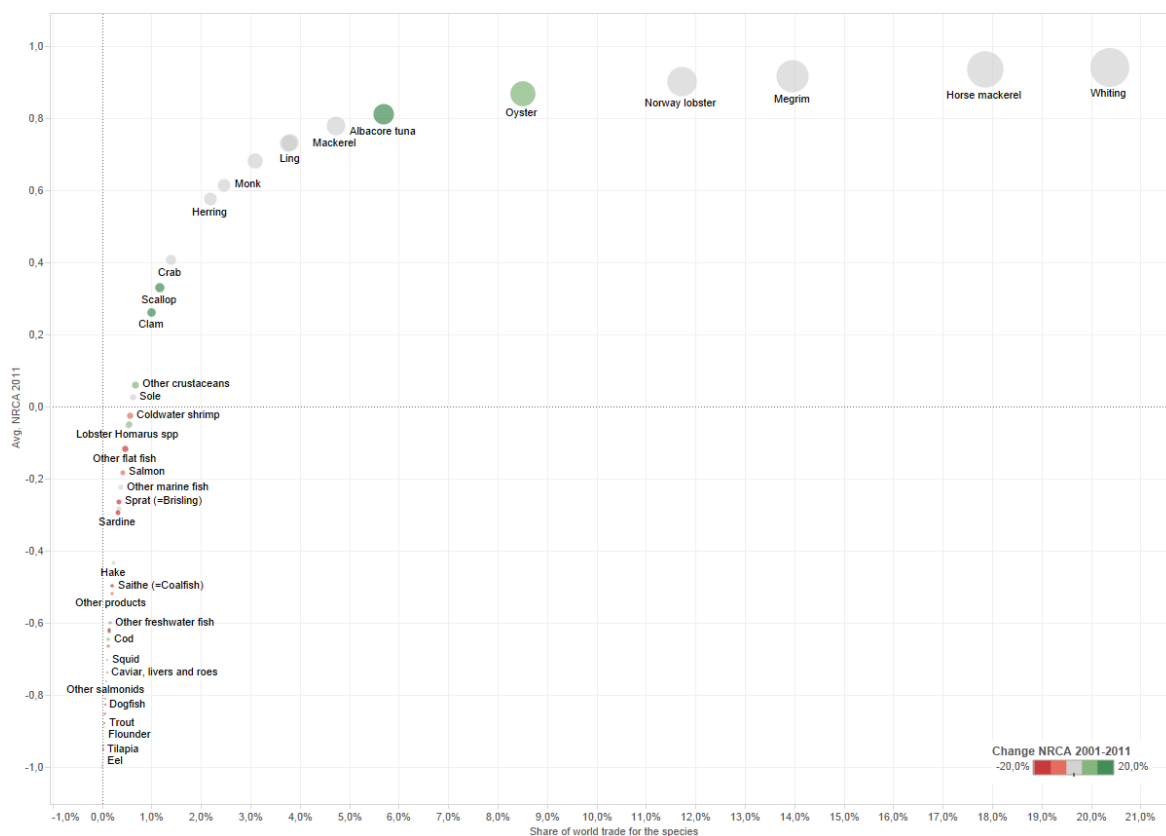
From 2001 to 2012, exports of all the most relevant commercial species increased, both in volume and value, with the only exceptions of mackerel and mussels which increased in volume but declined in value.



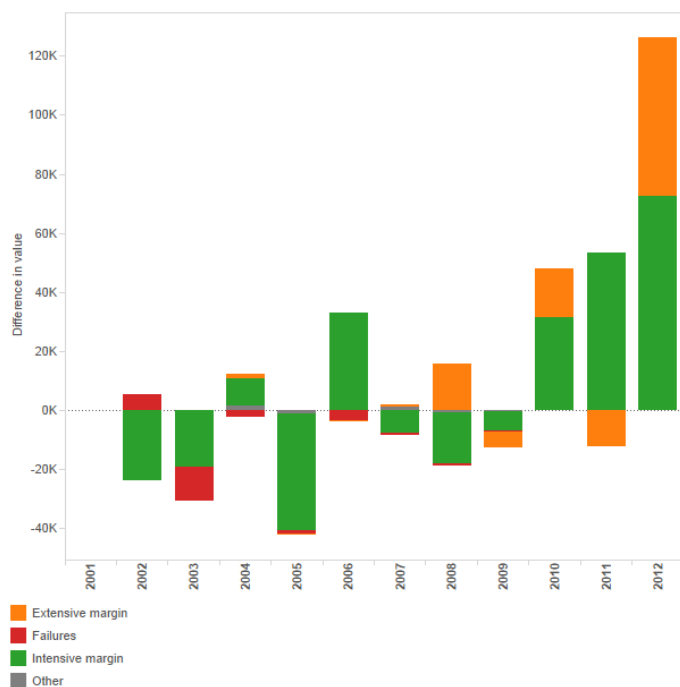
**Figure 5.11.9 - Irish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, Ireland's competitive advantage in most its relevant exported products (e.g. Horse mackerel, mackerel and Norway lobster) is higher than the rest of the world (Figure 5.11.10). Ireland has the highest comparative advantage on the international market for Whiting (NRCA = 0.94), Horse mackerel (NRCA = 0.94), Megrim (NRCA = 0.92) and Norway lobster (NRCA = 0.91). The NRCA index remained stable between 2001 and 2011 for all of them.

The competitive advantage for Whiting is mostly sustained exports of this low valued species mostly to Nigeria (80% in 2012) and alternatively across years to Russia (20% in 2008, 23% in 2010 and 7% in 2012), China (21% in 2008, 22% in 2009 and 15% in 2010) and Cameroon (11% in 2012). The increase of exports to Nigeria in 2012 corresponded to a reduction of imports from Norway.



**Figure 5.11.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Ireland, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**



**Figure 5.11.11 - Irish seafood exports margins: 2001-2012**

Seafood exports increased especially from 2011 to 2012 and trade patterns changed both at the intensive margin (i.e. exports of the same products to the same set of destination countries) and at the extensive margin (Figure 5.11.11). Changes at the intensive margin were in particular deriving from an expansion of the exports of mackerel to Nigeria, salmon to France and lobster to Italy. Changes at the extensive margin

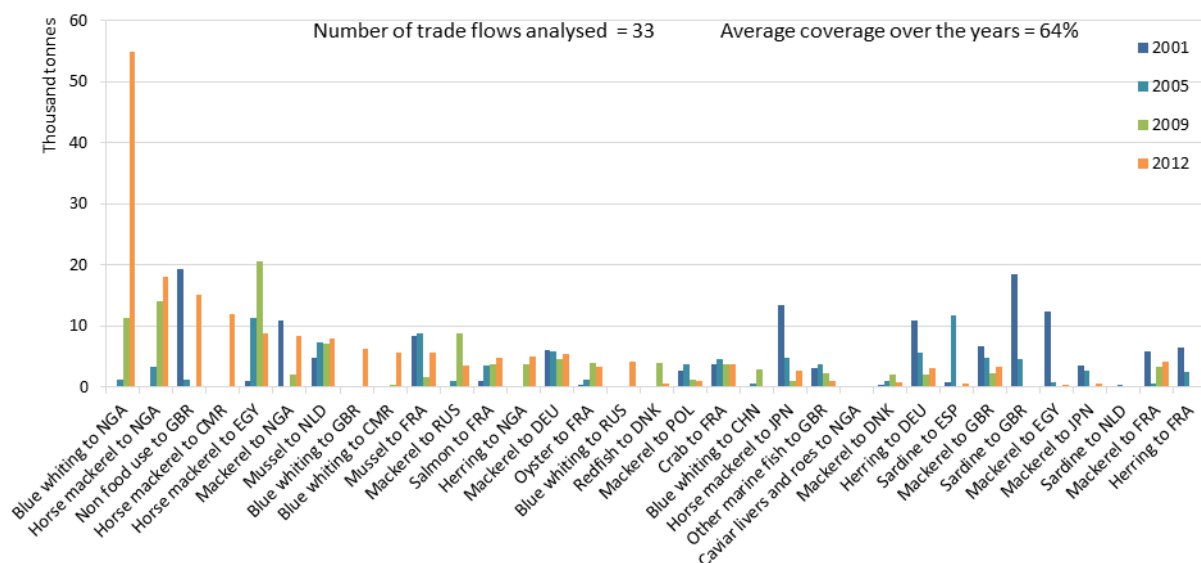
were related to new trade flows of horse mackerel to Cameroon and blue whiting to Nigeria. Failures contributed to the exports contraction in 2002-2006. The failures were deriving from abandonment of trade flows of caviar and trout to Korea and Japan between 2001 and 2006 and of trade of herring to Russia between 2004 and 2006. Other failures were registered in 2008 and 2009 with the abandonment of exports of horse mackerel to Georgia.

Figure 5.11.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Ireland, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 64% and 57% of the overall trade, respectively in volume and value.

As mentioned above, export volume of Irish fish and fishery products increased 14%, from 2001 to 2012. This growth has been driven by a sharp increase in the exports of blue whiting, mostly to Nigeria, but also to other countries, such as the United Kingdom and Russia.

The United Kingdom and France were the dominant countries of destination (in terms of volume) both at the beginning and at the end of the reference period, while other relevant countries lost their relevance over the years. Two examples are Germany, which contracted especially its imports of Irish herring and Japan, which reduced mostly imports of Irish horse mackerel. On the other hand, Irish seafood exports to Nigeria increased by 8 times, due especially to blue whiting (but also mackerel).

The value of seafood exports to the United Kingdom and Spain remained rather stable over the reference period; exports to Germany and Italy reduced and trade with all the other relevant countries of destination increased. The value of exports to the Netherlands increased sharply, mostly because of the increased trade of mussel. Trade with France doubled in value, mostly due to salmon, but also to oyster, scallop and crab. Finally, exports to Nigeria increased by seven times (in value), driven mainly by blue whiting e Horse mackerel.



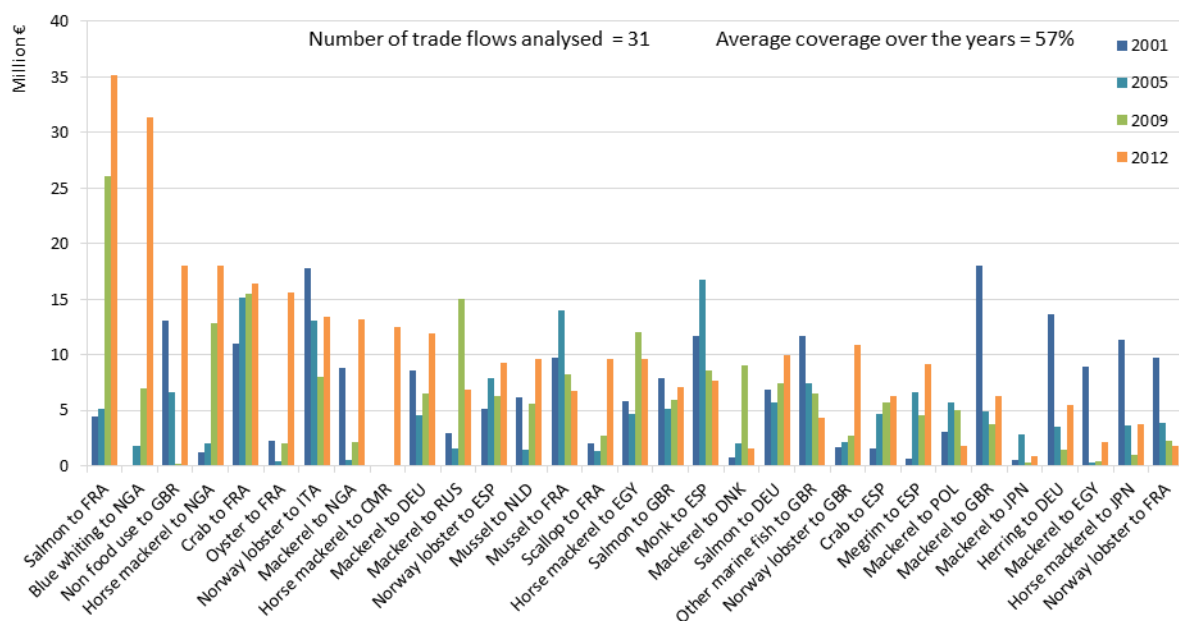


Figure 5.11.12 - Irish seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, the majority of seafood exports were frozen (56% of the total volume and 46% of its value), while 34% and 9% of their total volume was made up of fresh and prepared/preserved products, respectively (38% and 14%, in value) (Figure 5.11.13).

Export volume of fresh products increased sharply from 2001 to 2012, exports of frozen seafood remained rather stable and of prepared/preserved and dried/salted/smoked declined. Therefore, the contribution of fresh seafood to total export volume rose from 25% to 34%, while the share of prepared/preserved products contracted from 15% to 9%. In terms of value, the relative shares of the different categories of seafood products remained more stable, as seafood trade increased for all of them, except for dried/salted/smoked products.

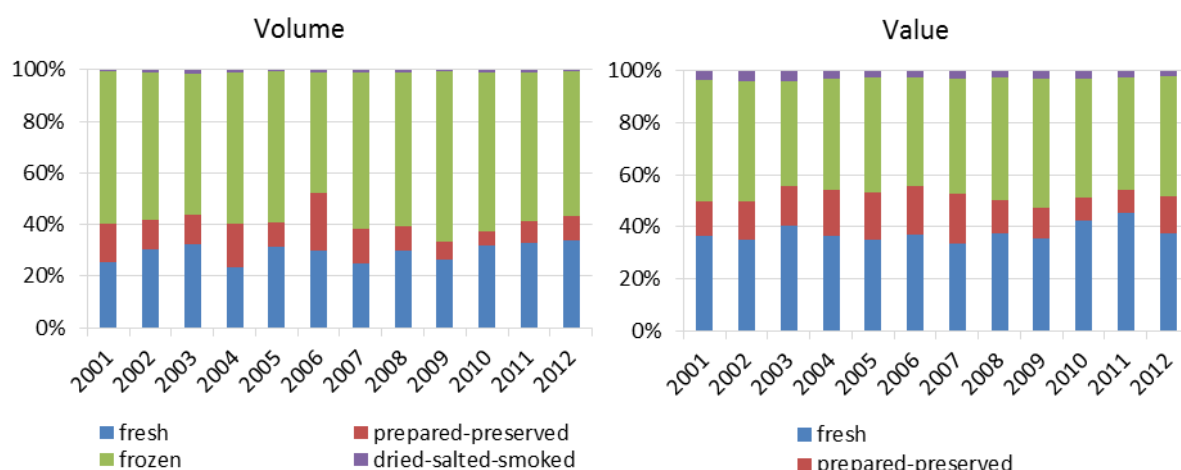


Figure 5.11.13 - Irish seafood exports trends by type of products: share in volume (left) and value (right)

Figure 5.11.14 shows the contribution of processed products to total exports, by countries of destination. Exports to Germany tend to be more processed than the average. On the other hand, the share of processed products to total exports to France and the United Kingdom, the most relevant countries of destination for Ireland in terms value of seafood trade, increased over the years. The change in the level of

processing for exports to Denmark derives from the progressive replacement of the trade of by product between 2001 and 2005 with the trade of frozen mackerel, occurred between 2005 and 2009. The long term trend since 1992 shows the progressive reduction of exports to Japan. The abandonment of trade of caviar, livers and roes has determined a progressive reduction of the contribution of processed products to total trade.

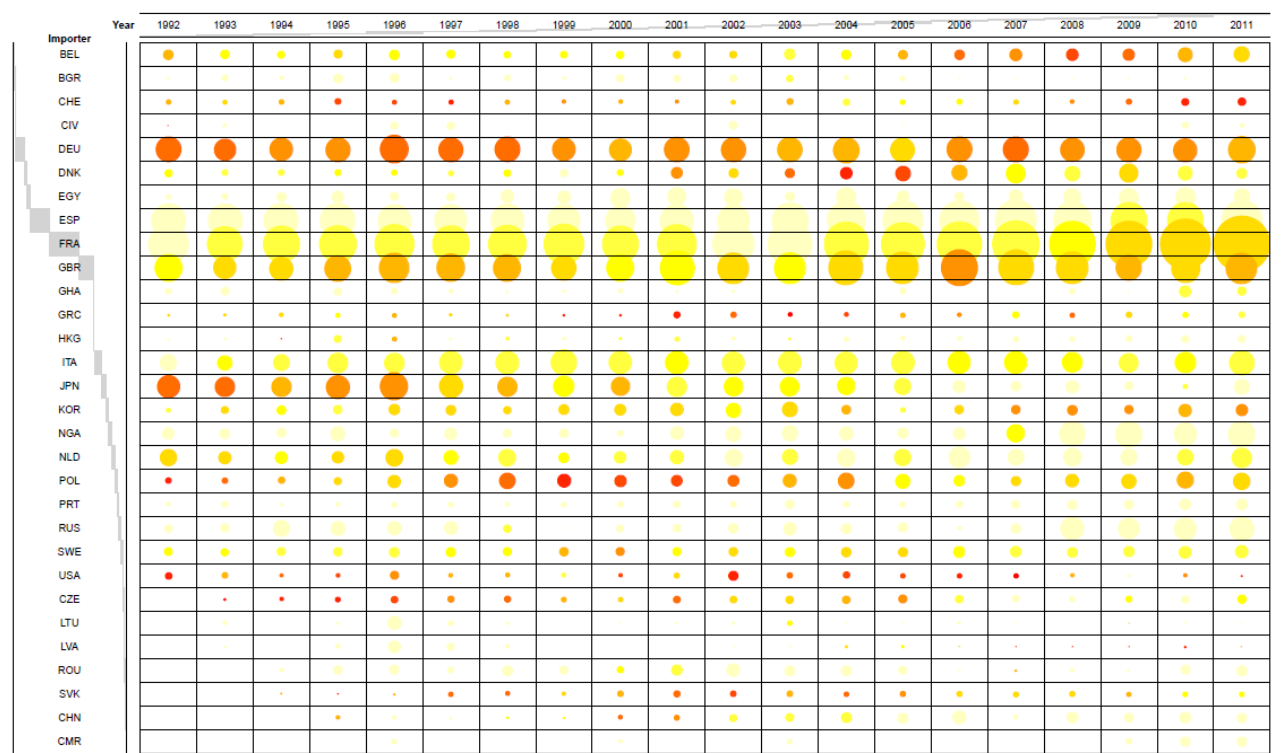


Figure 5.11.14 - Irish seafood exports trends by main seafood suppliers and contribution of processed products to total export value

## 5.12 Italy

### Production

The Italian fleet is highly diversified, with a broad range of vessel types targeting different species predominantly in the Adriatic Sea, where the fleet of the region Puglia operates, and in South Tyrrhenian Sea, where the Sicilian fleet operates. Total catches in 2011 were equal to 213 K tonnes and the most relevant species were European anchovy, other marine fish, European hake, deep water rose shrimp and swordfish, accounting together for more than 30% of the total (STECF, 2014a).

In 2011, the Italian aquaculture production amounted to 157 K tonnes of fish, corresponding to around 43% of the total Italian production of fish (aquaculture report, STECF, 2014b). The aquaculture industry is composed by several segments, the most relevant of which in terms of volume of production are the farming of Mediterranean mussels and the fattening of Trouts (STECF, 2014b).

The Italian fish processing sector is represented mostly by canning enterprises and the main products are canned and preserved tunas. However, there is also a significant number of companies that process anchovies, sardines and shellfish. In 2011, the value of production of the seafood canning industry amounted to 1.46 B Euro<sup>5</sup>, of which 1.07 B contributed by the canned tuna sector<sup>6</sup>. The canning industry (especially the tuna canning production) is heavily dependent on the imports of raw material from extra-community countries, especially Ecuador, Colombia and ACP countries (STECF, 2014c).

### Trade balance and exposure to trade competition

Italy is a net importer of fish and fishery products, with a negative trade balance of 751 K tonnes, valued at 3.4 B Euro (Figure 5.12.1). The trade deficit in volume deteriorated slightly over the reference period (by 5%), while the deficit in value increased significantly (by 29%, overall). This has been driven mostly by the increase of seafood imports, due to a higher per capita consumption (higher propensity to consume fish proteins, higher focus on more healthy products, higher life standards), as well as to the rise of the population (STECF, 2014c).

Intra-EU imports are more important than extra-community ones, which, however, are also relevant. Their relative contribution remained rather stable over the reference period. On the exports side, the large majority of trade occurs within the EU, even if the contribution of extra-community trade has increased over time.

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<sup>5</sup> ISMEA, 2012, Rapporto annuale 2012. Analisi e dati di settore. Analisi delle filiere. Roma, Dicembre 2012.

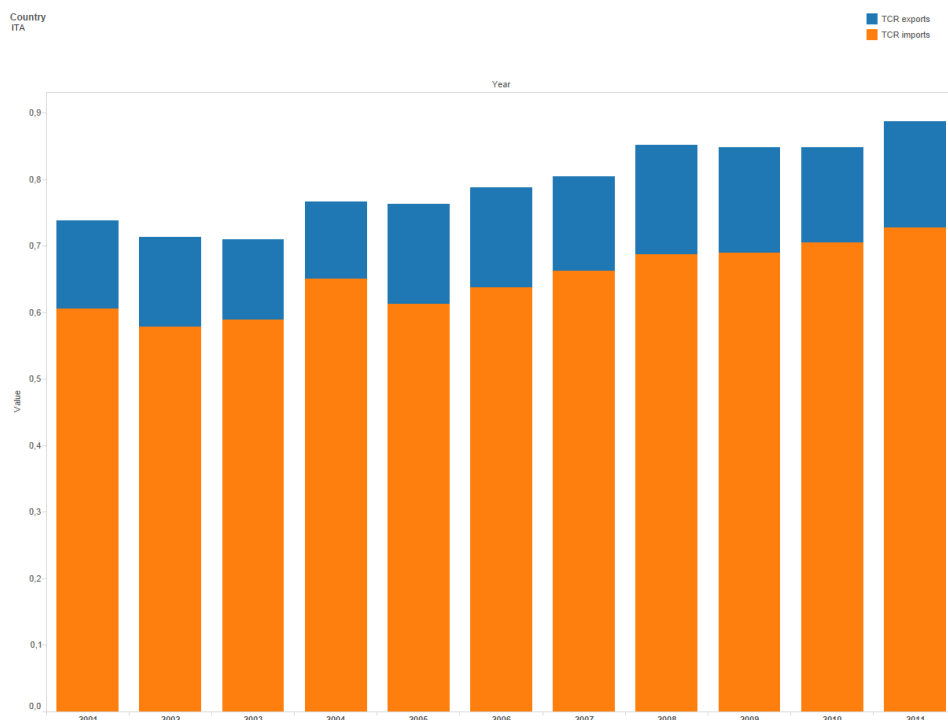
<sup>6</sup> ISMEA, 2012, Report ittico. Analisi e dati di settore 2011 e 2012. Roma, Dicembre 2012.



**Figure 5.12.1 - Italian seafood trade balance trends: value (left) and volume (right)**

According to the data, the Trade to Competition Ratio index increased almost continuously over the reference period, reaching the value of 0.88 in 2011 (

Figure 5.12.2). In spite of this, Italy remained one of the MS with the lowest exposure to trade competition. Trade competition for seafood is mostly driven by imports, as for most other MS.



**Figure 5.12.2 - Trend of the exposure to trade competition index for Italy**



## Imports

In 2012, Italy imported 862 K tonnes of seafood (corresponding to 3.9 B Euro). Over the reference decade, Italian seafood imports increased almost continuously in value, at an average annual growth rate of 3%, while remained rather stable in volume.

Intra-EU imports have been more relevant than extra-community trade, over the entire reference period in terms of both volume and value, ranging from 43% to 48% in volume and from 56% to 64% in value. Both shares remained rather stable over the years.

Figure 5.12.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 55% of the total volume of seafood imported by Italy and 55% of its value.

Spain has been the largest seafood supplier for Italy over the entire period. In 2012, it contributed 22% of the total imports in volume and 21% in value. The other most relevant seafood suppliers in terms of volume were the Netherlands (6%), France (5%), Greece (5%) and Germany (5%). In value, they were the Netherlands (7%), Denmark (6%), France (6%) and Greece (6%).

Trade with Spain increased significantly from 2001 to 2012 (by 18% and 59%, respectively in volume and value), as well as its contribution to total seafood imports. Trade with France and the Netherlands decreased in volume (by 33% and 1%, respectively) and increased much less in value (by 11% and 9% respectively) and with Denmark declined both in volume (- 47%) and value (-31%).

Furthermore, imports from several extra-community countries increased significantly, for example from Vietnam (by more than 6 times in volume and more than 7 in value), Indonesia (by almost 16 times in volume and 8 in value) and the Mauritius (9 times in volume and 11 in value). Among the EU MS, trade with Poland rose sharply.

The trade of tuna as raw material for the Italian tuna canning sector explains a large part of the increase of imports from extra-community countries. As mentioned, the Italian fish processing sector is mostly represented by the tuna canning industry, which is totally dependent on imports. Spain is the most relevant country of origin for this species and the volume of Spanish tuna imported by Italy has increased by 28% over the period. However, imports from several extra-community countries have increased more significantly, for example from Ecuador (by 60% in volume) and Thailand (by 13 times in volume) and new trade flows have emerged, for example imports from the Mauritius. Furthermore, the increase in the cost of tuna occurred over the last decade as a consequence of the smaller catches, has led the Italian companies to change their production and marketing strategies: first, imports of frozen, fresh and refrigerated tuna, mostly from Vietnam, has increased at the expense of the more expensive semi-manufactured tuna loins; second, several companies have relocated their production in areas closer to fishing grounds and where the labour cost is lower (STECF, 2014c).

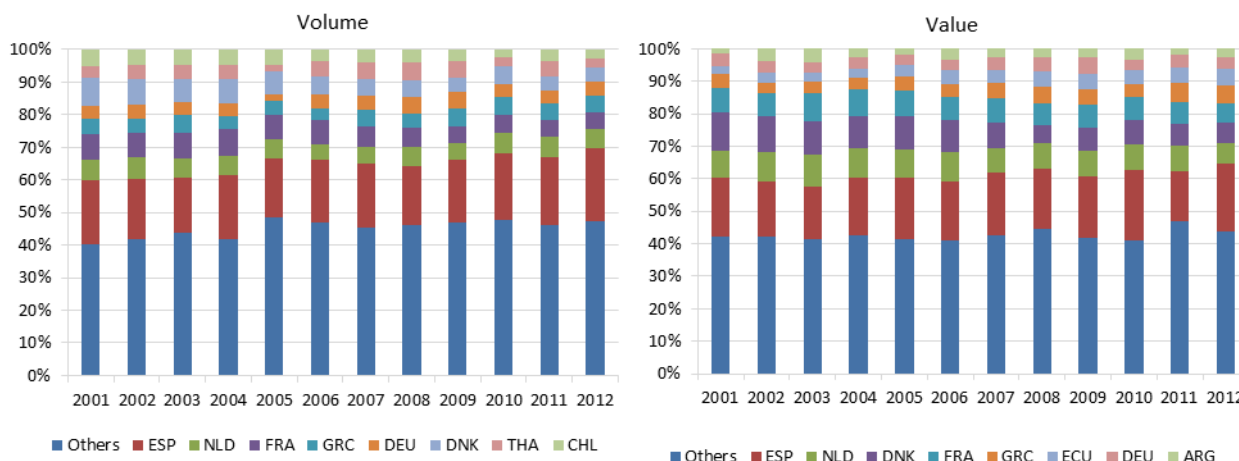


Figure 5.12.3 - Italian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.12.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 77% of the total volume of seafood imported by Italy and 72% of its value.

In 2012, 13% of the overall volume of Italian seafood imports was made up of miscellaneous tuna. Products of squid were the second most imported seafood items (contributing 9% of the total volume), followed by other marine fish (8%), fish for non human consumption (5%) and salmon (5%). In terms of value, miscellaneous tuna, squid, other marine fish, salmon and octopus contributed the most to overall imports (13%, 9%, 8%, 8% and 6%, respectively), while fish for non-human consumption contributed only 2% of the overall value.

Trade of all the most relevant commercial species increased significantly in value, especially for salmon (+120%), with the only exception of other marine fish, the trade of which decreased by 3%. On the other hand, import volumes increased for tuna and salmon (by 31% and 86%, respectively), but contracted for squid (-14%), other marine fish (-12%) and fish for non-human consumption (-57%).

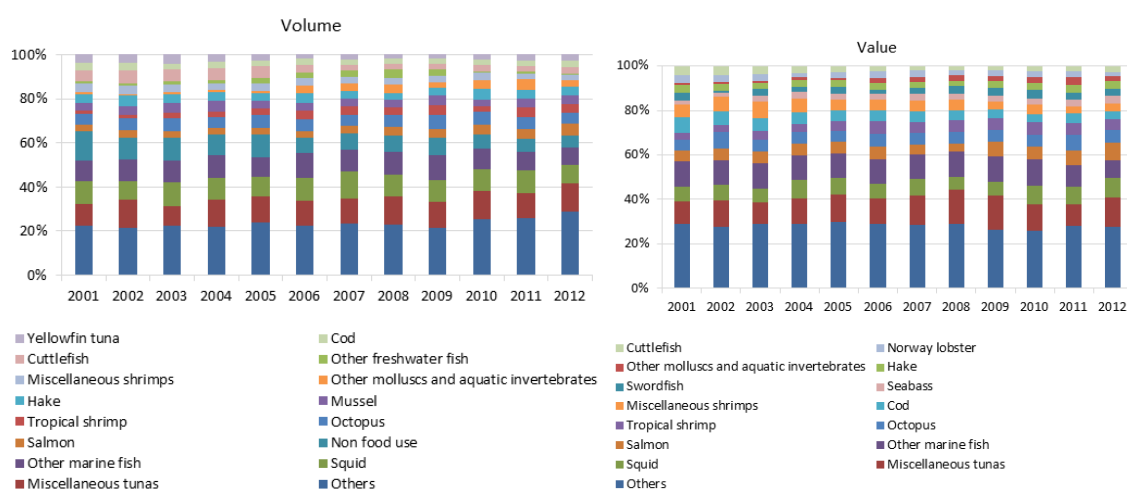


Figure 5.12.4 - Italian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Italy, in terms of volume (top figure) and value (bottom figure). The list of the most relevant

trade flows includes the “top 10” in volume and value, for each year of the period 2001-2012. As Italian seafood imports patterns are very complex, the two lists cover only 37% and 38% of the overall trade, respectively in volume and value.

As already observed, trade with Spain increased sharply from 2001 to 2012, both in volume and value. Some of the commercial species which contributed the most to the volume increase are tuna, swordfish and mussel. Tuna, squid and octopus, instead, contributed significantly to the rise in value.

As captured by the figure, the sharp increase in the imports of salmon is attributable mostly to the trade with Sweden (Figure 5.12.5). Trade with Denmark decreased sharply in volume, because of the reduced imports of fish for non-food uses. Cod and Norway lobster, instead, contributed markedly to its decline in value. The decreased trade with France in terms of volume resulted mostly from the contraction of the imports of yellowfin tuna.

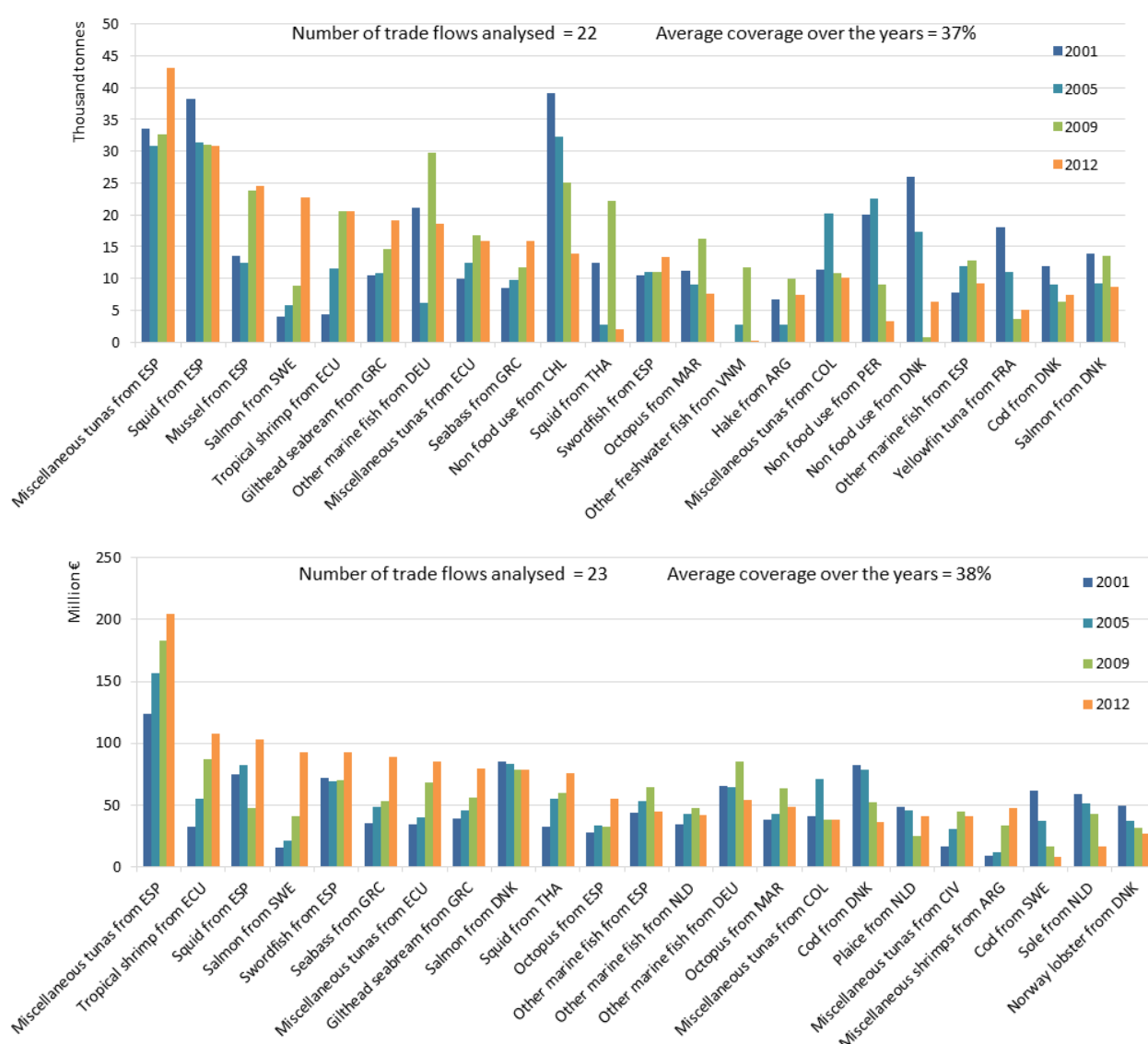


Figure 5.12.5: Italian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.12.6 shows the trends in the composition of imports by processing and preservation status. The majority of seafood imports are made up of frozen seafood (42% of the total volume and 41% of its value, in 2012). In 2012, the volume shares of prepared/preserved and fresh products were equal to 29% and

25%, respectively, but fresh seafood contributed more in terms value (27% vs. 23%). Import value increased for all different types of products and their relative contribution to the total remained rather stable over the reference period. On the other hand, the contribution of frozen products to the total volume decreased from 46% to 42%, mostly in favour of fresh seafood trade, the share of which rose from 19% to 25%.

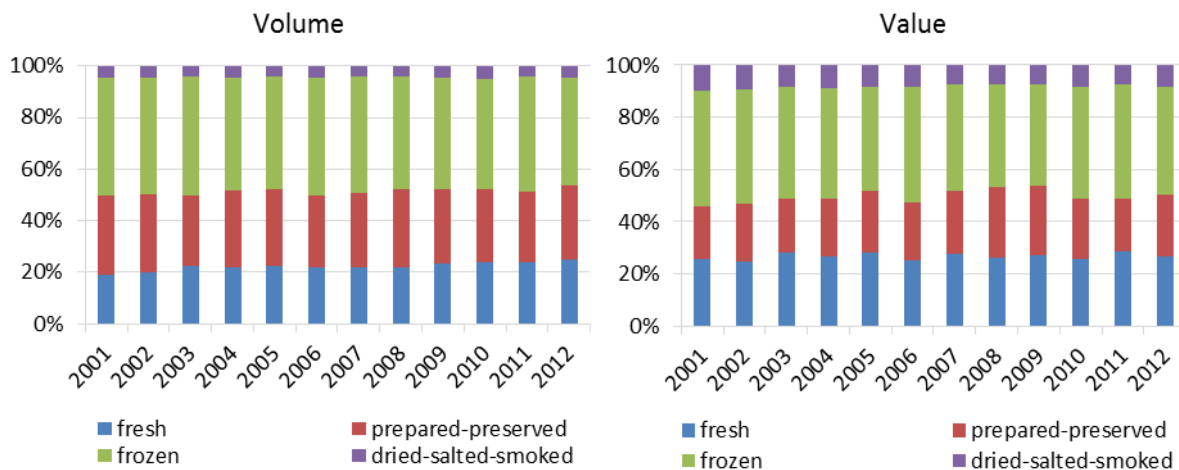


Figure 5.12.6 - Italian seafood imports trends by type of products: share in volume (left) and value (right)

The share of processed products over the total imports depends strongly on the country of origin (Figure 5.12.7). For example, the majority of the products imported from Greece, Spain and France are mainly non-processed, while imports from Denmark, the Netherlands and Norway are mostly processed.

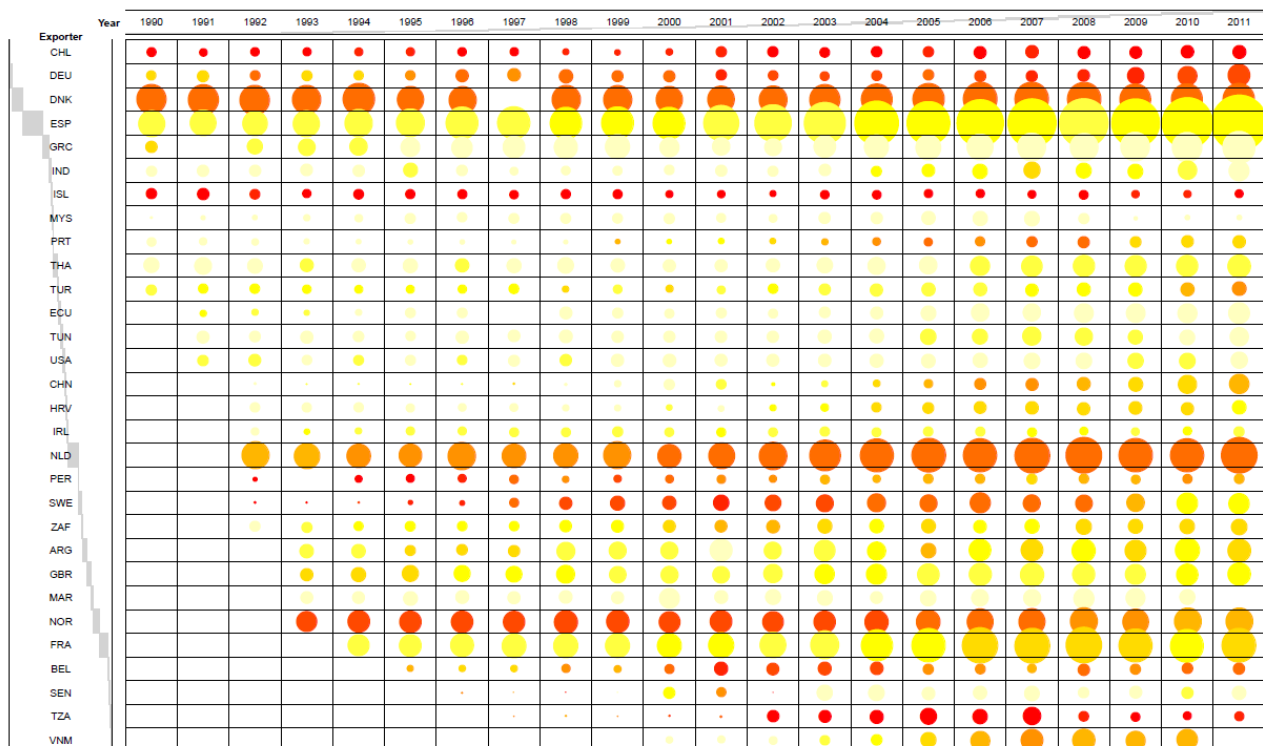


Figure 5.12.7 - Italian seafood imports trends by main seafood suppliers and contribution of processed products to total import value

Note: the size is proportional to the import value and the shading to the share of processed products.

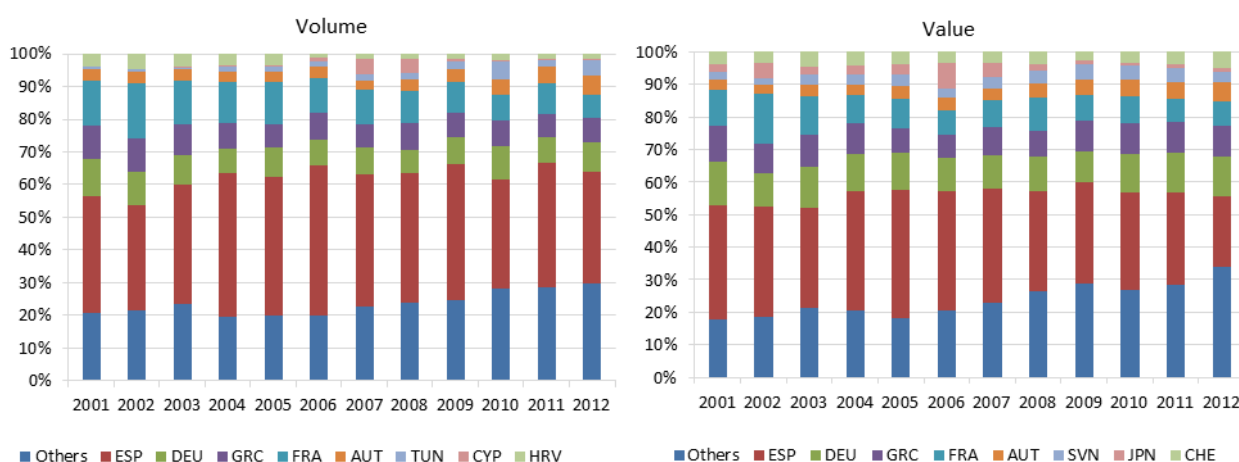
## Exports

In 2012, Italy exported 111 K tonnes of seafood, valued at 469 M Euro. This corresponded to a 19% decrease in volume and 13% increase in value since 2001. The large majority of seafood exports were directed to MS (82% in volume and 79% in value in 2012), but the contribution of extra-community trade increased over time (in 2012, it was equal to 18% and 21%, in volume and value respectively, vs. 10% and 13% in 2001).

Figure 5.12.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 76% of the total volume of seafood exported by Italy and the same share in value.

The most relevant country of destination for Italy is Spain, which, in 2012, accounted for 34% of the total Italian exports in terms of volume and 22% in value. In the same year, the other most relevant trade partners in volume were Germany (accounting for 9% of the Italian seafood exports), Greece (7%), France (7%) and Austria (6%). The same four countries were the most relevant also in terms of value of seafood trade, respectively accounting for 12%, 9%, 8% and 6% of the overall export value.

From 2001 to 2012, seafood exports to Spain, Greece and France decreased in volume (by 11%, 32% and 52%, respectively) and value (by 30%, 5% and 21%, respectively) and to Germany declined in volume (by 29%) and remained rather stable in value. On the other hand, exports to several MS of Central and Eastern Europe (e.g. Austria, Slovenia, Romania, Czech Republic and Poland) and extra-community countries, such as Tunisia and Turchia, increased sharply both in volume and value.

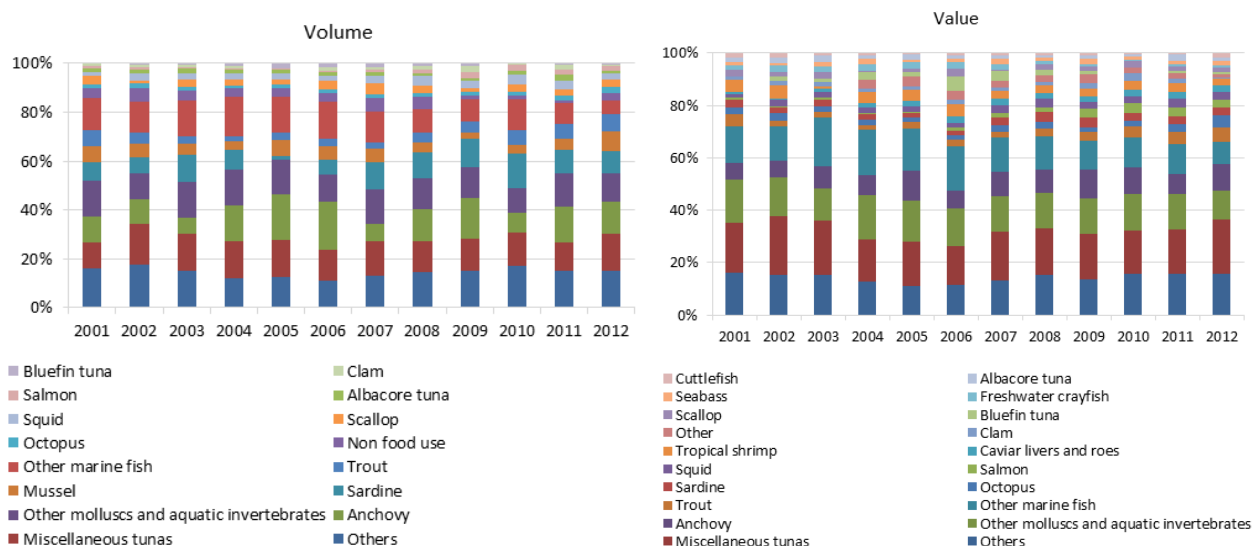


**Figure 5.12.8 - Italian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.12.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 85% of the total volume of seafood exported by Italy and almost 86% of its value.

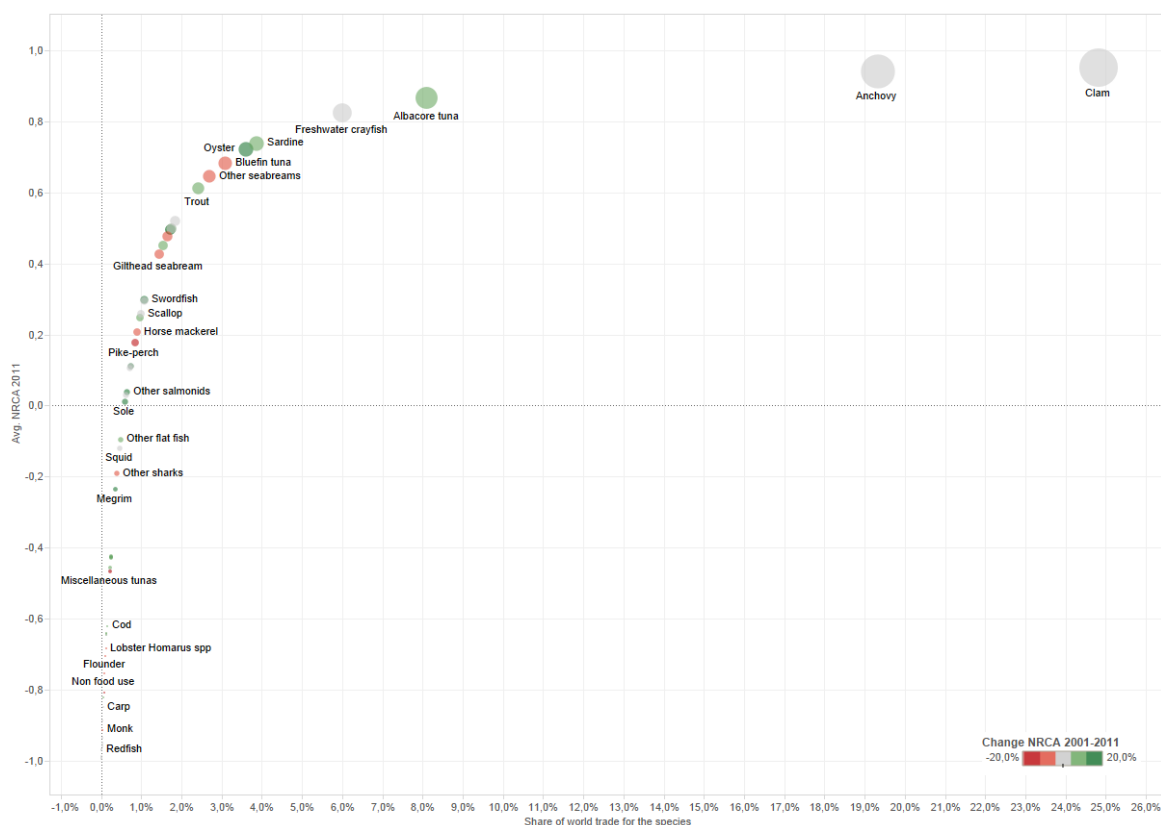
Miscellaneous tunas is the most exported commercial species for Italy (accounting for 15% of the total volume of seafood exports in 2012), followed by anchovies (13%), other molluscs and aquatic invertebrates (11%), sardine (9%) and mussels (8%). Miscellaneous tuna is the most relevant commercial species also in terms of value of Italian seafood exports, accounting for 21% of the total, followed by other molluscs and aquatic invertebrates (11%), anchovies (10%), other marine fish (8%) and trout (7%).

Export volume increased for all the most relevant traded items over the reference period, especially for miscellaneous tuna (+38%). The only exception is represented by other molluscs and aquatic invertebrates, the trade of which declined by 27%. Traded values, instead, increased for tuna (+22%), anchovies (+97%), mussels (+119%) and trout (+42%), while decreased for other marine fish (-33%) and other molluscs and aquatic invertebrates (-25%).



**Figure 5.12.9 - Italian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

Italy has a comparative advantage higher than the rest of the world in several commercial species (Figure 5.12.10). As evidenced by trade flows, the highest comparative advantage on the international market corresponds to anchovies (NRCA = 0.94) and clam (NRCA = 0.95). Trade of Italian clam and anchovies are cases for which MS recorded in 2011 the highest value of the index among all world countries. The NRCA index for these species remained rather stable from 2001 to 2011.



**Figure 5.12.10 - Normalized Revealed Comparative Advantage index (NRCA) for Italy, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

The largest part of the exports expansion occurred from 2004 to 2006, while in 2003 there was a significant contraction of the overall export value (Figure 5.12.11). Trade values changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries). The activation of new trade flows and the failures of old ones accounted for a rather small part of the exports change over the entire period.



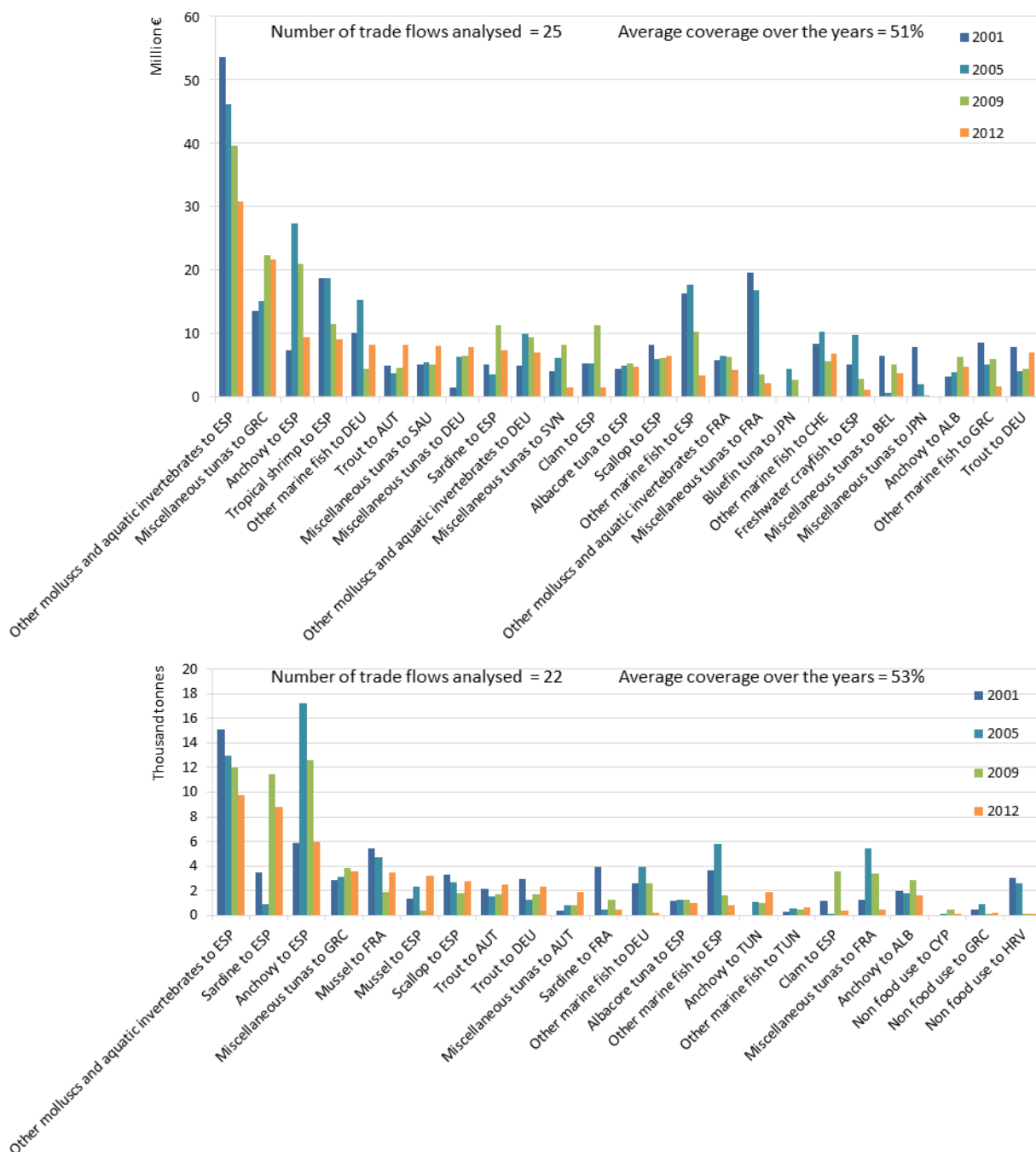
**Figure 5.12.11 - Italian seafood exports margins: 2001-2012**

The following figures show the trend of the most relevant trade flows (combinations “country of destination-species”) for Italy, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 53% and 51% of the overall trade, respectively in volume and value.

As mentioned, seafood exports to Spain, Greece and France decreased in volume and value from 2001 to 2012. For Spain, this resulted mostly from the decline in the trade of other marine fish and molluscs and aquatic invertebrate (Figure 5.12.12). Several seafood items had a significant role in the case of France, for example miscellaneous tuna, other molluscs and aquatic invertebrates and sardines (the last ones explain especially the decline in volume). Exports of mussel to France, instead, although reduced significantly in volume increased by almost five times in value. Even if not captured by the figure, the lower trade with Greece is mostly explained by reduced exports of other marine fish, octopus and anchovies.

As also mentioned above, exports to several MS of Central and Eastern Europe (e.g. Austria, Slovenia, Romania, Czech Republic and Poland) and extra-community countries (e.g. Tunisia and Turchia), increased sharply over the reference period, both in volume and value. The figures below show only some of the trade flows behind this trend, for example the exports of anchovy to Tunisia and trout to Austria.





**Figure 5.12.12 - Italian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2012, around 50% of Italian seafood export volume was represented by fresh products, while prepared/preserved and frozen seafood contributed 26% and 17% of the total, respectively. Fresh seafood contributed the most also in value (39%), followed by prepared/preserved products (37%). On the other hand, less than 20% of the total value was made up of frozen seafood.

While trade value of fresh and frozen seafood remained rather stable from 2001 to 2012, it increased over time for prepared/preserved products, and therefore, the contribution of these products to the total export value also rose (Figure 5.12.13). On the other hand, the volume shares of the different types of products did not changed significantly over time.

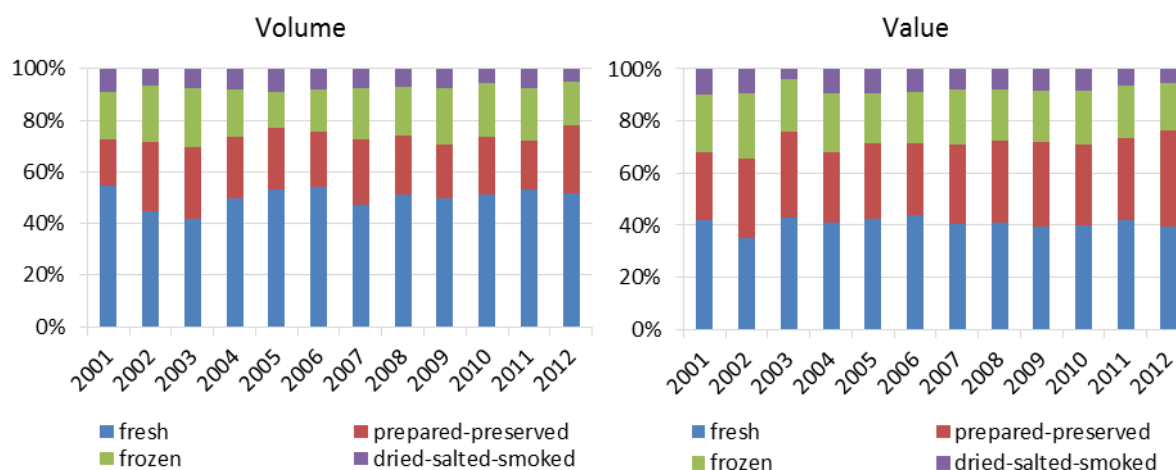


Figure 5.12.13 - Italian seafood exports trends by type of products: share in volume (left) and value (right)

Processed products do not contribute significantly to total exports. Only exports to some minor countries of destination, such as Cyprus and Albania, tend to be more processed than the average (Figure 5.12.14).

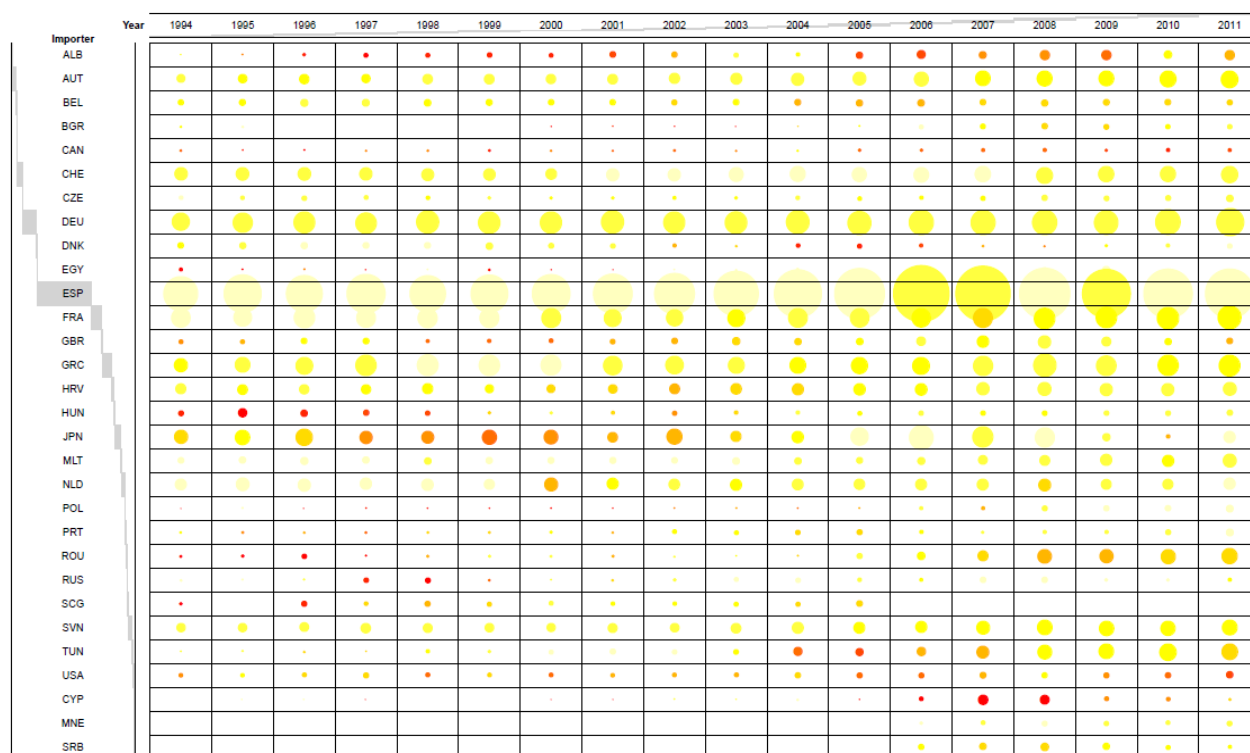


Figure 5.12.14 - Italian seafood exports trends by main seafood suppliers and contribution of processed products to total export value

Note: the size is proportional to the export value and the shading to the share of processed products.

## 5.13 Latvia

### Production

Latvian fleet is mostly represented by small scale boats and vessels, fishing in the Baltic Sea; however most of the fish (around 58% of the total production in 2011) is caught by the industrial high sea vessels, operating close to the African coast and in the North and North East Atlantic. The total weight of fish landed by the Latvian fleet in 2011 was 155.3 K tonnes; the fish landed by the vessels fishing in the Baltic Sea was valued at 21.8 M Euro.

Aquaculture represents a small share of the total Latvian fish production, with a total production of around 0.5 K tonnes of fish (mostly carps) in 2011, valued at 1.1 M Euro. In 2012, the most important farmed species were carp (84% of the production), sturgeons (4%), Northern pike (2%) and trout (1.6%).

Fish processing is a well-developed old tradition in Latvia. The processing sector is fully based on local natural resources. Most fish processing enterprises are situated in the coastal regions. The overall value of the production of the sector in 2011 was 170.8 M Euro. Most of the processed fish production is represented by frozen and chilled fish. The other most important type of production is canned and preserved Baltic sprat (accounting for 19% of the overall production in 2010). Latvia is historically well known in the Eastern Europe for this type of production.

Historically, the Latvian fishers and fish processing companies produce more seafood than what is necessary to satisfy the local demand. Therefore, the fisheries sector can be considered as the most export focused sector of the economy and is characterized by a permanently positive external trade balance (STECF, 2014c). During the entire reference period, indeed, the value of seafood exports exceeded the value of seafood imports.

### Trade balance and exposure to trade competition

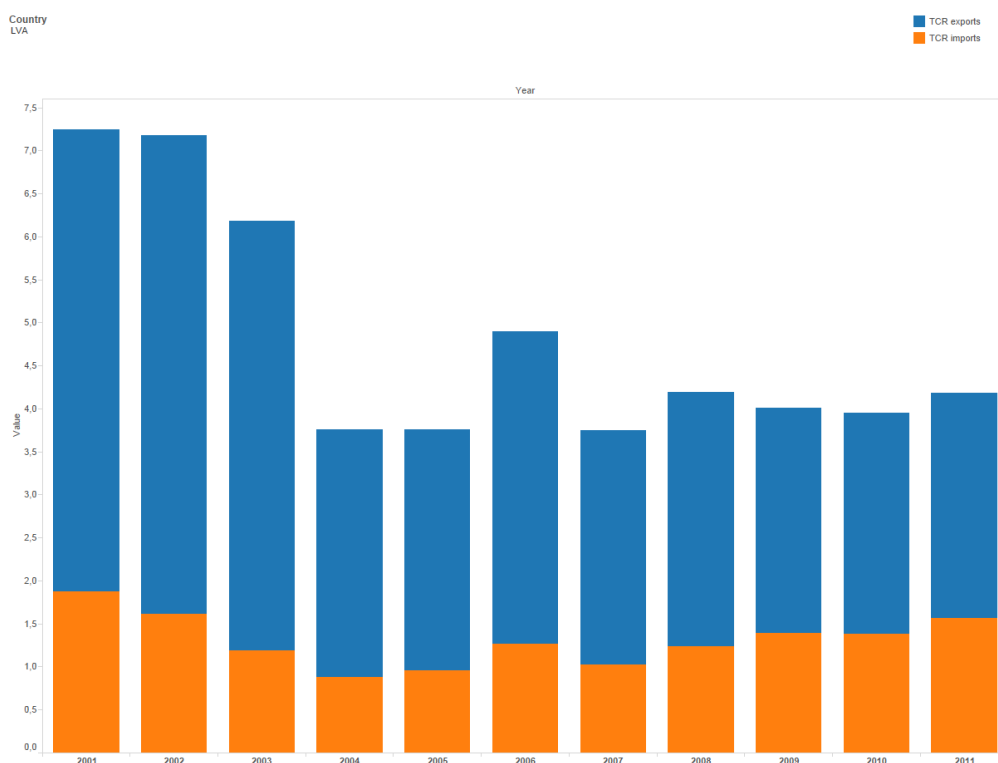
The trade balance of seafood for Latvia has been positive during the entire analysed period, with the export value exceeding the import value by 42%, in average over the period (Figure 5.13.1).

Latvia imports raw materials for the fish processing industry and exports seafood products. Therefore, its seafood trade balance depends on the economic situation in the major markets. For this reason, a deterioration of the trade balance was observed in the years 2006-2008, when the general economic situation of the countries importing Latvian seafood worsened and their seafood consumption decreased. Despite this fluctuation, the trade balance in value reduced by 31% over the reference period, going from 43.4 M Euro in 2001 to 30.1 M Euro in 2012. At the same time, the difference between the weight of imports and exports reduced by 31%, going from 80.1 K tonnes in 2001 to 55.4 K tonnes in 2012.



**Figure 5.13.1 - Latvian seafood trade balance trends: value (left) and volume (right)**

The volume of Latvian seafood trade is much higher than the apparent consumption of seafood within the country. This is confirmed by the exposure to trade competition index which compares the volume of imports and exports of the country with the national seafood consumption (Figure 5.13.2). Seafood imports exceeded the consumption by 56% (TCR imports = 1.56) and exports exceeded consumption by 162% (TCR exports = 2.62) in 2011; however the contribution of exports decreased significantly from 2001, when TCR exports was equal to 5.37.



**Figure 5.13.2 - Trend of the exposure to trade competition index for Latvia**

### Imports

Latvia imported around 58.0 K tonnes of fish and seafood in 2012, compared to 38.7 K tonnes in 2001. The value of its seafood imports also increased over the period, going from 27.9 to 152.5 M Euro. The increase of the import value was mainly driven by the increase of prices and changes in the imports structure. The average annual growth rate of the import value was around 19%, while the weight increased only by 5% p.a..

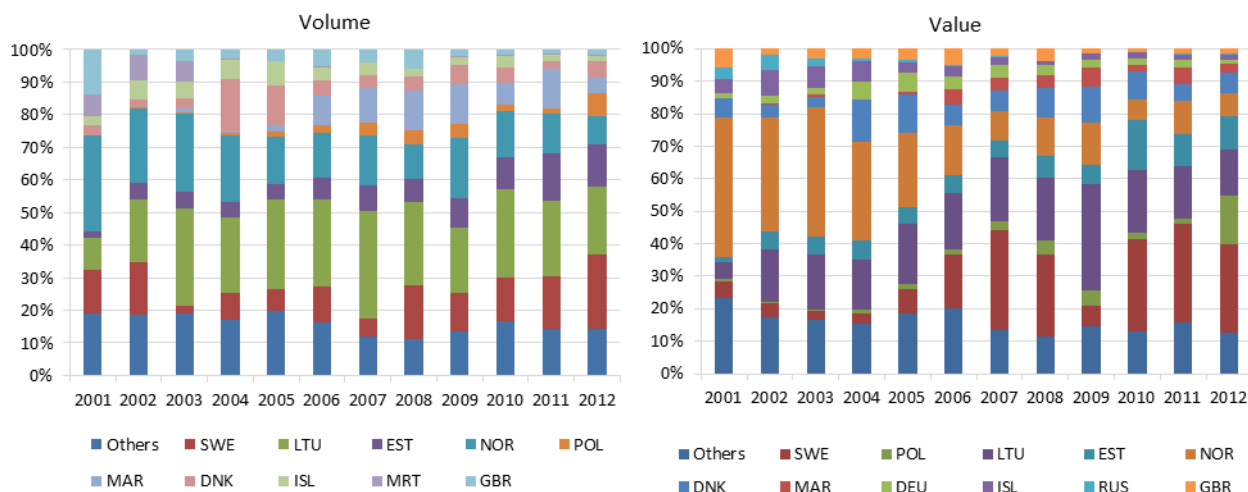
Over the last decade, Latvia imported from the EU MS almost 73% of its seafood in terms of value and 64% in weight. The contribution of intra-community imports to the overall import value grew from 33% in 2001 to 85% in 2012.

Figure 5.13.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 84% of the total volume of seafood imported by Latvia, and the same in terms of value.

In 2012, Latvia imported seafood from 44 countries from all over the world. The major EU suppliers are Sweden (contributing 23% of the total seafood volume in 2012, corresponding to 27% of the total value), Poland (7%, 15%), Lithuania (21%, 14%), Estonia (13%, 10%), Denmark (5%, 6%) and Finland (3%, 1%). The overall contribution of these Baltic countries to the total seafood imports was 72% in terms of weight and 74% in value.

The most important third countries supplying seafood to the Latvian market are Norway (contributing 8% of total seafood weight and 7% of the total value, in 2012), Morocco (5%, 3%) and Iceland (2%, 2%). The trade share of Norway and Iceland decreased almost continuously from 2001 to 2012 (from 43% of the total value of seafood imports to 7% for Norway and from 5% to 2% for Iceland), while the importance of

Sweden as major supplier to the Latvian market increased since this country joined the EU in 2004. Latvia imported seafood from 44 countries from all over the world in 2012.



**Figure 5.13.3 - Latvian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.13.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 90% of the total Latvian seafood imports, both in volume and value.

Salmon, herring, mackerel, trout and sprat are the major species imported to the Latvian market. In 2012, the imports of salmon and other salmonids accounted for 46% of the total value of seafood imports and 25% of their weight. The majority of them were imported fresh from Sweden. Most of the trade flow from this country to the Latvian market is made up of fresh salmon. This trade flow grew since 2004, when some new processing plants, specializing in salmon processing, were built in the country.

The second most important raw material and imported products in terms of value are small pelagic species, like herring, mackerels, sprat and sardine. These species contributed 15% of the overall import value and 34% of the import weight in 2012. As mentioned before, smoked and canned sprats are traditional products of the Latvian fish processing industry. Therefore, in 2011, when the Latvian sprat quota in the Baltic Sea decreased by 24% and the local supply was not enough for the processing sector, Latvia increased its imports of Baltic sprat from other countries in the region (Estonia, Poland, Sweden, Finland and Lithuania). Consequently, the share of sprat in the overall imports weight increased from 5% in 2010 to 16% in 2012. A similar situation can be observed also in the period 2001-2002.

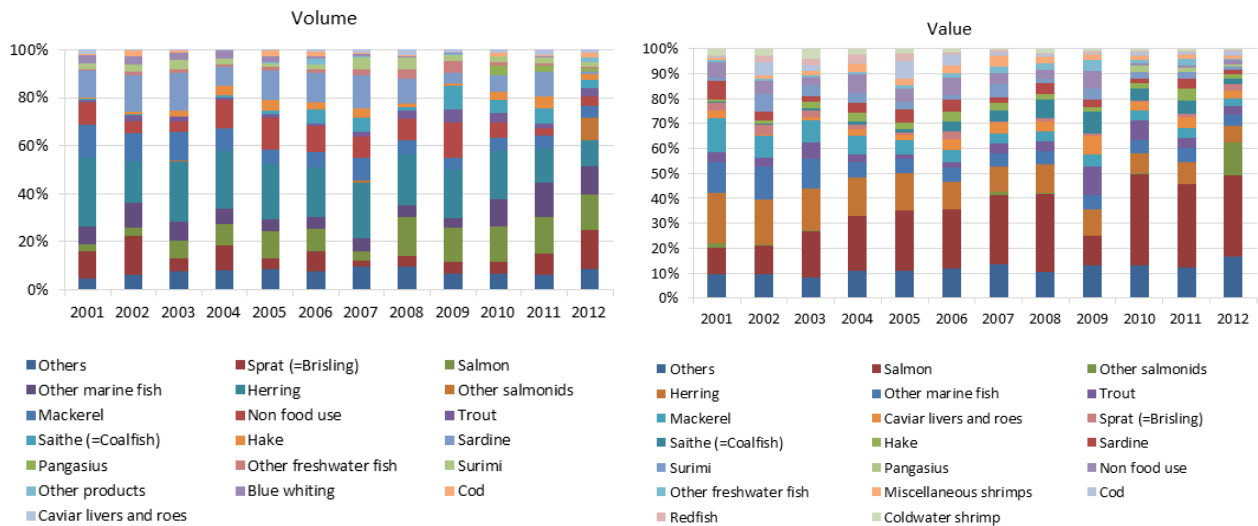
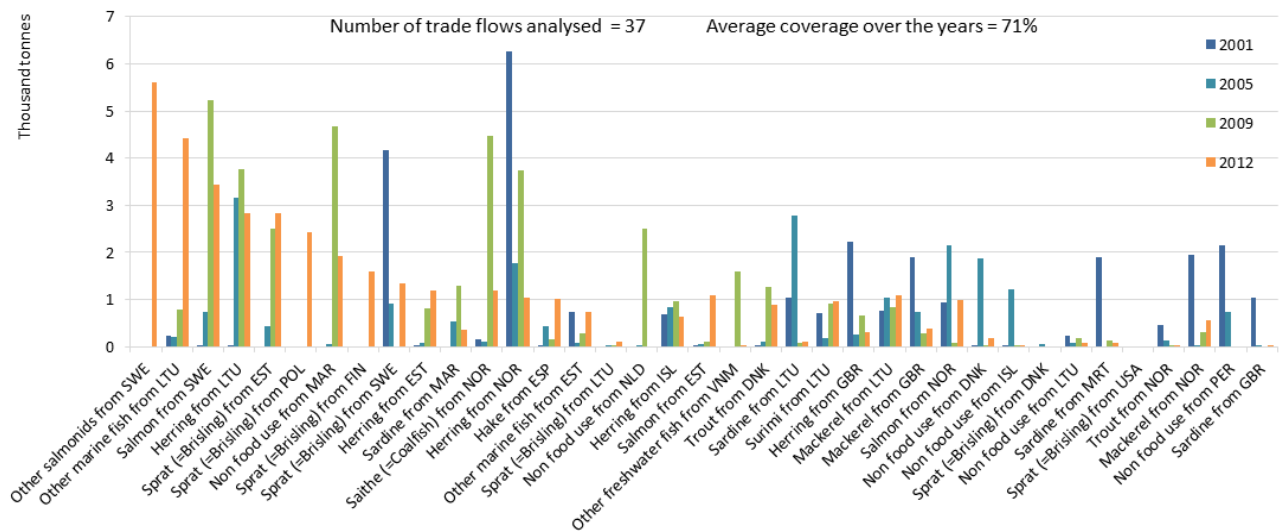


Figure 5.13.4 - Latvian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Latvia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover, in average over the years, 71% and 65% of the overall trade, respectively in volume and value (Figure 5.13.5).



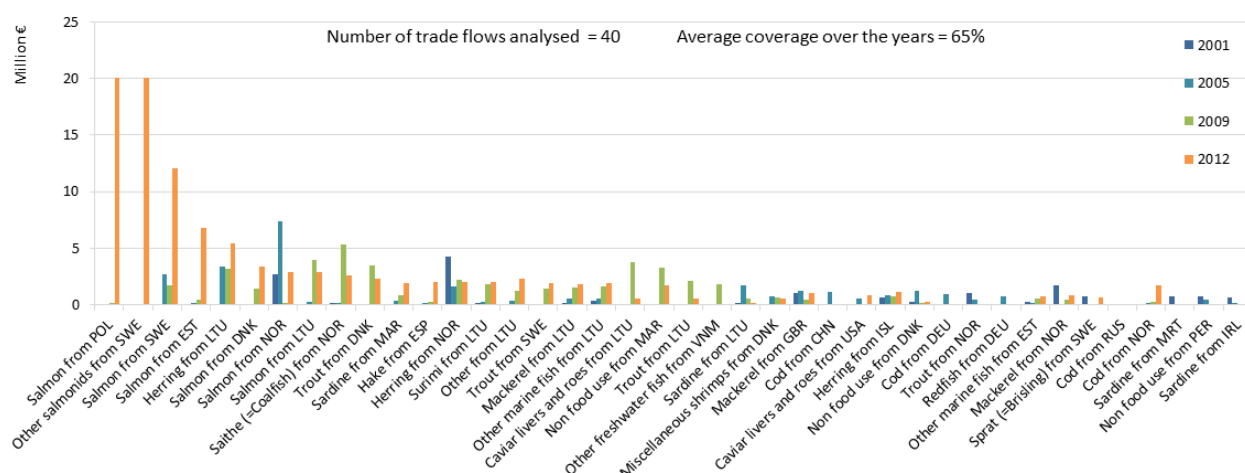


Figure 5.13.5 - Latvian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.13.6 shows the trends in the composition of imports by processing and preservation status. The increase of fresh fish imports was mostly driven by the trade of fresh salmon and other salmonids, as well as by the sprat landings of other Baltic Sea fishing nations in the country.

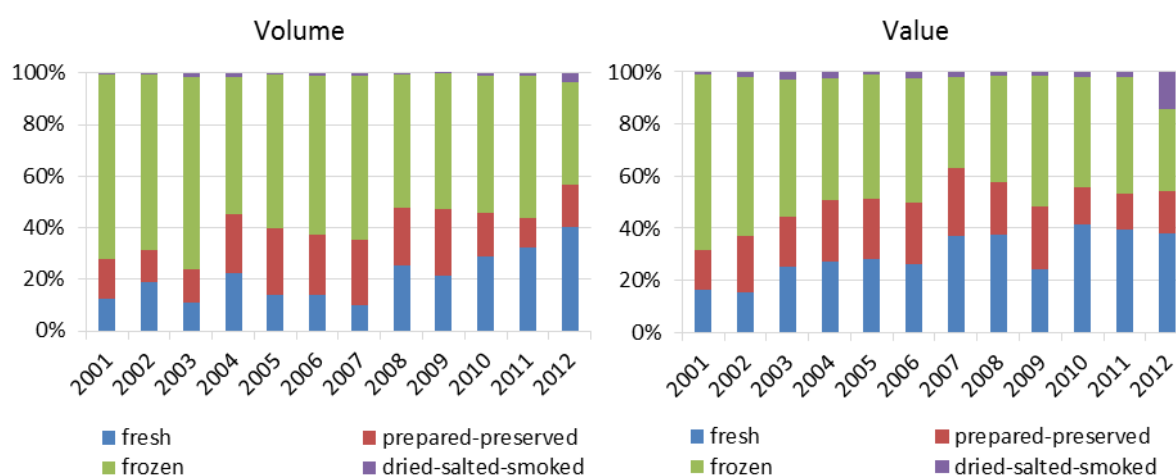


Figure 5.13.6 - Latvian seafood imports trends by type of products: share in volume (left) and value (right)

Figure 5.13.7 shows the changes in the contribution of processed products to total imports, by major seafood suppliers. As mentioned before and shown in the figure, the major suppliers of fresh fish are Sweden and Norway. Compared with the imports from these two countries, the share of processed products in the imports from other relevant partners is higher. For example, the majority of the seafood imports from Denmark is frozen or prepared/preserved.





**Figure 5.13.7 - Latvian seafood imports trends by main seafood suppliers and contribution of processed products to total import value**

**Note: the size is proportional to the import value and the shading to the share of processed products.**

## Exports

Latvia exported 113.4 K tonnes of seafood in 2012, valued at 182.6 M Euro. Exports increased every years, except in 2003 and 2007; the export value increased by 10% p.a. in average over the reference period, while the volume of exports remained almost the same.

Figure 5.13.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 86% of the total volume of seafood exported by Latvia and 82% of its value.

In 2012, the major countries of destination for Latvian seafood were Estonia (accounting for 36% of the total value of seafood exports and 15% of their weight), Russia (18% and 30%), Lithuania (13%, 12%), France (5%, 2%), Poland (4%, 5%), Belarus (4%, 6%), Denmark (3%, 3%) and Ukraine (2%, 9%).

Most of the exports to Russia (83% of the value of seafood destined to this country, in 2012), Ukraine (49%), Belarus (41%), Kazakhstan (55%), Georgia (73%) and other ex USSR countries, as well as to Germany (76%) and Check Republic (43%), is mostly represented by preserved miscellaneous small pelagics. Smoked sprat conserves are well known in the region.

The geographical distribution of the exports changed rather significantly over the period 2001-2012. The contribution of intra-community imports to the total value of seafood exports increased from 32% in 2001 to 68% in 2012. Seafood exports to Russia decreased markedly, as well as their contribution to total export value (from 52% in 2001 to 18% in 2012). Over the same period, the exports to Estonia increased from 0.4% to 36%.

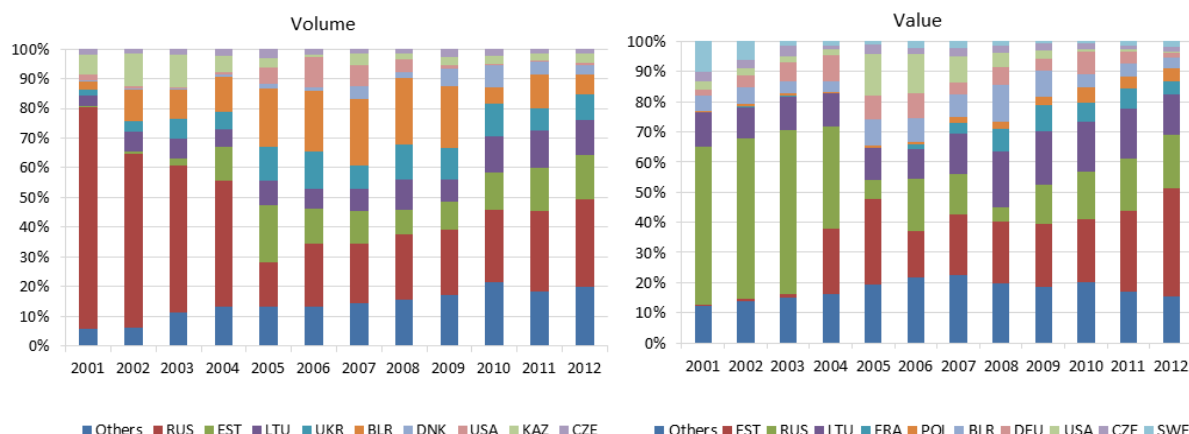


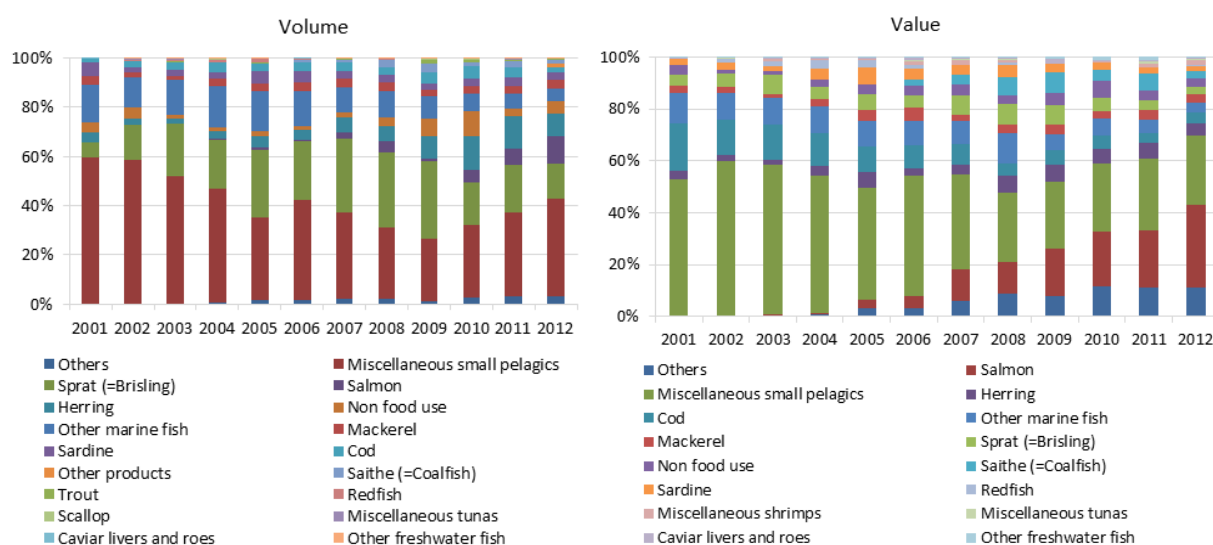
Figure 5.13.8 - Latvian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.13.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Latvian seafood exports almost entirely, both in volume and value.

More than one third of the seafood that Latvia exported over the period was made up of cut prepared and preserved miscellaneous small pelagics. The maximum share of these products in the Latvian export value was observed in 2002, when it reached 60%. However, since the years 2005-2006, when the salmon processing industry appeared in Latvia, the share of products of small pelagic in the Latvian seafood exports decreased (they contributed 27% of the value of seafood exports in 2012) and salmon took the leading place in terms of value of exports (it accounted for 32% of the overall value of exports in 2012).

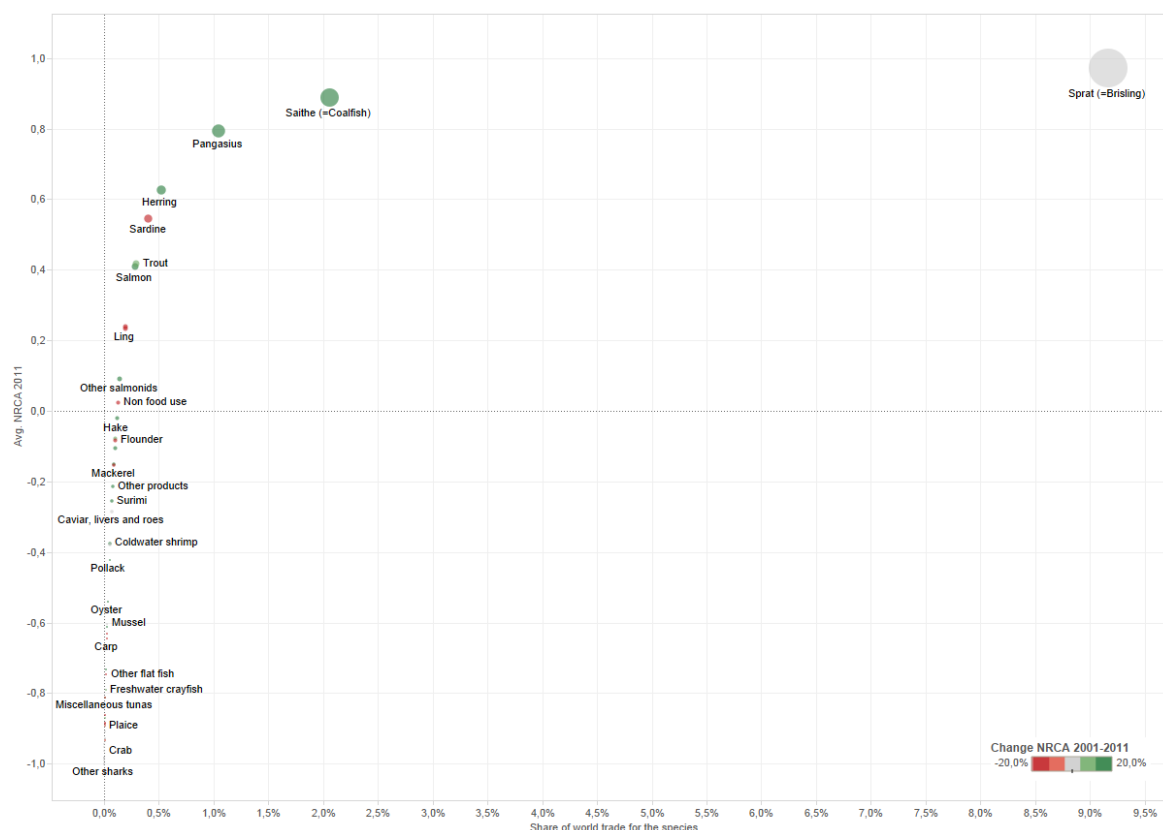
Most of the salmon exports are destined to Estonia (86% of the total value of salmon exports in 2012) and Lithuania (8%). In 2012, salmon was the main product traded with these countries. Latvia may be seen as a transit country for fresh salmon destined to Lithuanian and Estonian markets.

Similarly to prepared and preserved products of small pelagic species, the export value of fresh and frozen cod, mostly destined to Baltic Sea countries, decreased from 18% in 2001 to 4% in 2012.



**Figure 5.13.9 - Latvian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As shown in Figure 5.13.10, Latvia has a competitive advantage on the international market for sprat, saithe, pangasius, herring, trout and salmon. The production of sprat and herring depends on the fishing rights available and, therefore, the competitive advantage of these species in the global trade is linked to the status of the stocks and the countries' shares of fishing rights in the Baltic Sea region. The competitive advantage for salmon depends only on the imports of raw material and the development of the processing sector in the country.



**Figure 5.13.10 - Normalized Revealed Comparative Advantage index (NRCA) for Latvia, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Over the reference period, Latvia expanded its trade mainly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.13.11). The increase of the exports at the extensive margin (i.e. activation of new trade flows) played a rather relevant role in the period 2006-2011. This can be explained by two major changes. First of all, since Latvia joined the EU in 2004, several export flows have been re-directed. Second, Latvia has recently started to develop its salmon processing industry, thus increasing the exports of salmon products to the foreign markets. Failures accounted for a minor share of the export changes over the entire period.

A more detailed analysis of the trade flows by countries and their changes during the period 2001-2012 is presented in Figure 5.13.12, which shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Latvia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 76% and 70% of the overall trade, in average over the period, respectively in volume and value.

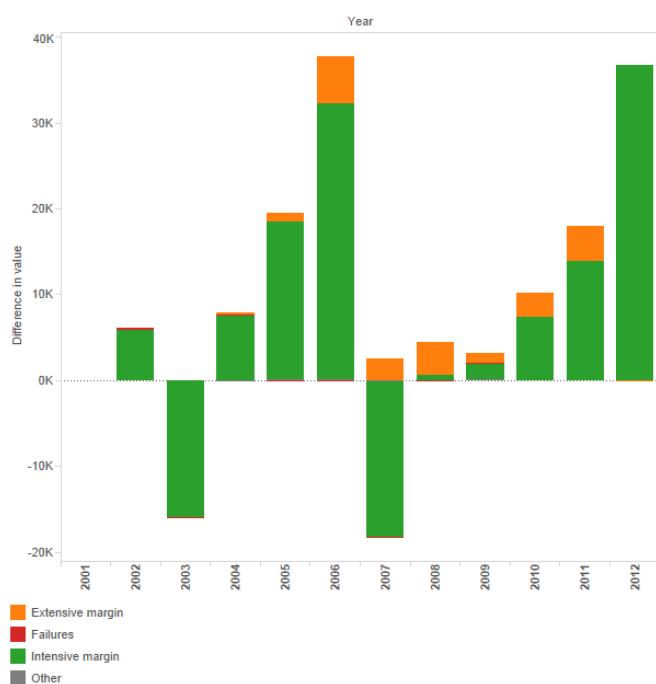
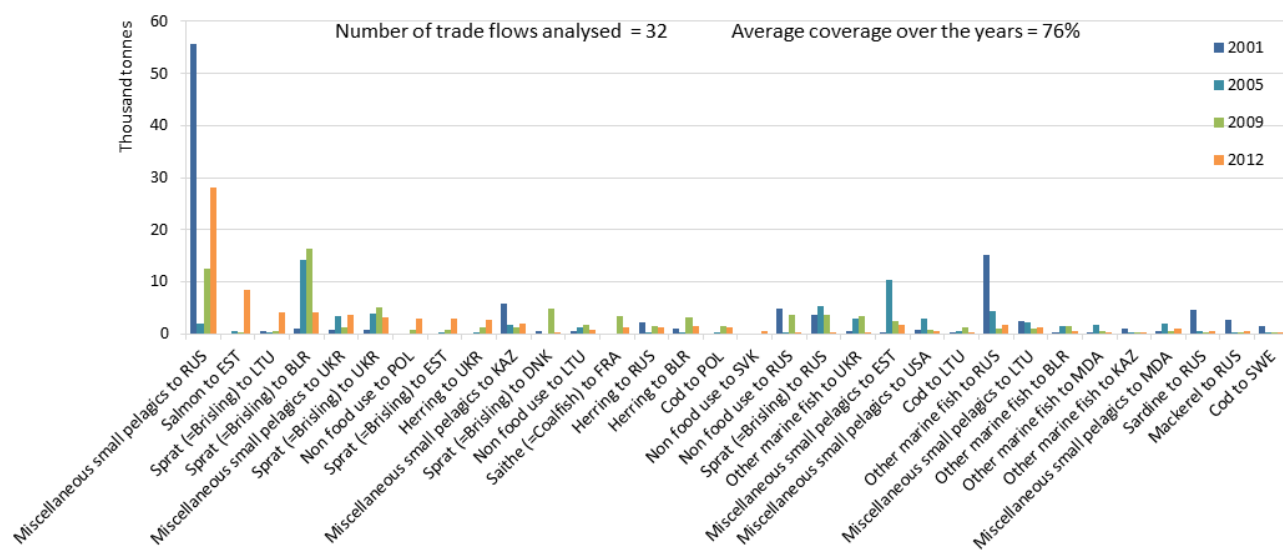


Figure 5.13.11 – Latvian seafood exports margins: 2001-2012



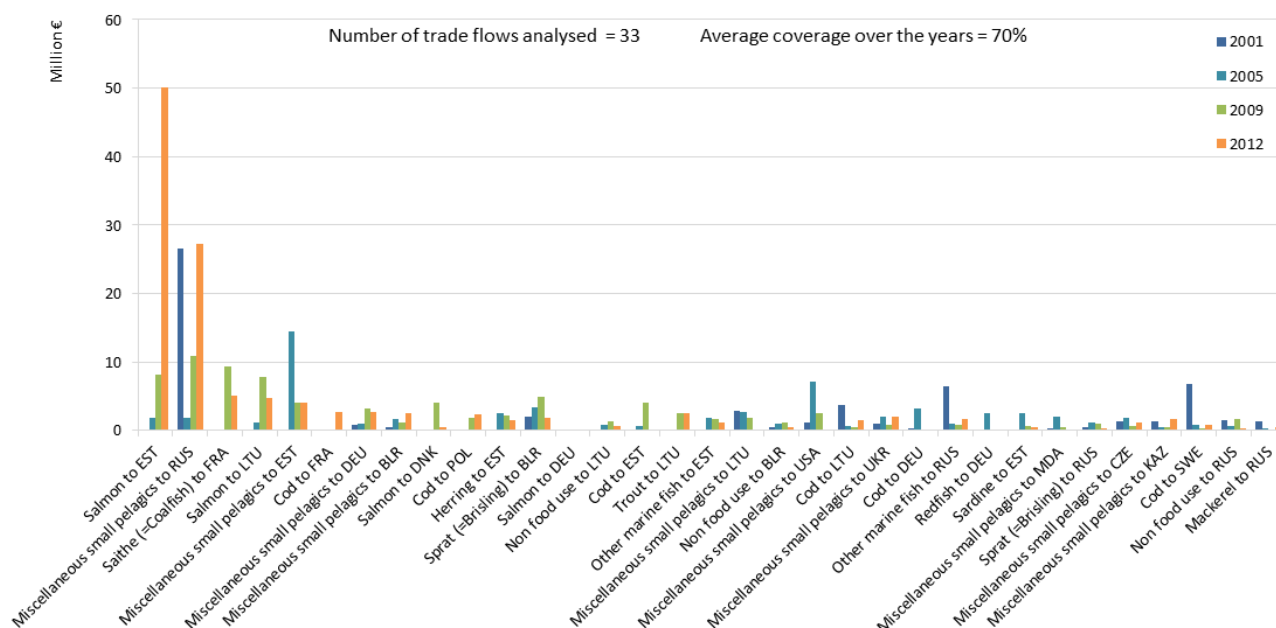


Figure 5.13.12 - Latvia seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.13.13 shows the trends in the composition of exports by processing and preservation status. As prepared and preserved small pelagic fishes are the major Latvian export products, the change in the share of prepared and preserved seafood exports reflects mostly the decrease of this trade flow. The growth of the share of fresh exports, on the other hand, reflects the increase of fresh salmon re-export since 2005, when salmon started to be imported from Sweden and Norway and exported to the neighbouring countries, Estonia and Lithuania.

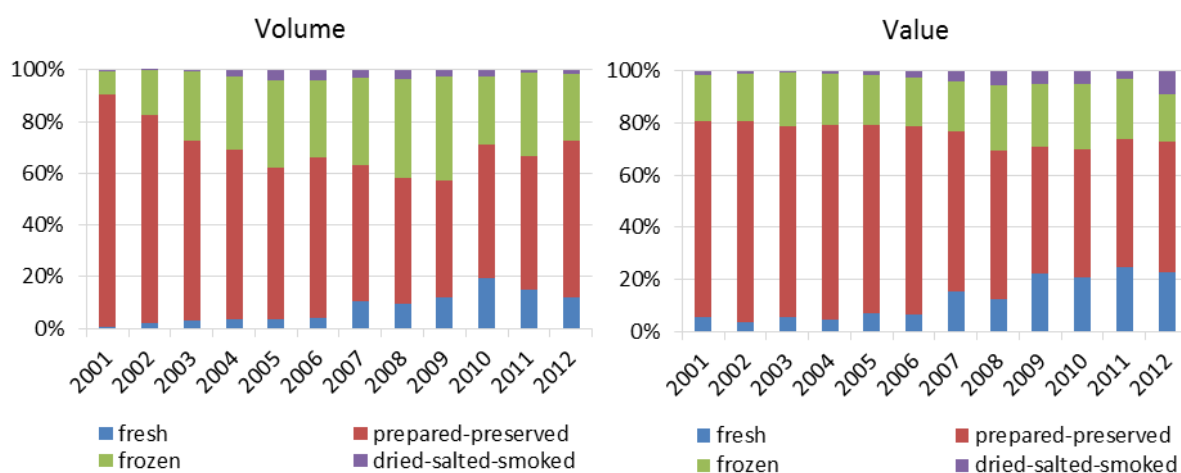


Figure 5.13.13 - Latvian seafood exports trends by type of products: share in volume (left) and value (right)

As mentioned before, Latvian trade is partly driven by the processing sector, therefore the processed products represent the major share of the trade with most of the Latvian trading countries (Figure 5.13.14). On the other hand, Latvian seafood exports to some trading partners (e.g. Estonia, Lithuania, Belorussia, Poland and Latvia) are mostly made up of fresh or frozen fish, being, in some cases, the landings of the Latvian fleets in these countries (fresh sprat and herring).

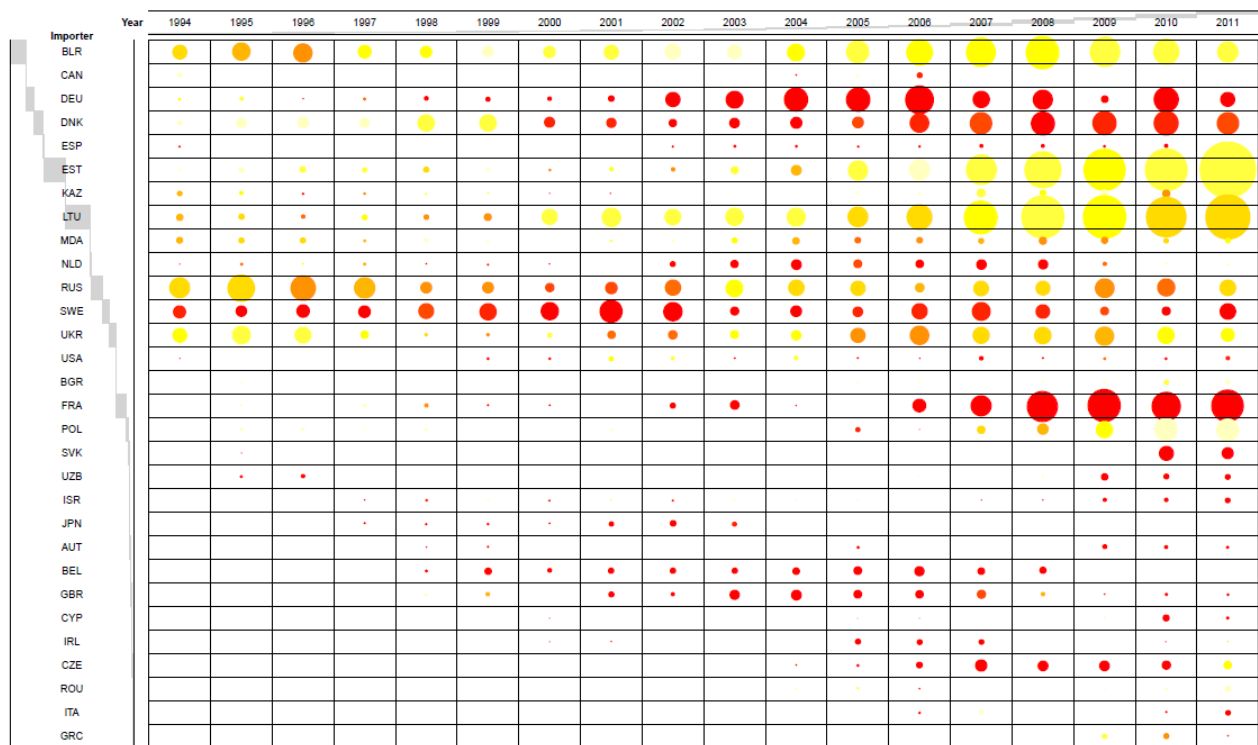


Figure 5.13.14 - Latvian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (size is proportional to the export value and the shading to the share of processed products).

## 5.14Lithuania

### Production

The Lithuanian fleet is mostly represented by small scale vessels fishing in the Baltic Sea; however most of the fish (about 85%) is caught by the industrial high sea vessels, operating close to the African coast and in the North and North-East Atlantic. The total volume of fish landed by the Lithuanian fleet in 2011 was 114.6 K tonnes, valued at 65.6 M Euro.

Aquaculture represents a small share of the total Lithuanian fish production, with a total production of around 3.6 K tonnes of fish (mostly carps) in 2012, valued at 7.1 M Euro<sup>7</sup>. The most important farmed species is carp (contributing 93% of the overall production in 2012). Sturgeons (1.5) and trout (1.2%) are also rather relevant.

The Lithuanian fish processing industry is a fast growing sector and is based on the imports of raw material (almost 80% of the total purchase) and the exports of its production. The overall value of the industry's production reached almost 373.7 M Euro in 2012 and only 20% of this value was sold in the local market<sup>8</sup>.

The main product of the Lithuanian fish processing industry is surimi, which covered approximately 33% of the total production in 2012. The second most relevant seafood item in terms of volume is smoked fish and the main species are Atlantic salmon and Atlantic herring. A large part of the production of the processing industry is also made up of frozen cod fillets and prepared salted products from Atlantic herring (STECF, 2014c).

### Trade balance and exposure to trade competition

During the period 2001-2012, Lithuania seafood exports and imports increased, especially in value. The export value reached a peak of 290 M Euro in 2011, starting from 44 M Euro in 2001.

The trade balance of seafood for Lithuania was positive between 2005 and 2011. During this period, the export value exceeded the import value by 7-49%. The trade of the country is mostly driven by the catching fleet and the processing sector (Figure 5.14.1).

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<sup>7</sup> Based on the data published in the annual report on Agriculture and food sector in Lithuania, 2012.  
<http://www.laei.lt/?mt=leidiniai&straipsnis=626&metai=2013>

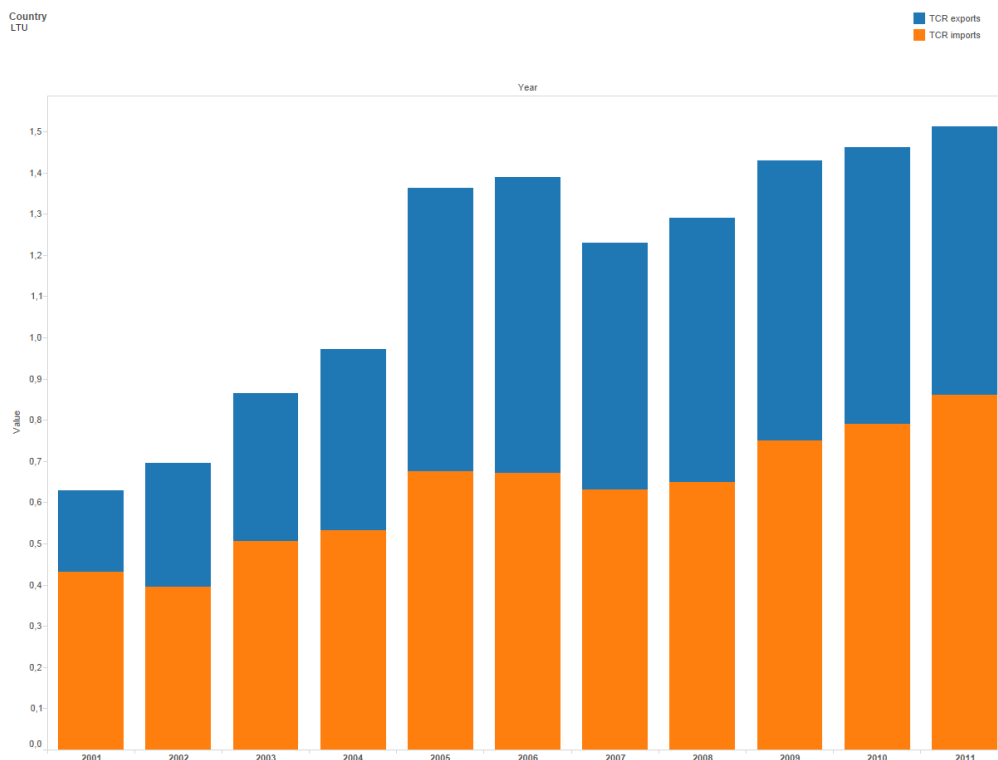
<sup>8</sup> Based on the data published in the annual report on Agriculture and food sector in Lithuania, 2012.  
<http://www.laei.lt/?mt=leidiniai&straipsnis=626&metai=2013>



**Figure 5.14.1 - Lithuanian seafood trade balance trends: value (left) and volume (right)**

Lithuania has a moderate exposure to trade competition, in line with most MS (in 2012, TCR was equal to 1.5, TCR for exports to 0.6 and TCR for imports to 0.8). The evolution of the TCR index over time indicates that Lithuania became more open to trade in particular between 2001 and 2008, thanks to the expansion of both imports and exports. Among the Baltic countries, Lithuania has the lowest TCR value which indicates that it is less open to trade (TCR for Latvia = 4.1 and for TCR for Estonia = 6.7, in 2012).





**Figure 5.14.2 - Trend of the exposure to trade competition index for Lithuania**

### Imports

Lithuania imported around 106 K tonnes of fish and seafood in 2012, compared to the imports of 62.7 K tonnes in 2001. The value of seafood imports also increased from 67 to 273 M Euro. The increase of import value was driven by the increase of prices and changes in the imports structure. The average annual growth rate of the import value was around 16%, while the import volume increased only by 5% p.a..

Figure 5.14.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 70% of the total volume of seafood imported by Lithuanian and 80% of its value.

Over the last decade, Lithuania imported from the MS almost 52% of its seafood imports in terms of value and 49% in terms of volume. The share of intra-community imports over the total import value increased from 40% in 2001 to 61% in 2012.

In 2012, Lithuania imported seafood from 120 countries. The major EU suppliers of seafood were Sweden (contributing 19% of the total seafood volume, corresponding to 29% in terms of value), Germany (8% and 10%), Latvia (12%, 8%), Denmark (4%, 3%), the Netherlands (5%, 3%) and Poland (2%, 2%).

The most important third countries which supplied seafood to the Lithuanian market were Norway (contributing 14% of the total volume of seafood imports and 11% of their total value, in 2012), Kazakhstan (2%, 6%), China (4%, 5%), USA (3%, 4%) and Vietnam (4%, 3%). The share of trade with Iceland and Argentina decreased continuously over time. The contribution of Iceland to the total import value decreased from 11% to 2% over the period 2002-2012, while the one of Argentina from 12% in 2003 to 2% in 2012. On the other hand, the importance of Sweden as supplier to the Lithuanian market increased since Lithuania joined the EU in 2004.

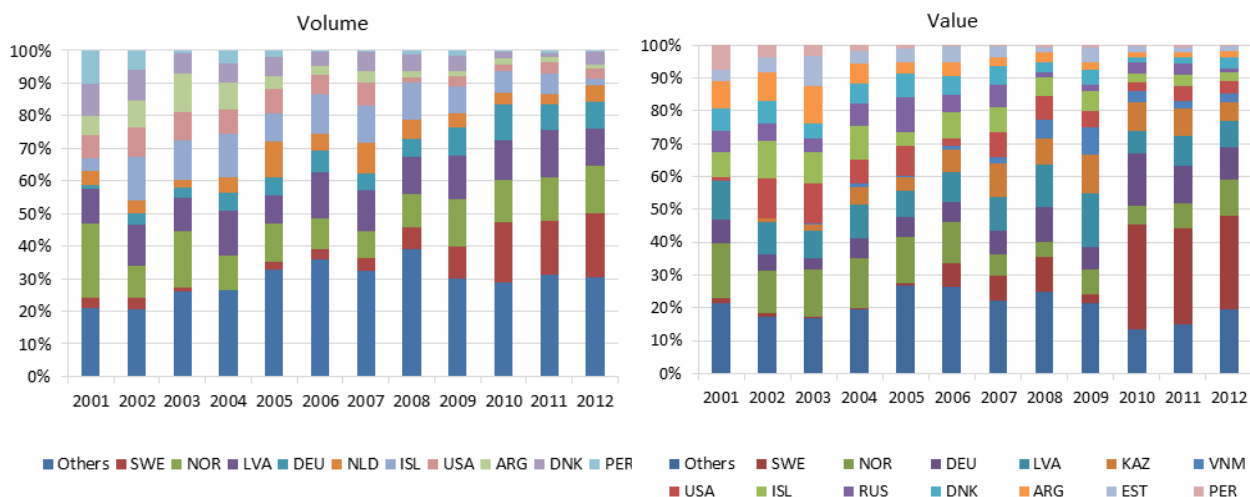


Figure 5.14.3 - Lithuanian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.14.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 95% of the total volume of seafood imported by Lithuanian and almost 93% of its value.

Lithuanian imports are mainly represented by raw material for the fish processing sector. Salmon, surimi, herring and cod are the most important species processed by the sector. These species contributed 63% to the total value of seafood import value and 58% to their volume in 2012. Other relevant species are hake, mackerel, Pollack, redfish and trout.

Imports of products for non food use reduced gradually between 2001 and 2008, while imports of salmon expanded between 2006 and 2012.

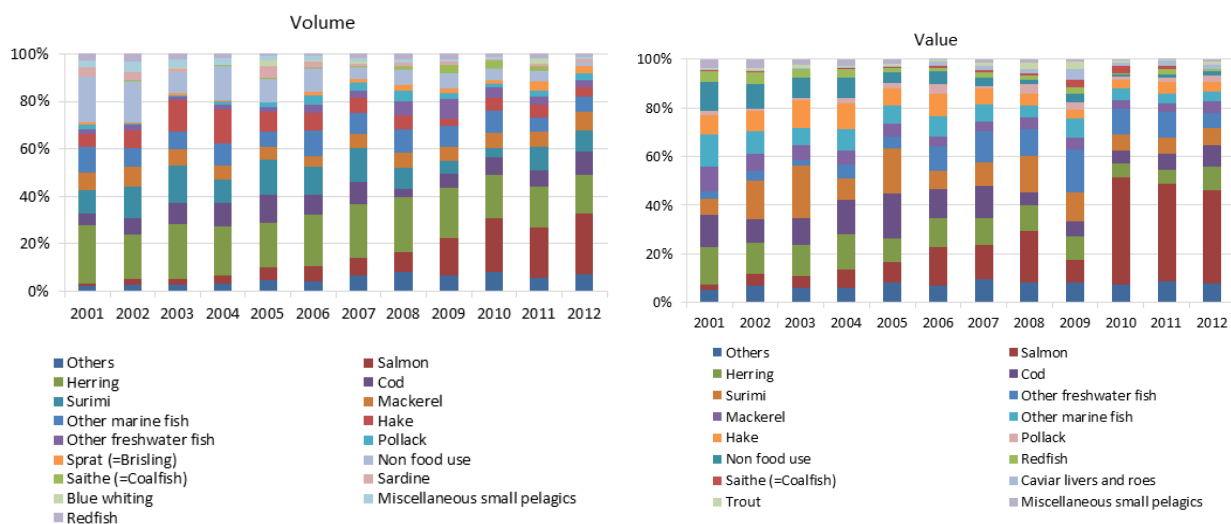


Figure 5.14.4 - Lithuanian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)

Figure 5.14.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Lithuania, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade

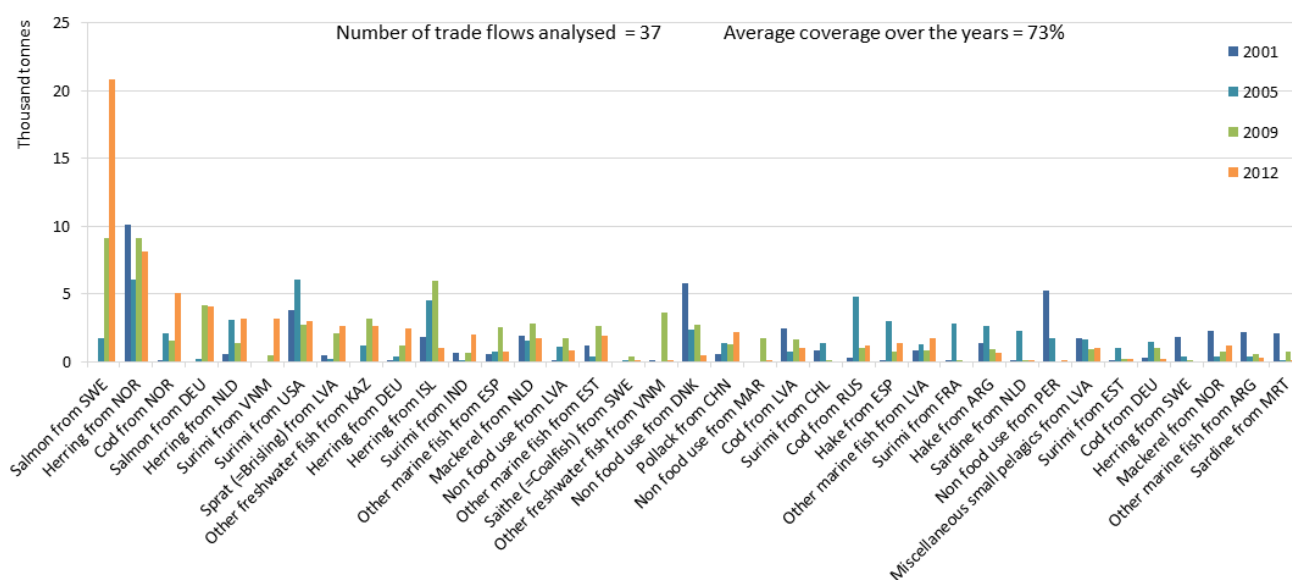
flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover, in average, 73% and 66% of the overall trade, respectively in volume and value.

In 2012, salmon imports accounted for 39% of the import value and 26% of the import volume and most of them were imported fresh from Sweden. Almost all seafood imports from Sweden were made up of fresh salmon. This trade flow grew since 2006, when some new processing plants, specialized in salmon processing, were built in the country. The growth of the industry proceeded over the period 2007-2013, when part of the resources available on the European Fisheries Fund (EFF) were used to build new fish processing factories.

The second most important product used as raw material for the fish processing sector is surimi, which contributed 7% of the total value of seafood imports in 2012, and 9% of the total volume. One of the biggest surimi producers in the world is based in Lithuania. This company owns 7 fish processing plants (4 of them are based in Lithuania, the others in Russia, Estonia and Spain) and exports a high variety of different products (mostly from salmon, herring and surimi). More than 85% of its production is exported all over the world. The imports of surimi raw material is driving most of the import flow from USA, Vietnam, India and Thailand. Imports of surimi from Chile ceased after 2009.

Herring and cod, each contributing 9% of the total value of seafood imports in 2012 (16% and 10% of the total volume, respectively), are mostly imported from countries of the North Sea basin: Norway, Iceland, the Netherlands and Germany. However, some important flows from Russia and Latvia was observed during the reference period.

The contribution of imports from China to the total import value increased from 0.5% in 2001 to 5% in 2012. Pollack, cod and hake were the main imported species.



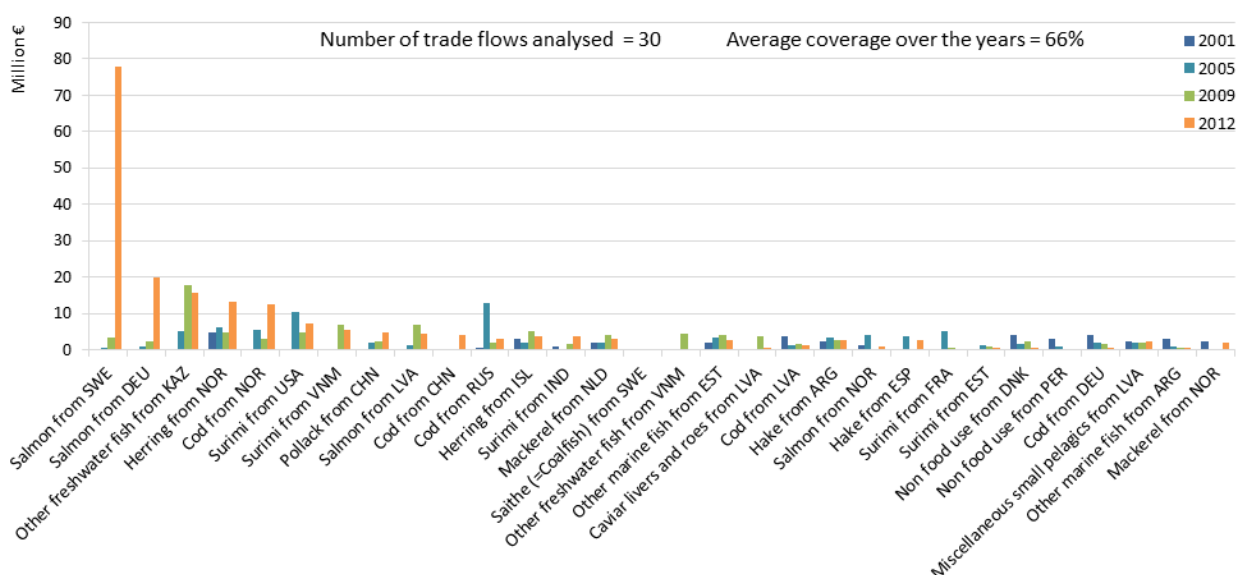


Figure 5.14.5 - Lithuanian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.14.6, which shows the trends in the composition of imports by processing and preservation status. Most of the farmed salmon used as raw material for the processing industry is imported from Norway through Sweden, mostly fresh. With the increase of the salmon processing, there was an increase in the imports of salmon from Sweden and, at the same time, of the share of fresh fish in the total value and volume of imports (Figure 5.14.6).

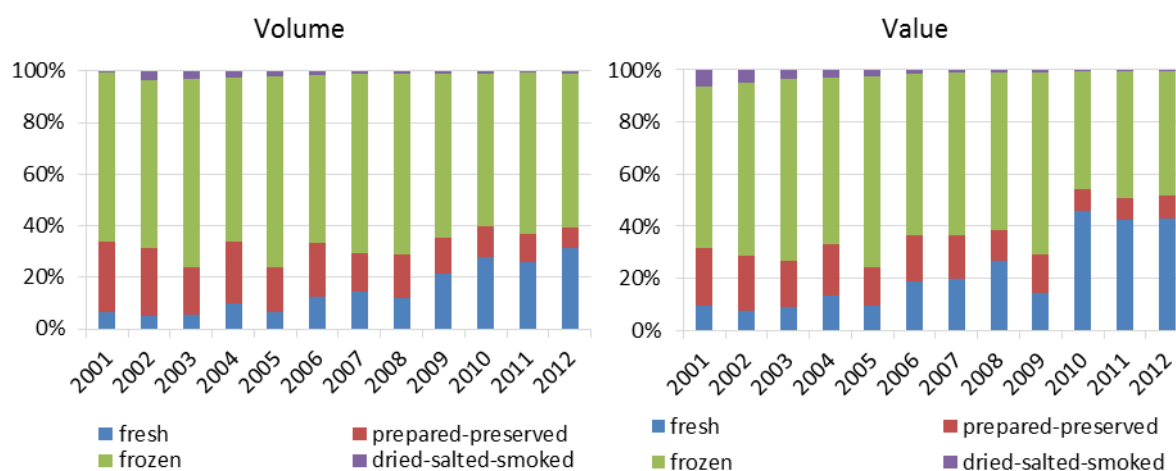
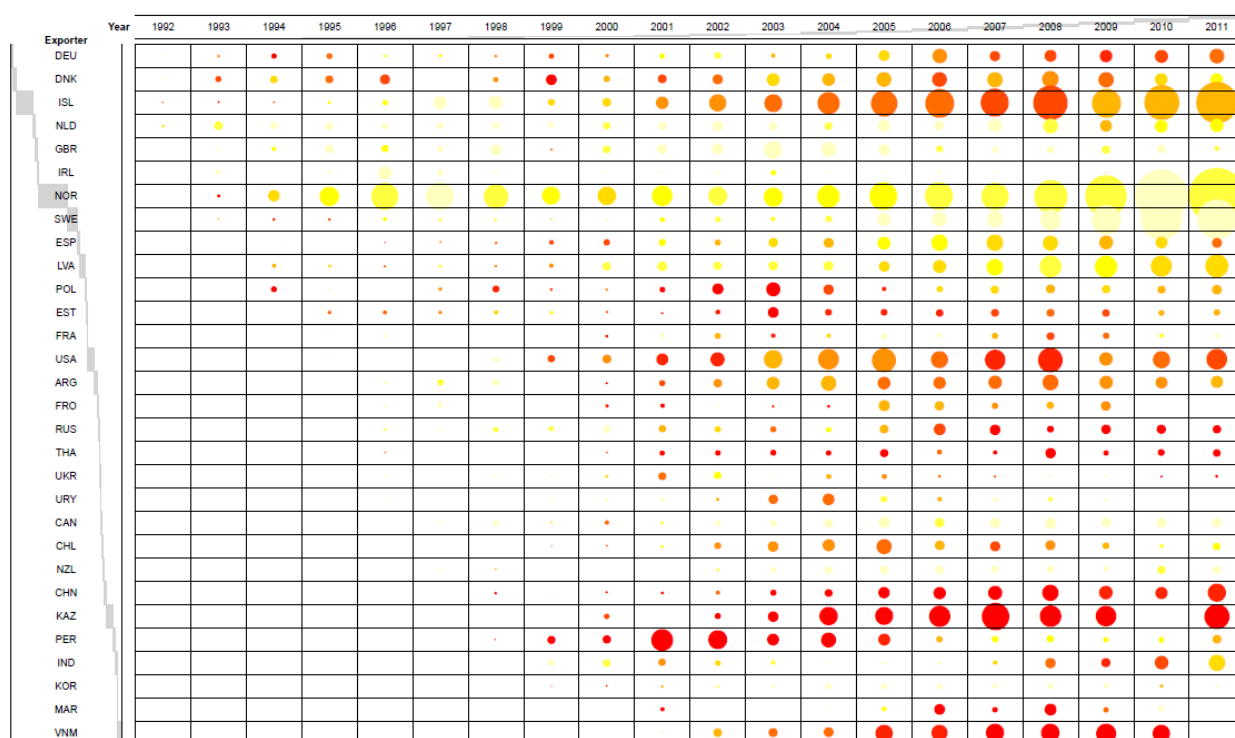


Figure 5.14.6 - Lithuanian seafood imports trends by type of products: share in volume (left) and value (right)

As mentioned before, most of the salmon for processing is imported fresh, while most of the other marine species (e.g. cod, herring, mackerel and surimi) are imported frozen. The level of processing by country of origin reflects the different composition of the trade flows described before (Figure 5.14.7).



**Figure 5.14.7 - Lithuanian seafood imports trends by main seafood suppliers and contribution of processed products to total import value (the size is proportional to the import value and the shading to the share of processed products)**

## Exports

In 2012, Lithuania exported 87.8 K tonnes of seafood, valued at 248.8 M Euro. Seafood exports increased every year except in 2012. Over the entire reference period, the export value increased by more than 5 times, at an average annual growth rate of 18%. The export volume also increased, at a rate of 12% p.a..

Figure 5.14.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 90% of the total volume of seafood exported by Lithuanian and 89% of its value.

Lithuania exported seafood to 50 different countries, in 2012. The contribution of extra-community trade to the total value of exports decreased from 29% in 2001 to 9% in 2012. Most of this decrease can be attributed to the trade with Russia, Belarus and Ukraine. The share of exports of these three countries reduced from 28% of the total value in 2001 to 6% in 2012. At the same time, the share of export value to some EU MS - the United Kingdom, Poland, Belgium, Italy and Spain - grew from 10% to 35%. German (contributing 22% of the total export value and 21% of the volume, in 2012), French (10%, 11%), Latvian (10%, 9%) and Estonian (5%, 5%) markets remained relevant destinations for Lithuanian seafood exports over the entire period.

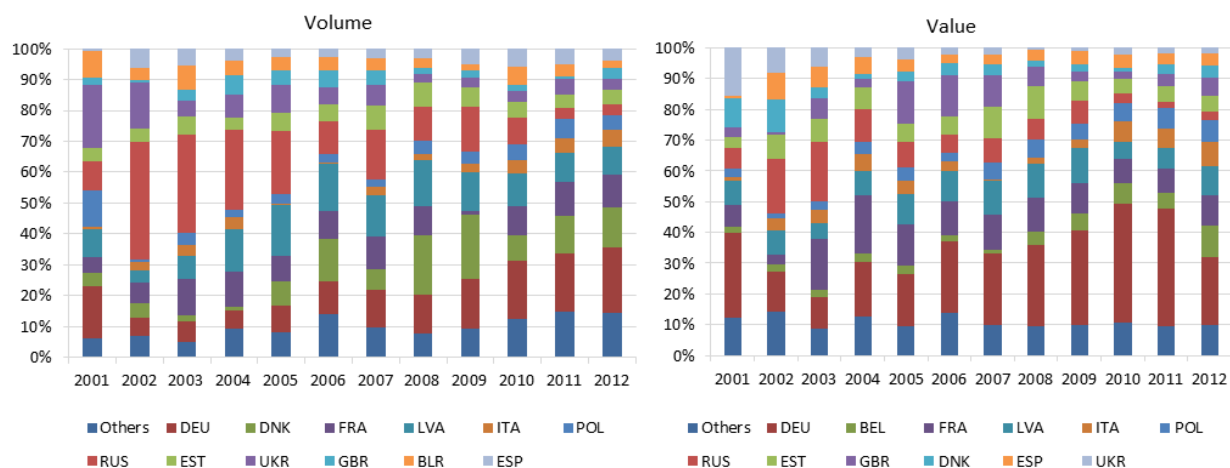


Figure 5.14.8 - Lithuanian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.14.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover almost entirely Lithuanian seafood exports, both in volume and value.

As already mentioned, seafood exports are driven by the fish processing industry, the main products of which are made from salmon, surimi, cod and herring. Overall, the products of these species contributed 71% of the total value of exports in 2012 (salmon, surimi, cod and herring contributed 26%, 22%, 11% and 9%, respectively) and 64% in volume. These products were also the main contributors to the exports flow in 2001, when they accounted for 66% of the export value, and have driven the expansion of the Lithuanian exports. Nevertheless, the salmon processing and exports became significant only after 2004, since when this product started to take over the exports shares of cod and herring.

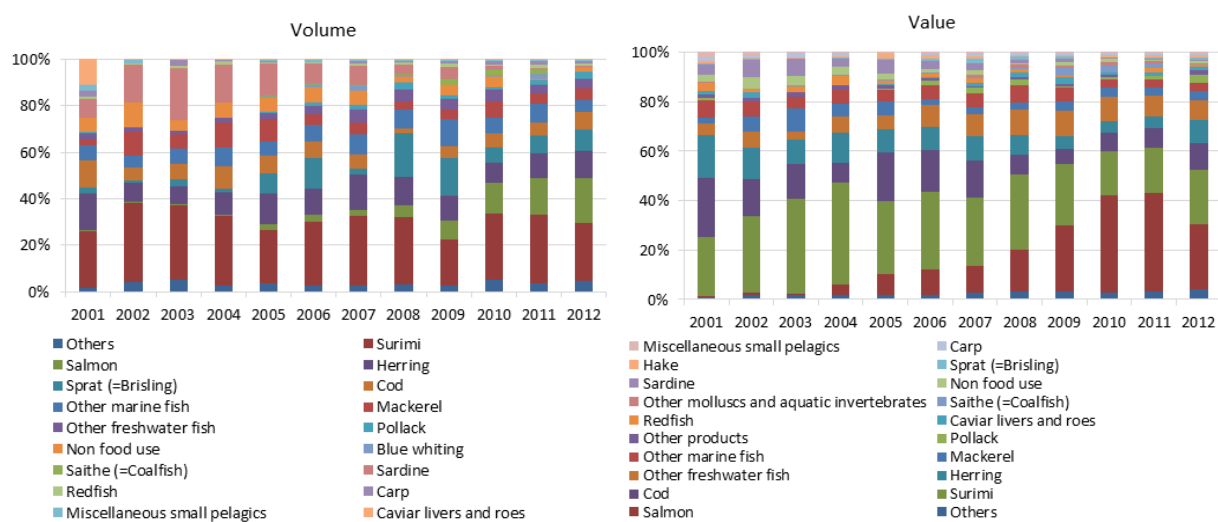
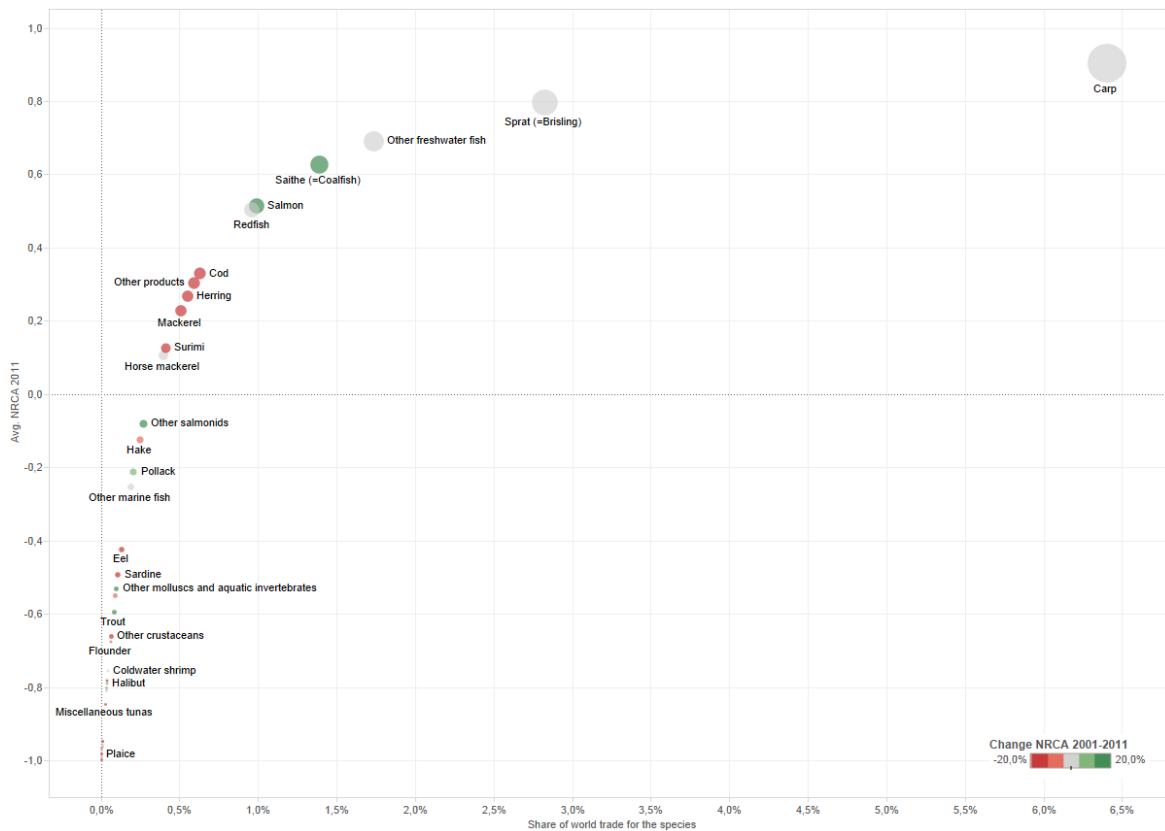


Figure 5.14.9 - Lithuanian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

As shown in Figure 5.14.10, Lithuania has a comparative advantage on the international market for carp, sprat, saithe and salmon. Carp is farmed and is exported, mostly, to neighbouring countries (Latvia and Poland). The production of sprat, mackerel, herring and cod depends on the fishing rights available and, therefore, the competitive advantage in the global trade of these species is linked to the status of the

stocks and the countries' shares of fishing rights. The competitive advantage for salmon depends only on the imports of raw material and the development of the processing sector in the country.



**Figure 5.14.10 - Normalized Revealed Comparative Advantage index (NRCA) for Lithuania, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

The above described trends by product are confirmed by the exports margins analysis, which shows that the changes in the Lithuanian exports are driven by the exports of traditional products to traditional markets (intensive margin) (Figure 5.14.11).

The expansion at the intensive margin in 2008, 2009 and, in particular, in 2010 came from the exports of salmon to Italy. On the other hand, the decrease at the intensive margin between 2011 and 2012 was related to the decline of salmon exports to Germany. The failures in 2008 consisted in the abandonment of the French market for the exports of freshwater fish.



**Figure 5.14.11 – Lithuanian seafood exports margins: 2001-2012**

Figure 5.14.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Lithuania, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 69% and 70% of the overall trade, respectively in volume and value.

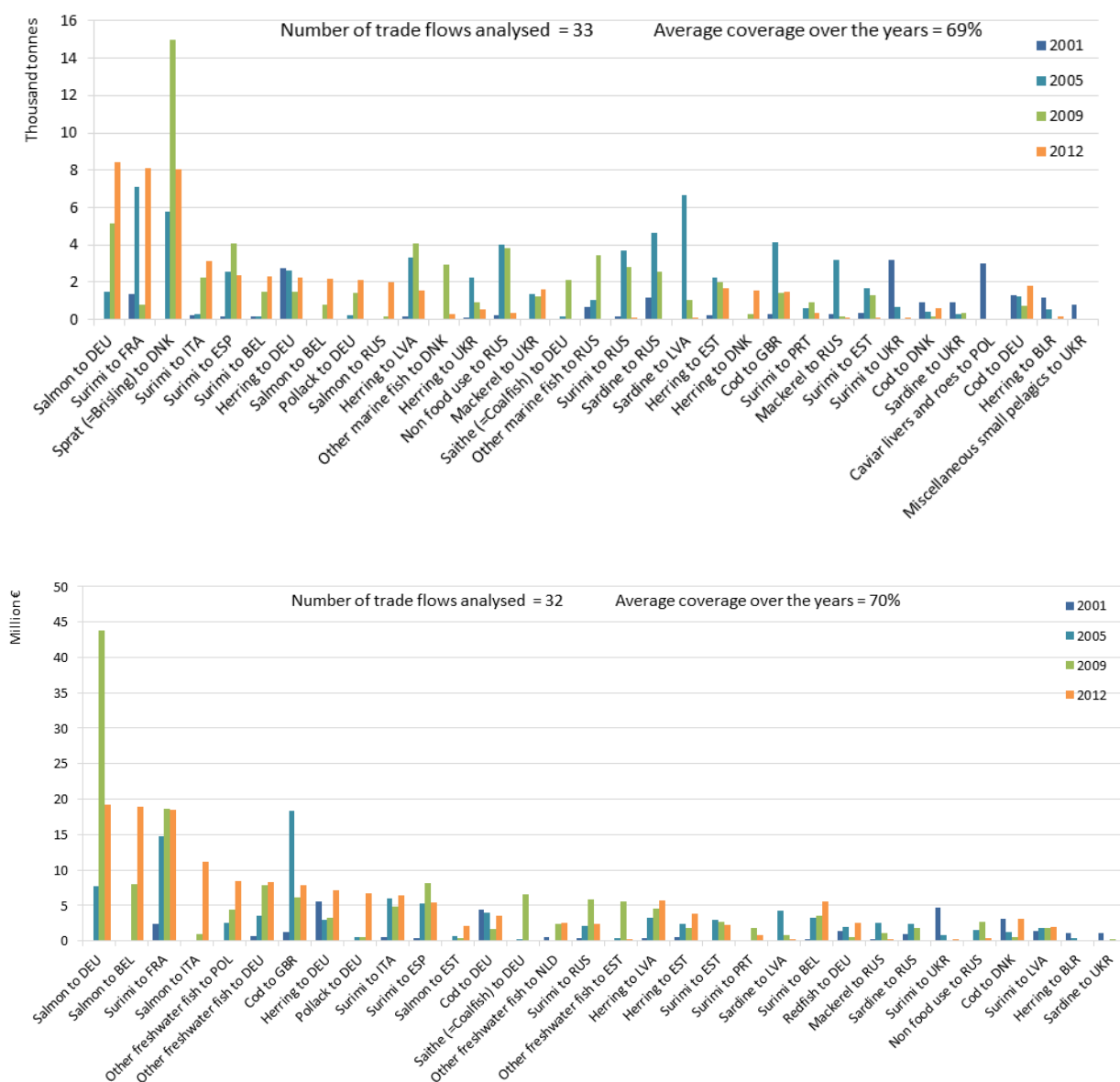
Lithuanian seafood exports to Denmark are mostly driven by the catching sector. In 2001, most of the export volume to this country was represented by cod; however since 2005, when a targeted pelagic fishery appeared in Lithuania, small pelagics (sprat and herring) became the most important species in the Lithuanian exports to Denmark. In 2005, the exports of sprat accounted for 85% of the export volume to Denmark and for 10% of the exports value. Changes over the years are mostly depended on the available sprat quotas, which have decreased recently.

In 2012, most of the salmon production in terms of value was exported to Germany, Belgium, Italy, Denmark and Latvia. Exports of salmon to Germany decreased significantly between 2011 and 2012. France has remained the main destination for Lithuanian surimi products since 2003 (almost 1/3 of the value of surimi exports was destined to this country during the period 2003-2012). Other markets for Lithuanian surimi products are Italy, Belgium, Spain, the United Kingdom, Poland, Russia, Estonia, Germany, Latvia, the Check Republic and the Netherlands.

Most of the frozen cut cod is exported to the United Kingdom, Germany and Denmark, while some fresh cod is also exported to the neighbouring countries, Poland and Latvia. Dried, salted and smoked cod was exported to Spain, Italy and Greece in 2012.

Most of the herring export value consists of prepared and preserved products (more than ¾ of the herring export value during the reference period 2001-2012). The main destination countries for this type of production are Germany, Latvia and Estonia. Frozen herring was exported to Latvia, Kazakhstan, Ukraine and Kyrgyzstan in 2012.





**Figure 5.14.12 - Lithuania seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.14.13 presents the trends in the composition of exports by processing and preservation status. The high share of processed products is indicative of the processing activities related to salmon, surimi and herring, traditionally established in Lithuania. However, since 2010, when new fish processing plants were built and started to specialise on dried, salted and smoked salmon, the contribution of this type of products to the overall exports increased.

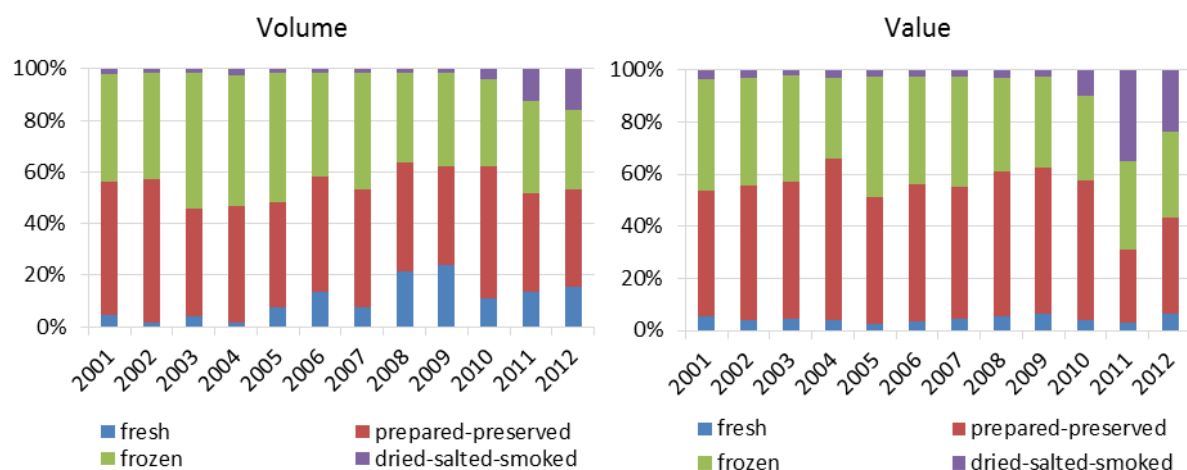


Figure 5.14.13 - Lithuanian seafood exports trends by type of products: share in volume (left) and value (right)

As mentioned before, Lithuanian trade is mostly driven by the processing sector, therefore processed products represents the major share of the trade with most of the Lithuanian trading partners (Figure 5.14.14). On the other hand, the exports of less processed products (frozen or fresh) to Ukraine and Belarus are actually landings of fish caught by the Lithuanian fishing fleet. The increase in the processing share in the seafood exports to Russia after 2011 derived from an expansion of the exports of surimi.

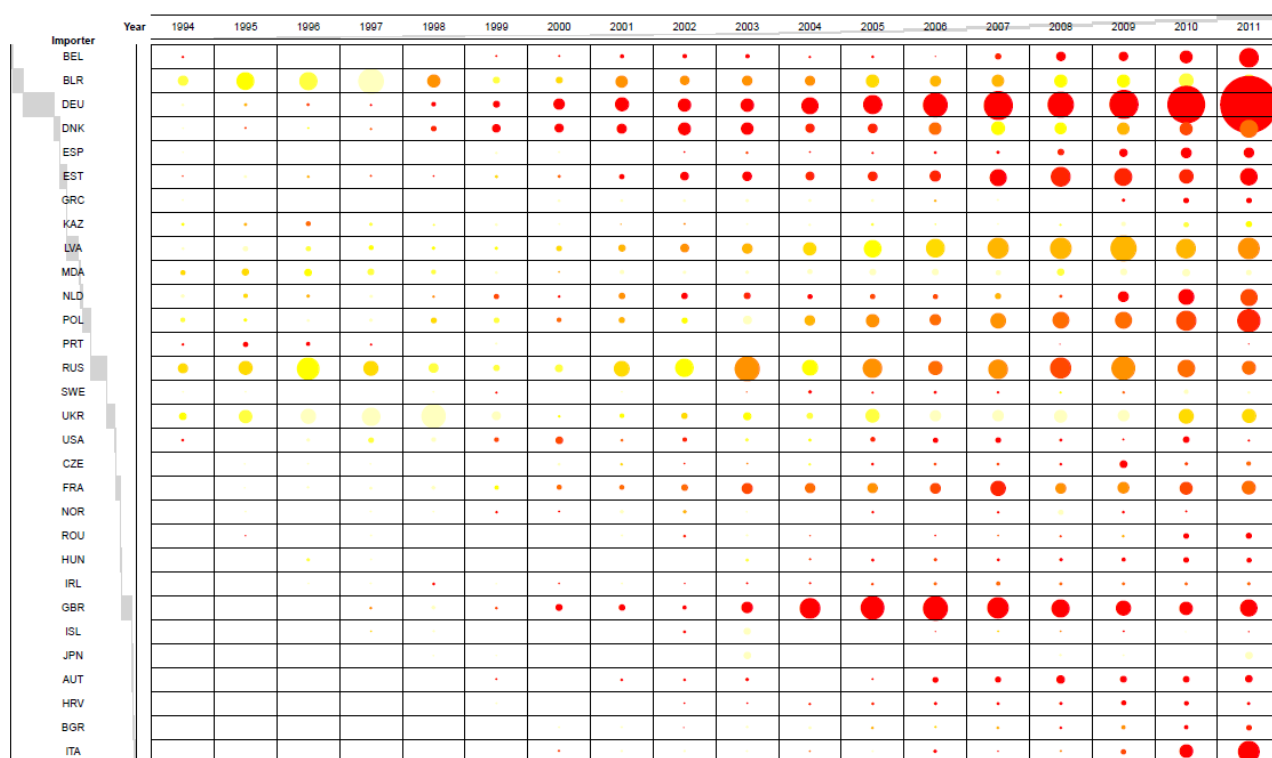


Figure 5.14.14 - Lithuanian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products)

## 5.15 Malta

### Production

A large part of the Maltese fleet consists of small-scale vessels under 12m and all the National fleet operates in the Mediterranean Sea (STECF, 2014a). Maltese fisheries are not species selective and are frequently described as multi-species and multi-gear fisheries, with fishermen switching from one gear to another several times throughout the year (FAO, 2005).

Total capture production in 2001 was 1.9 B tonnes, mostly made up of swordfish (28%), dolphinfish (18%), mackerel (7%) and tuna (6%).

The aquaculture sector is composed of a small number of enterprises farming exclusively marine fish (mostly seabream). The main segments are the seabass and seabream cage aquaculture and other marine fish cage aquaculture (mostly fattening of bluefin tuna) (STECF, 2014b). The total production of fish in 2011 was equal to 4.16 K tonnes.

The fish processing industry in Malta is practically non-existent.

### Trade balance and exposure to trade competition

Maltese seafood trade balance in 2012 was negative but equal only to 13 K tonnes of seafood. This corresponded to a positive balance in value of 3 M Euro in 2012 (Figure 5.15.1). Seafood trade balance has fluctuated significantly over the period (the balance in value has ranged from -36 to +41 M Euro). From 2010 to 2012, the balance has deteriorated both in volume and value, mostly due to the increase of the internal demand for fish and fishery products, due to the presence of tourists (STECF, 2014c).

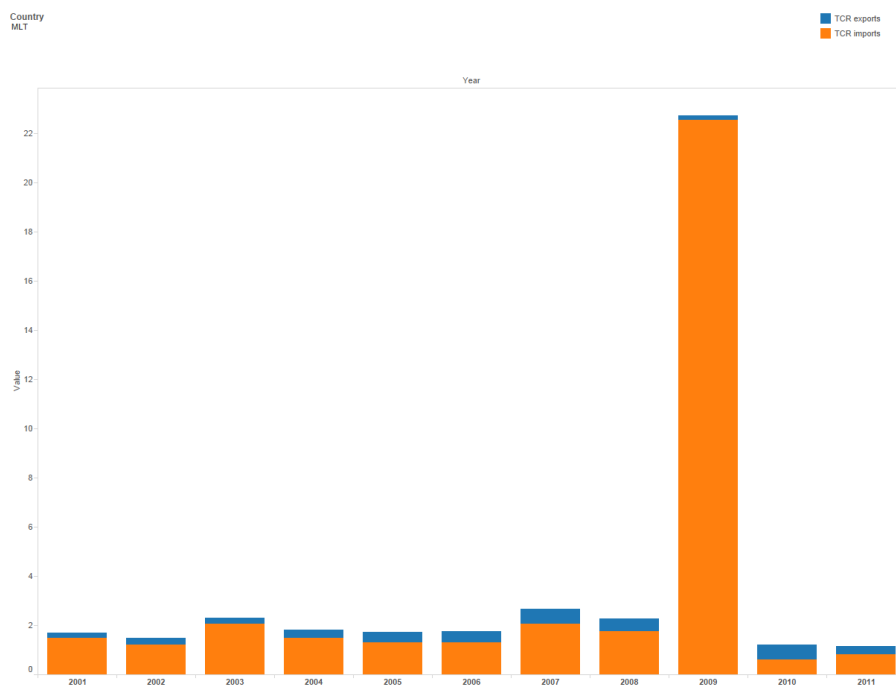
The volume of seafood imports reported in 2009 is several times higher than the one reported over the entire reference period, while in the same year the value of imports decreased significantly. This discrepancy may result from the wrong reporting of import data on scallop from Italy.

In 2012, half of the volume of Maltese seafood imports was imported from extra-community countries and more than 90% of its seafood exports was directed outside the EU. In terms of trade value, extra-community imports and exports were both prevalent compared to intra-community trade.



**Figure 5.15.1 - Maltese seafood trade balance trends: value (left) and volume (right)**

The exposure to seafood trade competition varied significantly from year to year over the reference period, reflecting the instability of the imports and exports trends (Figure 5.15.2). The exposure to seafood trade competition for seafood is mostly driven by imports, as for most other MS. In 2011, the estimated value of the Trade Competition Ratio (TCR) was 1.16, 70% of which attributable to seafood imports.



**Figure 5.15.2 - Trend of the exposure to trade competition index for Malta**

## Imports

In 2012, Malta imported 17 K tonnes of seafood (corresponding to 59 M Euro). The trend of seafood imports has been highly fluctuating over the reference period, especially in terms of volume.

In 2012, extra-community seafood imports were around half of the total in terms of volume, while intra-community imports were clearly prevalent in terms of value (74% of the total). The contribution of extra-community imports has fluctuated significantly over the reference period, both in volume and in value. If considering the entire reference period, it grew from 32% to 51% in terms of volume and decreased from 37% to 26% in value, meaning that the average unit value of extra-community imports has decreased and the unit value of intra-community imports has risen.

Seafood imports are rather concentrated. In 2012, almost 75% of their total volume was coming from five countries: Italy (accounting for 19% of the total), Morocco (19%), Spain (17%), USA (12%) and Thailand (6%). In terms of value, Italy accounted for 48% of the total imports, followed by France (7%), Thailand (7%), Spain (6%) and Morocco (5%).

Figure 5.15.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover, in average over the period, 89% of the Maltese seafood import volume and 83% of its value.

Trade patterns changed significantly over the reference decade. Imports from all the most relevant seafood suppliers (except Thailand) increased in volume and value, especially imports from Morocco. The increase in the imports from this country is attributable almost entirely to the imports of low-value species (mostly, sardine, mackerel and other marine species) and, in fact, the volume of imports has increased by 66 times, against a 15% increase in terms of value.

Seafood imports from Italy have also grown significantly, mostly because of the increased trade of tuna (63% of the overall rise in the value of Maltese seafood imports can be attributed to the growth in the trade of Italian tuna). On the other hand, imports from several other countries which were relevant seafood suppliers at the beginning of the decade (e.g. the United Kingdom, Denmark and Japan) declined both in volume and value.

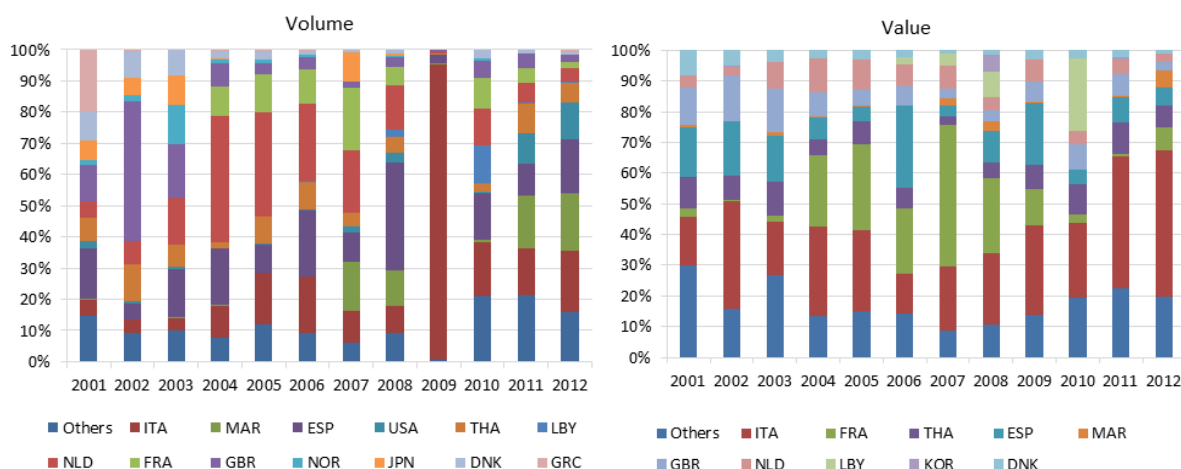


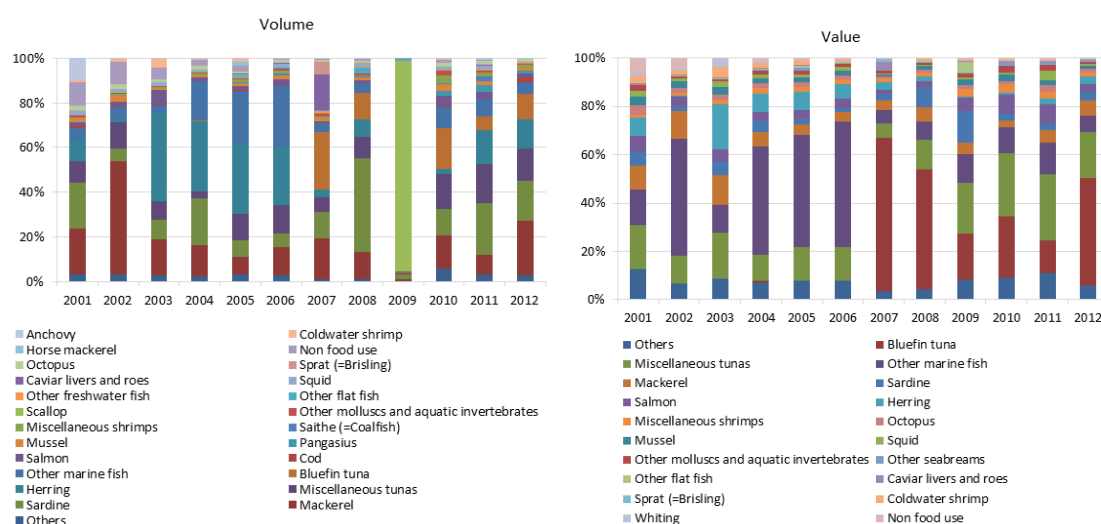
Figure 5.15.3 - Maltese seafood imports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.15.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 97% of the total Maltese seafood imports in volume and 92% in value.

In 2012, Maltese seafood imports were mostly made up of mackerel (accounting for 24% of the overall import volume), sardines (18%), miscellaneous tunas (14%), herring (13%) and bluefin tuna (11%). In terms of value, bluefin tuna accounted for 45% of the overall Maltese seafood imports, followed by miscellaneous tunas (19%), other marine fish (7%), mackerel (7%) and sardines (4%).

Imports of tuna have increased by three times in volume and almost ten times in value from 2001 to 2012, especially because of the expansion of the trade with Italy, but also with France, Thailand, Greece and Tunisia. Imports from Italy have increased by four times in volume and eight in value, mostly because of the increased trade of tuna. This trade flow alone contributed 63% of the overall rise in the value of Maltese seafood imports occurred over the period.

Imports of sardines and other marine fish have declined over the period in terms of volume, but have increased in value (for sardine, trade volumes contracted by 15%, while value rose by 66%). Mackerel imports, instead, increased both in volume and value (by around 20% in volume and 76% in value).



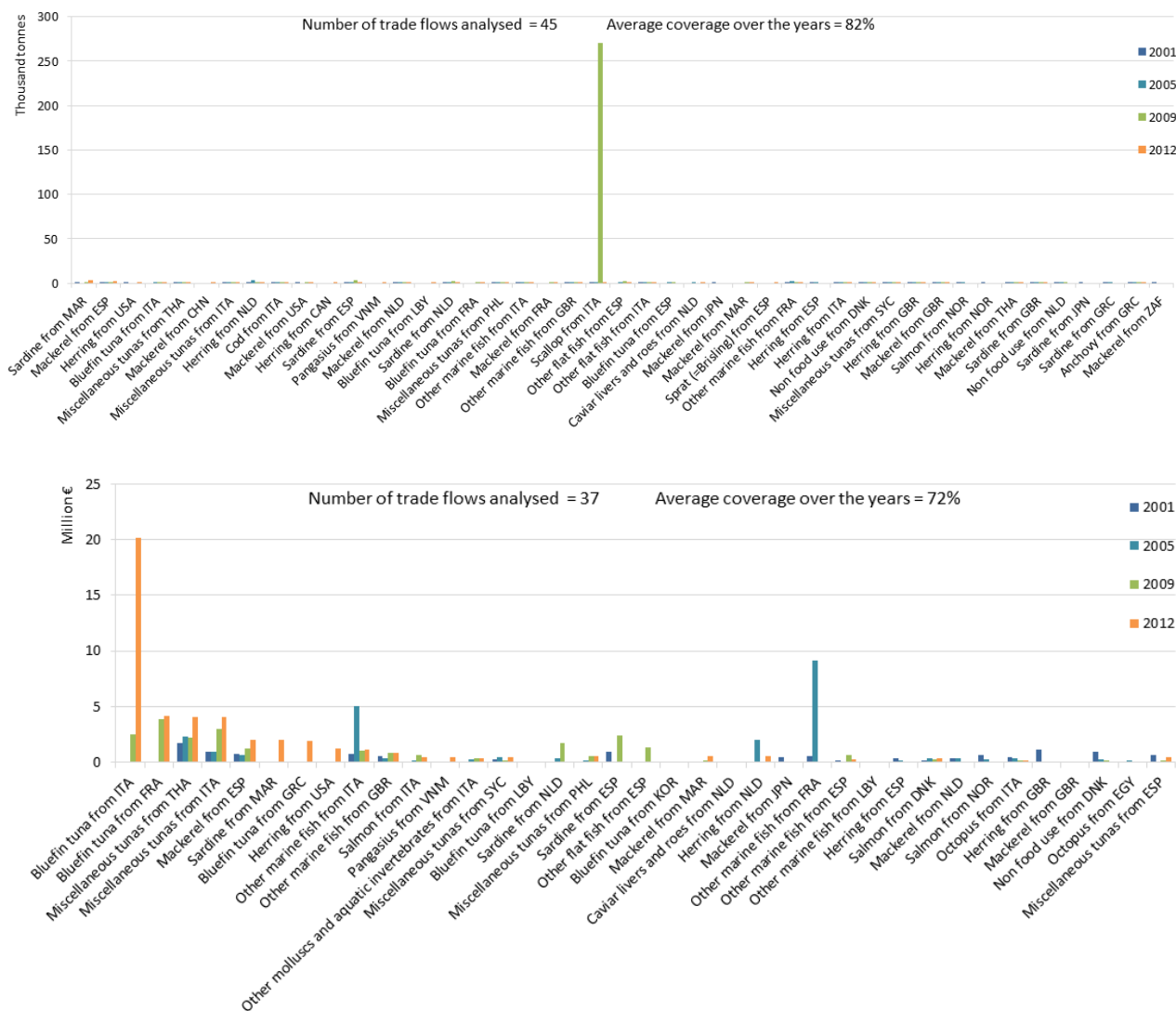
**Figure 5.15.4 - Maltese seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Malta, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 82% and 72% of the overall trade, respectively in volume and value.

As already seen, imports from all the most relevant seafood suppliers, except Thailand, have increased both in volume and value from 2001 to 2012. As mentioned, imports of tuna from Italy, France, Thailand, Greece and Tunisia contributed significantly to the value increase (Figure 5.15.5). Some other trade flows which have also contributed greatly to this increase are the imports of sardine from Morocco, mackerel from Spain and Herring from USA.

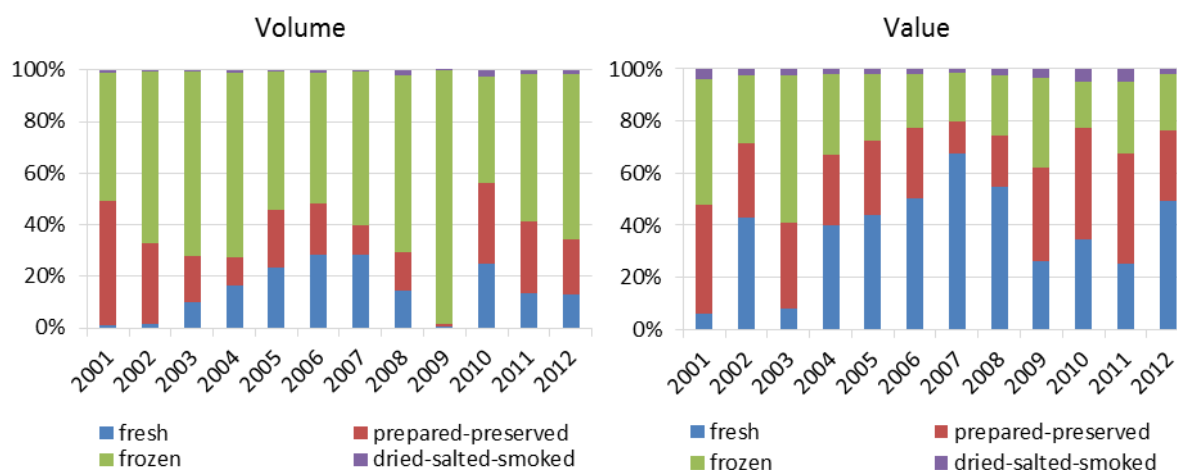
Trade of sardine with Morocco has increased markedly also in volume, as well as the imports of mackerel from Morocco, Spain, USA and China and of herring from USA and Netherlands.

On the other hand, trade volume of several trade flows have contracted over the period. A few examples are the imports of mackerel from South Africa, Japan, the Netherlands and Thailand, sardines from Japan, Greece and Spain, fish for non-human consumption from Denmark and the Netherlands, herring from the United Kingdom and anchovy from Greece.



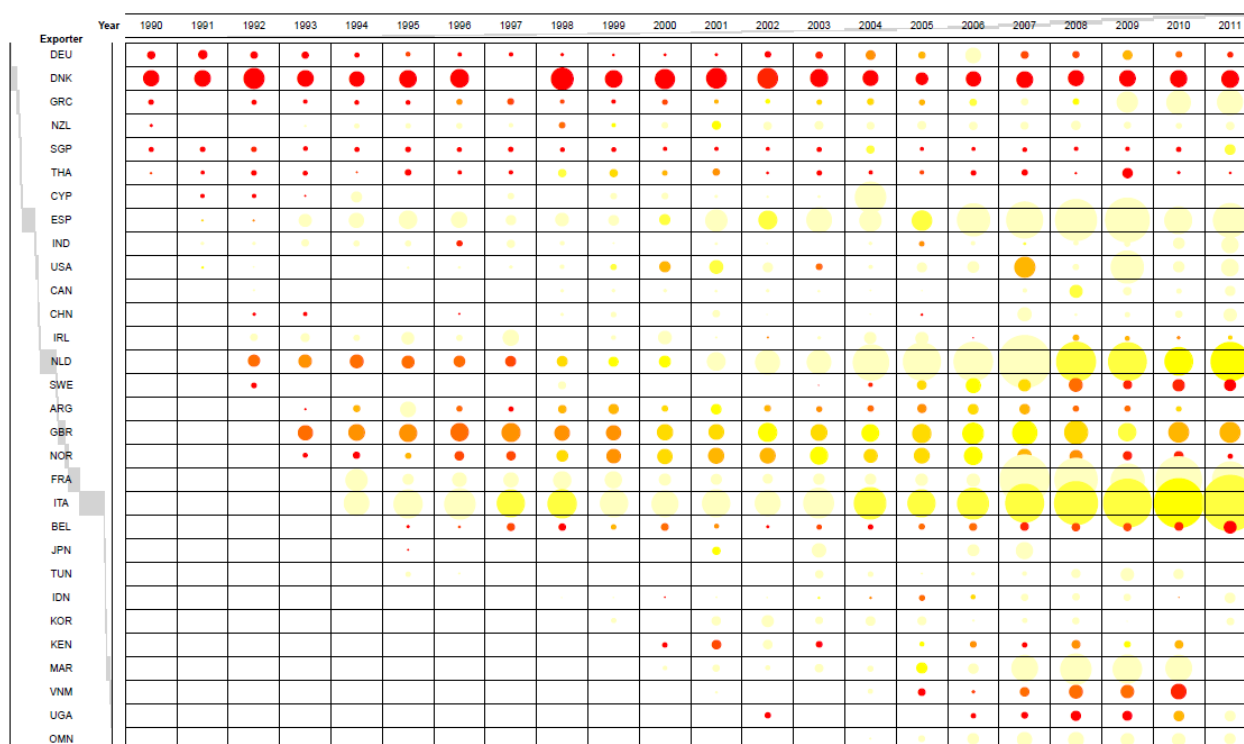
**Figure 5.15.5 - Maltese seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2012, 64% of the total Maltese imports of fish and fishery products was made up of frozen seafood (corresponding to 22% in terms of value), 22% of prepared/preserved products (27% in terms of value) and 13% of fresh seafood (49% in value). Over the reference period, imports of fresh seafood have increased the most (more than 12 times in volume and 21 times in value), reflecting the massive increase in the imports of fresh bluefin tuna (Figure 5.15.6).



**Figure 5.15.6 - Maltese seafood imports trends by type of products: share in volume (left) and value (right)**

The contribution of processed products to total imports varies depending on the country of origin. In general, non-processed products contribute the most to the overall value of imports. Imports from Denmark are mostly made up of processed products, as almost 70% of them are composed of dried/salted/smoked salmon (accounting for 30% of the total volume, in 2012), prepared/preserved fish for non food uses (20%) and prepared/preserved “other molluscs and aquatic invertebrates” (16%) (Figure 5.15.7).



**Figure 5.15.7 - Maltese seafood imports trends by main seafood suppliers and contribution of processed products to total import value**

Note: the size is proportional to the import value and the shading to the share of processed products.



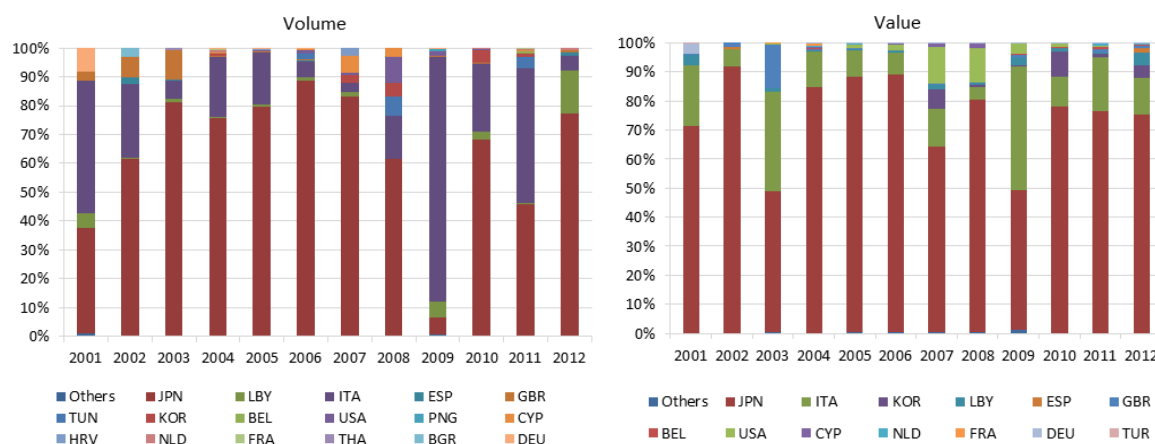
## Exports

Over the reference period, Maltese exports have been highly fluctuating and, in 2012, they were equal to 4 K tonnes of seafood, valued at 6 M Euro. In 2012, 92% of Maltese exports were sold outside the EU. This corresponded to 84% of the total trade value. The volume and value shares of extra-community trade varied significantly over the period, around an average of 70% and 81%, respectively.

Figure 5.15.8 shows the trend of the seafood exports to the most relevant partners shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover Maltese exports entirely.

Seafood exports are very concentrated in few markets. In 2012, Japan imported 77% of the volume of Maltese seafood exports, Libya another 15% and Italy almost all the rest. In terms of trade value, these three countries covered 75%, 13% and 5%, respectively.

Trade patterns changed radically over the reference period. Japan and Italy were the most relevant countries of destination for Maltese seafood also in 2001 (respectively accounting for 46% and 36% of the total seafood imports in volume, 71% and 21% of their value) and Libya was also rather relevant; however, while export volumes directed to Japan and Libya increased over the years, trade with Italy contracted. Furthermore, exports to Germany, which was the third largest country of destination for Malta in 2001 in terms of trade volume (mostly made up of seabream and seabass) declined by 96%. In terms of value, exports to Libya, Japan and Italy increased by around five times, 4 times and 2.5 times, respectively.



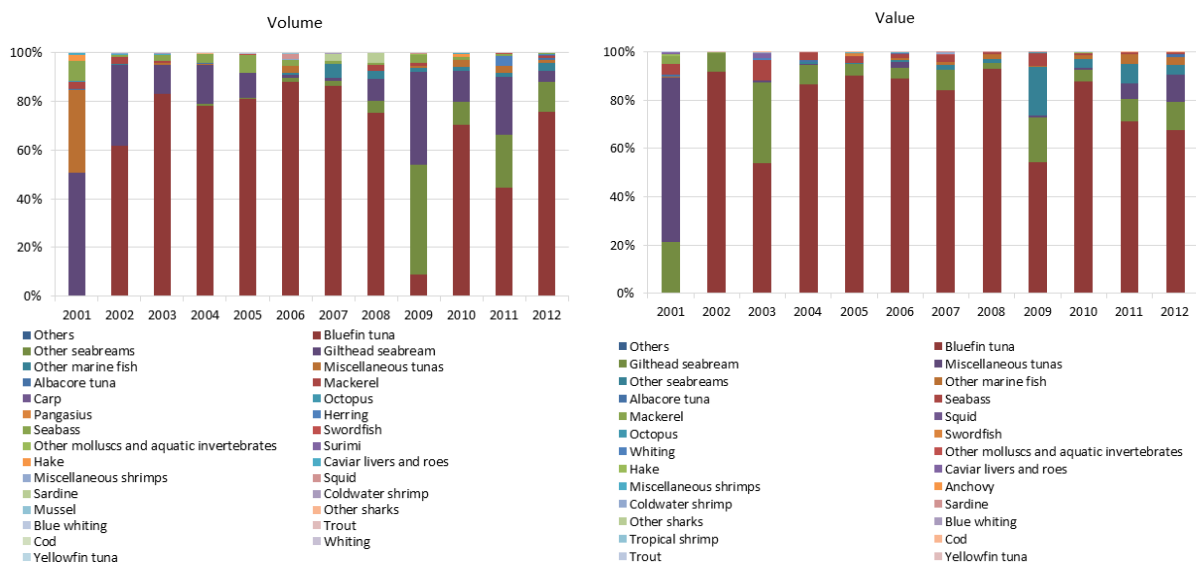
**Figure 5.15.8 - Maltese seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.15.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Maltese seafood exports entirely.

In 2012, 76% of the Maltese seafood export volume was made up of bluefin tuna and 12% of “other seabreams”. The other most represented species were gilthead seabream (accounting for 4% of the total volume of exports in 2012), other marine fish (4%) and miscellaneous tunas (1%). Bluefin tuna contributed 67% of the total value of seafood trade in 2012. Gilthead seabream, miscellaneous tunas, “other seabreams” and other marine fish contributed 12%, 12%, 4% and 3%, respectively.

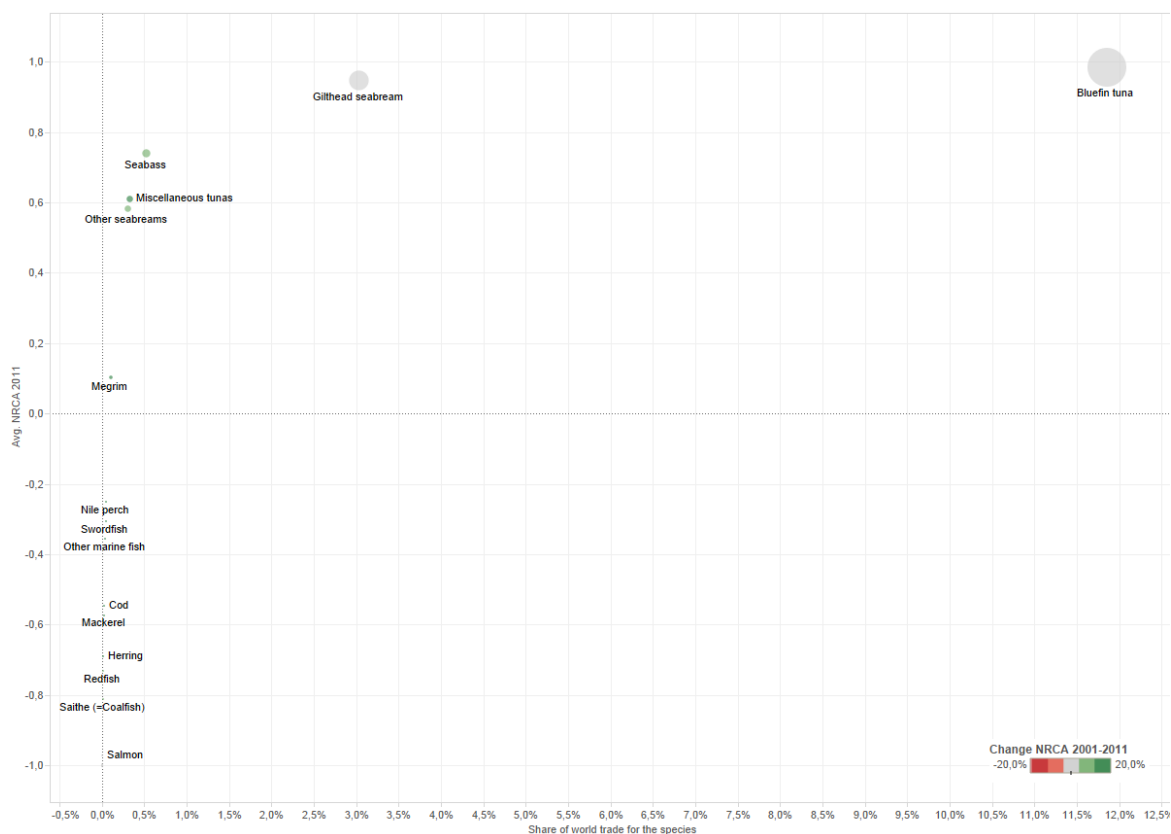
Generally, most bluefin tuna caught by Maltese long-liners is exported to Japan; seabass and gilthead seabream are exported whole, mainly to Central and North Italy (STECF, 2014c).

Exports of the most traded species were rather unstable during the reference period and it is not possible to identify clear trends. Trade of bluefin tuna to Japan has been the main driver of the changes in seafood exports occurred over the period. The volume of this trade flow has increased every year from 2001 to 2007, while it has fluctuated significantly afterwards. Its value has fluctuated between a minimum of 4.6 M Euro in 2003 and a maximum of 71 M Euro in 2008.



**Figure 5.15.9 - Maltese seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As mentioned, bluefin tuna and gilthead seabream contribute around 80% of the overall value of Maltese seafood exports. For both species, Malta has a comparative advantage on the international market, which has remained stable over the reference period. In 2011, the NRCA index for bluefin tuna was equal to 0.99, which is one of the highest values of the index recorded in the MS in that year. The NRCA index for gilthead seabream was equal to 0.95 (Figure 5.15.10).



**Figure 5.15.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Malta, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Seafood exports changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.15.11). The value of seafood exports increased significantly in 2008, declined in 2009 and rose again in 2010. As mentioned, these changes were driven by the trade of bluefin tuna. In 2008, the value of the exports of this species increased by 141% (from 34 M Euro to 82 M Euro), it contracted by 90% in 2009 (from 82 M Euro to less than 8 M Euro) and rose by 8 times in 2010 (from 8 M Euro to 61 M Euro).

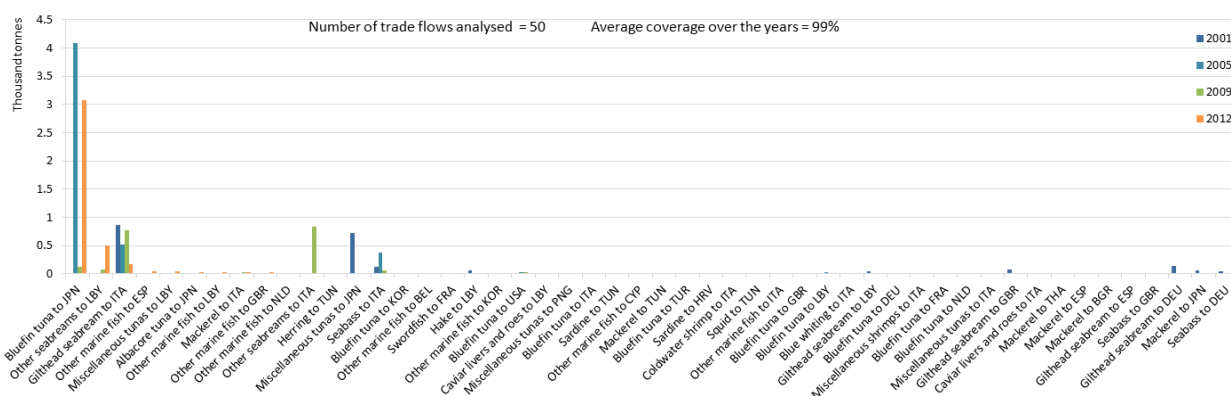


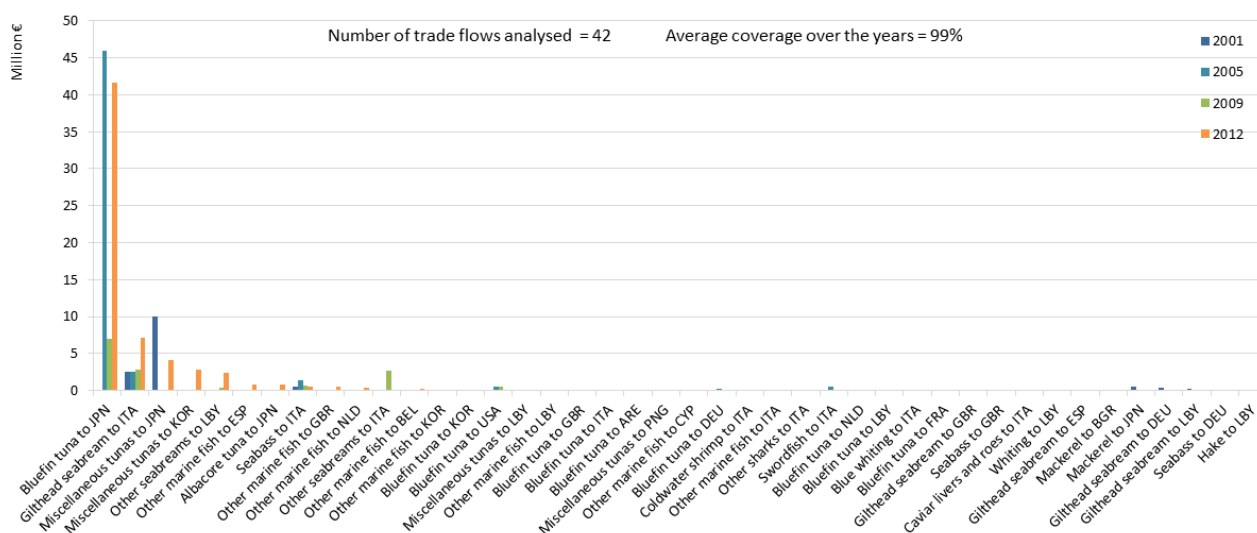
**Figure 5.15.11 - Maltese seafood exports margins: 2001-2012**

Figure 5.15.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Malta, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover Maltese seafood exports almost entirely.

Trade patterns have changed markedly from 2001 to 2012 and several trade flows have not existed in some years of the reference period, as it can be observed from the figure.

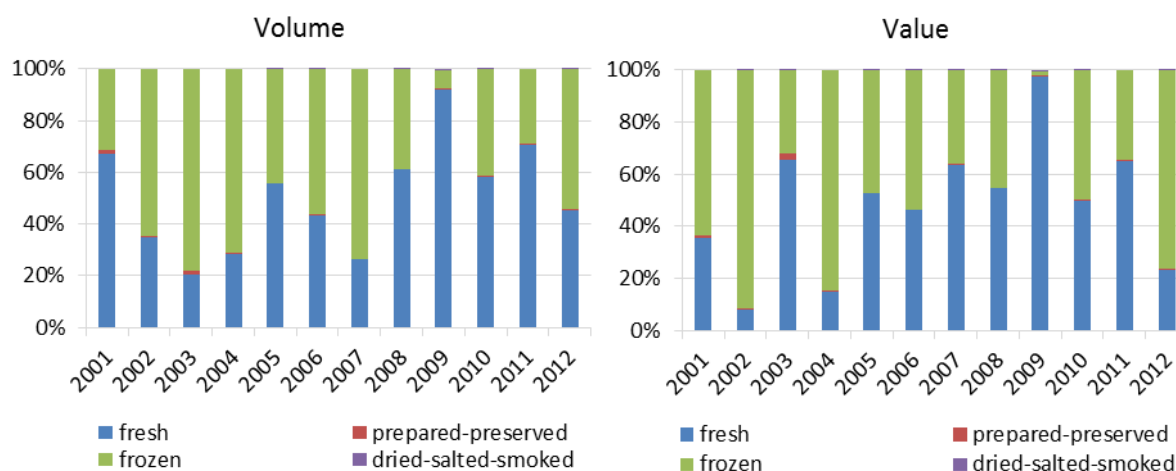
As seen above, exports of bluefin tuna to Japan have fluctuated significantly from year to year, both in volume and value. Concerning seabream, Malta explored several markets during the reference period, but its most relevant destination has remained Italy over the entire period.





**Figure 5.15.12 - Maltese seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Most seafood is exported by Malta frozen (54% of overall exports in volume in 2012, corresponding to 76% of its value) and fresh (45%, 23%). Exports of “fresh” increased markedly from 2001 to 2012, both in volume and value, but the trade of “frozen” increased much more (frozen seafood constituted 31% of the volume of Maltese exports in 2001, corresponding to 63% of its value). This reflects the increased trade of tuna, which is exported mostly as frozen fish, and the decreased trade of seabream and seabass, which are exported mostly as fresh fish (Figure 5.15.13).



**Figure 5.15.13 - Maltese seafood exports trends by type of products: share in volume (left) and value (right)**

The value of Maltese exports derive mostly from non-processed products. Frozen bluefin tuna exported to Japan and fresh gilthead seabream directed to Italy contribute around 80% of it (Figure 5.15.14).

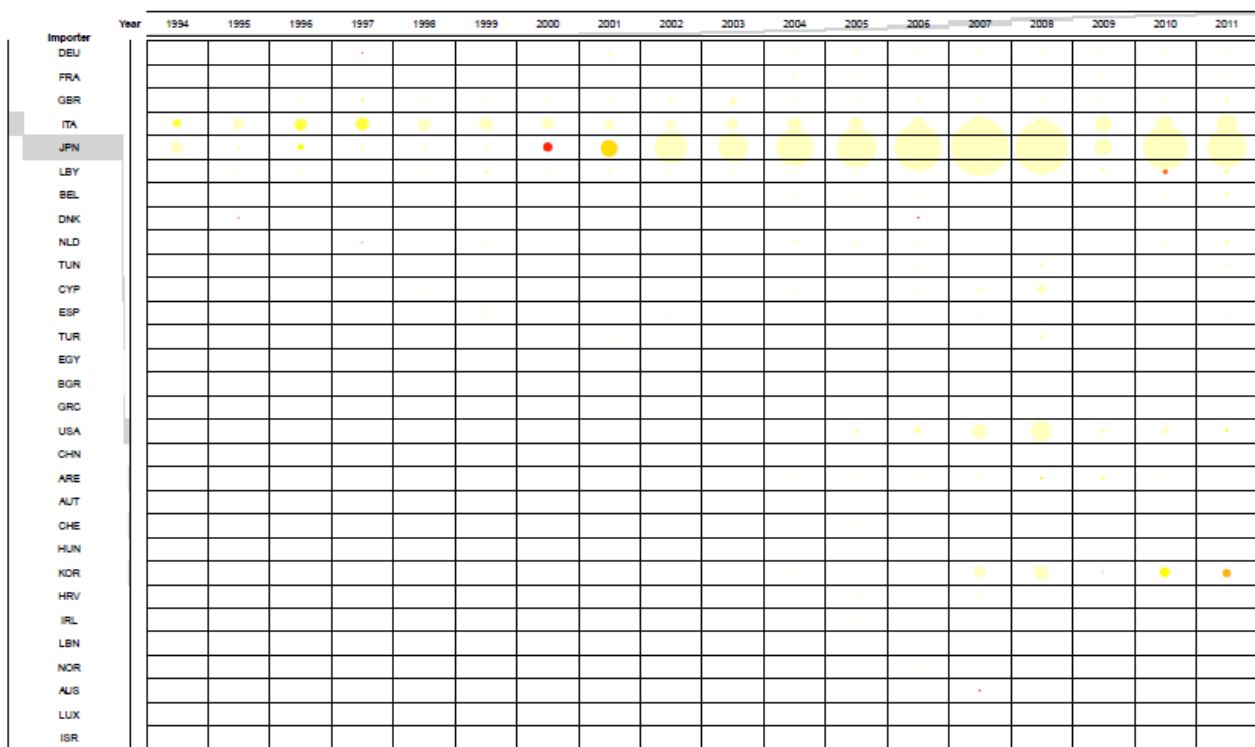


Figure 5.15.14 - Maltese seafood exports trends by main seafood suppliers and contribution of processed products to total export value (size is proportional to the export value and the shading to the share of processed products).

## 5.16 The Netherlands

### Production

The Dutch fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the North Sea (demersal fleet) and in the North East Atlantic Ocean (pelagic fleet), around the United Kingdom and Ireland. Furthermore, a part of the pelagic fleet operates in African waters and in the Pacific (STECF, 2014a).

Total capture production was equal to 368 K tonnes of fish in 2012, 33% of which made up of mackerel. Other commercial species highly represented in the overall production were sardine (14%), herring (12%) and sardinellas (12%).

The Netherlands has a small marine aquaculture sector, which produced only 220 tonnes in 2011. The aquaculture is concentrated on the production of shellfish, especially mussels, which was equal to 36 K tonnes in 2011. Intensive land-based culture of finfish takes place in closed recirculation systems and the major species are eel and catfish (STECF, 2014b).

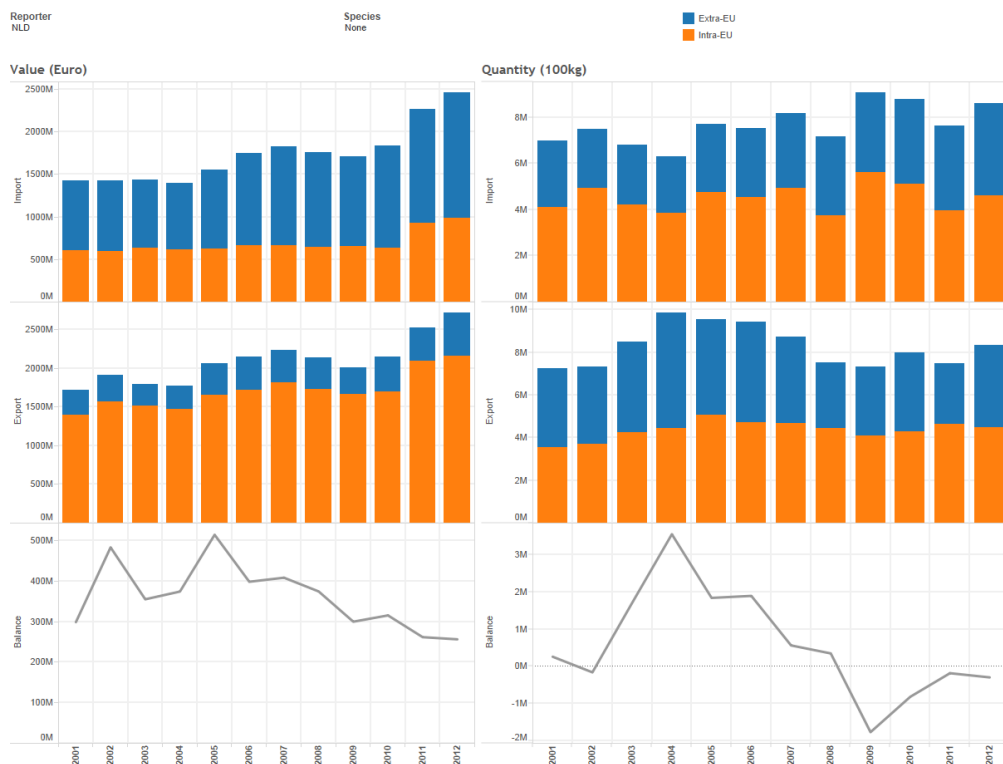
Dutch fish processing industry increasingly relies on imports as a result of the declining catches of most traditional species and the growing diversity of seafood products on the EU market. Most processed production is made up of flatfish, shrimps and mussels, which are imported as raw material from the North Sea and Wadden Sea. Another relevant Dutch production is salted herring, mostly produced from fish imported from Northern Europe. Furthermore, Dutch enterprises import increasing volumes of non-traditional species, such as pangasius and tropical shrimps, destined to be processed and exported. The Netherlands is an important trading hub for the transport of fish to other MS.

### Trade balance and exposure to trade competition

The Netherlands had a positive seafood trade balance in terms of value in 2012, equal to 257 M Euro, to which corresponded a trade deficit in volume of 30 K tonnes of seafood. Dutch seafood trade balance has fluctuated significantly over the reference period, both in volume and value (Figure 5.16.1)

In 2012, intra-community and extra EU imports were almost balanced in terms of volume, while extra-community imports were prevalent in value. In the same year, almost half of Dutch seafood export volume was directed outside the EU, but intra-community trade contributed much more to its value.

From 2001 to 2012, the relative contribution of intra and extra EU trade to total imports has remained rather stable, both in terms of volume and value. The contribution of intra-community exports has remained rather stable in volume, but has increased in value.



**Figure 5.16.1 - Dutch seafood trade balance trends: value (left) and volume (right)**

The Netherlands is one of the MS with the highest exposure to seafood trade competition, to which imports and exports contribute almost evenly (Figure 5.16.2). The trade competition in the Netherlands tended to increase over time and, in 2011, the estimated value of the Trade Competition Ratio (TCR) was 5.76, which indicates that the sum of Dutch imports and exports exceeded the domestic consumption of seafood by around six times.



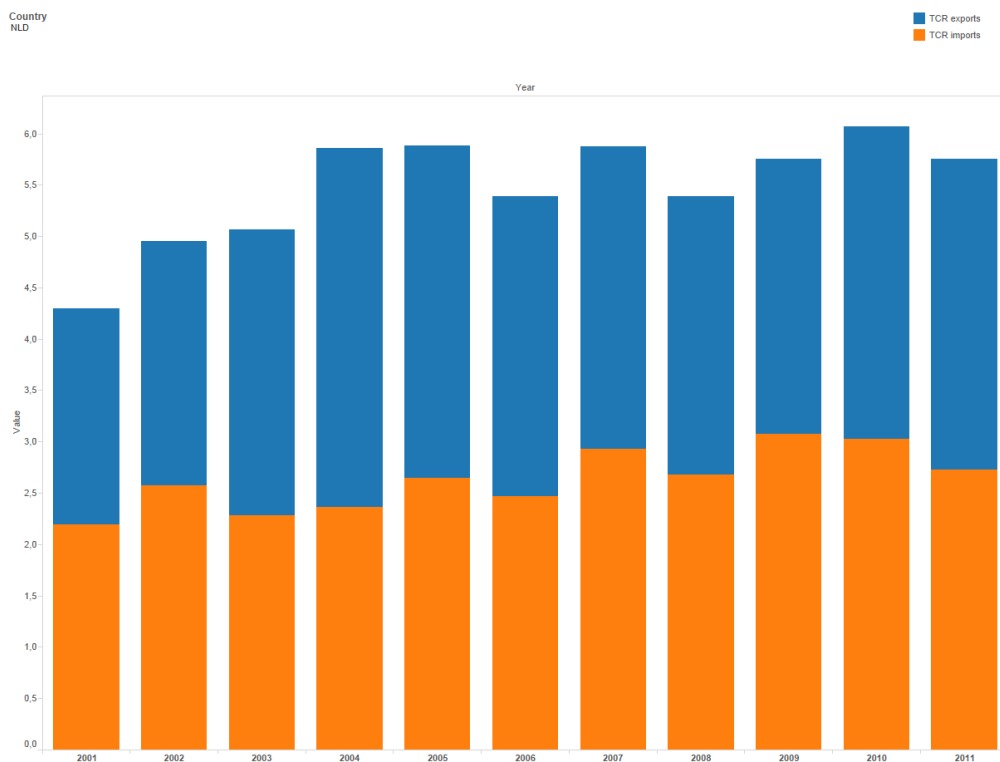


Figure 5.16.2 -- Trend of the exposure to trade competition index for Netherlands

### Imports

In 2012, the Netherlands imported 861 K tonnes of fish (corresponding to 2.5 B Euro). A substantial part of the imported seafood is destined to the Dutch seafood processing industry or re-exported directly. The Dutch fish processing and wholesaling industry as a whole, indeed, has an important function as trading hub for other MS (STECF, 2014c).

Seafood imports have increased over the reference period, both in volume (by 23%) and value (by 73%), at average annual growth rates of 3% and 5%, respectively. The declining catches of some traditional species, and the growing diversity of fish products on the EU market, have resulted in growing imports of fish products. The rise of imports also reflects the increasingly high dependence on imports of the processing industry (STECF, 2014c).

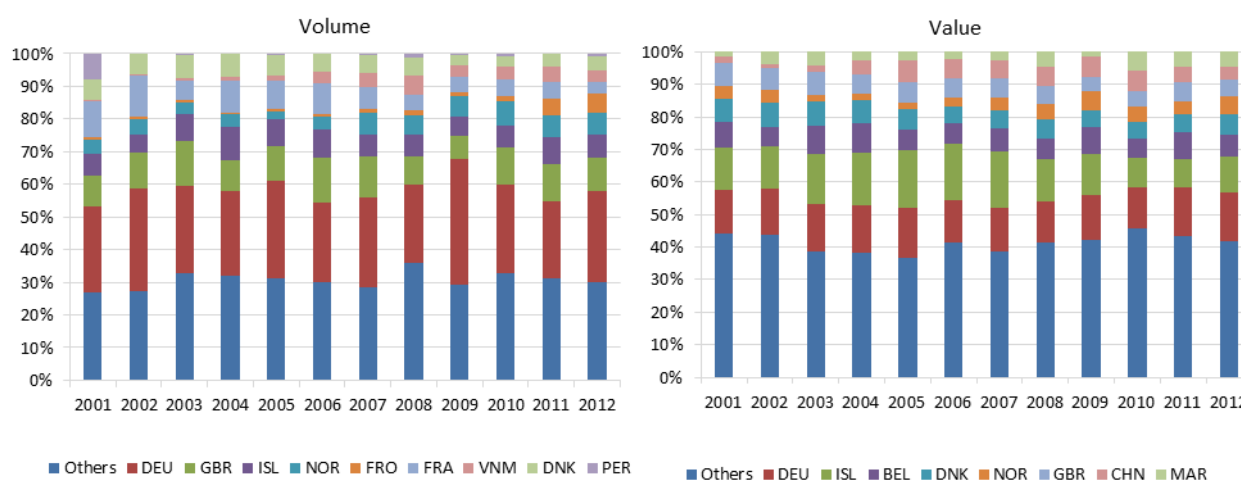
Over the last years, the fish processing has become more and more integrated with trading activities (STECF, 2014c). This trend is expected to continue in the coming years, with trading becoming a very important part of the business for many processors (STECF, 2014c).

The average unit value of extra-community seafood imports was higher than the one of intra-community trade in 2012. In fact, intra-community and extra EU imports were almost balanced in terms of volume, while extra-community imports were prevalent in value (60% vs. 40%). The relative contribution of intra and extra EU trade has remained rather stable over the reference period, ranging from 38% to 48% in volume and from 56% to 64% in value.

Figure 5.16.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover 69% and 59% of Dutch seafood imports, respectively in volume and value.

In 2012, the most relevant seafood suppliers for the Netherlands were Germany (contributing 28% of the total import volume), the United Kingdom (10%) Iceland (7%), Norway (6%) and the Faroe Islands (6%). Germany was the most relevant also in terms of value (contributing 15% of the total), followed by Iceland (11%), Belgium (7%), Denmark (6%) and Norway (5%).

From 2001 to 2012, imports from all the most relevant countries increased both in volume and value, with the highest growth in volume (almost nine times) corresponding to the Faroe Islands and, in value, to Norway (by more than 2 times). Furthermore, seafood trade with China, Russia and Vietnam rose markedly in volume and value (in volume, by 12 times, 3 times and almost 3 times, respectively and, in value, by 3, 4 and 7 times). Imports from several other extra-community countries also increased significantly, especially in value, for example from Morocco (by 5 times).



**Figure 5.16.3 - Dutch seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

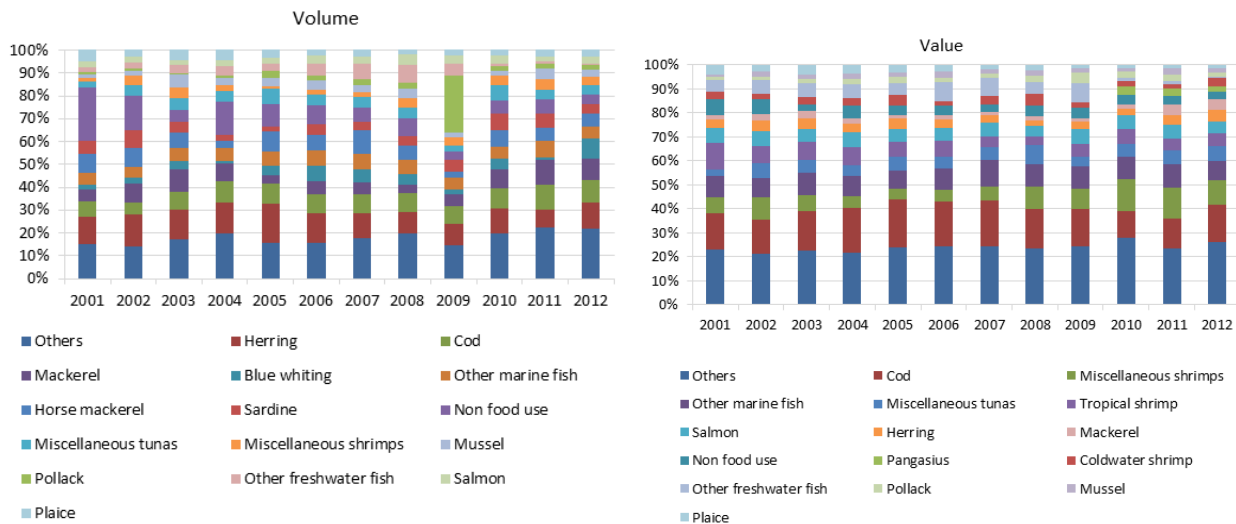
Figure 5.16.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 82% of the total Dutch seafood imports in volume and 77% in value.

In 2012, 11% of the overall volume of Dutch seafood imports was made up of herring. Salted herring is one of the most important products of the Dutch processing industry and the raw material consists almost entirely of frozen herring imported from Northern Europe (in 2012, 56% of the total volume was imported from Germany, 17% from Norway and 16% from the United Kingdom).

The other most relevant commercial species in terms of volume of trade were cod (10%), mackerel (9%), blue whiting (8%) and other marine fish (6%). Cod was the most relevant in terms of import value (accounting for 14% of the total), followed by miscellaneous shrimps (10%), other marine fish (7%), miscellaneous tuna (6%) and tropical shrimps (5%).

Some of the most imported species feed the fish processing industry that, as mentioned above, relies heavily on imports. The main product segments are flatfish, shrimps and mussels, for which the raw material is sourced from the North Sea and Wadden Sea. A substantial part of the imported seafood product is re-exported directly; for example, cod and pangasius are mostly imported to be re-exported directly to other MS through the harbour of Rotterdam (STECF, 2014c).

Imports of all most traded species have increased significantly over the reference period, both in volume and value, especially of blue whiting and mackerel, which respectively rose by almost five times and more than two in volume and by more than 16 times and almost five in value. Imports of raw material of species not traditionally used by the Dutch fish processing sector, such as pangasius, have also increased over the reference period (STECF, 2014c).

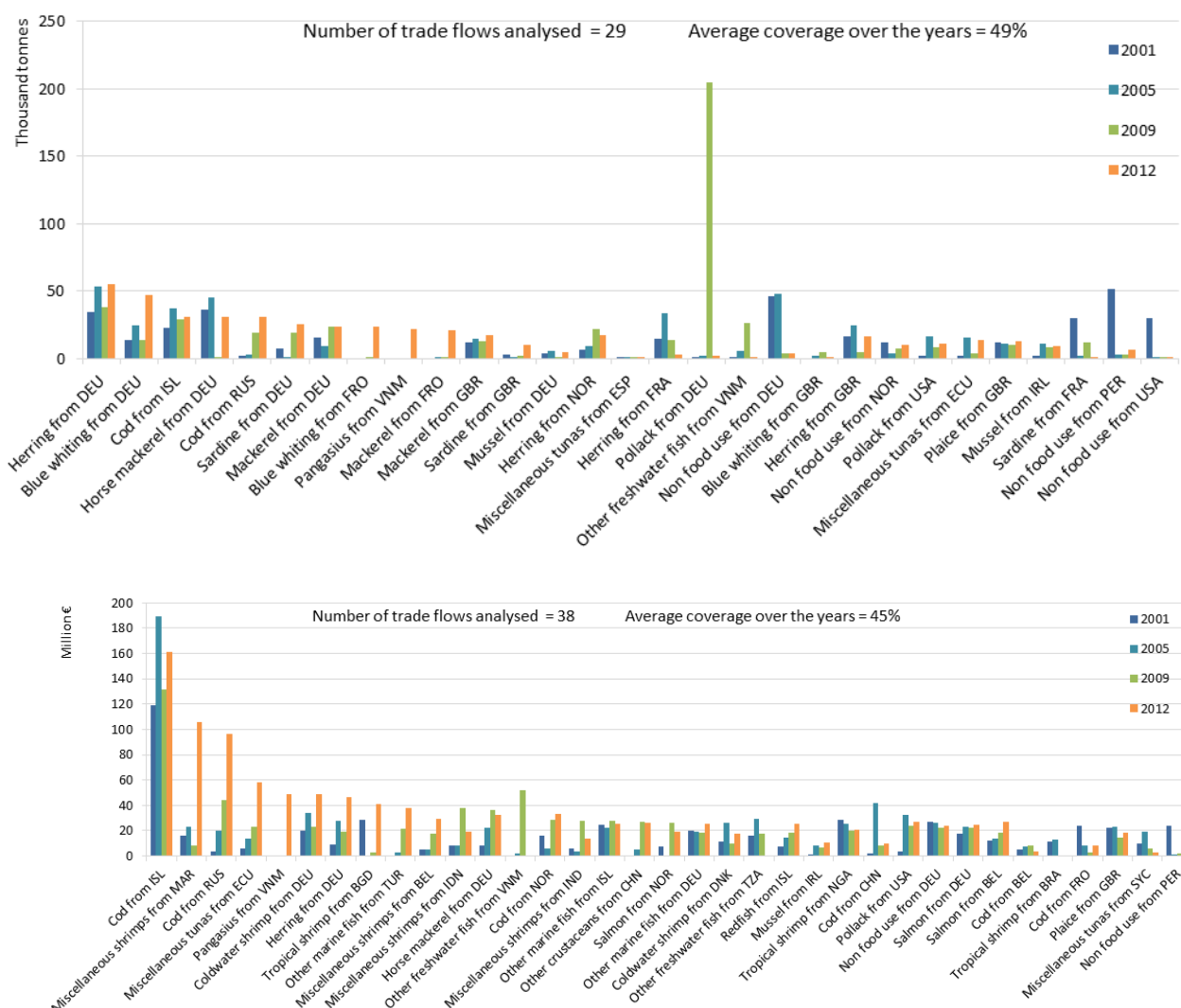


**Figure 5.16.4 - Dutch seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.16.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for the Netherlands, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 49% and 45% of the overall trade, respectively in volume and value.

The figures below show several of the trade flows mostly responsible for the sharp increase in the value of extra-community imports, described above. For example, the rise in the trade from Morocco is mostly due to the imports of shrimps, while the growth of the trade with China is explained by the marked increase of the imports of crustaceans from this country (by 43 times). Trade of cod and herring is behind the growth of the imports from Norway.

The figures also capture some of the flows explaining the increased of imports from the most relevant seafood suppliers. It is shown, for example, the sharp increase in the value of the imports of shrimps, salmon e horse mackerel from Germany and of shrimps from Belgium.



**Figure 5.16.5 - Dutch seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Frozen seafood contributed more than 64% of the overall amount of imports in 2012. This is explained by the fact that all the main traded species (e.g. herring, cod, mackerel and blue whiting) were imported mostly as frozen fish (Figure 5.16.6). Fresh and prepared/preserved products contributed 17% and 14% of the total volume, respectively. Frozen seafood is the most relevant category also in terms of value, contributing almost 50% of the total in 2012, while each of the other two most relevant categories contributed 22%.

In terms of volume, imports decreased for prepared/preserved products and increased especially for frozen products. Therefore, the contribution of frozen seafood to total import volume rose significantly over the period (from 49% in 2001 to 64% in 2012), while the share of more processed food declined (from 31% to 14%).

Imports of all types of seafood increased in value from 2001 to 2012, especially of frozen and prepared/preserved seafood (more than 90% for both the categories). As a consequence, the contribution of these two categories of seafood to total import value increased, at the expense of fresh seafood.

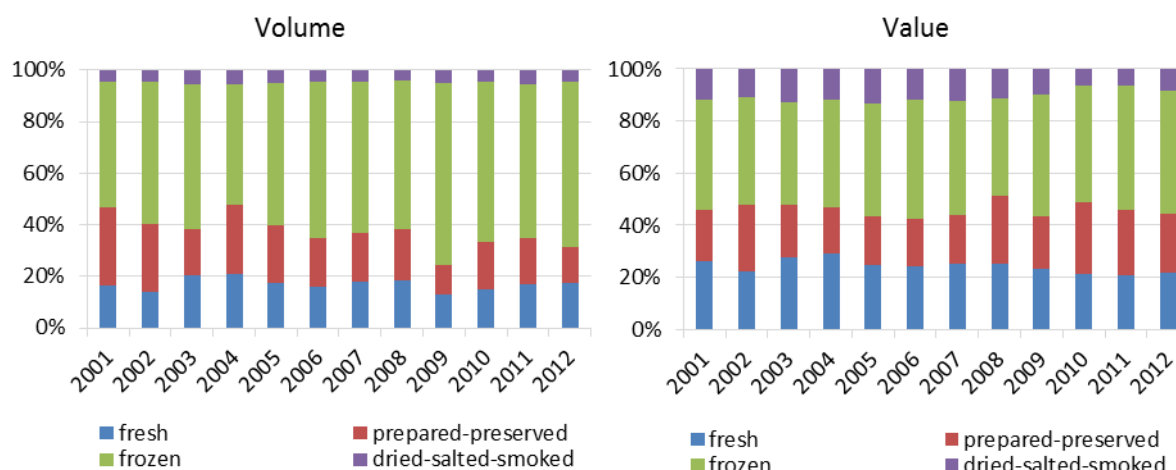


Figure 5.16.6 - Dutch seafood imports trends by type of products: share in volume (left) and value (right)

The share of processed products over the total imports varies depending on the country of origin, but, in general, processed production is prevalent, especially in the imports from extra-community countries, such as Iceland, Turkey, USA and China. Products imported from Norway (60% of which made up frozen herring, cod and fresh salmon), the United Kingdom and some other less relevant exporters are less processed than the average (Figure 5.16.7).

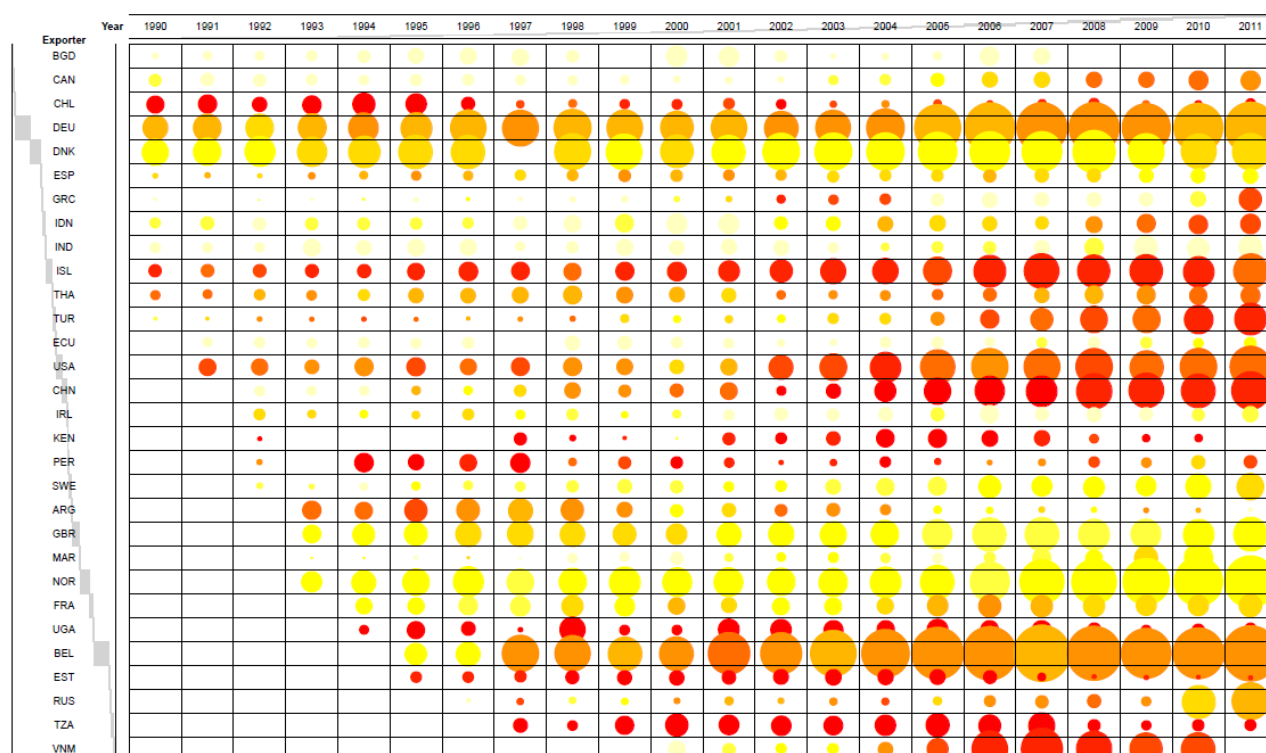


Figure 5.16.7 - Dutch seafood imports trends by main seafood suppliers and contribution of processed products to total import value (size is proportional to the import value and the shading to the share of processed products).

## Exports

The Netherlands exported 831 K tonnes of fish and fishery products in 2012, valued at 2.7 B Euro. These values represented an increase of 15% in volume and 58% in value compared to 2001.

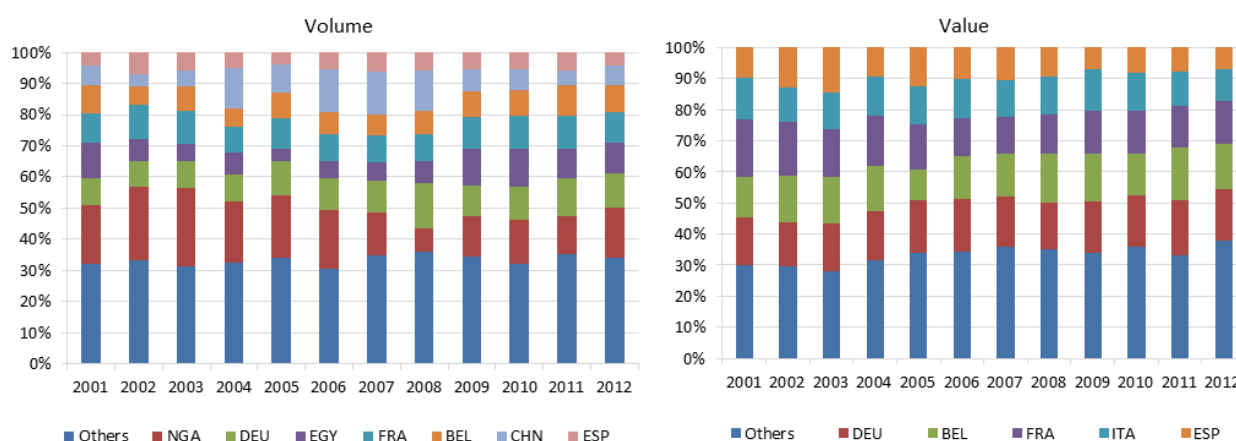
Almost half of Dutch seafood export volume was directed outside the EU in 2012; however intra-community trade contributed 79% of its total value. From 2001 to 2012, the volume share of extra-community trade has declined from 51% to 46%, while the value one has remained rather stable.

Figure 5.16.8 shows the trend of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average over the period, 67% of the total volume and value of seafood exported by the Netherlands.

In 2012, exports were spread across several countries and none of them was clearly preponderant with respect to the others, neither in volume nor in value. Furthermore, seafood export value was distributed across a larger range of importing countries in 2012 than in 2001. In 2012, the five most relevant importing partners covered 70% of the total Dutch seafood exports, while in 2001 they contributed only 62% of the total.

In 2012, 16% of Dutch fish volumes were directed to Nigeria (importing from the Netherlands mostly herring, mackerel and whiting), 11% to Germany (importing mostly other marine fish), 10% to Egypt (mackerel and herring), 10% to France (mussels and cod) and 9% to Belgium (mussels). Germany contributed the most to the overall export value (16% of the total), followed by Belgium, France, Italy and Spain (contributing 15%, 14%, 10% and 7%, respectively), while seafood traded to Nigeria contributed only 5% of the total value of Dutch seafood exports.

Trade patterns didn’t change much over time in terms of partners. However, while volumes exported to Germany increased substantially from 2001 to 2012, those exported to Nigeria and Italy declined and to the other importing countries remained more stable. Trade values to all relevant partners increased, especially to Nigeria and Egypt (by more than two times); however, their overall contribution to total export value decreased over time. This resulted from the fact that the trade with several other countries within (e.g. Portugal, Poland, Sweden, Denmark and Austria) and outside the EU (USA, Cameroon and the Ivory Coast) increased relatively more.



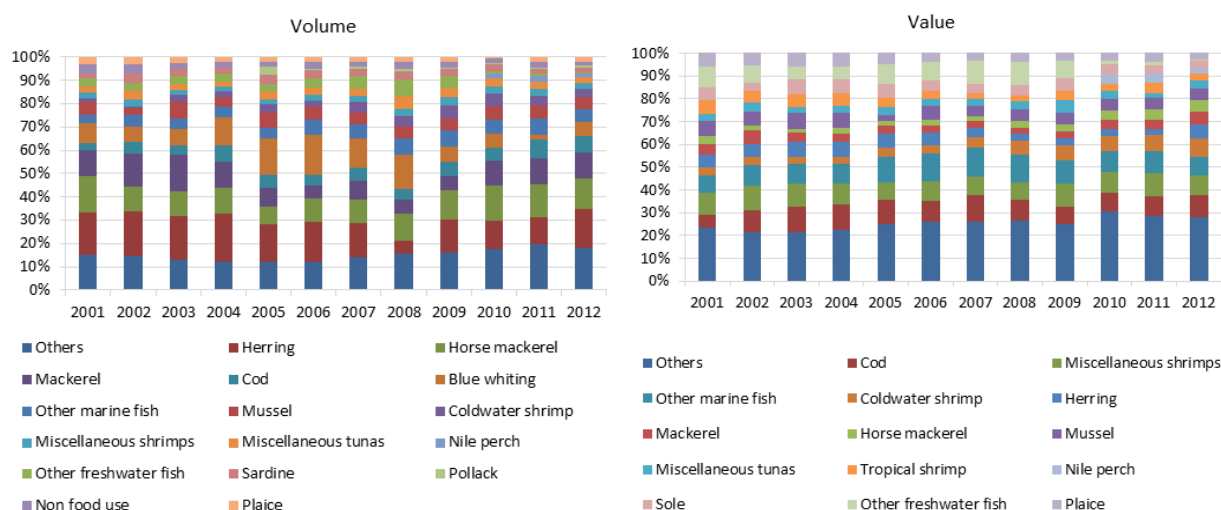
**Figure 5.16.8 - Dutch seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.16.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 85% of the total volume of seafood exported by Netherlands and almost 75% of its value.

In 2012, the most relevant commercial species in terms of volume of trade were herring (contributing 17% of the overall export volume), horse mackerel (13%), mackerel (12%), cod (7%) and Blue whiting (6%). In terms of value, cod was the most relevant, contributing 9% of the total, followed by miscellaneous shrimps (8%), other marine fish (8%), coldwater shrimps (7%) and herring (6%).

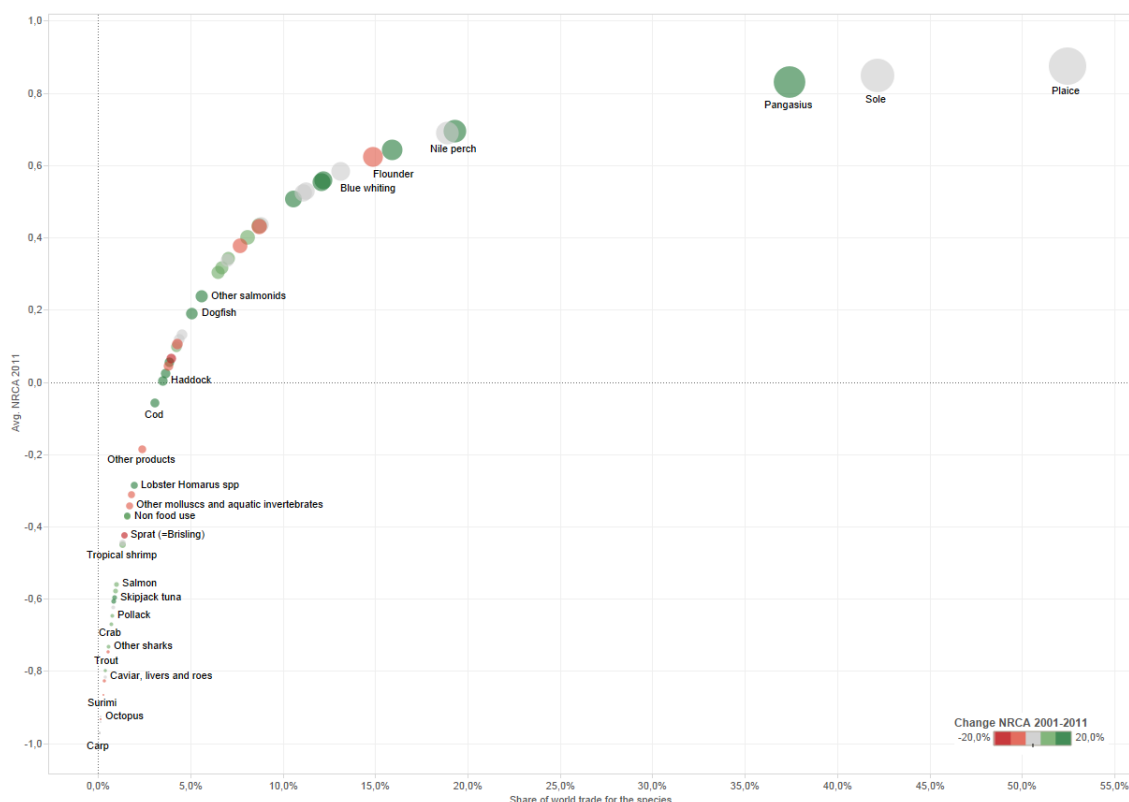
Herring is mostly exported to Nigeria and Egypt, while shrimps (both fished domestically and imported) and mussels are mostly exported within the EU, especially to Belgium, France and Germany (Morocco is a very important country of destination for coldwater shrimps). As mentioned, the Dutch processing sector has an important position in the processing of flatfish. Flatfish products are mainly exported to countries in Southern Europe, especially to Italy (STECF, 2014c).

Export volume of cod increased by almost three times from 2001 to 2012. Export volume of mackerel and herring also increased, but less significantly (by 19% and 5%, respectively) and of horse mackerel and blue whiting declined. Therefore, the relative contribution of cod to total exports increased from 3% to 7%. Export value increased for all the most relevant commercial species, especially for cod and coldwater shrimps and, indeed, their shares of the total rose from 6% to 9% and from 4% to 7%, respectively.



**Figure 5.16.9 - Dutch seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, the Netherlands's comparative advantage in many of its exported products is higher than for the rest of the world (Figure 5.16.10). This is true also for the most relevant commercial species in terms of value of exports (i.e. miscellaneous shrimps, other marine fish, coldwater shrimps and herring), but not for the most important one (i.e. cod), for which the Netherlands had a competitive disadvantage in 2011. In the same year, the Netherlands had the highest comparative advantage on the international market for plaice (NRCA = 0.88), sole (NRCA = 0.85) and pangasius (NRCA = 0.83), which respectively contributed only 2%, 4% and 1% of the overall Dutch seafood export value in 2011. The NRCA index remained stable between 2001 and 2011 for plaice and sole, while it increased for pangasius, reflecting also the increased trade of this species.



**Figure 5.16.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Netherlands, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Seafood exports increased especially from 2010 to 2012 and trade patterns changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.16.11). Changes at the extensive margin (i.e. activation of new trade flows) played a very relevant role in the overall exports changes in 2010. Failures did not contribute significantly to the exports contraction over the entire period.



**Figure 5.16.11 - Dutch seafood exports margins: 2001-2012**

Figure 5.16.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for the Netherlands, in terms of volume (top figure) and value (bottom figure). The list of the



most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 48% and 39% of the overall trade (in average over the reference period), respectively in volume and value.

As mentioned above, export volume of Dutch fish and fishery products increased by 15%, from 2001 to 2012. The figures below captures only some of the trade flows which explain this increase, for example the trade of herring to Egypt, cod to Portugal, coldwater shrimps to Morocco and mackerel to Poland.

As mentioned, trade with all the most relevant partners increased over time in terms of value, especially to Nigeria and Egypt. For Nigeria, it was mostly due to an increased trade of herring, while horse mackerel and herring were the main responsible in the case of Egypt.

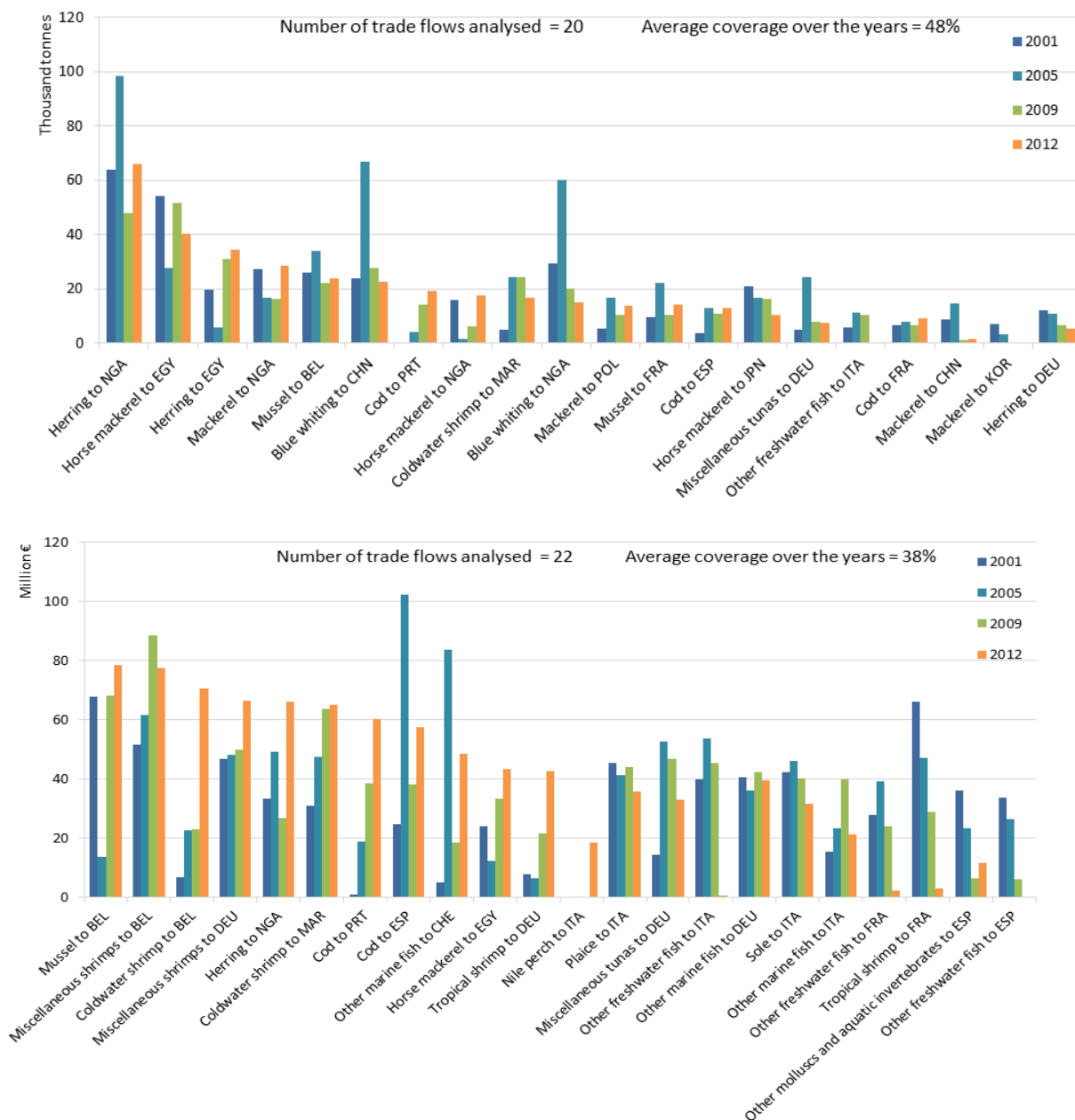
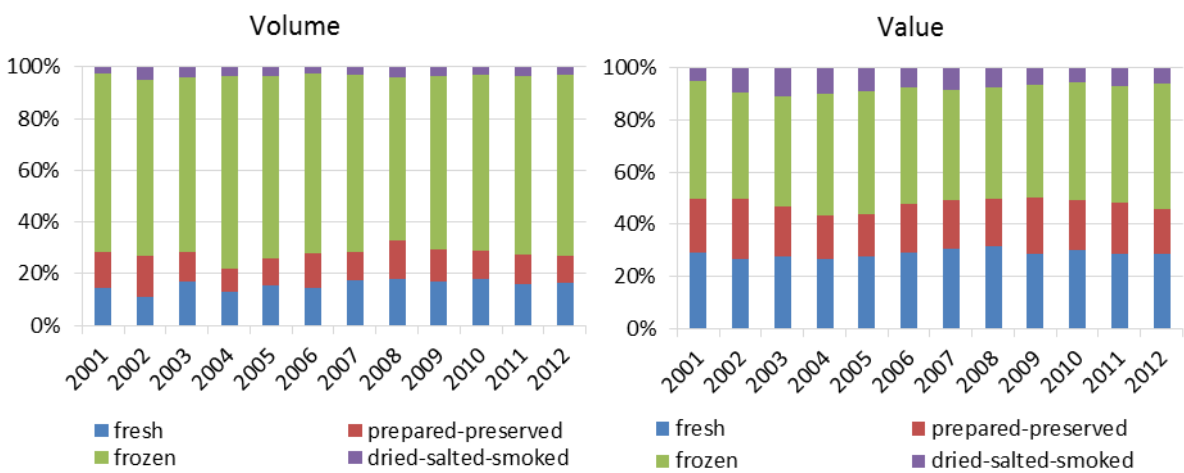


Figure 5.16.12 - Dutch seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

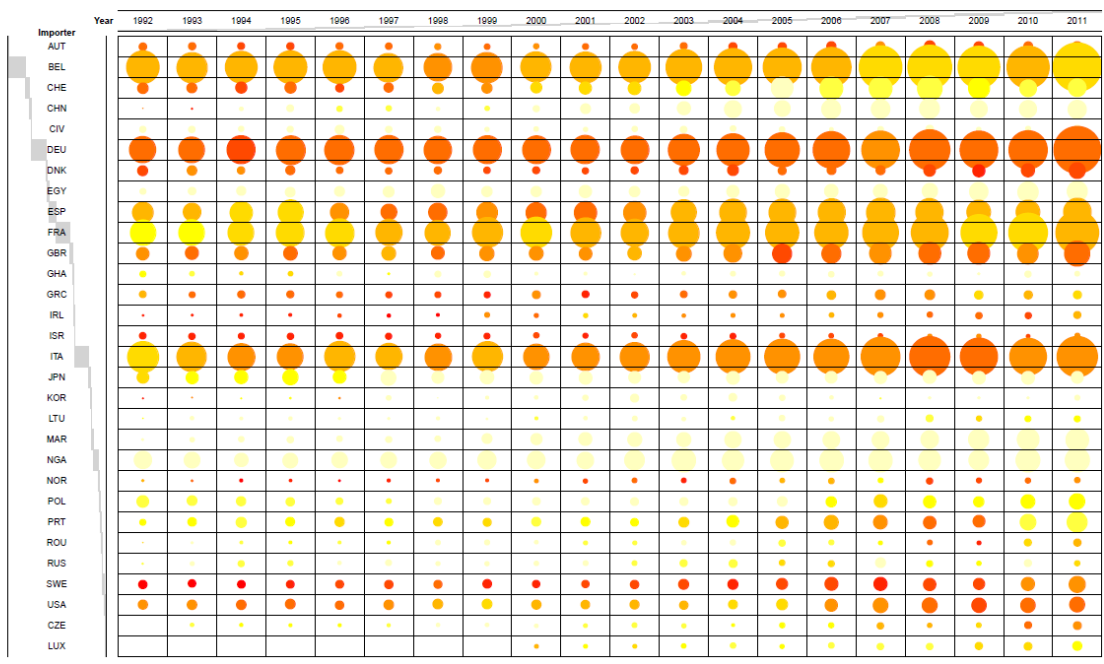
The largest part of seafood exports is frozen (70% of the exported volume in 2012, corresponding to 48% of the overall value), while fresh and prepared/prepared products contribute 16% and 10% of the total

volume, respectively (corresponding to shares of 29% and 17%, in terms of value). Trade value has increased for all types of products from 2001 to 2012, and volumes have increased for all of them except for prepared/preserved seafood. Therefore, the relative contribution of the different categories of seafood has remained rather stable over time, both in volume and value (Figure 5.16.13).



**Figure 5.16.13 - Dutch seafood exports trends by type of products: share in volume (left) and value (right)**

The relative contribution of processed products to total exports depends on the countries of destination. For example, exports to Germany and Italy are mainly processed, while the share of processed products is lower in the case of Belgium, France and several secondary trade partners (Figure 5.16.14).



**Figure 5.16.14 - Dutch seafood exports trends by main seafood suppliers and contribution of processed products to total export value (size is proportional to the export value and the shading to the share of processed products).**

## 5.17 Poland

### Production

In 2012 the Polish fishing fleet consisted of 843 registered vessels, more than 62% of which were small scale vessels (<12 m) using passive gears. The Polish fleet is moderately diversified with a range of vessel types targeting different species predominantly in the Baltic Sea, North East Atlantic, Mauritanian and Moroccan waters. The Polish fleet landed 180 K tonnes of fish in 2012. The Baltic Sea fleet landed 120 K tonnes of fish, valued at 56 M Euro. The total landings volume and value of the Baltic Sea fleet increased over the period. In 2012, Atlantic cod generated the highest landed value in the Baltic fisheries (17.8 M Euro), followed by European sprat (14.6 M Euro), Atlantic herring (12.1 M Euro), and then European flounder (4.6 M Euro). In terms of landings volume, in 2012 Atlantic cod landings were 14.8 K tonnes, European sprat landings were 63.1 K tonnes and Atlantic herring landings were 27.1 K tonnes.

The total volume of Polish aquaculture production was 33.2 K tonnes in 2012, with a total value of 105.1 M Euro. The biggest subsector is the production of carps, mostly in ponds. In 2012, common carp represented 55% of the total volume of production and 41% of the whole value of aquaculture production, while silver carp represented another 2% of volume and 8% of value. The next most important specie is rainbow trout, which contributed 32% of the total volume of aquaculture production and 27% of its total value in 2012.

In 2011, there were 271 fish processing companies involved in fish processing (approved by the General Veterinary Inspectorate to intra-community trade in Poland). In the same year, the volume of production of the fish processing industry (of the enterprises processing fish as their main activity) increased slightly to 375 K tonnes (1.5% more than in 2010). The most important group of products were prepared and preserved fish, which contributed 52% of the total production volume. The production of fish prepared and preserved increased by 10% from 2010 to 2011. More than half of the total volume of prepared and preserved products was made up of products of herring. The second largest group of seafood products produced by Poland consisted of smoked fish, with a 20% share in the production volume. In this group, the largest volume share (53% of the total) was represented by smoked salmon, whose production increased by 3% from 2010 to 2011. Fresh and frozen fillets covered 12% of the total production volume, fresh fish 6%, salted fish 5% and other products 3%.

### Trade balance and exposure to trade competition

The trade balance of seafood for Poland fluctuated significantly over the period 2004-2012 (period for which the data are available from EUROSTAT COMEXT databases). While the export value increased continuously, the value of imports decreased in certain years (e.g. 2007, 2011 and 2012), thus producing a positive trade balance (Figure 5.17.1).

Poland imports raw material for the processing industry and exports processed seafood products, mainly to the EU market. The average price per unit of imported seafood volume is much lower than the price per unit of exported production. The trade balance in volume has been negative over the entire reference period, with the volume of imported seafood almost double than the volume of exports. On the contrary the export value was 25% higher than the import value in 2012.



Figure 5.17.1 - Polish seafood trade balance trends: value (left) and volume (right)

The exposure to seafood trade competition in Poland increased between 2004 and 2011, from 1.03 to 2.03 (Figure 5.17.2). In 2011, imports exceeded the consumption by 14% (TCR imports = 1.14) and exports were 11% lower than the consumption (TCR exports = 0.89).

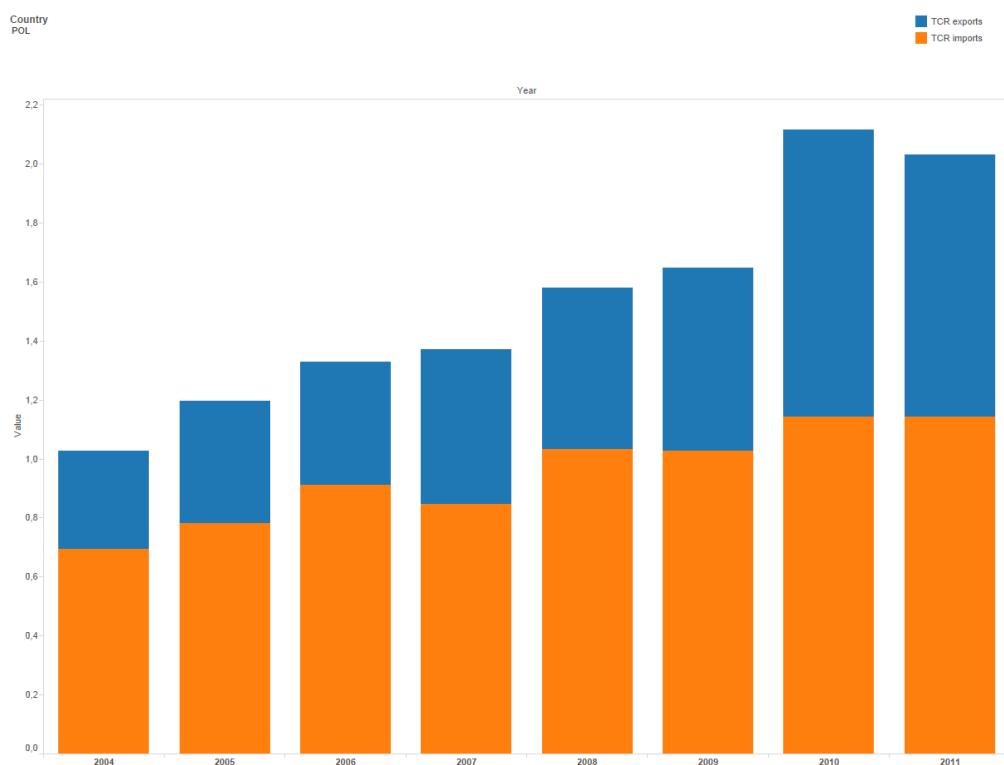


Figure 5.17.2 - Trend of the exposure to trade competition index for Poland

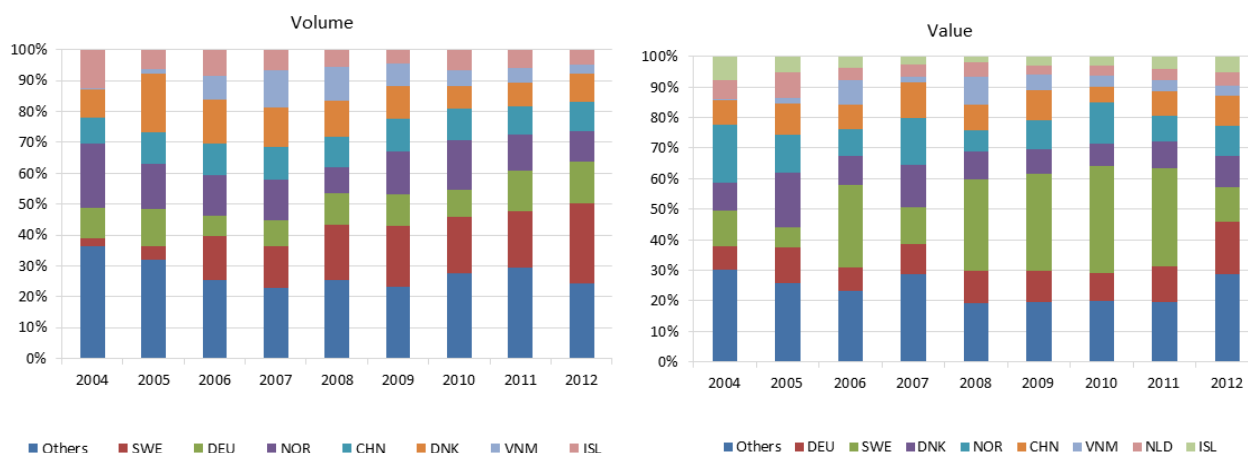
## Imports

Poland imported around 420.7 K tonnes of fish and seafood in 2012, compared to 248.9 K tonnes in 2004. The value of its seafood imports also increased, going from 378.8 M Euro in 2004 to 833.0 M Euro in 2012. The increase of the import value was mainly driven by the increase of prices and changes in the imports structure. The average annual growth rate of the import value was around 14%, while the volume increased only by 7% p.a..

Figure 5.17.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2004-2012). Seafood imports from these countries cover, in average over the period, 73% of the total volume of seafood imported by Poland and 76% of the total value.

Poland imported seafood from 73 countries from all over the world in 2012. During the period 2004 - 2012, Poland imported from EU countries 59% of the total value of its seafood imports and 53% of the overall volume. The contribution of intra-EU imports to total import value grew from 46% in 2001 to 66% in 2011 and dropped to 57% in 2012.

The major seafood suppliers for Poland in 2012 were Sweden (contributing 26% of the total volume of seafood imports and 11% of their value), Germany (14%, 17%), Norway (10%, 10%), China (10%, 10%) and Denmark (9%, 10%). These countries contributed 68% and 58% of the overall imports in 2012, respectively in volume and in value. The other most important suppliers were Iceland, UK, the Netherlands, Vietnam, USA and Russia.

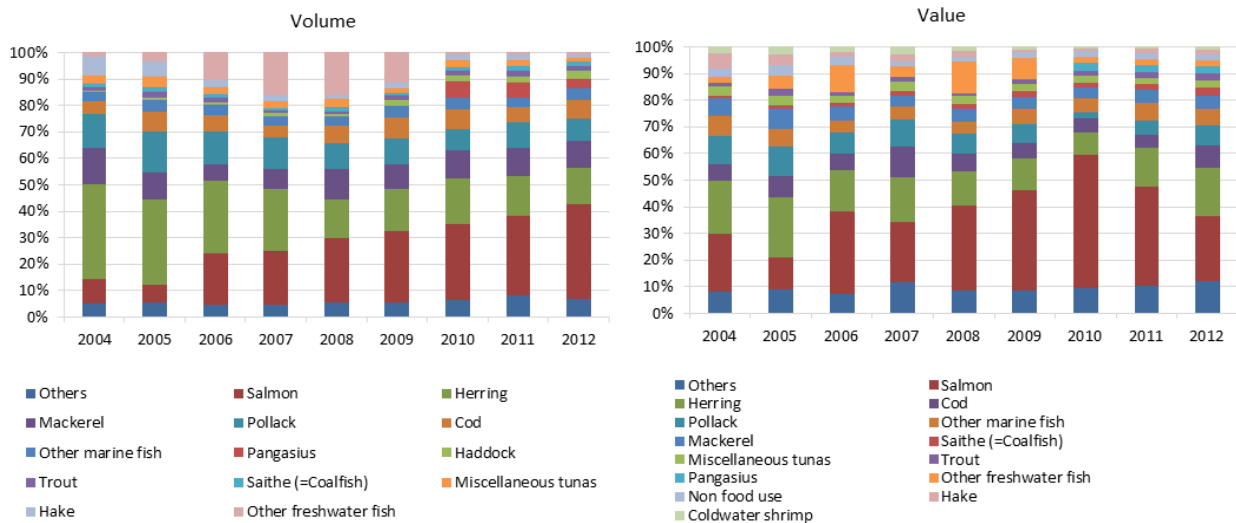


**Figure 5.17.3 - Polish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.17.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2004-2012). The imports of these species cover, in average over the years, 93% of the total Polish seafood imports in volume and 91% in value.

In 2012, the most important species in the Polish seafood imports were salmon (accounting for 28% of the total volume of imports and 24% of the overall value), herring (21%, 18%), cod (6%, 8%), pollack (8%, 8%) and mackerel (8%, 5%). These species remained the most important for the Polish market during the entire period 2004-2012, with some changes driven by fluctuations in fish prices. The share of imports of salmon increased to 50% in value in 2010 and decreased to 24% in 2012, while the share in terms of trade volume changed slightly from 2010 to 2012 (from 25% to 28%). The difference between the export growth in volume and value was partially determined by an increase of the contribution of cut salmon to the import

value, which occurred at the expense of whole salmon (whole salmon contributed 83% of the total value of salmon imports in 2011 and 65% in 2012).



**Figure 5.17.4 - Polish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.17.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Poland, in terms of volume (top figure) and value (bottom figure). The first list includes the “top 10” trade flows for each year of the period 2004-2012, in terms of traded volume; the second list in terms of traded value. The two lists cover, in average over the years, 74% and 67% of the overall trade, respectively in volume and value.

The increasing trade flow from Sweden is mainly represented by fresh salmon for the fish processing industry. Herring raw material is mostly imported from countries fishing this specie in the North Sea – Iceland, Norway, Germany, Denmark and the Netherlands. The pollack is mostly supplied from China and USA, however around 22% of this fish supply in 2012 came through Germany, which fishes this specie in the North East Atlantic fishing region. The frozen mackerel, which is quite popular in the Eastern EU markets as smoked and salted, is supplied to the Polish market from the fishing nations (the Netherlands, Faroe Islands and Norway).

Imports of salmon from Sweden increased in volume between 2009 and 2012 but decreased considerably in value. This difference reflects a strong reduction in prices which affected in particular whole fresh salmon in 2012.

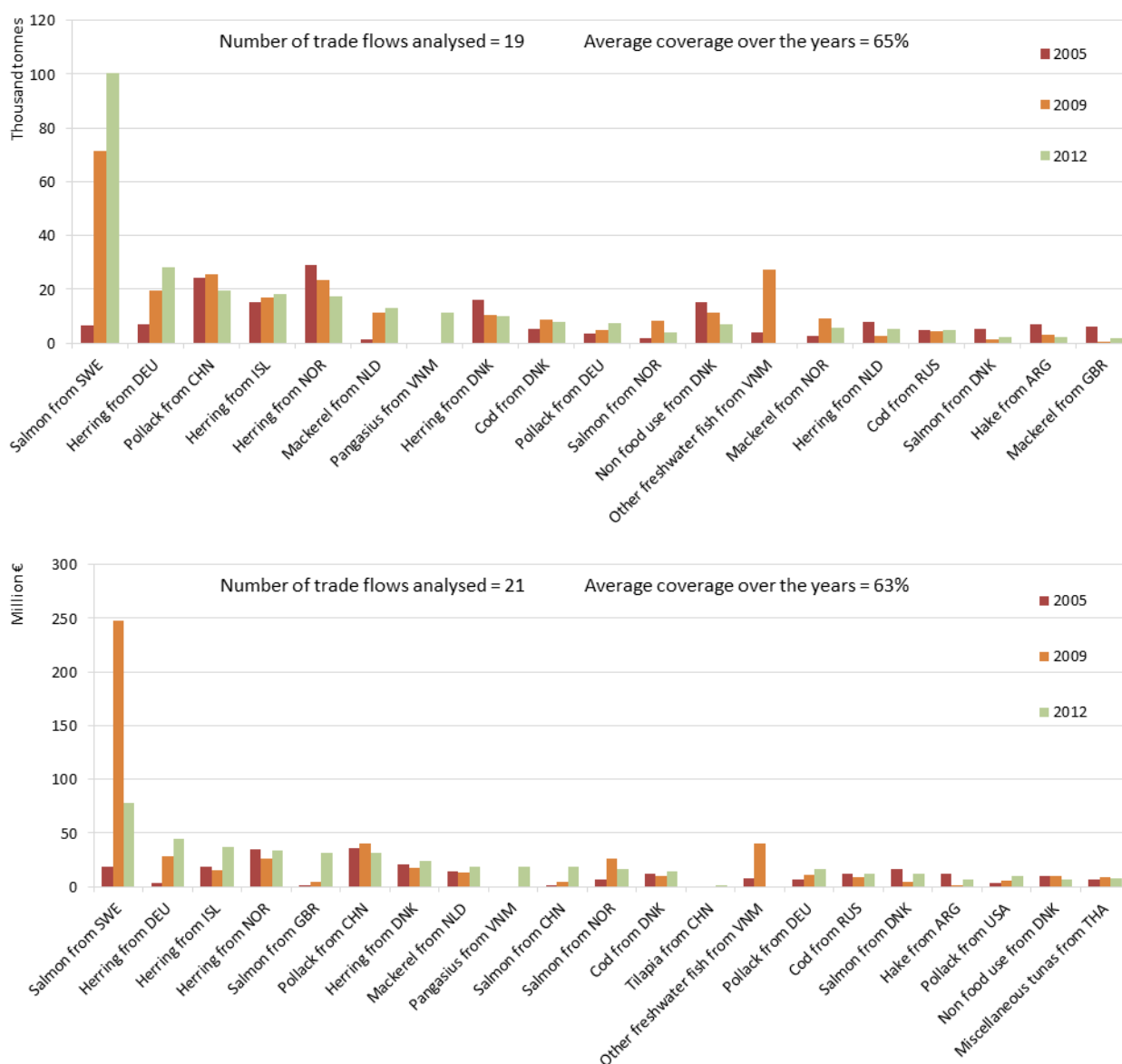


Figure 5.17.5 - Polish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.17.6 shows the trends in the composition of imports by processing and preservation status. Most of the Polish seafood imports are represented by raw material for the processing industry. Since 2005, there has been an increasing trend in the import volume of whole fresh and frozen rather than cut products. The fact that this trend is not reflected in the import value is indicative of diminishing prices for the imported materials. Most of the changes in the imports structure by processing can be attributed to salmon, the contribution of which increased in volume from 7% to 24% between 2004 and 2012. As a consequence of the expansion of salmon, there has been a relative reduction of the share of herring in the total import volume, from 37% in 2004 to 18% in 2012.

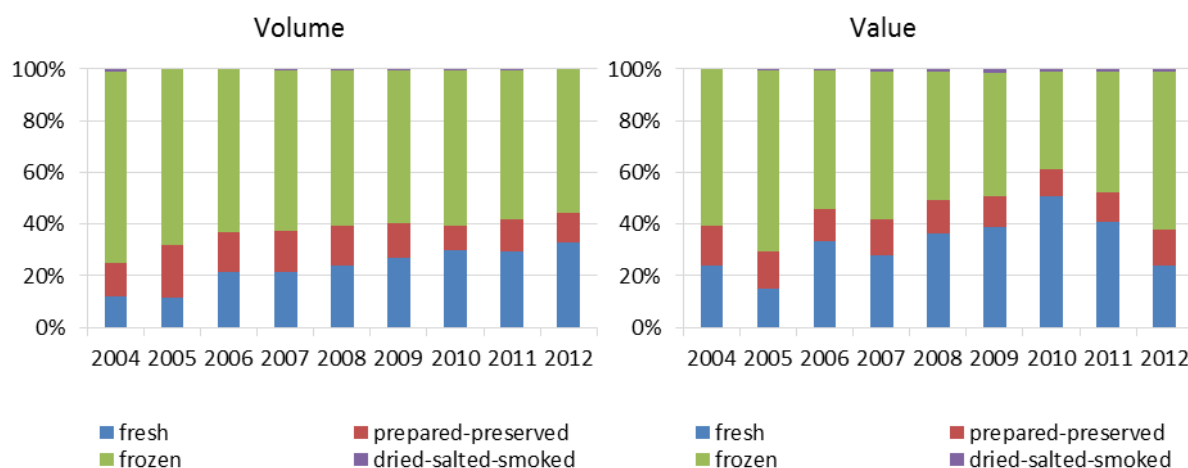


Figure 5.17.6 - Polish seafood imports trends by type of products: share in volume (left) and value (right)

## Exports

Poland exported around 229.9 K tonnes of seafood in 2012 (valued at 1.0 B Euro). The value of seafood exports increased almost continuously over the reference period at an average annual growth rate of 15%. Export volume also doubled from 2004 to 2012, at an annual growth rate of 9.6%.

Figure 5.17.7 shows the trend of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2004-2012). Seafood exports to these countries cover, in average, 77% of the total volume of seafood exported by Poland and 84% of its value.

Poland exported seafood to 78 different countries in 2012. Germany is the major destination for Polish products. Exports to Germany represented around 59% of exported production value and 48% of the overall volume in 2012. The other important destinations were France (contributing 6% in terms of volume and 9% in terms of value), the United Kingdom (7%, 9%) and Denmark (4%, 7%).

The geographical distribution of the exports remained similar in the period 2004-2012. Intra-community exports represented 87-90% of the total exports of the country.

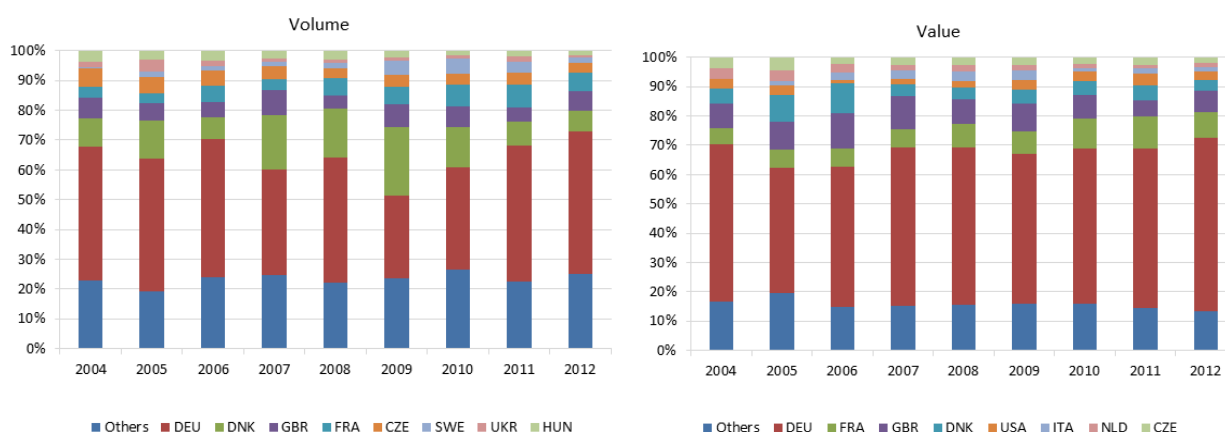
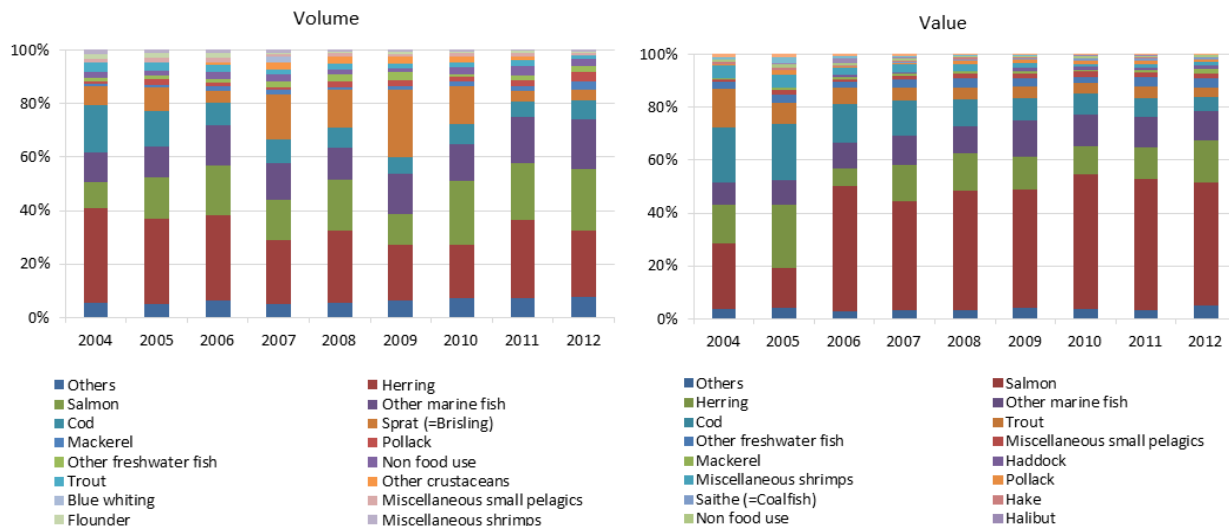


Figure 5.17.7 - Polish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.17.8 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2004-2012). The exports of these species cover, in average over the years, 94% of the total volume of seafood exported by Poland and almost 96% of its value.

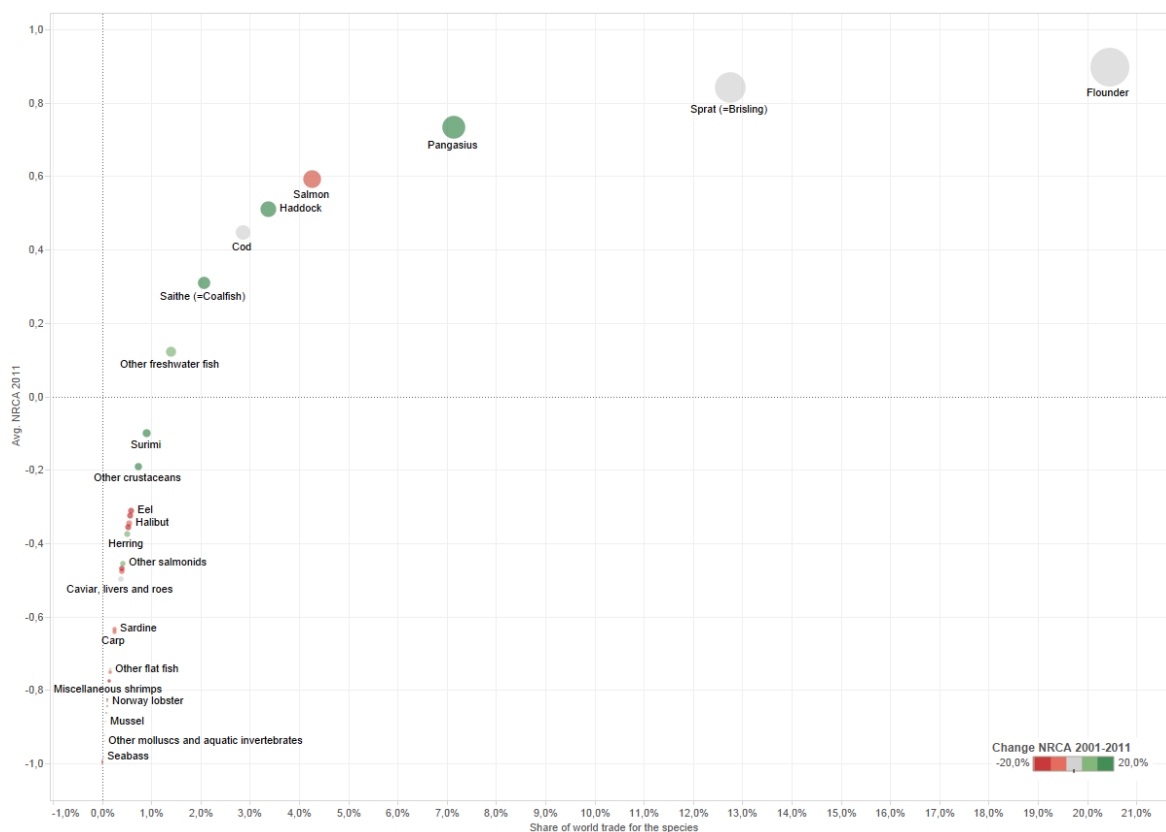


Prepared and preserved herring and smoked salmon are the major products of Polish processing industry as well as the main exported products. Herring and salmon represented 48% of volume and 62% of value of exports in 2012. During the analysed period, these species took over the share of cod exports. The decreasing importance of cod exports can be attributed to the decrease in cod quotas in the Baltic Sea, which resulted in a shortage of cod for processing.



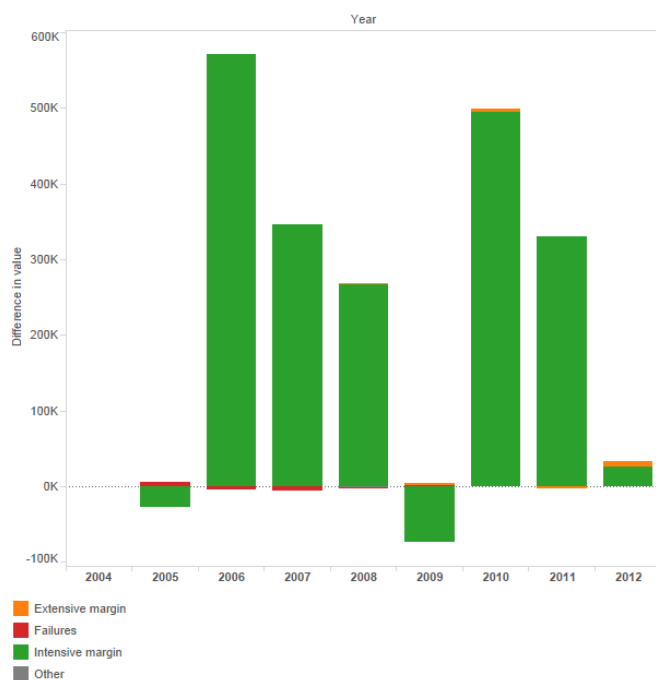
**Figure 5.17.8 - Polish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As it is shown in Figure 5.17.9, Poland is competitive on the flounder, sprat, pangasius, salmon, haddock, cod and saithe export markets. The trade of most of these species (except pangasius and salmon) is represented by the catching fleet fishing in the Atlantic ocean and is dependent on the available fishing rights, therefore the competitive advantage in the global trade of this species depends on the status of the stocks and the available fishing rights. On the other hand, competitive advantage in salmon and pangasius exports depends only on the imports of raw material and the development of the processing sector in the country.



**Figure 5.17.9 - Normalized Revealed Comparative Advantage index (NRCA) for Poland, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

As it has been shown before, the Polish exports is rather concentrated in few countries, with the major country representing almost half of the exports. Therefore, the expansion of the trade during the period 2004-2012 has been due mostly to an increase of the exports of old products to old markets (intensive margin) (Figure 5.17.10).

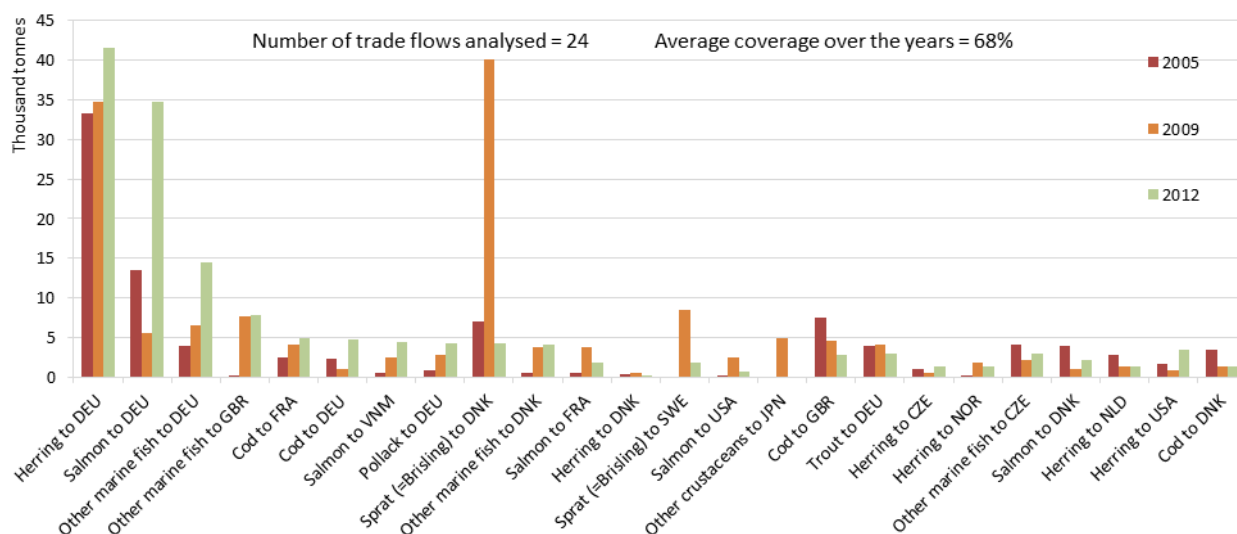


**Figure 5.17.10 – Polish seafood exports margins: 2001-2012**

The following figures show the trend of the most relevant trade flows (combinations “country of destination-species”) for Poland, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows in volume (value) includes all the “top 10” trade flows in volume (value) for each year of the period 2004-2012. The two lists cover (in average over the reference period) 68% and 71% of the overall trade, respectively in volume and value.

As mentioned above, the major exports destination of Polish seafood is Germany. Between 2005 and 2012, the exports to Germany have been increasingly represented by smoked salmon in addition to prepared and preserved herring (Figure 5.17.11).

The observed increase of sprat exports to Denmark in 2009 could be explained by the Polish fleet activity, which increased the use of Polish sprat quota in 2009 (Polish sprat catches increased by 50% in 2009) and landed it in Denmark for fish meals and oil.



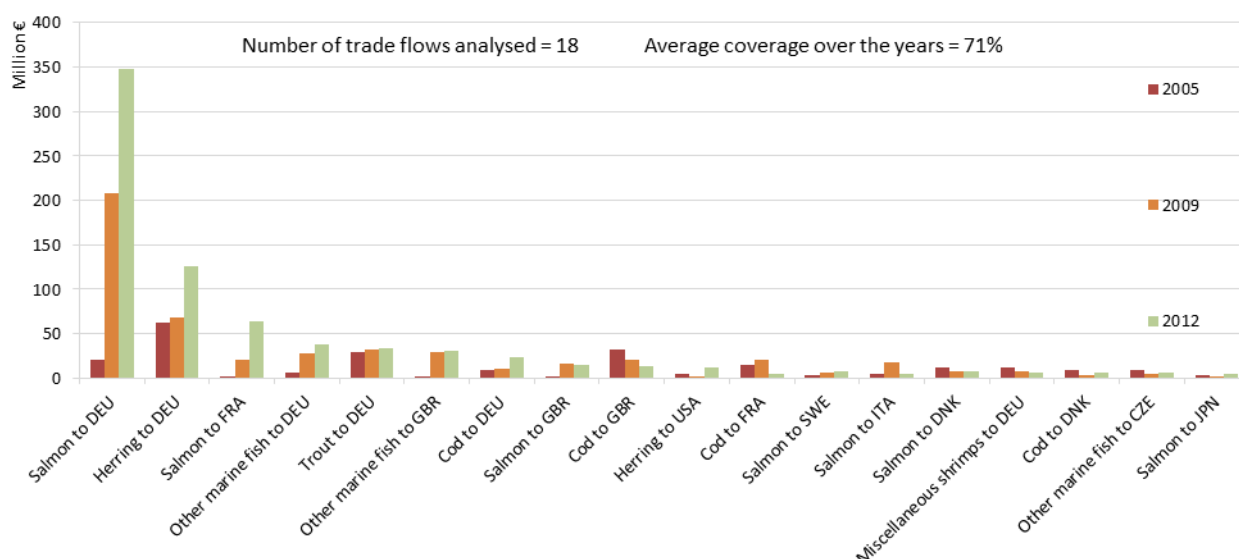


Figure 5.17.11 - Poland seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.17.12 shows the trends in the composition of exports by processing and preservation status. Dried, salted and smoked salmon contributes the most to the total value of exports (40% of the total in average over the period 2006-2012), despite it represents less than 10% of the export volume. Prepared and preserved products are mostly represented by herring and other marine fish, therefore are less valuable, compared to other exports flows of processed products. The exports of fresh and frozen production is mostly driven by the catching sector and by the exports of frozen cod and salmon.

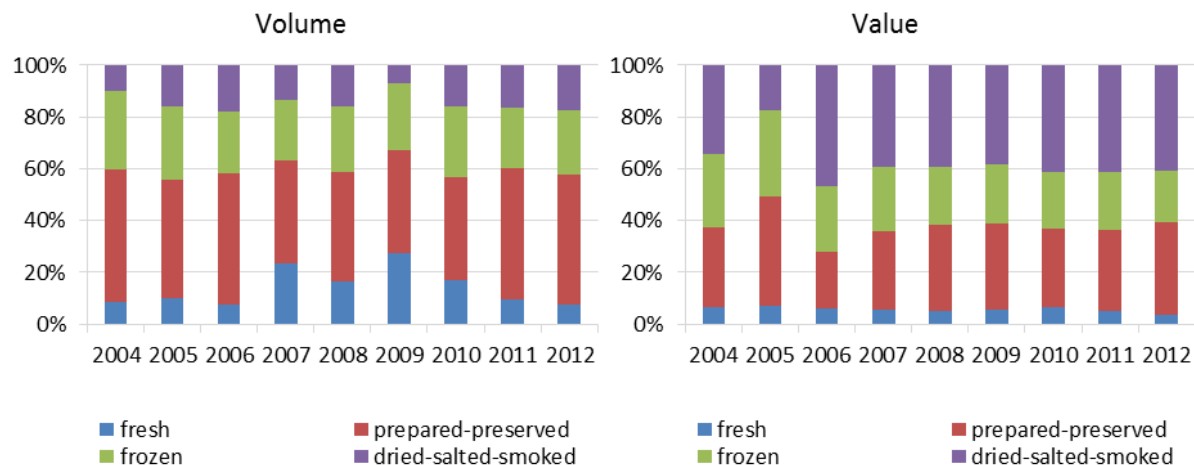


Figure 5.17.12 - Polish seafood exports trends by type of products: share in volume (left) and value (right)

## 5.18 Portugal

### Production

The Portuguese fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Portuguese Exclusive Economic Zone. In 2011, eighteen vessels made up the hooks 24-40m segment, which mainly operates along the Africa Coast and in the Indian Ocean. The fleet targets a variety of species but in particular large pelagic fishes, such as blue shark, bigeye tuna and swordfish (STECF, 2014a).

The total volume of Portuguese catches in 2011 was 216 K tonnes, 13% less than in 2000. Catches of European pilchard, chub mackerel and blue shark were respectively equal to 57 K tonnes (27% of the total), 33 K tonnes (15%) and 14 K tonnes (7%).

The marine and shellfish segments are the main contributors to both total volume and value of Portuguese aquaculture, while freshwater aquaculture has a smaller importance (STECF, 2014b). Total farmed production in 2011 was equal to around 9 K tonnes, mostly made up of turbot (35%), grooved carpet shell (25%), trout (12%) and seabream (9%).

The Portuguese fish processing industry is strongly dependent on imports. This dependency is expected to continue also in future, mainly due to the restrictions on catches imposed by the quota regulation. The salting and drying sector depends almost exclusively on imports, while the canning sector still depends on domestic production (mainly for sardine and mackerel) (STECF, 2014c).

In 2011, the frozen industry (mostly marine fish) contributed with 104 K tonnes to the total production. The second largest amount of production came from the salting and drying sector (Atlantic cod, salted or in brine, is one of the most represented products). Finally, the cannery and preparation industry (mostly sardine and tuna) produced 44 K tonnes of products.

### Trade balance and exposure to trade competition

Portugal's degree of self-sufficiency in fisheries products is very low. In 2012, Portuguese net imports was equal to 181 K tonnes, valued at 691 M Euro. The trade balance varies depending on the categories of products: it is positive for the canned products as the cannery processing industry is mostly sourced by the national catches of small pelagic, while it is negative for frozen and salted/dried products as both the frozen and salting/drying industries are very dependent on the imports of raw material (STECF, 2014c). Frozen products contribute the most to generate the negative balance. Their trade balance in 2012 was equal to -131 K tonnes of seafood, corresponding to -410 M Euro. Dried and salted products, with a negative balance of 53 K tonnes of seafood (233 M Euro), also contributed significantly.

The trade deficit in volume and value has fluctuated significantly over the years and, in 2012, they were 18% and 4% lower than in 2001, respectively (Figure 5.18.1).

The share of intra-community imports increased over the reference period in particular in value (from 51% to 74%), while the share of intra-community exports remained more stable. In 2012, intra-EU trade was 83% of the total trade in volume and 76% in value.

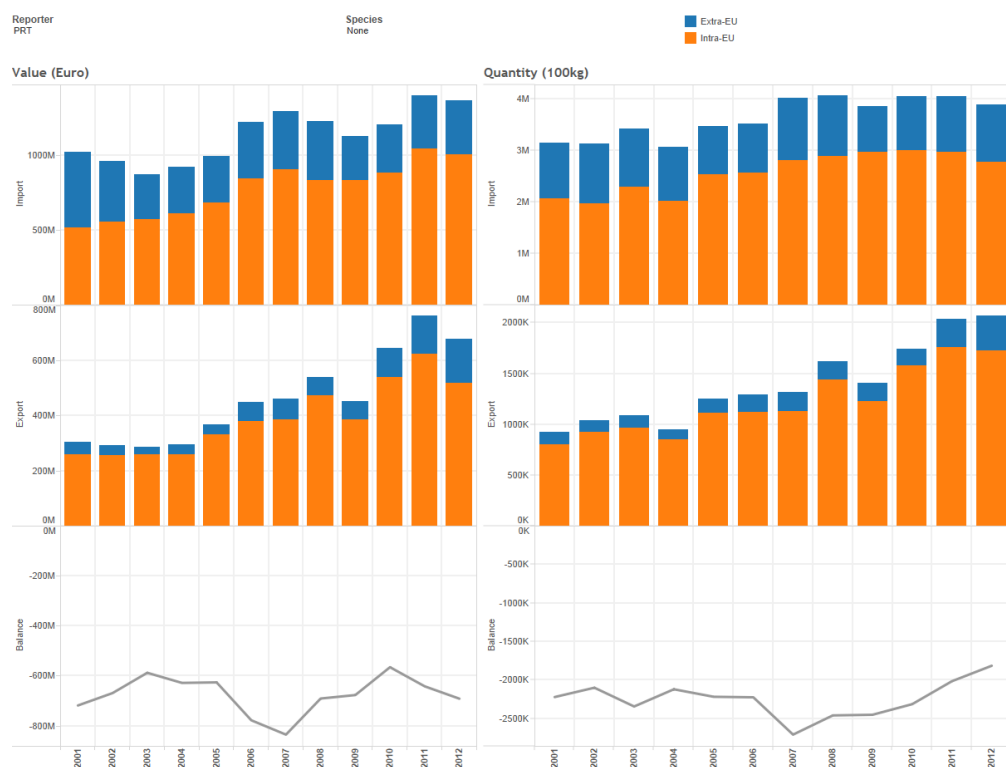


Figure 5.18.1 - Portuguese seafood trade balance trends: value (left) and volume (right)

Given its high level of seafood consumption and high level of domestic production, Portugal is one of the MS with the lowest exposure to seafood trade competition, which, however, has increased almost continuously from 2001 to 2011, when the Trade Competition Ratio (TCR) reached the value of 0.95 (Figure 5.18.2). As in the case of most other MS, the exposure to seafood trade competition is mostly driven by imports.

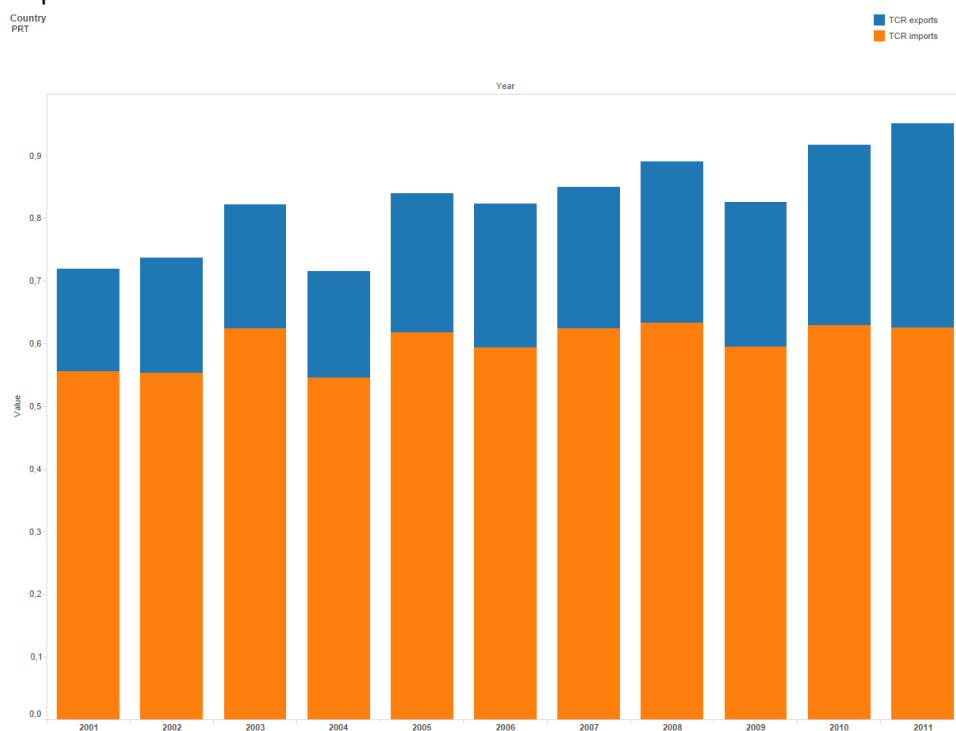


Figure 5.18.2 - Trend of the exposure to trade competition index for Portugal

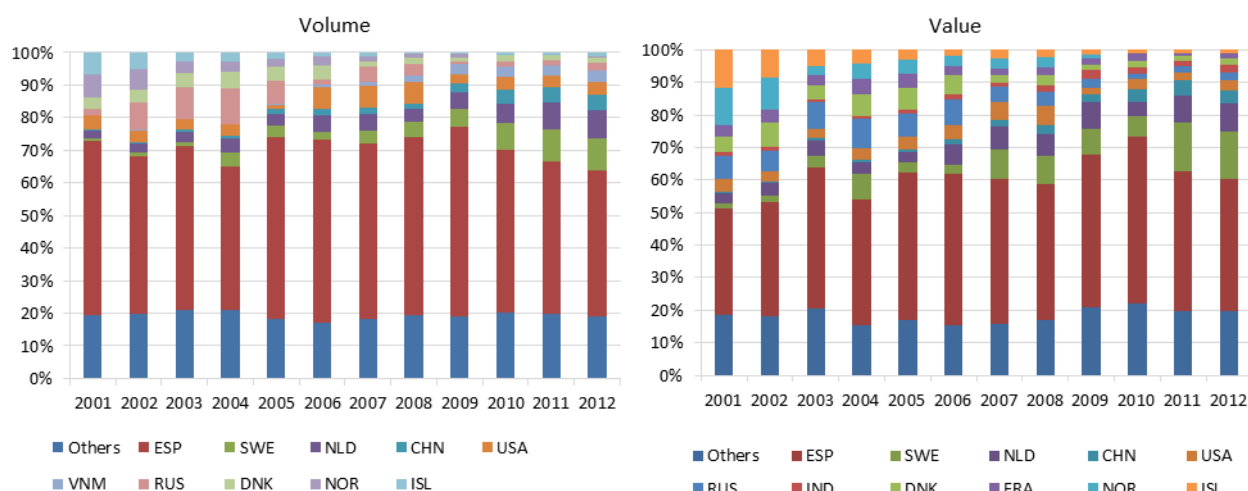
## Imports

Portugal imported 3.9 M tonnes of seafood in 2012, corresponding to almost 1.4 B Euro. Portuguese seafood imports have fluctuated over the reference period, especially in terms of value. Overall, seafood import volume increased 24% between 2001 and 2012, at an average annual growth rate of 2%, and in value imports increased by 34%, at a rate of 3%.

Figure 5.18.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover more than 80% of the overall Portuguese seafood imports, both in volume and value.

The by far largest seafood supplier has been Spain over the entire reference period. In 2012, it contributed 45% of the total volume of seafood imports and 41% of its value. The other most relevant trade partners in terms of volume of trade were Sweden (contributing 10% of the total imports), the Netherlands (9%), China (4%) and USA (4%). The same countries were the most relevant also in terms of import value, respectively contributing 15%, 9%, 4% and 3% of the total.

Trade with Spain has been rather unstable over the period and has decreased in volume since 2009. However, its value has increased almost continuously from 2001 to 2012 (66% over the entire period). Imports from Sweden, the Netherlands, China and Vietnam also rose markedly over the period, both in volume (by 14 times, five times, ten times and 76 times) and value (by 15 times, four times, ten times and 33 times, respectively); on the other hand, imports from some countries which were relevant seafood suppliers at the beginning of the decade, such as Norway, Iceland, Denmark and Russia, declined significantly, as well as the contribution of these countries to the total import volume and value.



**Figure 5.18.3 - Portuguese seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.18.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 82% of the total Portuguese seafood imports in volume and 83% in value.

In 2012, 27% of the overall volume of Portuguese seafood imports and 30% of its value was made up of cod. Sweden and the Netherlands are the most relevant countries of origin for salted and frozen cod, respectively.

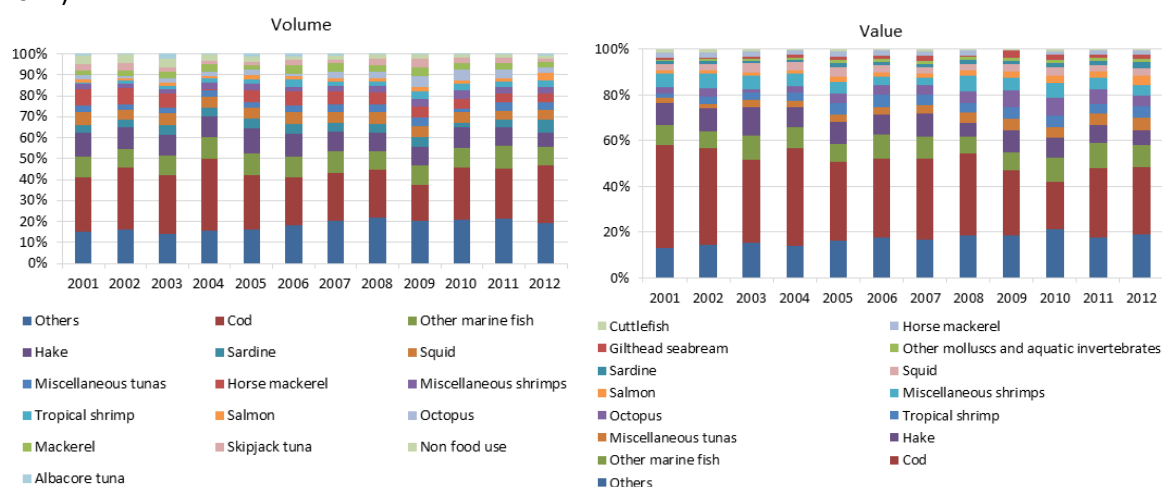
The other most relevant commercial species in volume were other marine fish, hake, sardine and squid (contributing 9%, 7%, 6% and 5% of the total volume, respectively), while, in value, other marine fish and hake (accounting for 10% and 6% of the total) were followed by miscellaneous tuna (6%) and tropical shrimps (5%).

A large part of the fish imports is destined to the fish processing industry. Salting and drying is one of the three most relevant segments of the Portuguese fish processing industry and its main product is salted dried cod (STECF, 2014c). The raw material is mainly imported and the final product is for domestic consumption within the national market.

The other two most relevant components of the fish processing sector are the frozen industry and the cannery and preparation segment. The frozen industry is highly dependent on the imports of raw material, as well as the salting and drying industry (STECF, 2014c). The output of the frozen industry is very differentiated, but the main products are frozen desalted cod, sardine and hake. The production of the frozen industry is mostly directed to supply the national market, but it also has a high export value component (STECF, 2014c).

The cannery and preparation segment, the main products of which are preparation and cannery of sardine, mackerel, horse mackerel and tuna, is the only fish processing segment in Portugal mostly dependent on domestic production. However, the increasing prices of sardine, due to the low availability of this specie and the implementing of catch restrictions on the national fleet, are putting under pressure this industry, which will probably need to turn to imports as an alternative for supply (STECF, 2014, processing). The entire fish processing industry is expected to continue to be highly dependent on imports, due to restrictions on catches imposed by the quota regulation (STECF, 2014c).

Imports of cod have been highly fluctuating over the reference period, both in terms of volume and value. Overall, the volume of cod's imports increased 30%, while its value declined 11%. Import value of hake also declined, while imports of all the other relevant species rose substantially, especially of miscellaneous tuna, tropical shrimps, octopus and sardine (each of them increased by around three times). In volume, besides cod, sardine, miscellaneous tuna, other marine fish and tropical shrimps were also traded more in 2012 than in 2001. Trade volume of hake and squid, instead, declined over time (by 30% and 9% from 2001 to 2012).



**Figure 5.18.4 - Portuguese seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

Figure 5.18.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for Portugal, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade



flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 60% and 58% of the overall imports (in average over the reference period), respectively in volume and value.

The most striking expansion of trade flows between 2001 and 2012 was recorded for imports of cod from Sweden and the Netherlands, which raised both in volume (14 and five times, respectively) and value (15 and four times, respectively), while trade from Norway, Iceland, Russia and Denmark declined significantly. These trends reflect changes in the commercial routes for cod.

As observed, the value of trade with Spain has increased almost continuously from 2001 to 2012 (66% over the entire period). This has resulted mostly from the increased value of imports of other marine fish, miscellaneous tuna, octopus, sardine and miscellaneous shrimps.

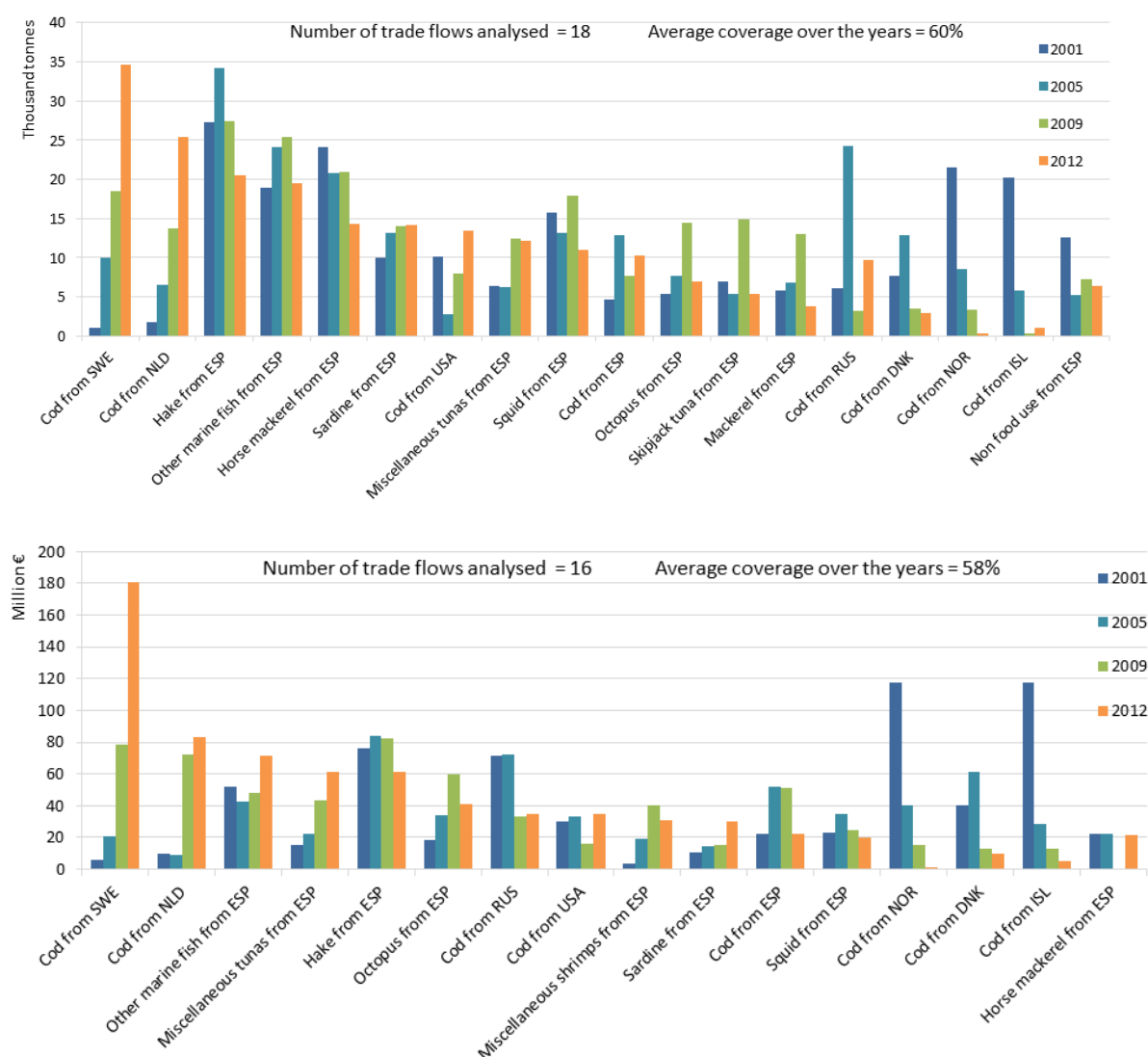


Figure 5.18.5 - Portuguese seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Frozen seafood contributed almost 60% of the overall volume of imports in 2012 and 50% of its value (Figure 5.18.6). Whilst dried/salted/smoked seafood represents a small share of imports in other MS, it contributes significantly in Portugal (17% in volume and 22% in value in 2012). Most of dried, salted and smoked products are represented by cod. This form of preservation represents 50% of the overall imports of cod and 70% of its value. Import value of frozen seafood increased over the reference period (by 50%),

as well as its contribution to total imports (from 44% in 2001 to 50% in 2012). The contribution of prepared/preserved and fresh products also increased (from 5% to 8% and from 16% to 20%, respectively) at the expense of dried/salted/smoked seafood, the value of which declined 15% over the period. In volume, imports of frozen seafood increased the most and therefore its share of the total increased from less than 50% in 2001 to almost 60% in 2012.

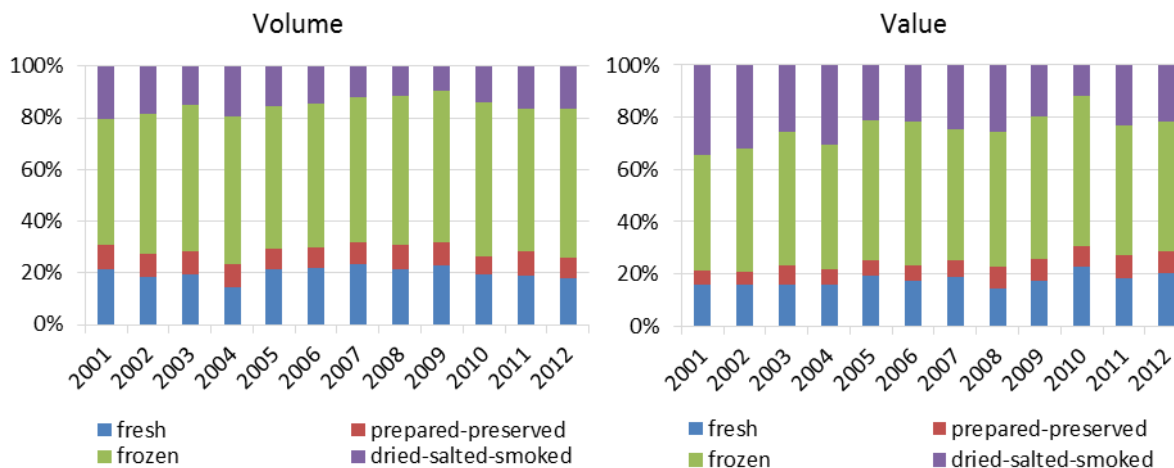


Figure 5.18.6 - Portuguese seafood imports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to the value of total imports varies depending on the country of origin. Among the most relevant seafood suppliers, imports from Sweden and Norway are mainly processed, while those from Spain are mostly non processed (Figure 5.18.7).



Figure 5.18.7 - Portuguese seafood imports trends by main seafood suppliers and contribution of processed products to total import value

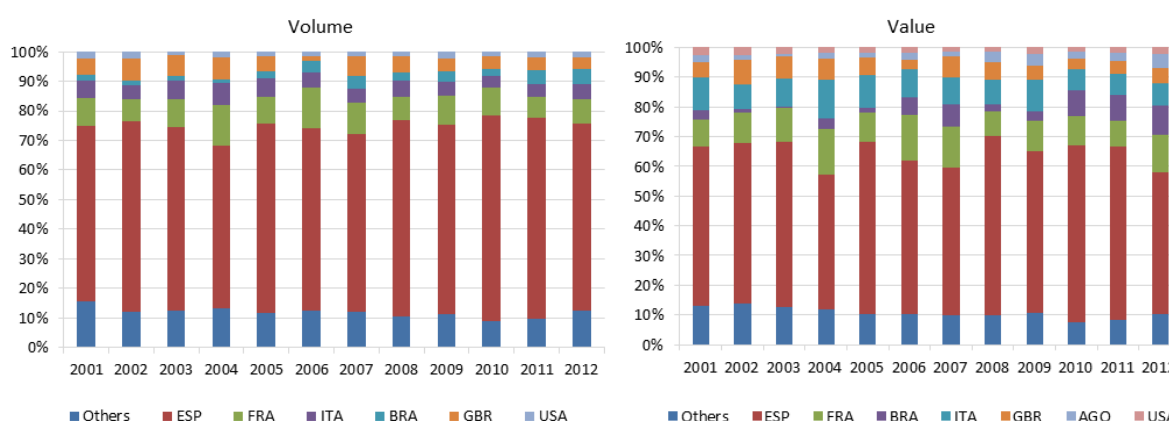
## Exports

Portugal exported 207 K of fish and fishery products in 2012, corresponding to 679 M Euro, 125% more than in 2001 in terms of volume and 123% more in value.

The largest part of seafood exports is directed to EU MS (83% of the overall seafood export volume in 2012, corresponding to 76% of its value). However the contribution of extra-community trade to the total exports has increased from 2001 to 2012, both in volume (from 13% to 17%) and value (from 15% to 24%).

Figure 5.18.8 shows the trend of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 88% of the total volume of seafood exported by Portugal and 89% of its value.

Portuguese seafood exports are concentrated in few markets. In 2012, 63% of the overall volume of Portuguese seafood exports and almost 50% of its value was directed to Spain. The other most relevant partners in terms of trade volume were France (accounting for 8% of Portuguese export volume), Italy (5%), Brazil (5%) and the United Kingdom (4%). These countries were the most relevant also in terms of value of imports from Portugal, accounting for 12%, 7%, 10% and 5% of the total, respectively. Spain, Italy, France and the United Kingdom were the most relevant countries of destination also in 2001, in terms of trade volume and value. From 2001 and 2012, all of them have increased the volume and value of their seafood imports from Portugal between two and three times. The increase was particularly relevant in the case of Brazil; Brazilian imports contributing less than 2% to Portuguese seafood exports (corresponding to around 3% in value) in 2001 increased by six times in volume and seven in value by 2012.



**Figure 5.18.8 - Portuguese seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

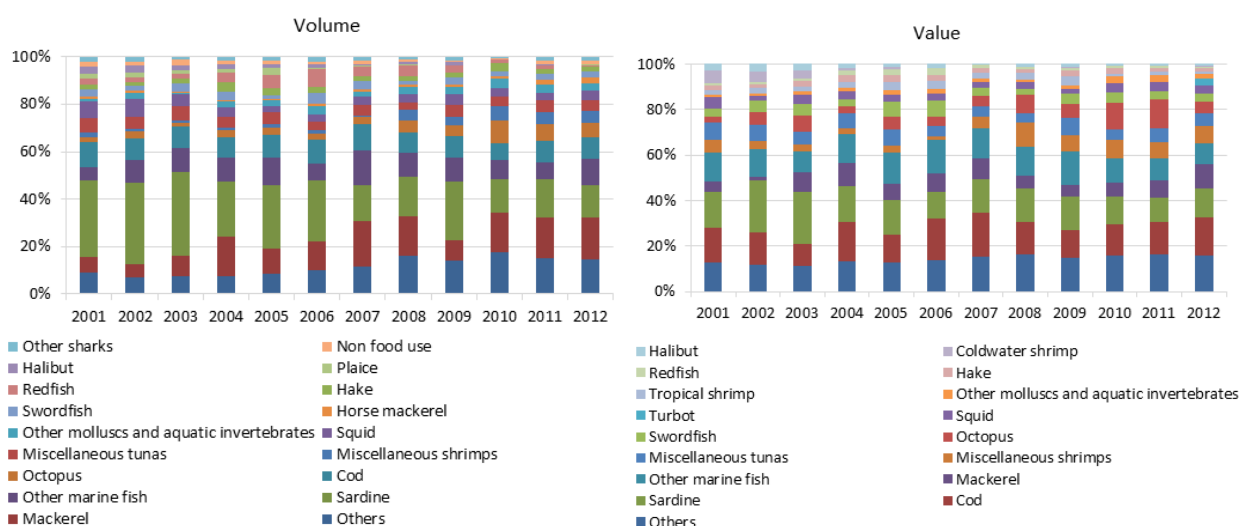
Figure 5.18.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 88% of the total volume of seafood exported by Portugal and almost 86% of its value.

In 2012, the two most exported species in terms of volume are mackerel (18%) and sardine (13%). Preparation and cannery of sardine, mackerel horse mackerel and tuna are the main products of the cannery and preparation industry, which is the only segment of the Portuguese fish processing industry for which the exports is higher than the internal consumption (STECF, 2014c). This industry is concentrated near major ports specialized on pelagic fisheries, such as Matosinhos (North), Peniche (Center) and Olhão (South), give the high dependency of the industry on the national catches of small pelagic.

The other more relevant species in terms of exported volume were other marine fish (11%), cod (9%) and octopus (6%). In terms of value, cod was the most relevant (contributing 17% to the total Portuguese

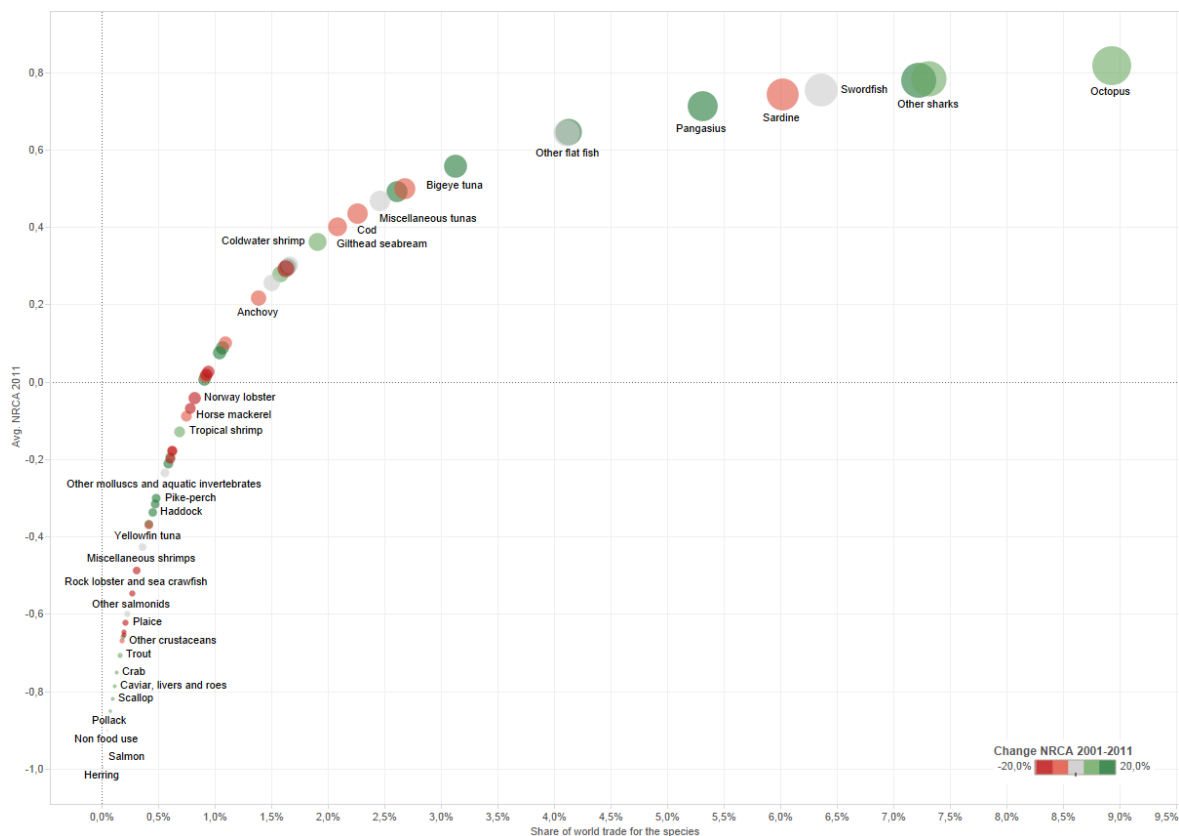
seafood exports), followed by sardine (13%), mackerel (11%), other marine fish (9%) and miscellaneous tuna (8%). The most relevant countries of destination for cod is Brazil (dry salted and desalted frozen cod), followed by Spain and France. In 2012, more than 40% of the total volume of Portuguese cod exports (corresponding to more than 50% of the total value) was directed to Brazil, while at the beginning of the decade, Spain covered more than 60% of the total volume and around 40% of its value.

Although the main trade partners remained the same over the entire period, trade patterns have changed substantially in terms of trade composition. In 2001, 33% of the overall Portuguese seafood export volume was made up of sardine and almost another 25% of cod and squid. In value, sardine, cod and other marine fish made up almost 45% of the total exports. From 2001 to 2012, the exports of a few species which were less relevant at the beginning of the decade increased sharply; for example, trade of mackerel increased more than six times in volume and almost 6 in value and of octopus by 7 times in volume and more than four in value. On the other hand, the relative increase of sardine's export value was much less pronounced (by 77%) and was accompanied by a 7% decline of the traded volumes.



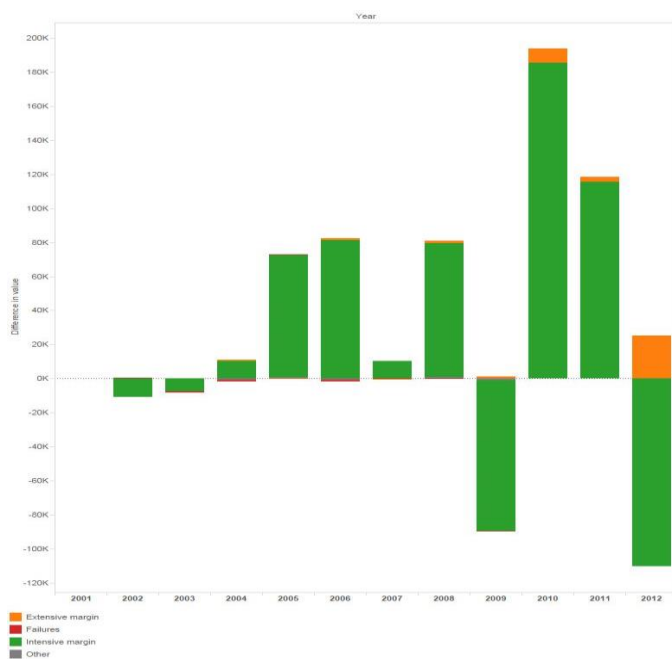
**Figure 5.18.9 - Portuguese seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, Portugal's comparative advantage in most its relevant species in terms of traded value (e.g. cod, sardine, and miscellaneous tuna) is higher than the rest of the world (Figure 5.18.10). Portugal has the highest comparative advantage on the international market for octopus (NRCA = 0.2), other sharks (NRCA = 0.78) and Megrim (NRCA = 0.78). The NRCA index increased between 2001 and 2011 for all of them.



**Figure 5.18.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Portugal, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Changes on the extensive margin (new trade flows) between 2011 and 2012 were mostly linked to the trade of turbot to Spain. Between 2008 and 2009 and between 2011 and 2012 there was a reduction on the intensive margin due to a reduction in the value of exports of octopus to Spain (Figure 5.18.11).



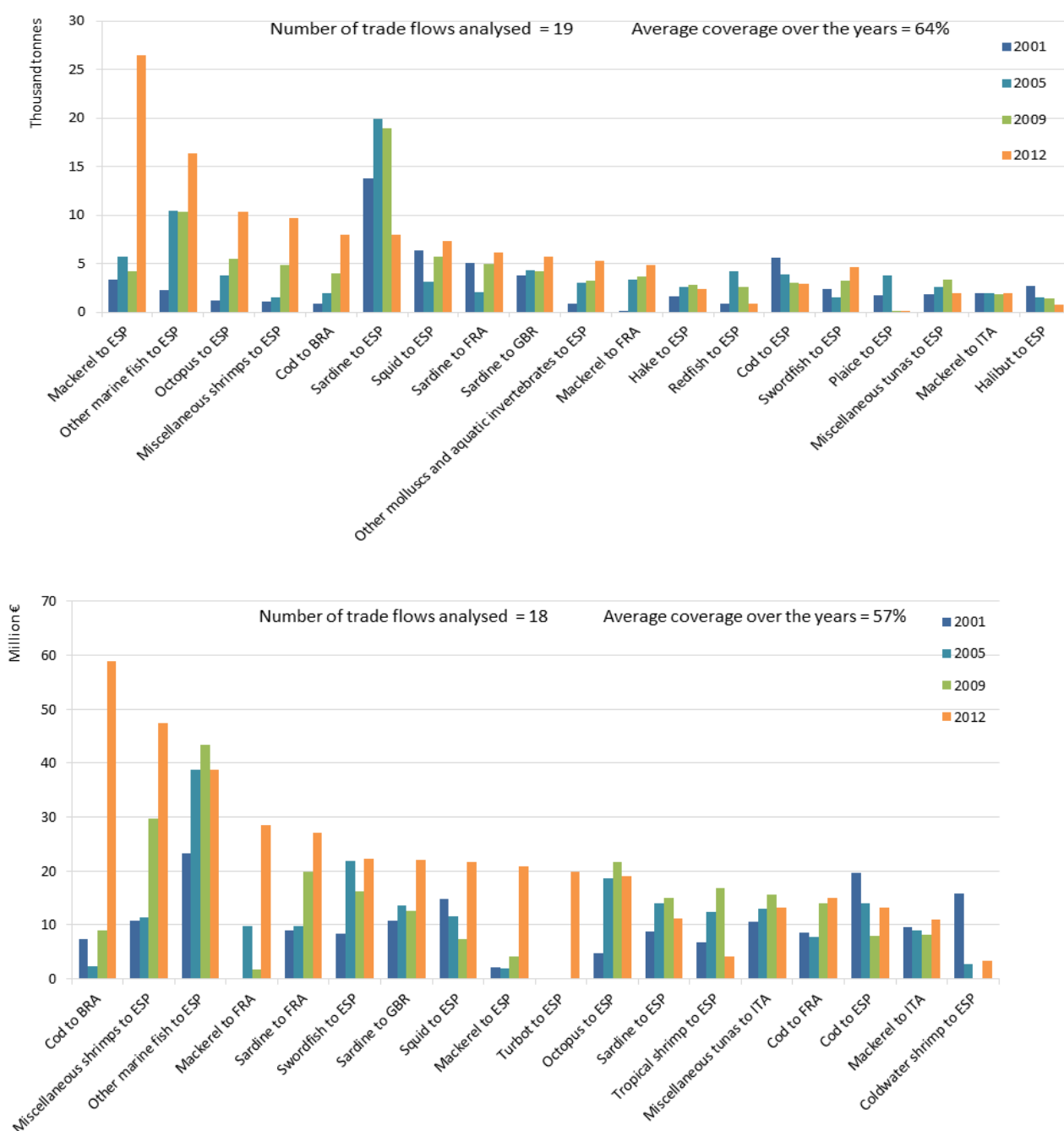
**Figure 5.18.11 - Portuguese seafood exports margins: 2001-2012**

Figure 5.18.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Portugal, in terms of volume (top figure) and value (bottom figure). The list of the most

relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 64% and 57% of the overall trade, respectively in volume and value.

Trade flows the most relevant countries of destination have significantly increased from 2001 to 2012 both in volume and value. The growth of the trade volume with Spain has been driven mostly by the increased exports of mackerel, but also of other marine fish, octopus, miscellaneous shrimps, and other molluscs and aquatic invertebrates. Exports of shrimps and other marine fish have contributed the most to the increase in value. The increased trade of Mackerel and sardines partially explains the growth of the exports to France.

Exports of cod, which have doubled in volume and value over the reference period, have changed their destinations. Exports to Spain, Greece and the United Kingdom have reduced, both in volume and value, while those to Brazil, mostly, but also to Angola and France, have increased sharply. In 2012, 77% of Brazilian seafood imports from Portugal were made up of cod, which was responsible for around 80% of the increase in the trade between these countries occurred from 2001 to 2012.



**Figure 5.18.12 - Portuguese seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

Portugal exports its seafood mostly frozen (in 2012, 44% of the overall seafood export volume was frozen, corresponding to 40% of its value) and as fresh and prepared/preserved products (cannery, mostly sardine and mackerel). In 2012, these two categories accounted for 29% and 22% of the total seafood export volume and for 23% and 27% of its value, respectively. Exports of the various types of products have increased almost proportionally over the reference period and, indeed, the contribution of each category to total exports has remained rather stable over time (Figure 5.18.13).

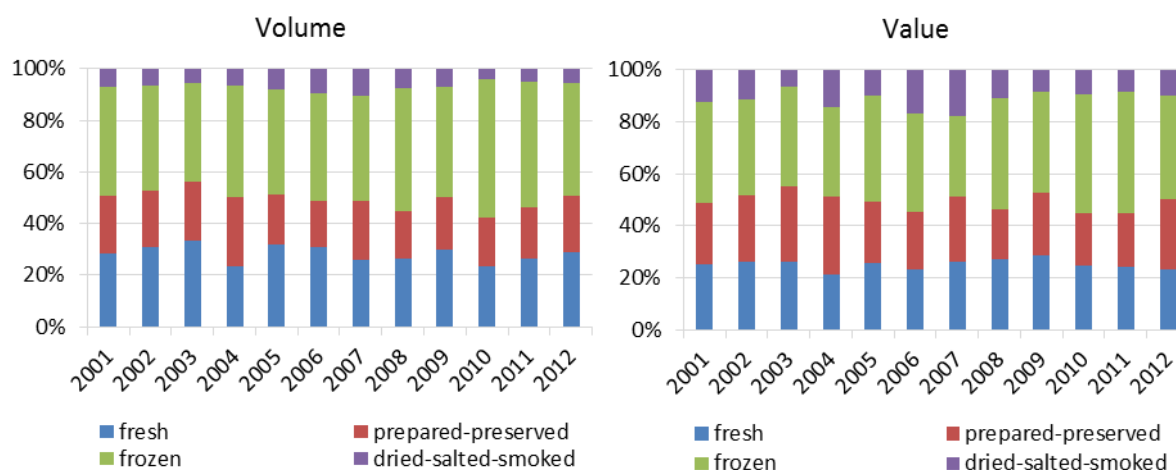


Figure 5.18.13 - Portuguese seafood exports trends by type of products: share in volume (left) and value (right)

Figure 5.18.14 indicates that the large majority of seafood exported to Spain is non-processed. The contribution of processed products is higher in the exports to some less relevant destinations, such as Brazil and Angola. These exports are mostly made of dried and salted cod. The increase in the share of processing in the trade flows to Italy between 2003 and 2008 was linked to a temporary expansion of trade of dried and salted cod which diminished in 2008 and was replaced afterwards by exports of frozen octopus.

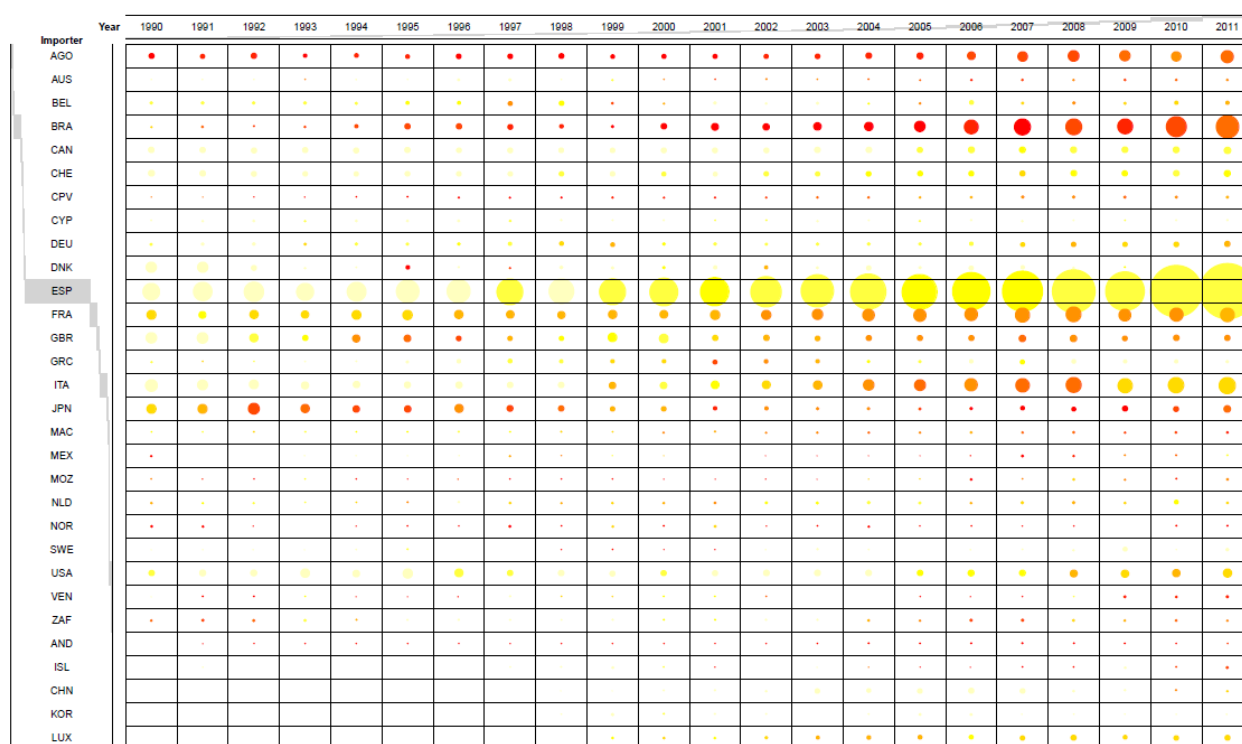


Figure 5.18.14 - Portuguese seafood exports trends by main seafood suppliers and contribution of processed products to total export value



## 5.19 Romania

### Production

The Romanian national fishing fleet is almost entirely represented by a small-scale fishery. The small-scale fishery is made up of vessels of less than 12 metres using, in the same season, polyvalent gears and polyvalent mobile and passive gears. The same vessels shift from one gear to another during the same fishing period (STECF, 2014a).

Overall capture production in 2012 was around 3 K tonnes of fish (56% less than in 2000), made up of goldfish (34%), pontic shad (14%), bream (8%) and several other species.

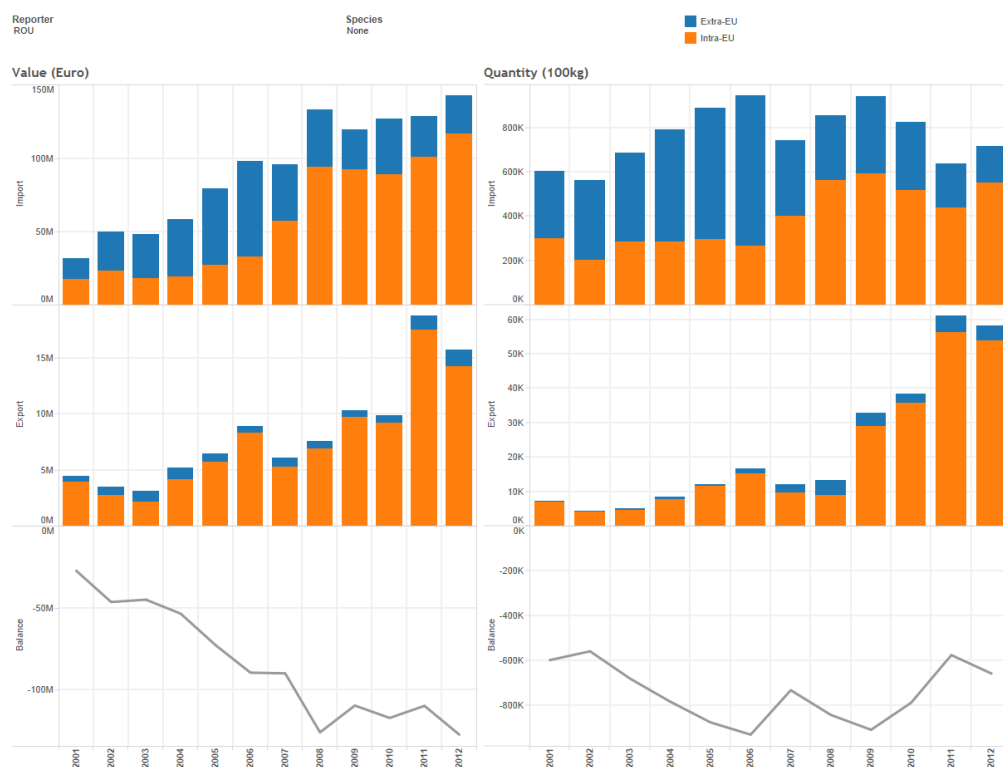
The Romanian aquaculture sector sales reached 8.35 K tonnes in 2011. The largest part of the Romanian aquaculture production comes from the freshwater sector. The extensive land base culture of species of the Cyprinidae family (mainly carps) produced around 79% of total Romanian aquaculture production in 2011 (in volume); trout represented the 20% in volume (STECF, 2014b).

The fish processing sector is small in Romania and is highly dependent on the imports of raw material, with mackerel and herring being the most common species (Romanian managing authority, 2011).

### Trade balance and exposure to trade competition

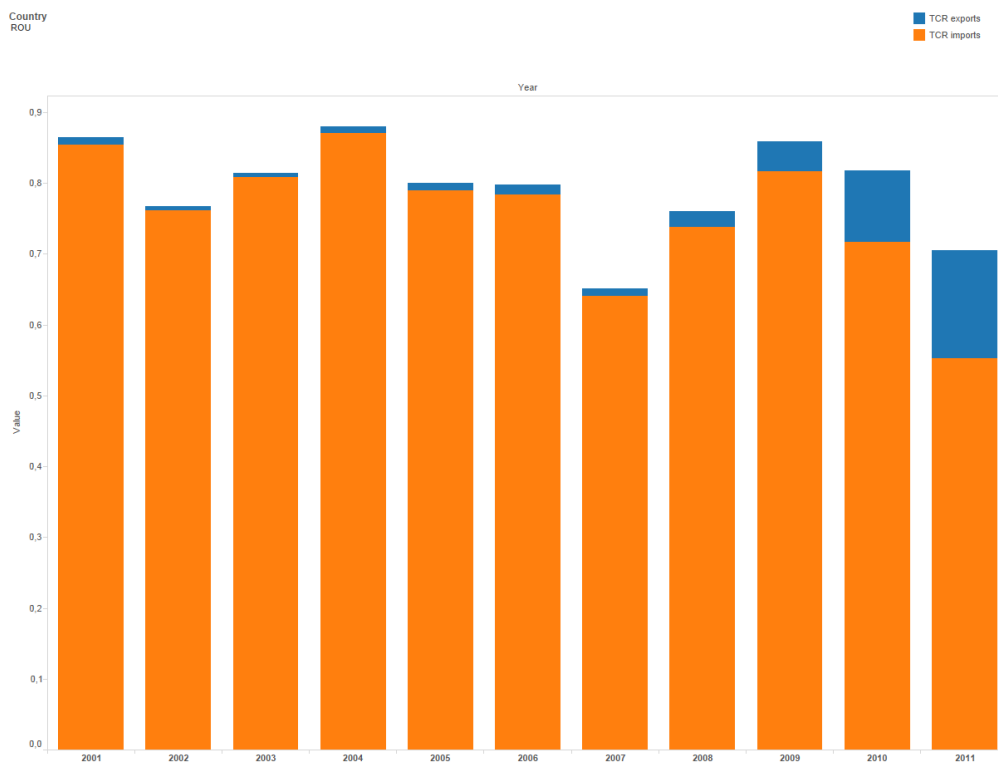
Romania is a net importer of fish and fishery products. Fish trade balance in 2012 was equal to -66 K tonnes of seafood, corresponding to -127 M Euro. The deficit in volume has fluctuated from 2001 to 2012, while the deficit in value has increased almost 5 times (Figure 5.19.1).

In 2012, intra-community seafood imports were much more relevant than extra-community ones, both in volume and value, while during the first years of the decade imports from outside the EU were the majority. In 2012, almost all seafood was exported within the EU, both in terms of volume and value; however the share of trade with non-MS fluctuated significantly over the reference period.



**Figure 5.19.1 - Romanian seafood trade balance trends: value (left) and volume (right)**

Romania is one of the MS with the lowest exposure to seafood trade competition, which, has also tended to decrease over time, especially over the last years of the reference period (Figure 5.19.2). In 2011, the Trade Competition Ratio (TCR) was equal to 0.70, while it was equal to 0.86 in 2001. As in the case of most other MS, the exposure to seafood trade competition is mostly driven by imports. However the contribution of exports increased over time and in 2011, 21% of the estimated TCR corresponded to exports.



**Figure 5.19.2- Trend of the exposure to trade competition index for Romania**

### Imports

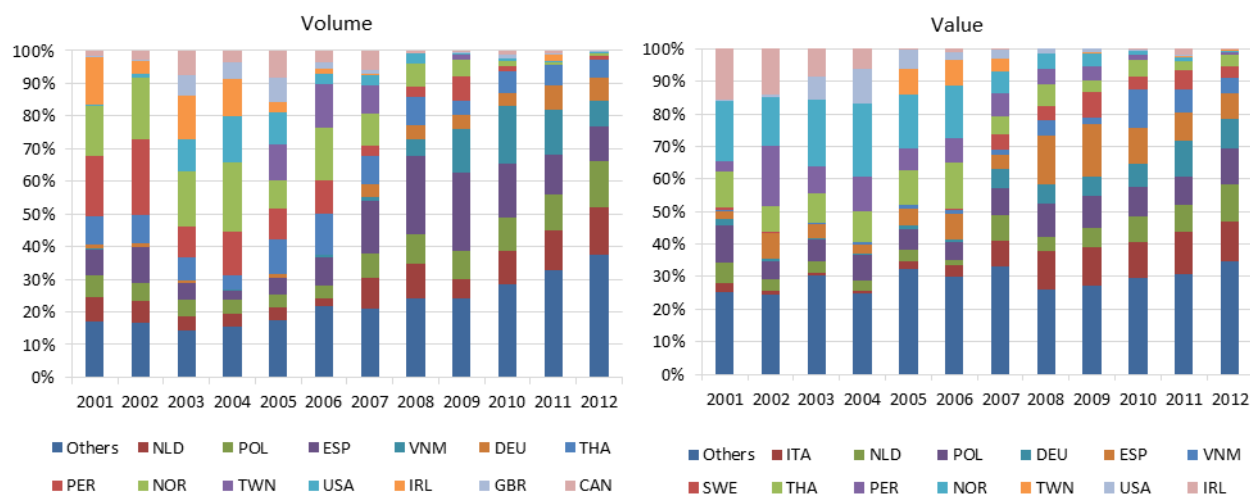
In 2012, Romania imported 72 K of seafood, valued at 143 M Euro. Seafood import volume fluctuated markedly over the reference period, but in 2012 was 18% higher than in 2001. Seafood import value increased almost continuously over the reference period, at an annual growth rate of 16%, and rose by almost 5 times over the entire period.

In 2012, intra-community seafood imports were much more relevant than extra-community ones, both in volume (accounting for 77% of the total) and value (82% of the total), while during the first years of the decade imports from outside the EU were the majority.

Figure 5.19.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover 77% of the overall Romanian seafood imports in volume and 71% of their value.

The largest seafood suppliers for Romania in 2012 were Netherlands (contributing 14% of the total volume of imports), Poland (14%), Spain (11%), Vietnam (8%) and Germany (7%). In terms of value, the main partners were Italy (contributing 12% of the total), the Netherlands (11%), Poland 811%), Germany (9%) and Spain (8%).

Trade patterns changed radically over the decade and were discontinuous from year to year. Furthermore, seafood imports were more concentrated in 2001 (when the first five most relevant suppliers in terms of import volume - Peru, Norway, Ireland, Thailand and Spain - contributed 65% of the total) than in 2012 (when Netherlands, Poland, Spain, Vietnam and Germany contributed 54% of the total seafood import volume).

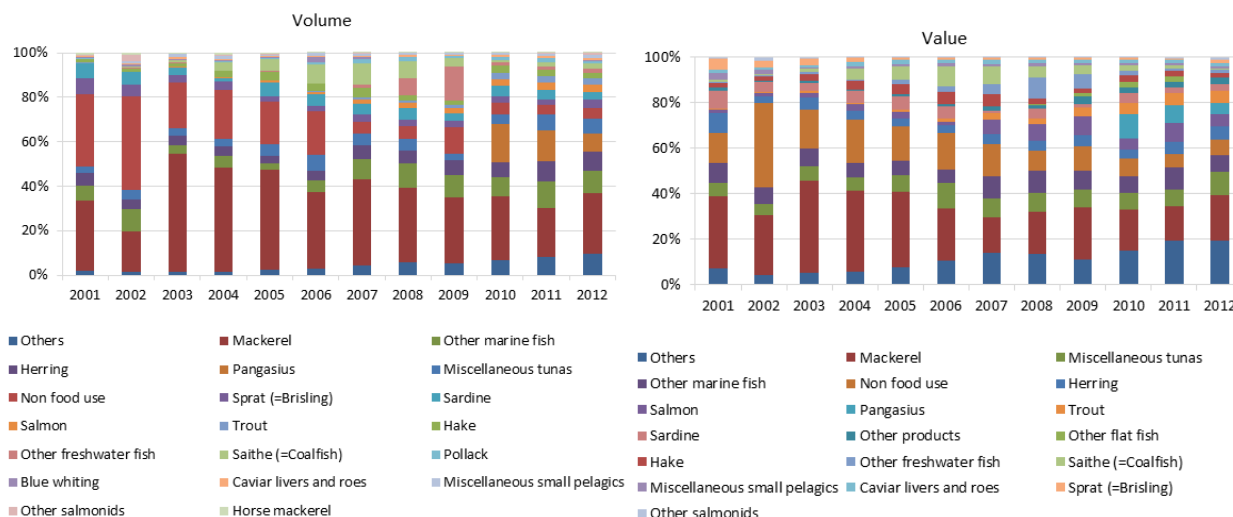


**Figure 5.19.3 - Romanian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.19.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 96% of the total Romanian seafood imports in volume and 89% in value.

Mackerel has been the most relevant commercial species imported over the entire reference period but its contribution to the total has decreased over time (from 32% to 28% in volume and from 32% to 20% in value). The other most relevant commercial species in terms of trade volume are other marine fish (contributing 10% of the total volume), herring (9%), pangasius (8%) and miscellaneous tuna (7%). In value, they were miscellaneous tuna (contributing 10% of the total value of seafood), other marine fish (7%), fish for non food uses (7%) and herring (6%).

At the beginning of the reference period, 32% of seafood volume imported by Romania was made up of fish for non-human consumption. These imports contracted sharply from 2001 to 2012, both in absolute and relevant terms (respectively by 83% and from 32% to less than 5%). Import volume of mackerel fluctuated significantly over the reference period, but it decreased almost continuously since 2005. On the other hand, import volumes of some other commercial species, such as other marine fish, herring and miscellaneous tuna, have grown sharply. Trade values of Mackerel and fish for non human consumption rose markedly from 2001 to 2012 (almost tripled and more than doubled respectively), but their contribution to the overall trade reduced from 32% to 20% and from 13% to 7%, as a result of the increase in the value of the imports of several commercial species. A few examples are example miscellaneous tuna (by 8 times), salmon (by 15 times), trout (by 80 times) and carp (by 163 times).

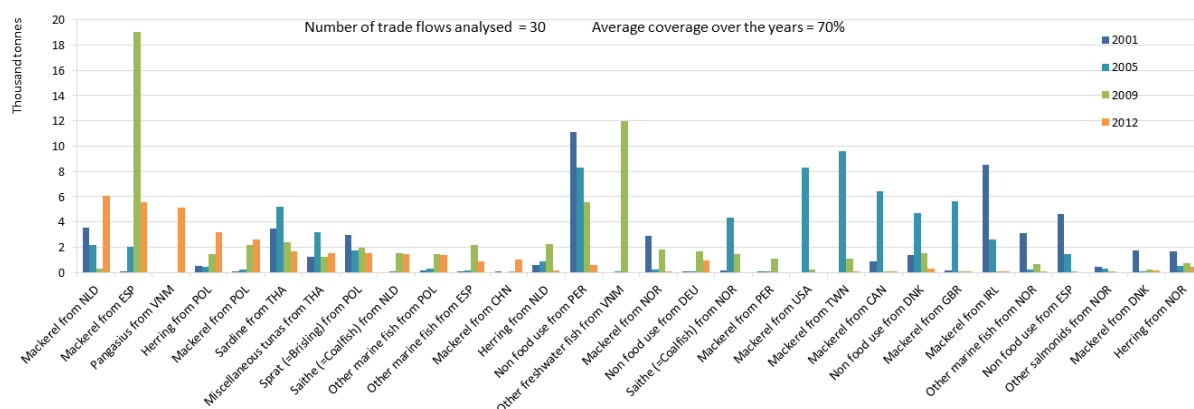


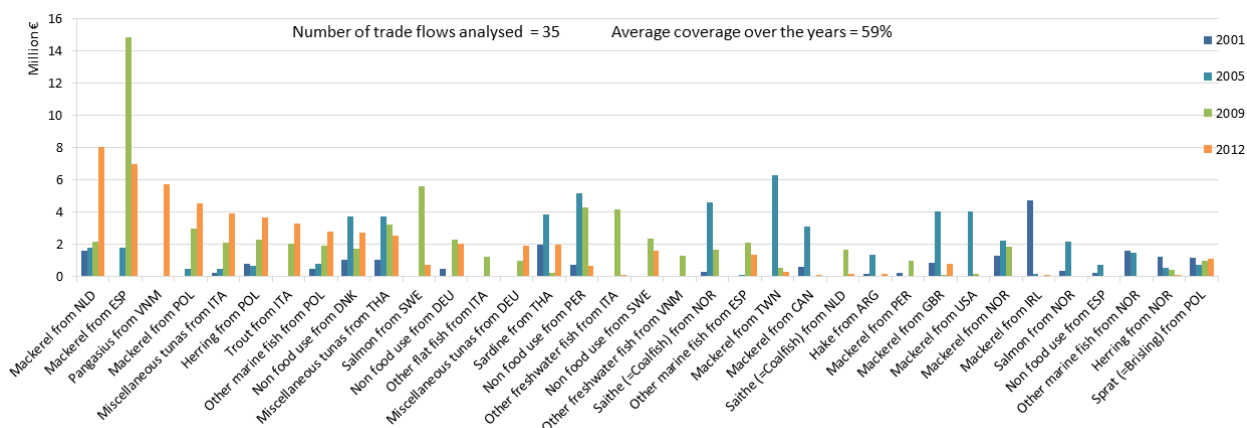
**Figure 5.19.4 - Romanian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Romania, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 70% and 59% of the overall imports, respectively in volume and value.

As already observed, imports from Peru, Norway and Ireland, which were the most relevant seafood suppliers for Romania in 2012, declined significantly. For Peru, this resulted almost only from the contraction in the trade of fish for non-human consumption. For Norway and Ireland, instead, herring and mackerel are the main responsible (for Norway also other marine fish played a significant role). The changes in the commercial routes of these two species explain also the sharp increase in the volume and value of imports from the Netherlands, Poland and Spain (for this last country only Mackerel).

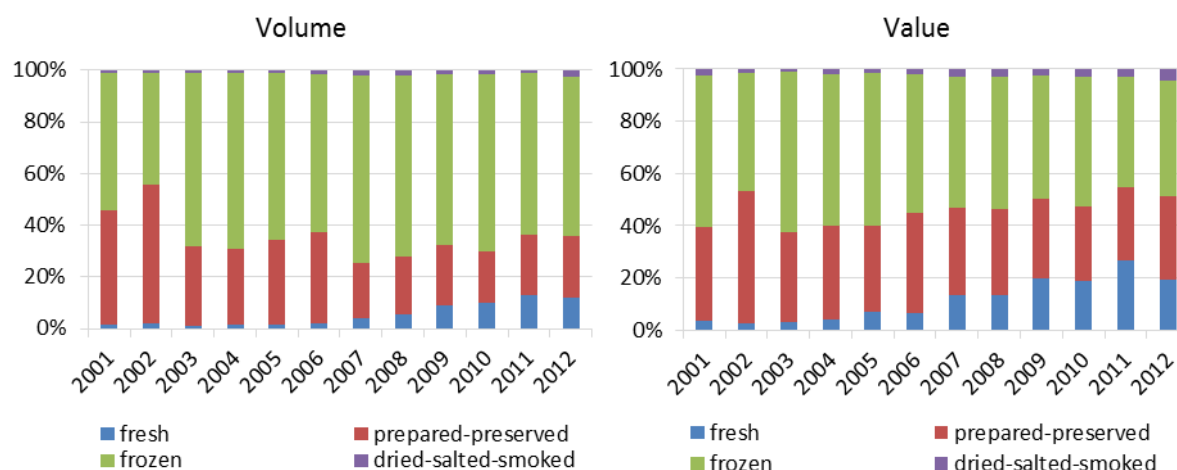
Trade of trout, tuna and flat fish increased significantly the value of imports from Italy, as well as the trade of pangasius in the case of Vietnam (Figure 5.19.5).





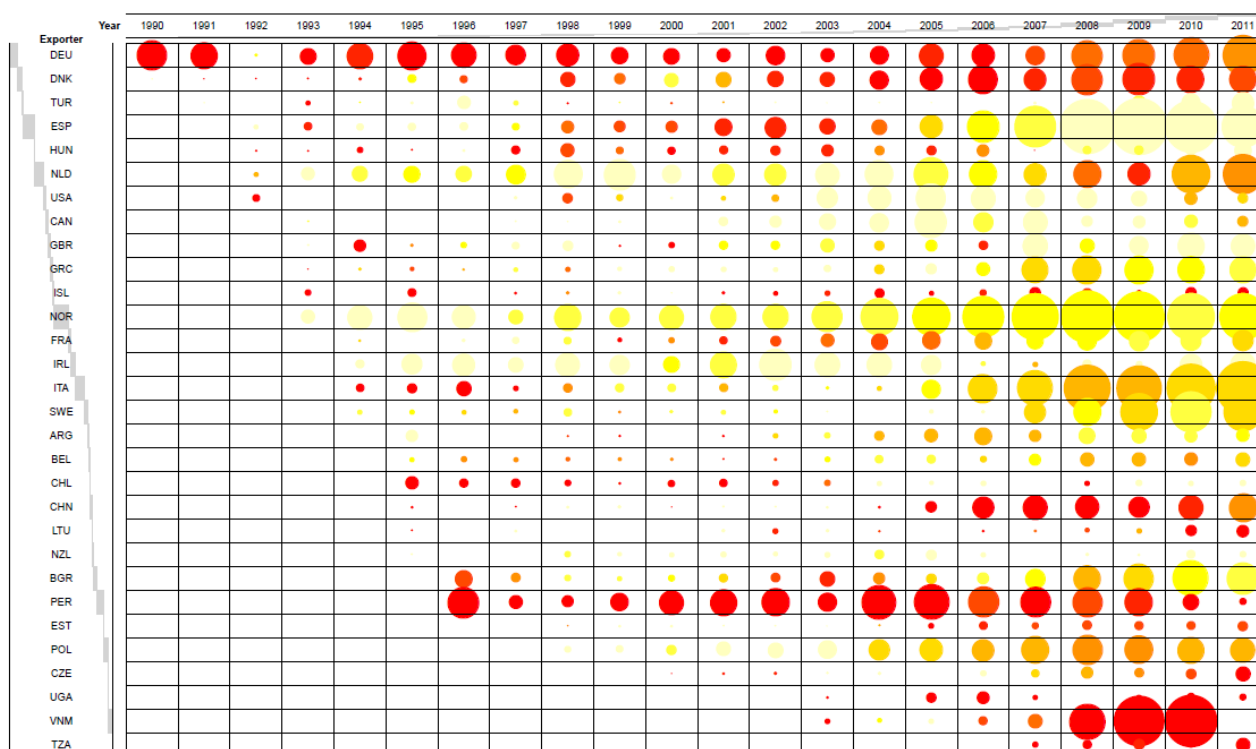
**Figure 5.19.5 - Romanian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Several commercial species among the most traded (e.g. such as cod, other marine fish, hake and sardine) are imported mostly frozen. Therefore, frozen seafood contributes a large part of the total seafood imports both in volume and value (around 60% and 45% of the total, respectively in 2012) (Figure 5.19.6). Imports of fresh seafood rose sharply over the reference period (by 10 times in volume and almost 26 in value), especially because of the increased imports of trout, carp, salmon and freshwater fish. Trade of fresh seafood accounted for around 70% of the total increase of Romanian seafood imports occurred from 2001 to 2012. The contribution of fresh seafood over the total import volume rose sharply from 2001 to 2012, mostly at the expense of prepared/preserved products, the trade of which declined by 37% over the period. Trade of all the other categories of seafood also increased in value, even if their share of the total imports declined markedly in favour of fresh products.



**Figure 5.19.6 - Romanian seafood imports trends by type of products: share in volume (left) and value (right)**

The contribution of processed production to total imports varies depending on the country of origin. For example, imports from Germany, Denmark, and Netherlands are mainly processed, while non-processed products are prevalent in the imports from Spain and Norway (Figure 5.19.7).



**Figure 5.19.7 - Romanian seafood imports trends by main seafood suppliers and contribution of processed products to total import value**

Note: the size is proportional to the import value and the shading to the share of processed products.

## Exports

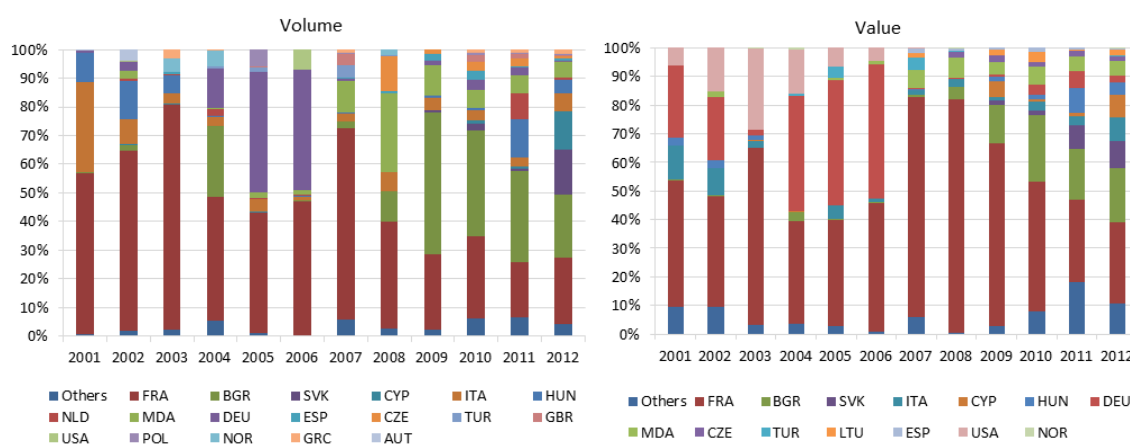
Romania exported 6 K tonnes of fish in 2012, 8 times more than in 2001. Seafood exports increased significantly also in value, from 4 M Euro in 2001 to almost 16 M Euro in 2012. In 2012, almost all seafood was exported within the EU (92% of the total volume, corresponding to 90% of its value); however the share of trade with non-MS fluctuated significantly over the reference period around an average of 10% in terms of volume and 13% in value.

Figure 5.19.8 shows the trend of the seafood exports to the most relevant partners shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 97% of the total volume of seafood exported by Romania and 94% of its value.

Trade patterns have changed radically over time. Seafood exports were much more concentrated at the beginning of the decade than afterwards. In 2001, in fact, France and Italy covered almost 90% of the total Romanian seafood exports. Romanian trade partners also changed over time: in 2001, the five most relevant countries of destination in terms of volume of trade were France (accounting for 56% of the total), Italy (31%), Hungary (10%), Germany and Bulgaria (each one contributing less than 1%), while in 2012 the majority of seafood was exported to France (22%), Bulgaria (22%), Slovakia (16%), Cyprus (13%) and Italy (6%). Seafood exports to France and Italy have increased over the period, but the exports growth occurred over the reference period has been due mostly to the increased exports to several other countries, such as Bulgaria, Slovakia, Cyprus, Moldavia, Hungary and Greece.

In terms of value, France contributed 44% of the overall exports in 2001, followed by Germany (25%), Italy (12%), USA (6%) and Hungary (4%). The value of exports to Italy has almost tripled from 2001 to 2012, while

exports to Germany decreased by 65% and to USA ceased. The value of exports to France has more than twofolded over the reference period and therefore France has remained the most relevant country of destination over the entire period. However, its share of the total trade has reduced significantly, especially from 2007 (In 2012, France contributed 28% of the total Romanian seafood exports), mostly as a result of the increased trade with Bulgaria, Slovakia, Italy and Cyprus, which in 2012 were the most relevant trade partners for Romania in terms of trade value after France (contributing 19%, 9%, 8% and 8% of the total, respectively).

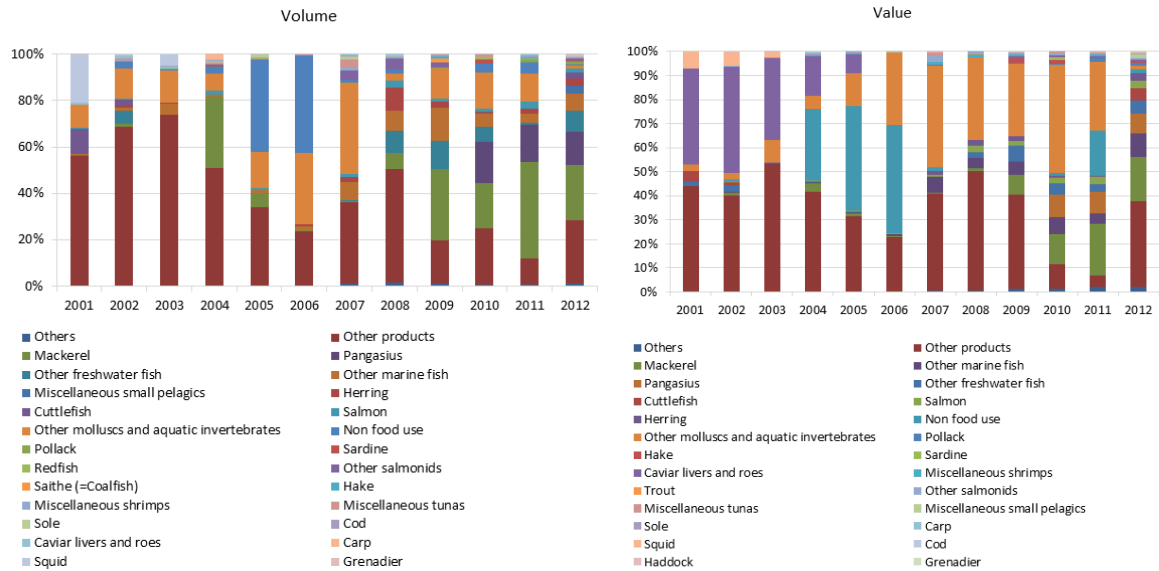


**Figure 5.19.8 - Romanian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.19.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover Romanian seafood exports almost entirely, both in volume and value.

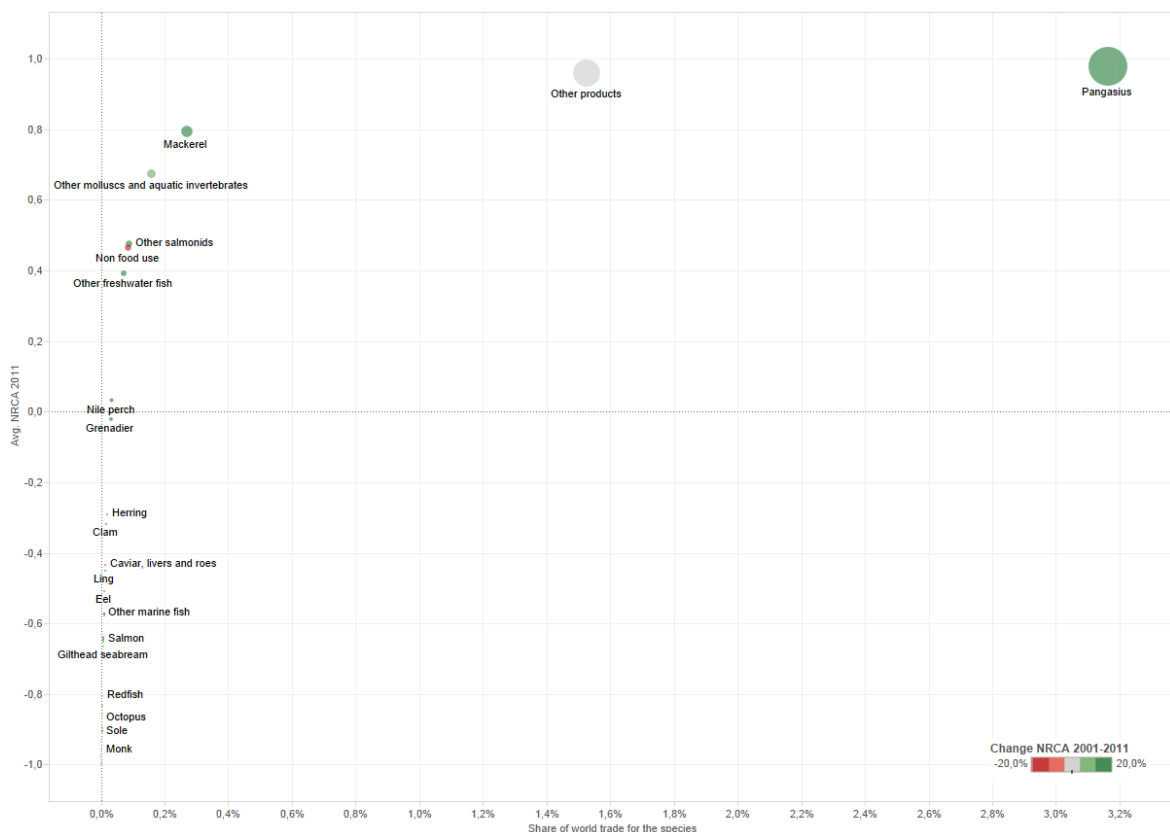
As already observed trade patterns changed radically over the years. This happened not only in terms of trade partners but also of trade composition. In 2001, 56% of Romania seafood export volume was made up of other products, followed by squid (contributing 21% of the total), cuttlefish (11%), other molluscs and aquatic invertebrates (10%) and caviar livers and roes (1%). In 2012, instead, other products contributed less than 30% of the total exports and the other four commercial species together less than 5%. On the other hand, mackerel, pangasius, other freshwater fish and other marine fish constituted the majority of seafood exports, respectively contributing 24%, 14%, 9%, 8% and 3% of the overall seafood exports. In terms of value, more than 80% of the total seafood exports were made up of other products and caviar livers and roes in 2001, and most of the rest of squid, cuttlefish and other molluscs and aquatic invertebrates. Export value of other products almost tripled from 2001 to 2012; however its contribution to the total value of seafood exports reduced significantly also in value (from 44% to 33%), due to the sharp increase in the trade value of several other commercial species, such as Mackerel, Herring and Pangasius. Furthermore, the value of trade of caviar livers and roes declined by 94% over the decade, especially in the first years of the period (in 2006, caviar livers and roes already contributed less than 1% of the total value of Romanian seafood exports).



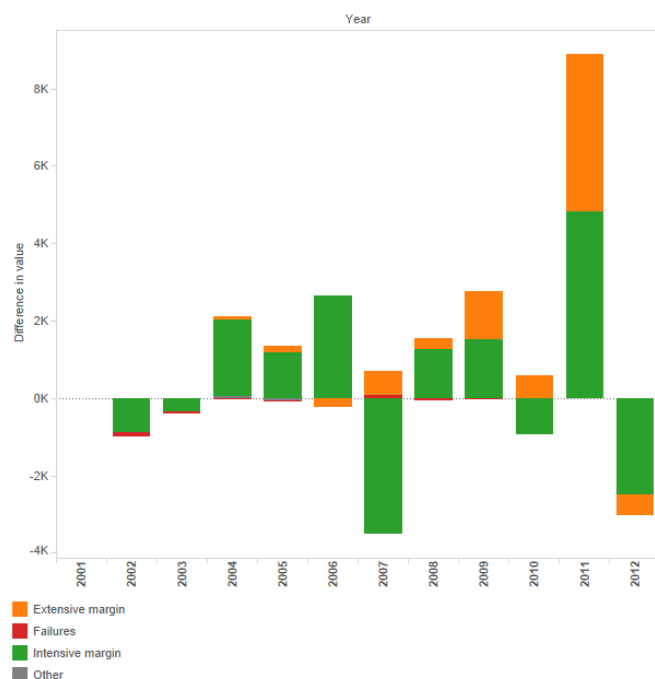


**Figure 5.19.9 - Romanian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, Romania has the highest comparative advantage on the international market for Pangasius (NRCA = 0.98), other products (NRCA = 0.96) and Mackerel (NRCA = 0.79). Trade of Romanian Pangasius is one of the cases for which MS recorded in 2011 the highest value of the index among all world countries. The NRCA index for this species increased impressively from 2001, when its value (-1) indicates a comparative disadvantage on the international market. The NRCA index for Mackerel also increased significantly from 2001, when it was equal to -0.05. On the other hand, its value remained rather stable in the case of other products (Figure 5.19.10).



**Figure 5.19.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Romania, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**



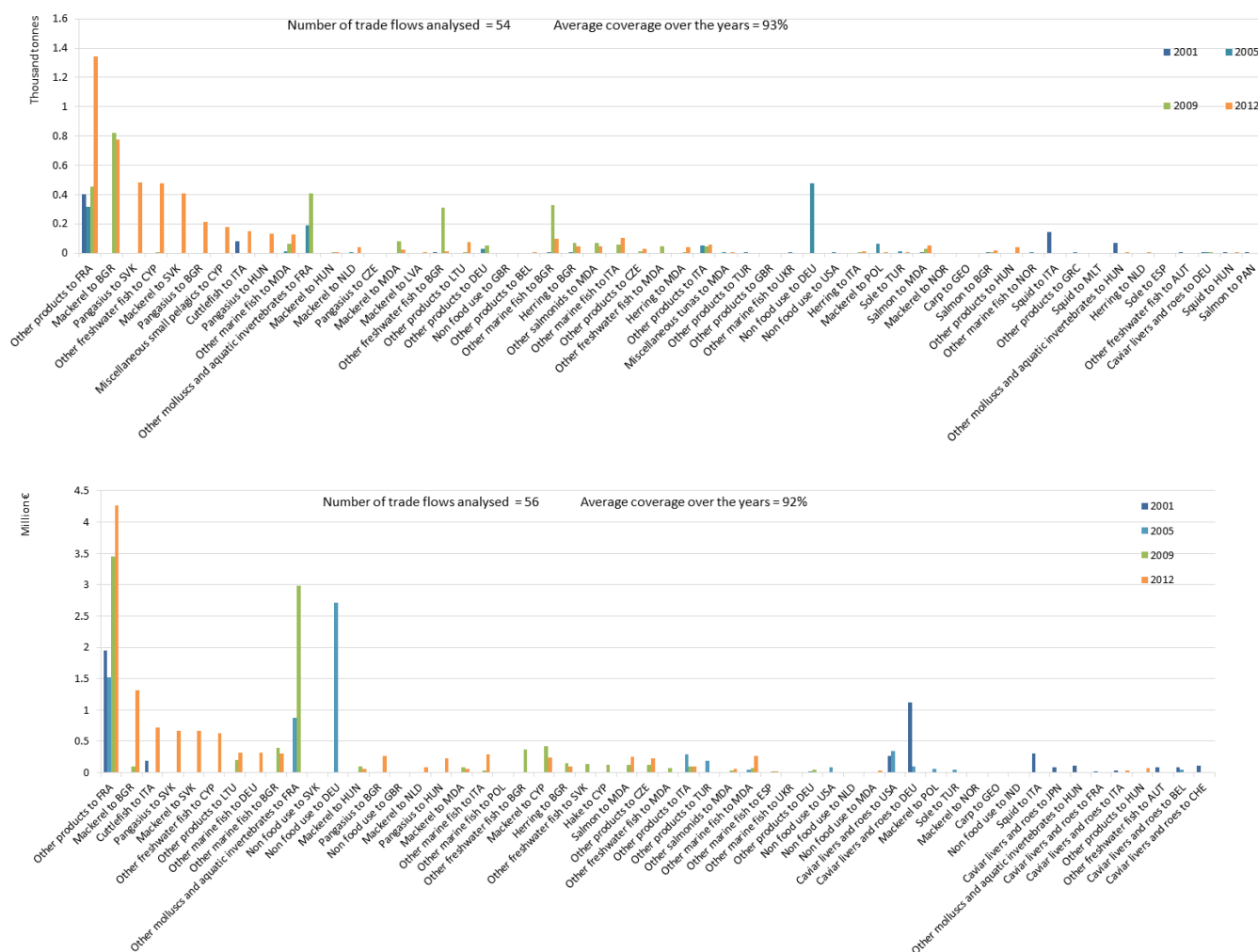
**Figure 5.19.11 - Romanian seafood exports margins: 2001-2012**

Seafood export value changed significantly from year to year. In 2011, it increased significantly, due to the increased exports of the same products to the same set of destination countries (intensive margin), as well as to the activation of new trade flows (extensive margin) (Figure 5.19.11). Changes at the extensive margin played a rather significant role in the overall exports changes especially since 2007. Failures, on the other hand, were not relevant over the entire period.

Figure 5.19.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Romania, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 93% and 92% of the overall trade, respectively in volume and value.

As mentioned, export volume to France has increased significantly from 2001 to 2012, both in volume and value, driven by the increased exports of other products. The value of seafood exports to Italy has tripled, mostly due to the increased trade of cuttlefish and other marine fish. On the contrary, trade with Germany and USA, which in 2001 was mostly made up of caviar livers and roes, has decreased sharply in value. The value of exports of caviar livers and roes to various other countries, such as Switzerland, Belgium and Japan, has also declined markedly.

As also observed, other countries have become important trade partners for Romania, for example Bulgaria and Slovakia, due to the increased trade of mackerel and Pangasius and Cyprus, mostly due to the exports of other freshwater fish.



**Figure 5.19.12 - Romanian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2001, more than 60% of the overall seafood exports were made up of fresh products. Traded volumes of all the categories of seafood increased sharply over the period, especially of prepared/preserved and frozen products. For this last group of products, the increased trade reflected the increased exports of Mackerel and Pangasius, while other products and other marine fish were the main determinant in the case of more processed products. In 2001, fresh seafood contributed the most also in terms of value (45% of the total), followed by prepared/preserved products (39%). Trade of frozen seafood rose more than the one of the other types of products in terms of value (by 14 times, against around 2 times in average for the other categories of seafood). Therefore, the contribution of frozen seafood exports increased from 9% in 2001 to almost 40% in 2012 (Figure 5.19.13).

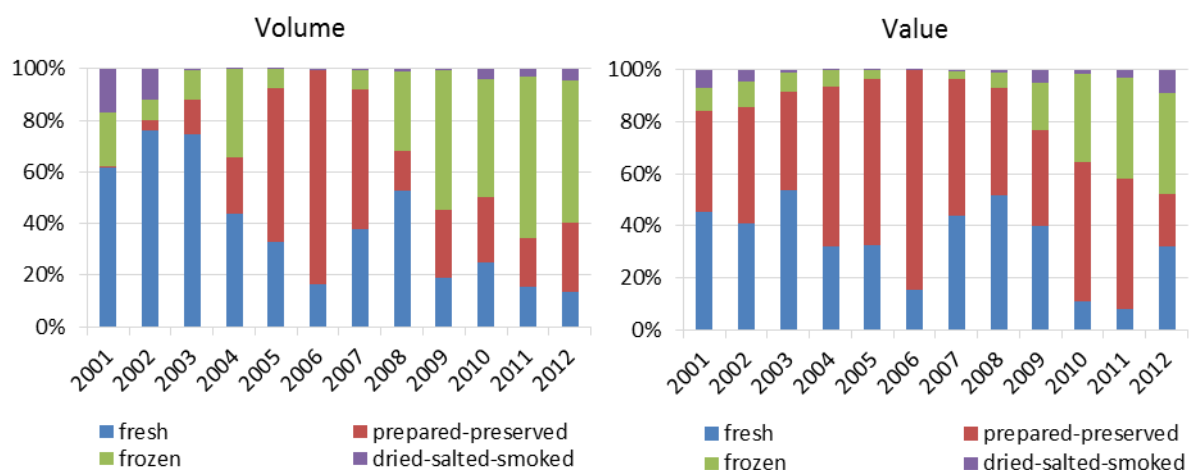


Figure 5.19.13 - Romanian seafood exports trends by type of products: share in volume (left) and value (right)

Processed products contribute differently to total exports depending on the countries of destination and they are the majority of the exports to France (Figure 5.19.14).

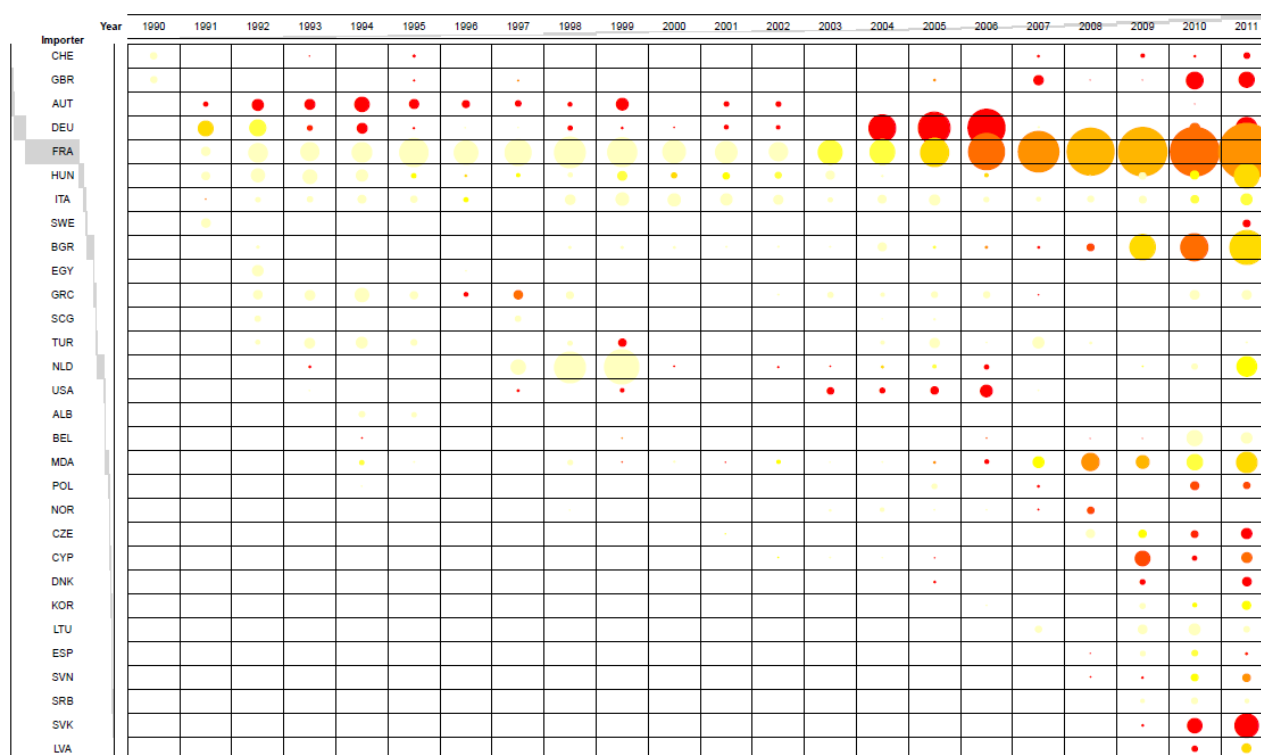


Figure 5.19.14 - Romanian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.20 Slovenia

### Production

The Slovenian fleet has a range of vessel types targeting different species predominantly in the Adriatic Sea. Total catches in 2011 were equal to 0.9 K tonnes, 70% of which made up of five commercial species: sardine (34% of the total volume), anchovy (18%), carp (8%), whiting (7%) and mullet (4%).

Aquaculture production in 2011 was higher than catches and almost equal to 1 K tonnes of fish, mostly trout (64%) and carp (20%).

The fish processing sector is rather large compared to the total fish production and, in 2011, comprised 14 companies processing fish, half of which had fish processing as their main activity. The main products of the Slovenian fish processing industry are various fish cans, tuna pate, dried cod spread, and products from cephalopods, Atlantic salmon and hake fillets. Turnover from the Fish cans and tuna pate represents almost 50% of the turnover of the entire fish processing industry (STECF, 2014c). Slovenian fish processing industry mainly depends on the imports of raw materials from all over the world, but mostly from other MS.

### Trade balance and exposure to trade competition

Slovenia has been a net importer of fish and fishery products over the entire reference period, with a negative balance of 11 K tonnes of seafood in 2012, corresponding to a deficit of 42 M Euro. Seafood trade balance deteriorated almost continuously over the reference period, both in volume and in value (by 7% and 43%, respectively) (Figure 5.20.1).

The dependence of Slovenia on seafood imports increased over time mostly for two reasons. Slovenian seafood consumption has risen over time, due to an increased awareness of healthy lifestyles and good nutrition (STECF, 2014c). In addition, the total volume of landings decreased significantly over the last years of the reference period, due to several factors including, the overexploitation of stocks and scrapping of fishing vessels, as in the case of European anchovy and sardine (STECF, 2014a). The smaller catches have also made the Slovenian fish processing industry increasingly dependent on the imports of raw material.

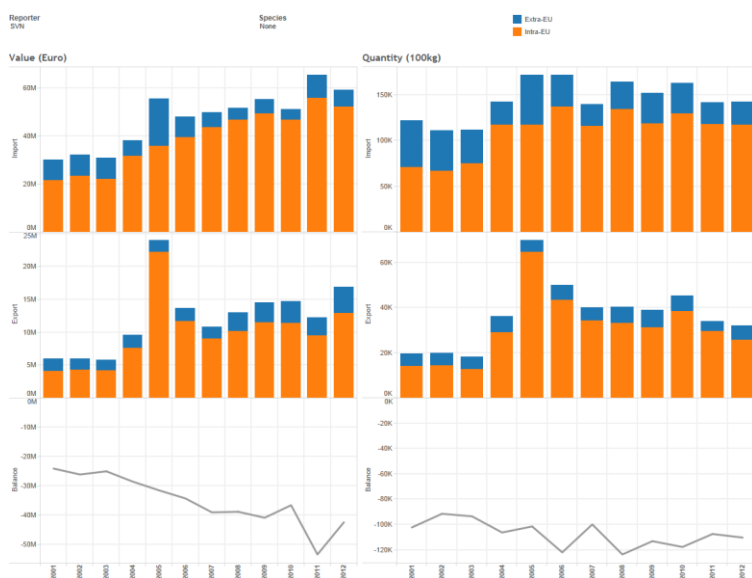
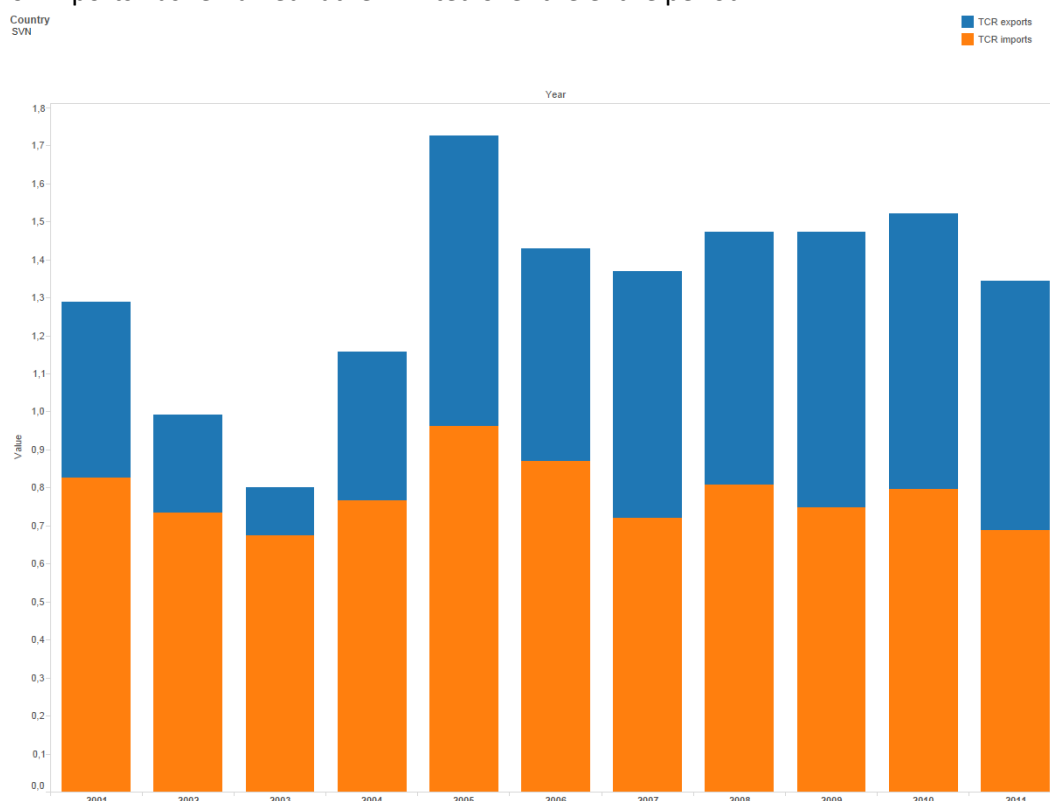


Figure 5.20.1 - Slovenian seafood trade balance trends: value (left) and volume (right)

Slovenia is one of the MS with the highest exposure to seafood trade competition, which, however tended to decrease over the reference period (Figure 5.20.2). In 2011, the estimated value of the Trade

Competition Ratio (TCR) for Slovenia was 2.16, which indicates that the sum of Slovenian imports and exports exceeded the domestic consumption of seafood by around two times. Differently from most other MS, in Slovenia the exposure to seafood trade competition is mostly driven by exports and the contribution of imports has remained rather limited over the entire period.



**Figure 5.20.2 Trend of the exposure to trade competition index for Slovenia**

### Imports

In 2012, Slovenia imported 14.2 K tonnes of seafood, valued at 59 M Euro. Seafood import volume grew substantially over the first years of the reference period and remained more stable in average afterwards. Overall, it rose by 17%, at an average annual growth rate of 2%. Contrarily, the value of imports has increased almost continuously (by 97% in total), at an average growth rate of 8%.

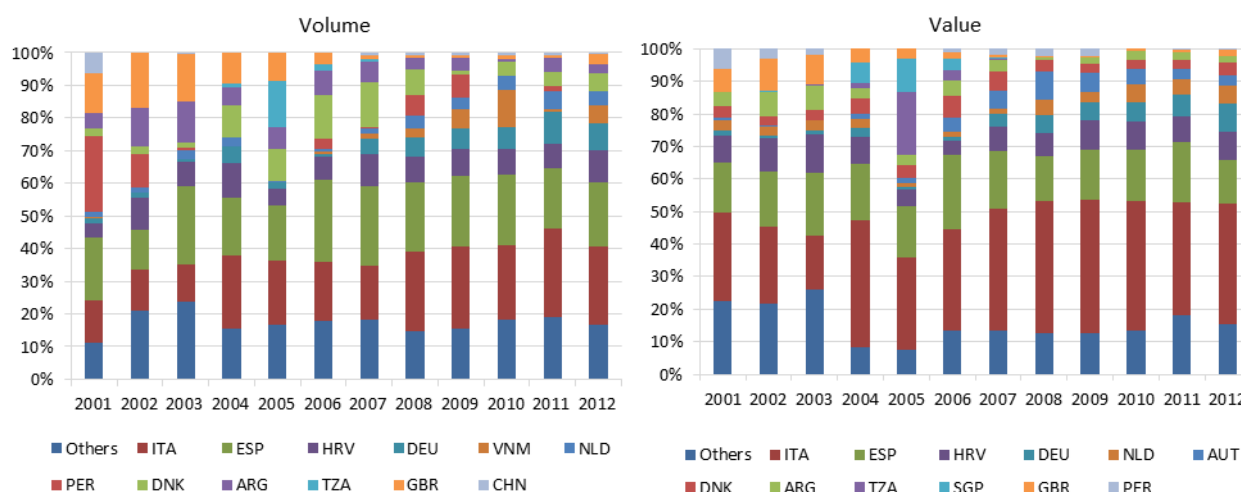
The majority of seafood imports come from within the EU (82% of the total volume of seafood in 2012, corresponding to 88% of its value). Furthermore, the share of extra-community imports has decreased over the years, both in volume (from 42% to 18% of the total) and in value (from 29% to 12%).

Figure 5.20.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Imports from these countries cover, in average over the years, 83% and 85% of the Slovenian seafood import volume and value, respectively.

In 2012, the most relevant seafood suppliers were Italy, (accounting for 24% of the total volume of seafood imports), Spain (20%), Croatia (10%), Germany (8%) and Vietnam (6%). Italy, Spain, Croatia and Germany were the most important partners also in terms of trade value (accounting for 37%, 13%, 9% and 9% of the total imports, respectively), followed by Netherlands (5%).

Trade with the above listed countries increased markedly from 2001 to 2012, especially with Italy (by 117% in volume and 167% in value), Croatia (by 174% and 106%), Germany (by 475% and almost 10 times) and Vietnam (by 19 times and 90 times).

On the other hand, trade with Peru and the United Kingdom, which were two very important seafood suppliers at the beginning of the decade declined significantly.

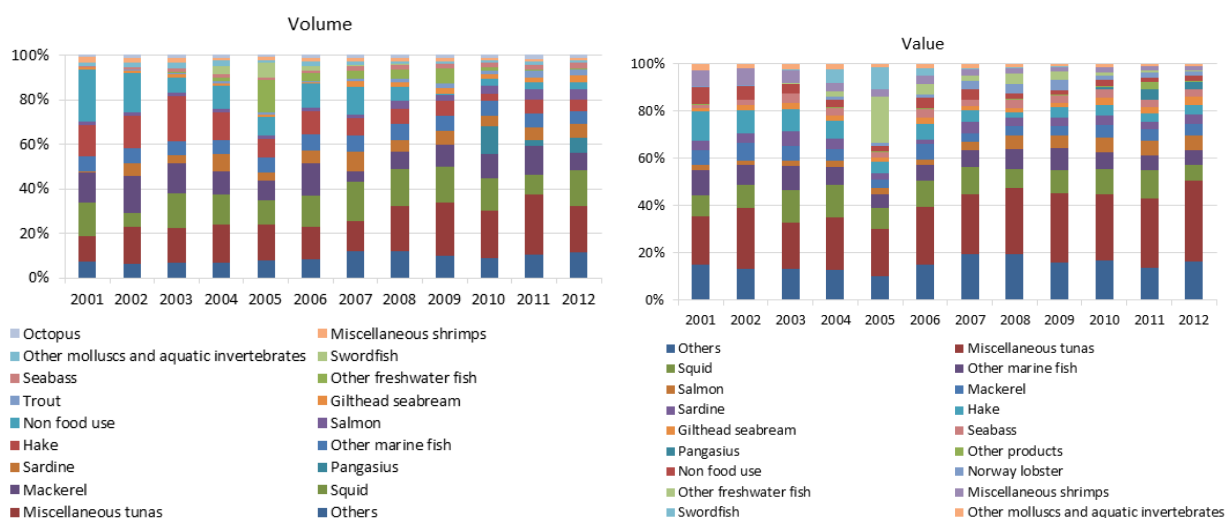


**Figure 5.20.3 - Slovenian seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.20.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 91% of Slovenian seafood imports in volume and 85% of their value.

In 2012, the majority of Slovenian seafood imports were made up of miscellaneous tuna (21% of the total volume), squid (16%), mackerel (8%), pangasius (7%) and sardine (6%). miscellaneous tuna gave the by far highest contribution in terms of value (34% of the total), followed by squid (7%), other marine fish (6%), salmon (6%) and mackerel (6%).

The value of imports of all the most traded species increased significantly from 2001 to 2012, especially of salmon, miscellaneous tuna and sardine. Imports of miscellaneous tunas, sardine and pangasius rose significantly also in terms of traded volumes, while the trade of mackerel and other marine fish contracted. The highest increase was observed for the imports of sardine, the volume of which grew by 8 times over the reference period, as a consequence of the decline of the national production. Raw material of sardines and anchovies are used by the Slovenian fish processing industry and almost all firms depend on the imports of these products (STECF, 2014c).



**Figure 5.20.4 - Slovenian seafood imports trends by most relevant commercial species: share in volume (left) and value (right)**

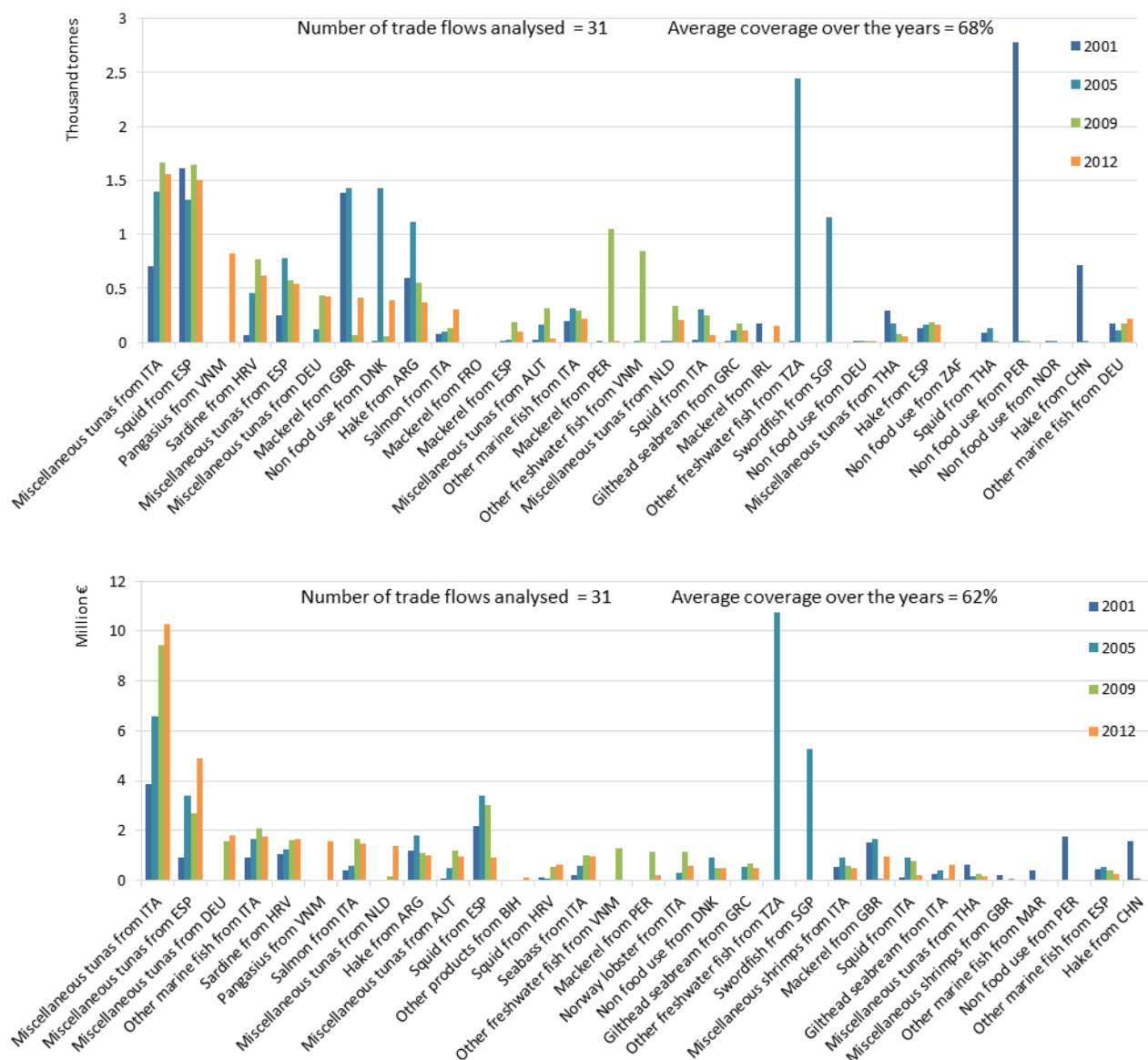
The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Slovenia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 68% and 62% of the overall trade, respectively in volume and value.

In 2001, 23% of the total volume of imports was made up of fish for non-food uses from Peru (Figure 5.20.5). The imports of mackerel from the United Kingdom and hake from China and Argentina contributed 11% and 10% of the total volume of Slovenian seafood imports. These trade flows contracted significantly over the reference period. On the other hand, imports of miscellaneous tuna from its traditional countries of origin (Italy and Spain), as well as from Germany and Netherlands, rose almost continuously. A large part of the increase in the volume of seafood imports occurred from 2001 to 2012 is attributable to sardines. The volume of their imports from Croatia and Italy increased by more than 8 times and 5 times, respectively.

salmon and tuna explain a large part of the increase in the value of imports registered from 2001 to 2012. The value of imports of miscellaneous tuna from its main countries of origin, Italy and Spain, respectively grew by almost 3 times and more than 5 times over the reference period. Tuna imports from the less traditional countries, Germany and Netherlands, increased even more in relative terms.

The value of salmon imports grew by almost 6 times from 2001 to 2012, mostly due to the imports from Italy, but also from several other MS, such as Germany, the Netherlands, Denmark, Spain, Poland and France.





**Figure 5.20.5 - Slovenian seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2012, frozen products accounted for 49% of the total volume of seafood imports (Figure 5.20.6), as several of the most traded species (e.g. squid, mackerel, pangasius and hake) were imported mostly frozen. Prepared/preserved products also contributed significantly to the total volume of imports (30%), mostly due to the trade of miscellaneous tuna and sardines. The “fresh” contributed 18% of the total and was mostly made up of salmon, gilthead seabream, seabass and trout.

In terms of value, prepared/preserved products contributed the most (42% of the total value of seafood imports in 2012), followed by frozen products (34%) and fresh seafood (21%).

The import volume of fresh products increased by almost three times from 2001 to 2012, reflecting the increased trade of salmon, gilthead seabream, seabass and trout. Therefore, the share of fresh seafood over the total volume of imports increased from 8% to 18%. The imported value increased markedly for all categories and the relative shares remained rather stable over time.

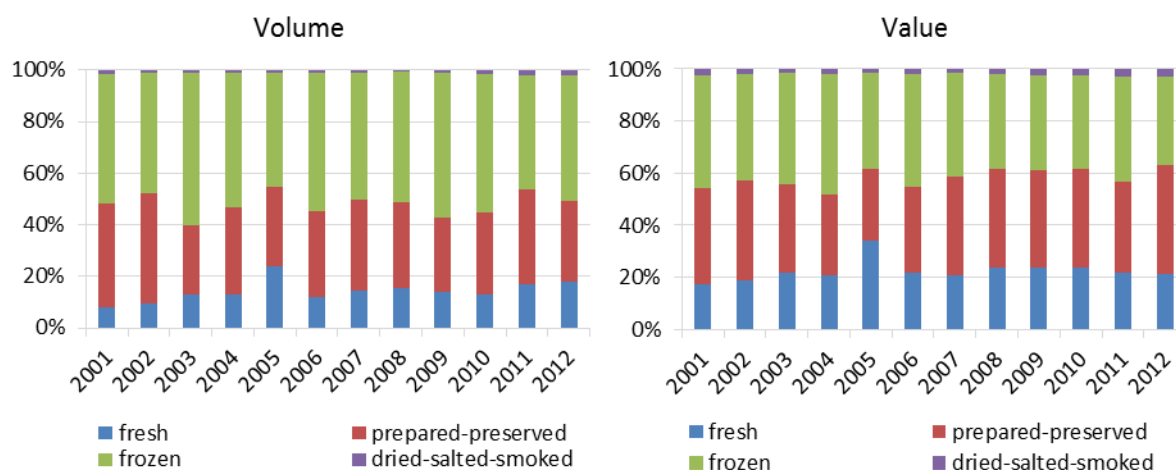


Figure 5.20.6 - Slovenian seafood imports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to total imports varies depending on the country of origin. Non-processed products contribute the most to the total value of seafood imports from Spain, Italy and Croatia, while the value of imports from several other countries (e.g. Germany, the Netherlands and Denmark) derives mostly from processed seafood (Figure 5.20.7).

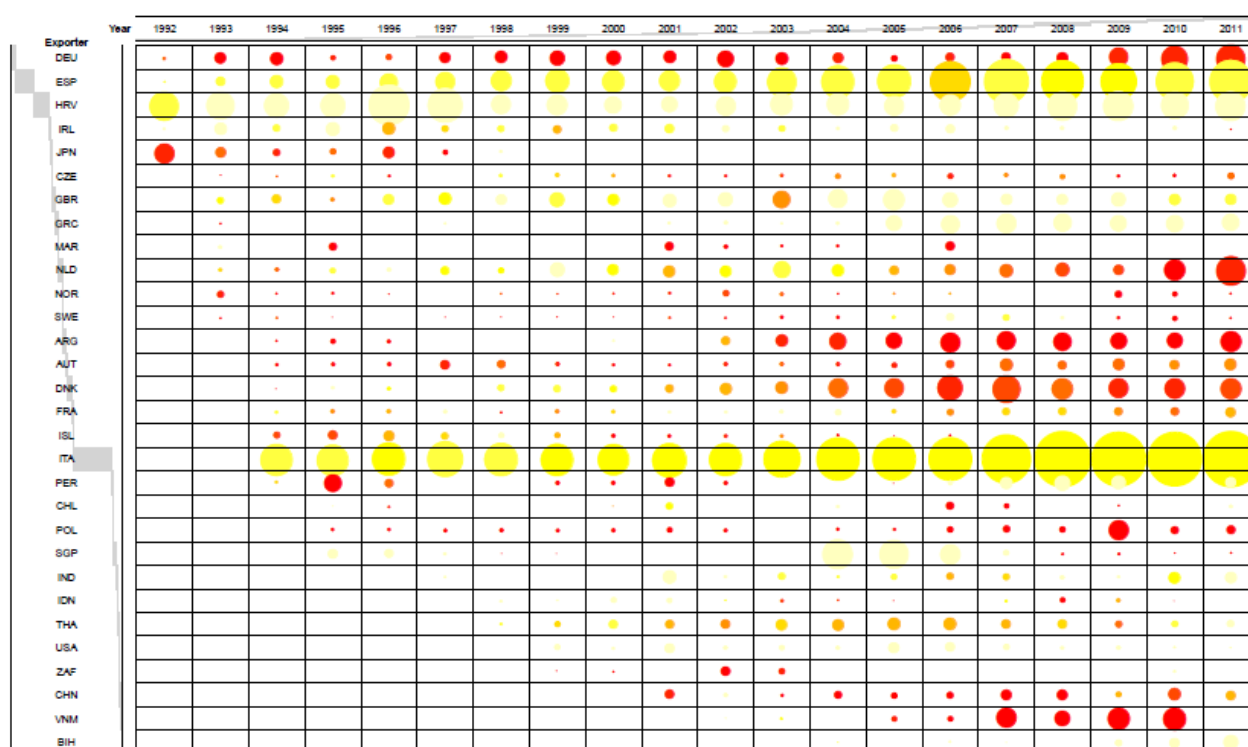


Figure 5.20.7 - Slovenian seafood imports trends by main seafood suppliers and contribution of processed products to total import value (Note: the size is proportional to the import value and the shading to the share of processed products)

## Exports

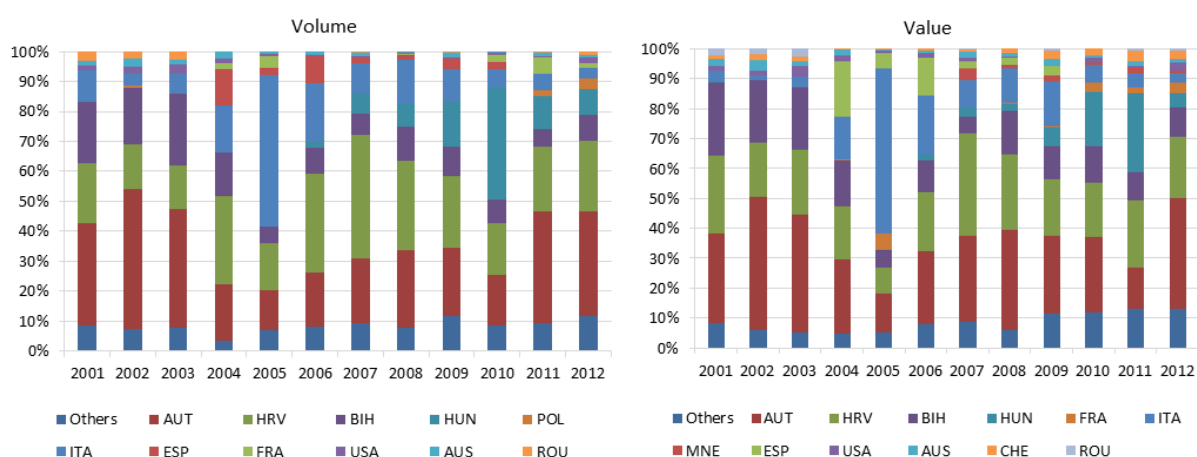
In 2012, Slovenia exported around 3.2 K tonnes of fish and fishery products (valued at 17 M Euro), 11% more than in 2001. The volume of seafood exports has decreased almost every year since 2005, while the trend of export value was increasing since 2007.

In 2012, 80% of the Slovenian seafood export volume, corresponding to 77% of the export value, was directed to MS. Extra-community exports were more relevant at the beginning of the decade: in 2012, 28% of the total volume of seafood exports and 32% of their value went outside the Community.

Figure 5.20.8 shows the trend of the seafood exports to the most relevant partners shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 92% of the total volume of seafood exported by Slovenia and 92% of its value.

In 2012, the most important countries of destination in terms of volume of trade, were Austria (accounting for 35% of the total volume of Slovenian seafood exports), Croatia (23%), Bosnia and Herzegovina (9%), Hungary (9%) and Poland (4%). Austria, Croatia, Bosnia and Herzegovina, and Hungary were the most relevant partners also in terms of value (respectively accounting for 37%, 20%, 10% and 5%), followed by France (3%).

Trade patterns changed significantly over the reference period. For example, Slovenia has reduced its exports to Bosnia and Herzegovina (both in volume and in value) and has started to trade with new countries: France, since 2004, and Hungary, since 2006.



**Figure 5.20.8 - Slovenian seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

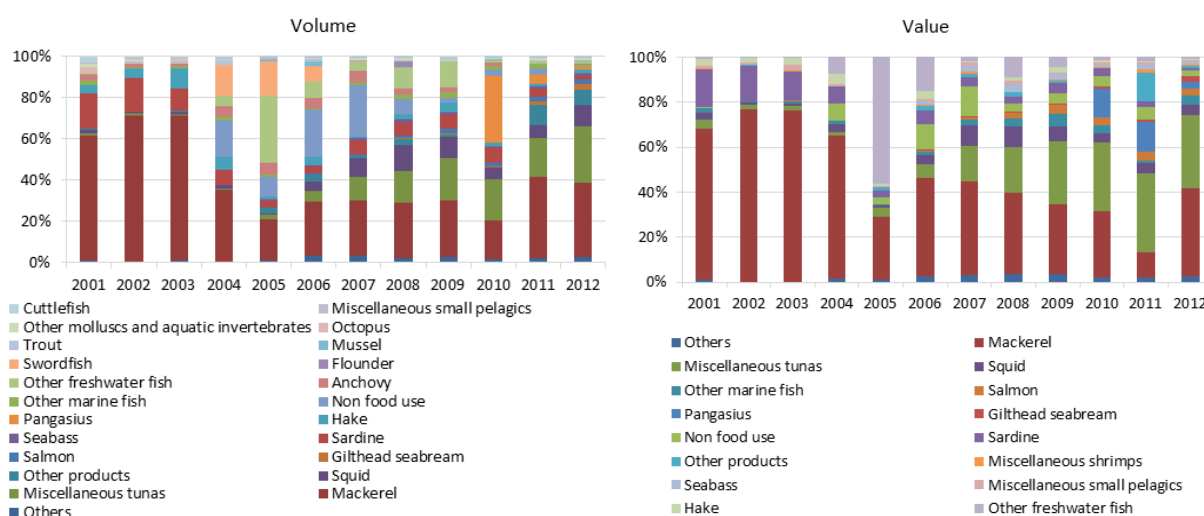
Figure 5.20.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 98% of the total volume of seafood exported by Slovenia and almost 98% of its value.

In 2012, the majority of Slovenian seafood exports was made up of mackerel (accounting for 36% of the total volume of exports), miscellaneous tunas (28%), squid (10%), “other products” and gilthead seabream (3%). Mackerel was exported mostly to Austria, while Croatia was the main destination for tuna and squid. Mackerel and miscellaneous tunas respectively contributed 38% and 32% of the total value of exports, followed by squid (4%), other marine fish (4%) and salmon (3%).

The composition of seafood trade has changed significantly over the reference period. In 2001, around 60% of Slovenian seafood exports (in volume and value) was represented by mackerel, while sardines accounted for some 15%.

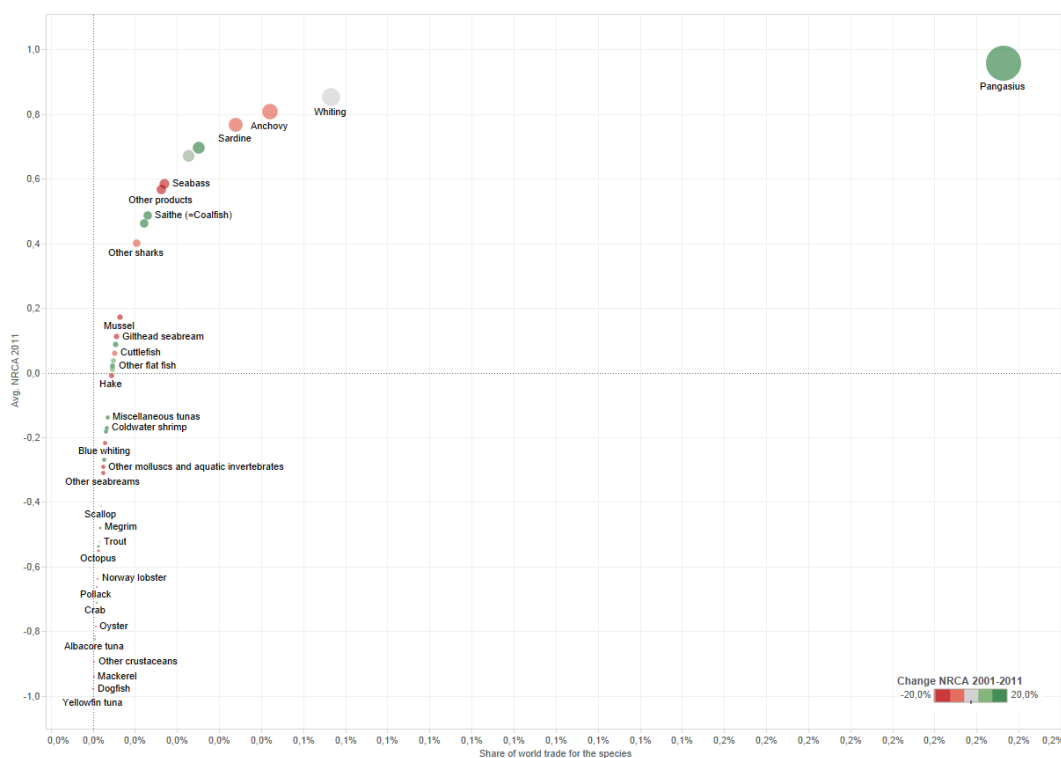
From 2001 to 2012, exports of mackerel have increased both in volume and in value, but the trade of other species, especially tuna, have increased much more. Tuna exports have increased by 43 times in volume and 23 times in value (mostly due to the increased trade with Croatia, but also with Austria, Bosnia, Herzegovina and Switzerland). Exports of mackerel have remained rather stable in volume and have increased 72% in value (especially due to the increased exports to Austria). Furthermore, mackerel has been re-directed from Croatia, Bosnia and Herzegovina to Austria, which has increased its imports of Slovenian mackerel by 40% (in volume). Exports of squid rose by almost 9 times in volume and four in value, mostly because of the increased trade with Croatia.

Exports of sardine, which were predominantly directed to Bosnia and Herzegovina, Croatia, Romania and Egypt, decreased markedly.



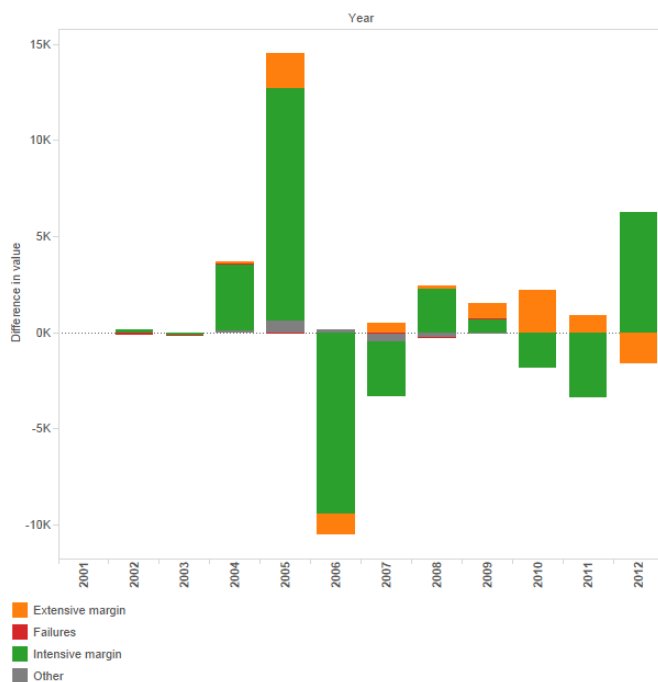
**Figure 5.20.9 - Slovenian seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

As evidenced by trade flows, in 2011 Slovenia had the highest comparative advantage on the international market for Pangasius (NRCA = 0.96) (Figure 5.20.10).



**Figure 5.20.10 - Normalized Revealed Comparative Advantage index (NRCA) and share of world trade for Slovenia, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

Seafood exports increased especially from 2010 to 2012 and trade patterns changed mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries) (Figure 5.20.11). Failures contributed significantly to the exports contraction in 2002. Changes at the extensive margin (i.e. activation of new trade flows) played a rather relevant role in the overall exports changes since 2008.



**Figure 5.20.11 - Slovenian seafood exports margins: 2001-2012**

Figure 5.20.12 shows the trend of the most relevant trade flows (combinations “country of destination-species”) for Slovenia, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 83% and 81% of the overall trade, respectively in volume and value.

As mentioned above, tuna exports to Croatia, Austria, Bosnia and Herzegovina have increased markedly over the reference period, both in terms of volume and value. Exports of mackerel to Croatia, Bosnia and Herzegovina have contracted and to Austria have increased. Exports of squid to Croatia have grown and of sardine to Bosnia and Herzegovina, Croatia, Romania and Egypt, have decreased. The value of exports of mackerel to Austria has also risen significantly.

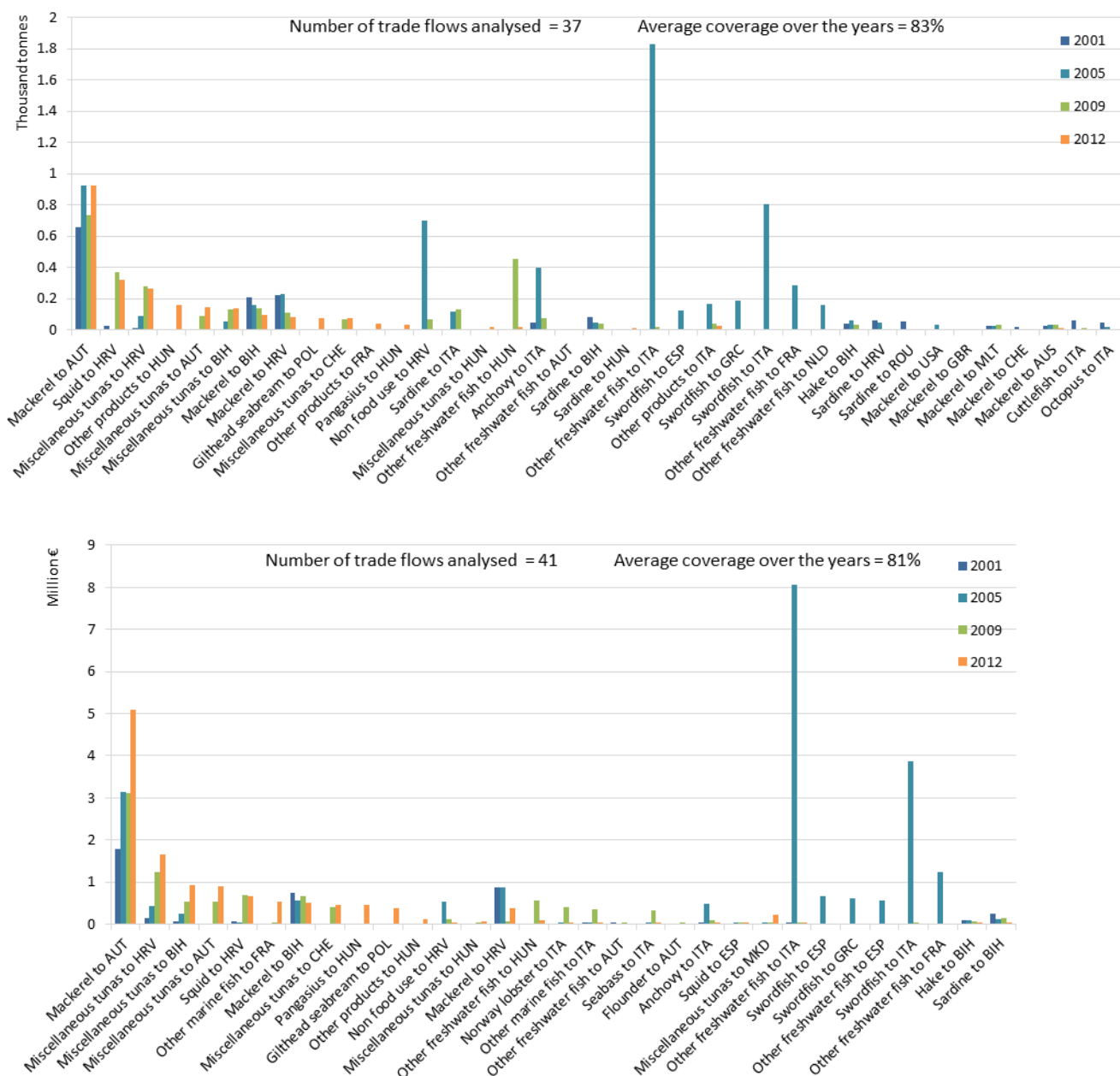


Figure 5.20.12 - Slovenian seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

In 2012, 94% of Slovenian fish exports was in the form of prepared and preserved products (corresponding to 84% of its value), as all fish for non-food uses, as well as the largest part of mackerel and tuna is traded in these forms (Figure 5.20.13).

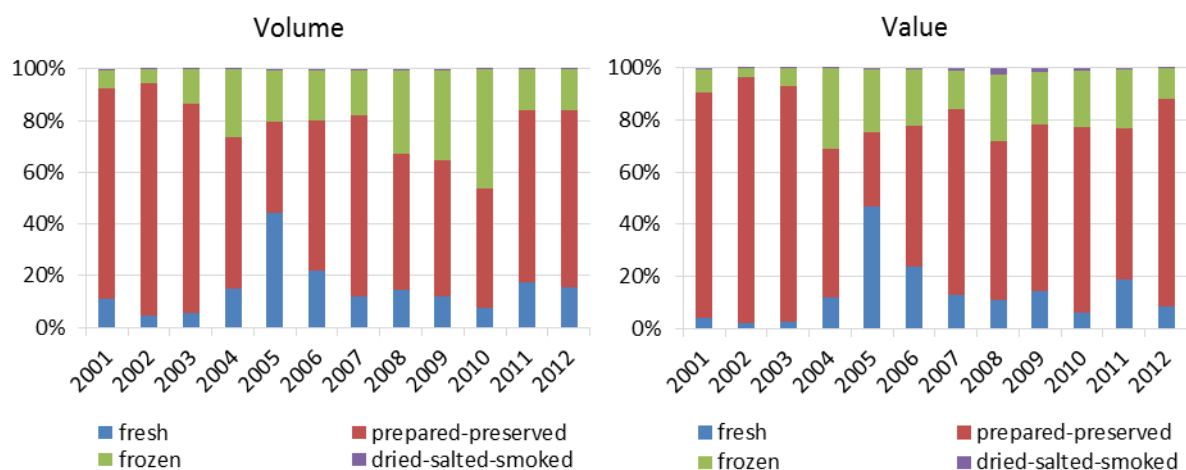


Figure 5.20.13 - Slovenian seafood exports trends by type of products: share in volume (left) and value (right)

The contribution of processed products to total exports depends on the countries of destination. Exports to Germany tend to be more processed than the average. On the other hand, the share of processed products to total exports to France and the United Kingdom, the most relevant countries of destination for Slovenia in terms value of seafood trade, increased over the years (Figure 5.20.14).



Figure 5.20.14 - Slovenian seafood exports trends by main seafood suppliers and contribution of processed products to total export value (Note: the size is proportional to the export value and the shading to the share of processed products)



## 5.21 Spain

### Production

The Spanish fleet is highly diversified with a broad range of vessels types fishing into different grounds (national water, other EU waters or international fishing grounds) and targeting many different species such as tunas, cod, anchovies, sardines, squid, cuttlefish and octopus, mainly in the Mediterranean and Northeast Atlantic. The three most important segments in terms of total landings income are demersal trawler and seiners (longer than 24m) and purse seiners (longer than 40m), respectively contributing 21% and 17% of the income from landings generated by the fleet in 2011 (STECF, 2014a).

In 2011, the total volume of fish catches was around 1 M tonnes (almost 20% of overall EU catches) and the highest catches corresponded to pelagic or semi-pelagic species, such as tuna, mackerel, sardines and anchovy. In the same year, farmed production was equal to 271 K tonnes of fish, contributing almost 40% of the total EU aquaculture output. Spanish aquaculture is mostly based on the cultivation of bivalve molluscs, especially mussels (77% of total volumes in 2011) and on the production of seabass (6%), rainbow trout (6%), seabream (6%) and turbot (3%). From 2000 to 2011 the production of rainbow trout decreased by 50% and of mussels by 16%. On the contrary, volume of seabass increased about ten times and of seabream almost doubled.

### Trade balance and exposure to trade competition

In 2012, Spanish seafood trade was in deficit to the extent of 398 K tonnes, amounting to 1.9 M Euro (Figure 5.21.1), which results from the high rates of seafood consumption (STECF, 2014c). The negative balance is mostly due to the trade of fresh and frozen products, for which the value of imports exceeds the value of exports, as a result of the high internal consumption of these products. As Spanish consumers prefer fresh seafood, this contributes to exports much less significantly than other types of products. The value of exports of prepared and preserved seafood, instead, is almost as much as the value of imports, as a consequence of the aggregation of value undertaken by the Spanish processing industry and consisting in further processing, packaging and branding (STECF, 2014c).

Over the reference period, the negative balance reduced by 52% in volume and 7% in value, mostly as a result of the increase in the seafood exports (+15% in volume and +46% in value). This increase has resulted from the fact that the Spanish seafood industry has focused more and more on the exports markets, especially within the EU. A strengthened access to the European markets, together with the improved qualities of semi processed imports and the enhanced efforts in new product development (STECF, 2014c) also help to explain the improvement of the seafood trade balance occurred over the years.

As already observed, the fish processing industry has specialized in the addition of value and re-exports of imported products already processed and, as a consequence of that, the negative value of the trade balance of these type of products is considerably smaller than the one of the other seafood commodities (STECF, 2014c). Processed products are also the main responsible of the improvement of the trade balance occurred over the reference period. The trade balance of these products improved especially during the last years of the reference period, as a result of the fact that the fish processing industry has increased its exporting effort due to the fall in internal demand caused by the impacts of the financial crisis on domestic consumption (STECF, 2014c).

Extra EU-imports represented almost 70% of the total seafood imports in 2012 (both in volume and value), while only 37% of the total exports of fish and fishery products in volume (and 27% in value) was directed outside the MS. This is a common trend in almost all other MS with relevance in the processing industry

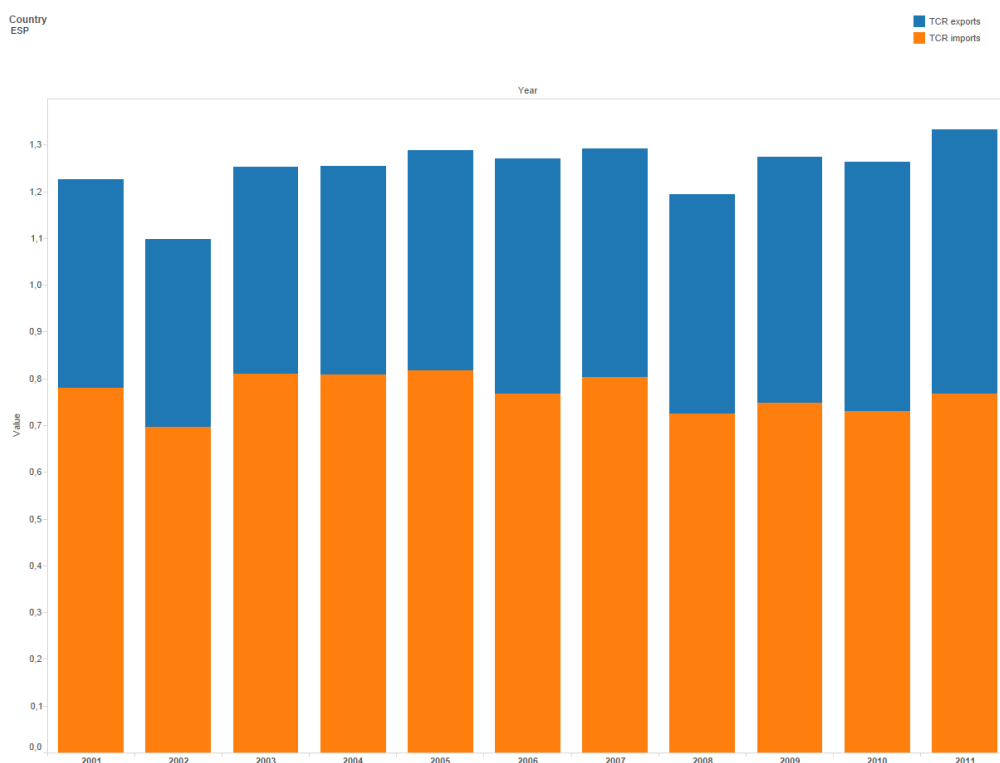
and is explained, not only by the fact that intra-community trade is facilitated by the absence of trade barriers, but also by the higher prices offered by the EU market for food products imported from developing countries at lower price (STECF, 2014c).

The volume share of extra-community seafood imports remained rather stable over the reference period, but its value increased. These shares remained rather stable over the period.



**Figure 5.21.1 - Spanish seafood trade balance trends: value (left) and volume (right)**

Compared to the average of the other MS, Spain is less exposed to the trade competition (Figure 5.21.2). As for the majority of the MS, the exposure to trade competition is mostly driven by imports (in 2011, TCR exports = 0.56, while TCR imports = 0.76). Even if the trade competition remained rather stable over the reference period, the relevance of exports increased over time (TCR exports was equal to 36% of the total TCR in 2001, vs. 42% in 2012).



**Figure 5.21.2 - Trend of the exposure to trade competition index for Spain**

### Imports

Spain imported 1.3 M tonnes of seafood in 2012, valued at 4.6 B Euro. Import volume fluctuated from 2001 to 2012 and, overall, it declined by 6%. Its value increased by 19%, at an average annual growth rate of 2%.

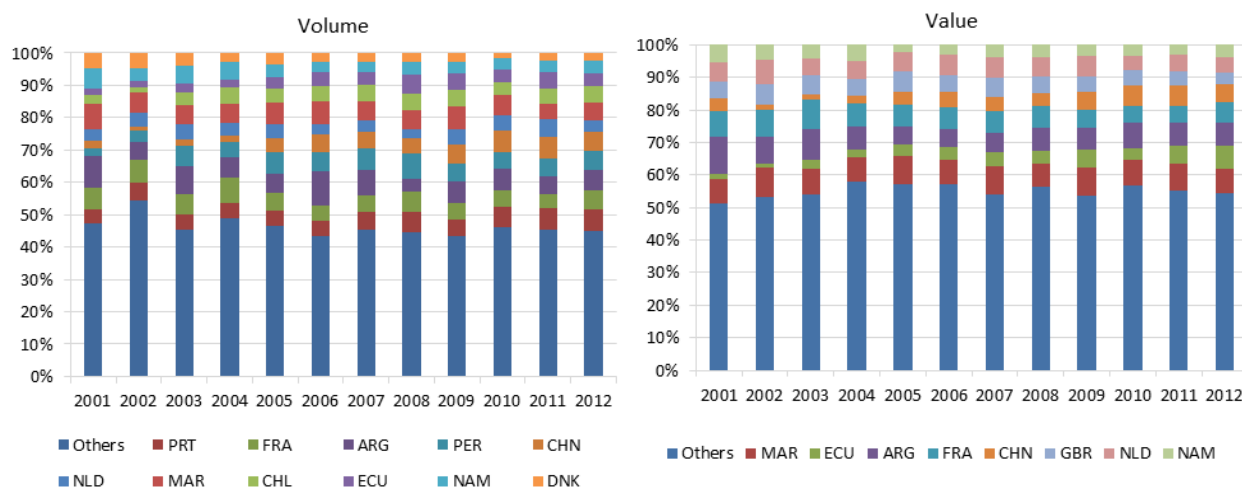
As mentioned, extra EU-imports represented almost 70% of the total seafood imports in both volume and value. The volume share of seafood imported from outside the EU remained rather stable over the reference period, but its value increased.

Figure 5.21.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 54% of the total volume of seafood imported by Spain and 45% of its value.

Spain imports seafood from several countries, none of which is strongly prevalent on the others (the top-10 seafood suppliers in 2012 accounted only for 54% of the total import volume and value). The five most important countries of origin in 2012 were Portugal, France, Argentina, Peru and China, each of them accounting for 6% of the total import volume. In value, the most relevant were Morocco (8%), exporting to Spain mostly pelagic species and cephalopods whether fresh or semi processed, but also some other demersal species. It followed Ecuador (7%), from where large amounts of penaeus shrimp and different species of tunas used in the canning industry are imported (STECF, 2014c), Argentina (7%), France (7%) and China (6%). Argentina and Namibia are the two main suppliers of frozen Southern hake, which complements the supply of fresh European hake, which is the most popular species across Spaniards (STECF, 2014c).

Seafood trade volume with France, Argentina and Morocco decreased 11%, 42% and 34%, respectively. Trade with Argentina decreased also in value (-29%) and with France and Morocco remained rather stable

in average. On the other hand, trade with the Portugal and, especially, with Peru, China and Ecuador increased significantly (36%, 129%, 141% and 82%, respectively in volume, and 25%, 139% 70% and more than five times in value).



**Figure 5.21.3 - Spanish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.21.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, 74% of the total volume of seafood imported by Spain and 70% of its value.

Trade patterns are very differentiated also in terms of traded products. In 2012, the most traded items in volume were squid (10%), hake (9%), Yellowfin tuna (6%), miscellaneous tuna (6%) and miscellaneous shrimps (6%). In terms of value, the five most relevant commercial species were miscellaneous tuna (9%), squid (8%), Tropical shrimps (8%), miscellaneous shrimps (8%) and hake (7%). Tunas, small pelagics and cephalopods are the main raw materials for the canning industry, while shrimps and Southern hake are usually imported frozen and derived to the domestic market with small or none further processing (STECF, 2014c).

Imports of tropical shrimps and hake reduced both in volume (by 10% and 32%, respectively) and value (27% and 7%). Trade of squid and yellowfin tuna decreased in volume (by 92% and 22%, respectively) but rose in value (19% and 55%), while trade of miscellaneous tuna and miscellaneous shrimps grew both in volume (by 146% and 128%, respectively) and value (by six times and 33%). The increase in the import value of miscellaneous tuna contributed the most to the overall imports growth occurred from 2001 to 2012.

The volume of Imports of cod has also increased significantly over the reference period. While, until the late 80's, the Spanish firms processing cod were mostly supplied by the national fleet, with time they had to increasingly rely on imports because of the depletion of the stocks due to overfishing (STECF, 2014c).

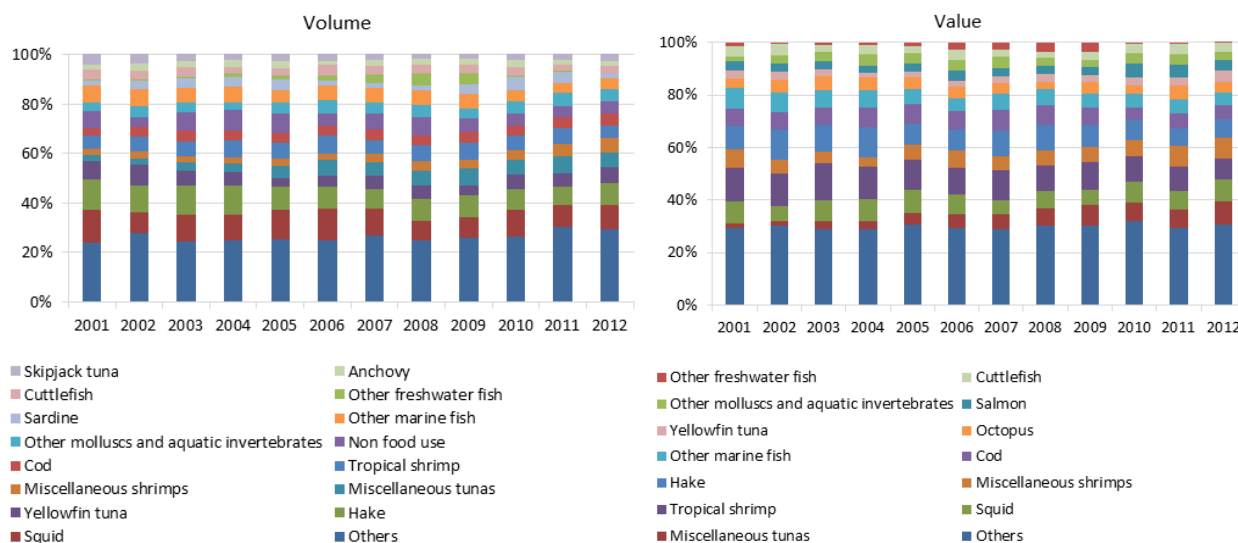
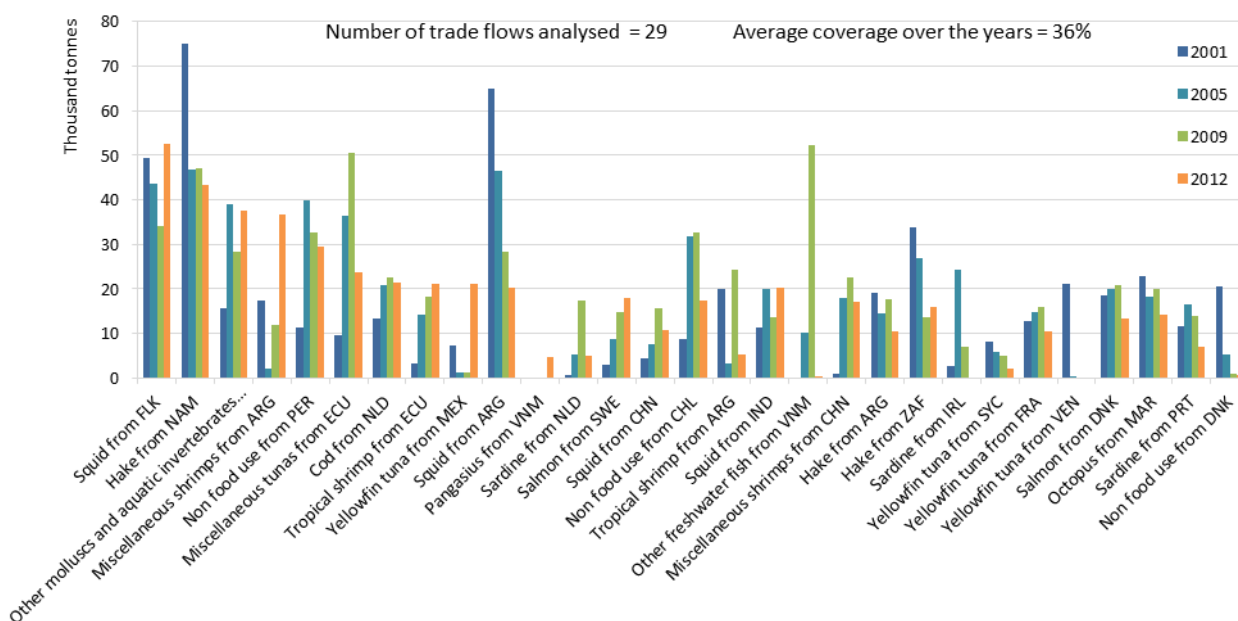


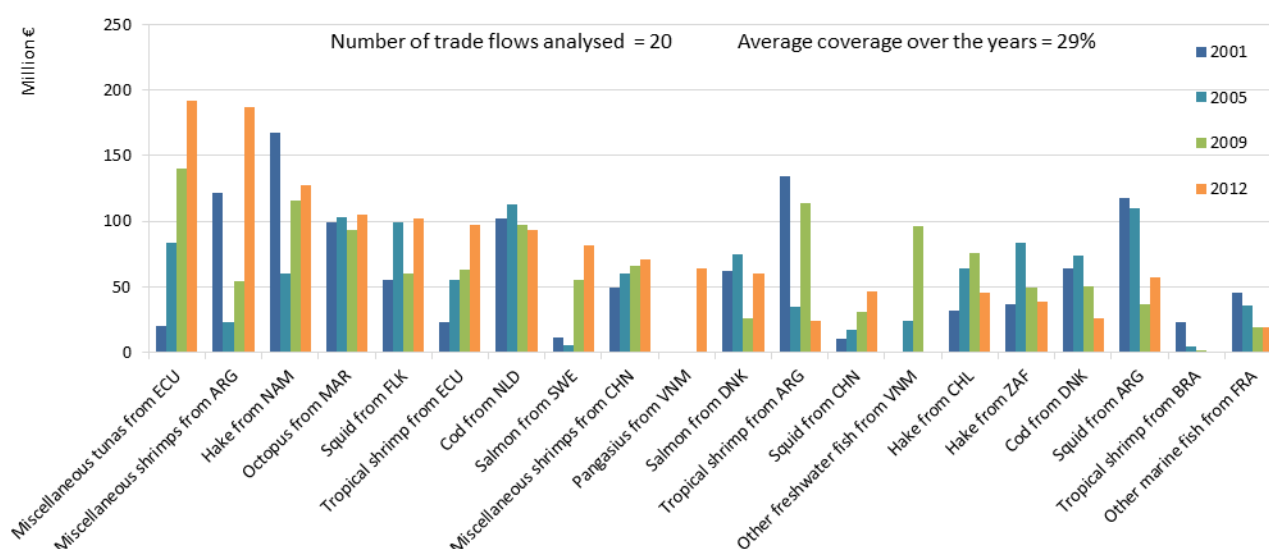
Figure 5.21.4 - Spanish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)

The following figures show the trend of the most relevant trade flows (combinations “country of origin-species”) for Spain, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. As Spanish fish imports patterns are very complex, the two lists respectively cover 36% and 30% of the overall trade, respectively in volume and value.

As mentioned, the value of tuna imports increased 19% from 2001 to 2012. This resulted mostly from a marked increase in the imports of miscellaneous tuna from Ecuador. Other trade flows also contributed significantly, for example the imports of squid from China, salmon from Sweden and shrimps from Argentina (Figure 5.21.5).

Seafood import volume, instead, declined by 6% over the period. Some of the trade flows which contributed significantly to this decrease are the imports of squid from Argentina, Yellowfin tuna from Venezuela and hake from Namibia and South Africa.





**Figure 5.21.5 - Spanish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.21.6 shows the trends in the composition of imports by processing and preservation status. In 2012, almost 60% of the total seafood imports (in volume and value) were made up of frozen fish and fishery products. Fresh seafood contributed 21% in volume and 22% in value, while prepared/preserved products contributed 17% and 16%, respectively. While imports of frozen and fresh seafood decreased in volume and slightly increased in value from 2001 to 2012, trade of prepared/preserved products increased significantly in volume (+39%) and value (+189%). The significant increase of the imports of prepared/preserved products is a consequence of the changes in the orientation of the local processing industry, which in the first decade of the century became more dependent on imports of already processed or partially processed commodities to be finalised (further processed, packaged and branded) in Spain rather than on fresh raw materials (STECF, 2014c). A good example of this trend is the Spanish canning industry, especially of tuna products (where the exported amounts of prepared/preserved tuna almost correspond to the imported ones), but also of other products of fish and shellfish, such as anchovy, sardine or cephalopods, which are mostly sold in domestic markets (STECF, 2014c).

As a consequence, the contribution of prepared/preserved seafood to the total import volume increased from 10% to 16% (corresponding to an increase of the value share from 6% to 16%), while the contribution of frozen seafood contracted sharply (from 66% to 60% in volume and from 65% to 59% in value). The share of fresh and dried/salted/smoked seafood was rather stable over the period, both in volume and value.

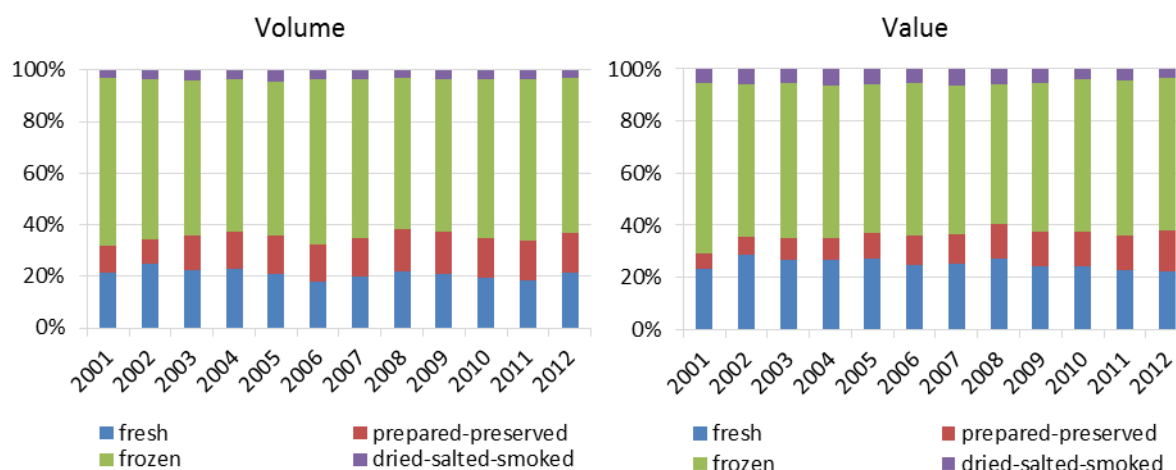
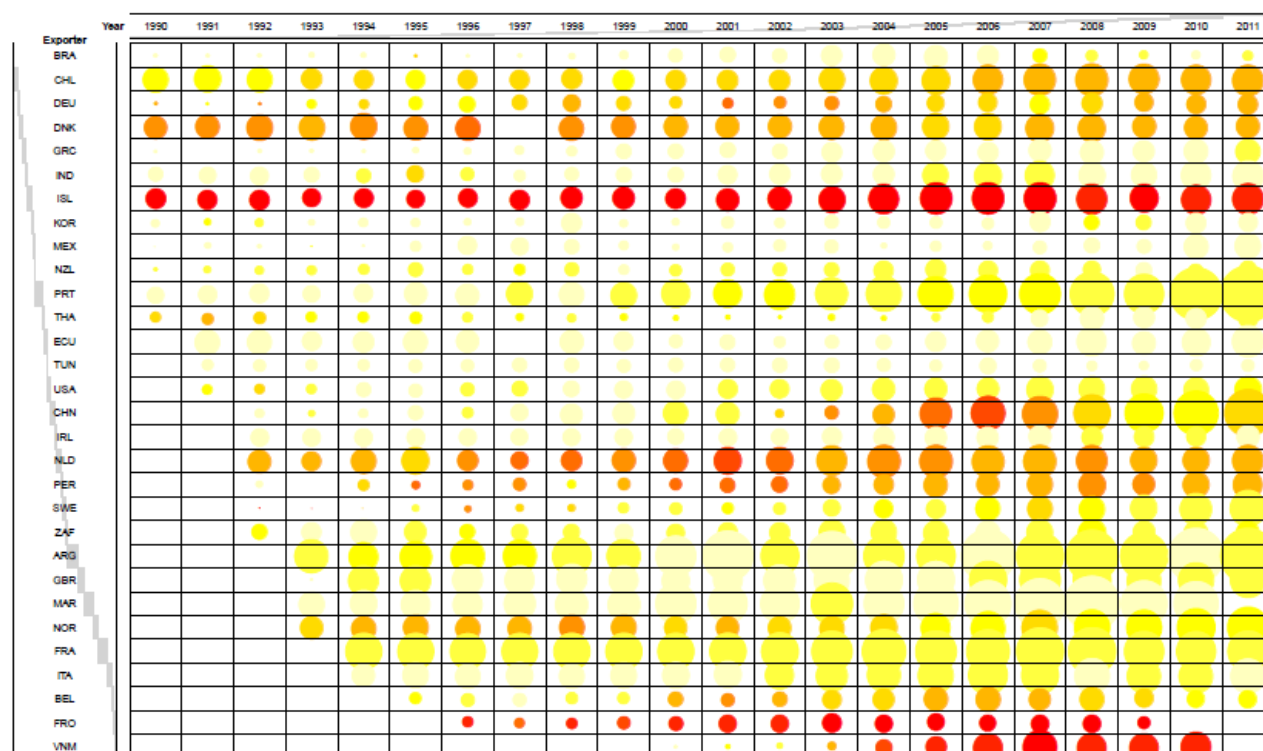


Figure 5.21.6 - Spanish seafood imports trends by type of products: share in volume (left) and value (right)

Imports from most relevant partners are mainly non-processed (Figure 5.21.7). Processed products contribute more than in average in the case of imports from Chile, Germany, Denmark, the Netherlands, Peru and China, and are the majority of the imports from Iceland (mostly made up of frozen cod) and Vietnam (mostly made up of frozen pangasius).

The figure shows an increasing shading of the bubbles over time for some countries, such as Chile and China. This resulted from the fact that the share of processed products in the total imports from these countries has increased. However, the shading for most of the suppliers is rather constant, reflecting a stable contribution of processed products in the imports.



**Figure 5.21.7 - Spanish seafood imports trends by main seafood suppliers and contribution of processed products to total import value (Note: the size is proportional to the import value and the shading to the share of processed products)**

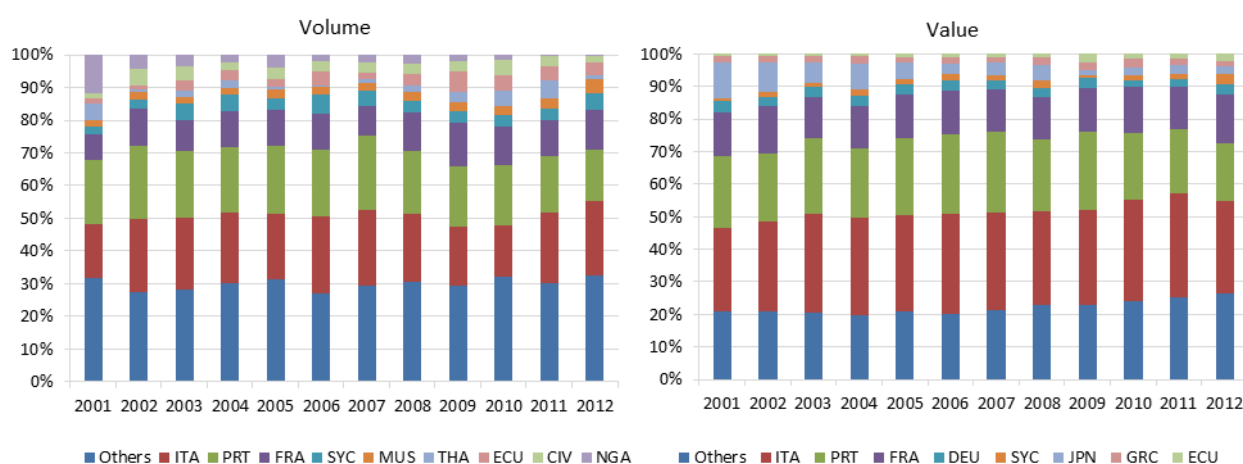
## Exports

In 2012, Spain exported around 916 K tonnes of seafood, valued at 2.7 B Euro. Seafood exports increased almost continuously both in volume and value. Overall, they rose 15% and 46%, respectively in terms of volume and value (at an average annual growth rate of 2% in volume and 4% in value). Exports of all types of products increased over the period, but prepared/preserved products increased the most. As already mentioned, during the last years, the Spanish fish processing industry oriented its activity towards the production of high value added products. Furthermore, due to economic crisis and the stagnation of the domestic demand, the industry has increased its efforts to exports these high added-value products to other MS, thus reducing its dependency on the internal demand (STECF, 2014c). In the same year, 63% of total exports of fish and fishery products in volume, and 73% in value, was directed to MS. These shares remained rather stable over the reference period.

Figure 5.21.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 70% of the total volume of seafood exported by Spanish and 78% of its value.

Seafood export volume was spread across several countries over the entire period. In 2012, the most relevant five were Italy (accounting for 23% of the total Spanish seafood export volume), Portugal (16%), France (12%), the Seychelles (5%) and the Mauritius (4%). The value of exports, instead, was rather concentrated, and mostly within the EU. In 2012, 67% of the total export value was attributable to the trade with Italy (28%), Portugal (18%), France (15%), Germany (3%) and the Seychelles (3%). Italy, France and Portugal were relevant trade partners for Spain also in 2001. However, trade with Portugal reduced by 9% in volume, while with Italy and France increased by 59% and 78%, respectively. Their relative shares in value changed significantly from 2001 to 2012. The contribution of exports to Portugal reduced from 22% to 18%, in favour of the exports to Italy (the share of which rose from 26% to 28%), France (from 13% to 15%) and several other countries.

Over the decade, the amount of seafood exported to Nigeria, which, in 2001, was the third most important partner in terms of volume, declined sharply (by 97%). Furthermore, exports to Japan, which imported 11% of the total value of Spanish exports in 2001, declined 54% in volume and 36% in value (in 2012, Japan contributed only 3% to the total value of Spanish seafood exports).





**Figure 5.21.8 - Spanish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

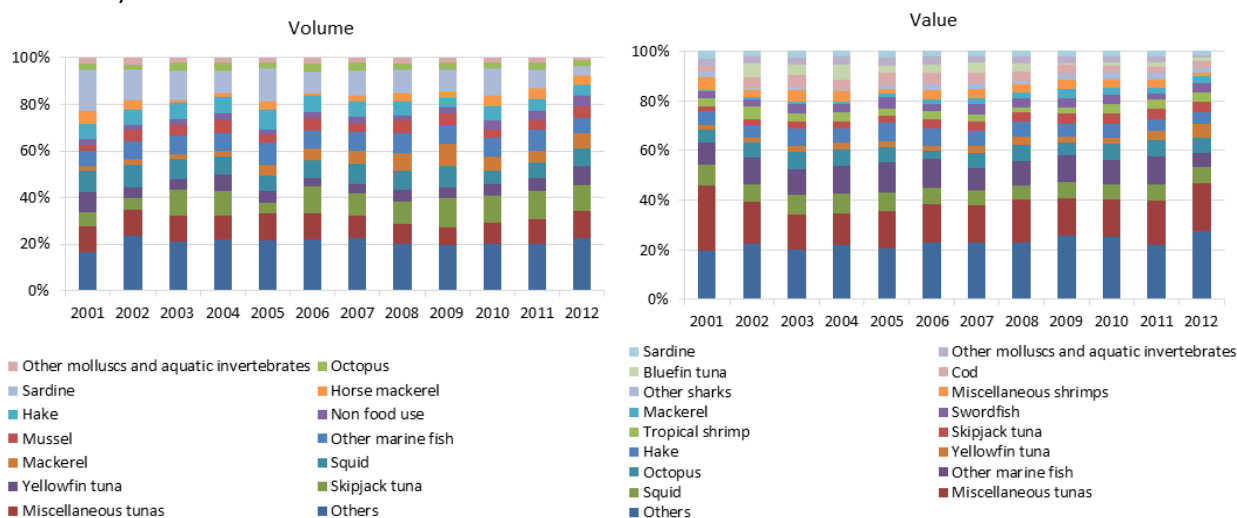
Figure 5.21.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 79% of the total volume of seafood exported by Spain and almost 77% of its value.

In 2012, 27% of the export volume was made up of miscellaneous tuna (11%), Skipjack tuna (11%) and Yellowfin tuna (8%), mostly exported to Italy, France and Portugal, within the EU, and to Ecuador, the Seychelles and the Mauritius, outside the EU. Exports of Squid and mackerel were the following largest in volume, contributing 8% and 7% of the Spanish seafood exports, respectively.

Tuna contributed significantly to total trade also in terms of value (miscellaneous tuna, Skipjack tuna and Yellowfin tuna contributed 19%, 6% and 4% of the total), as well as squid (6%), other marine fish (6%) and octopus (6%).

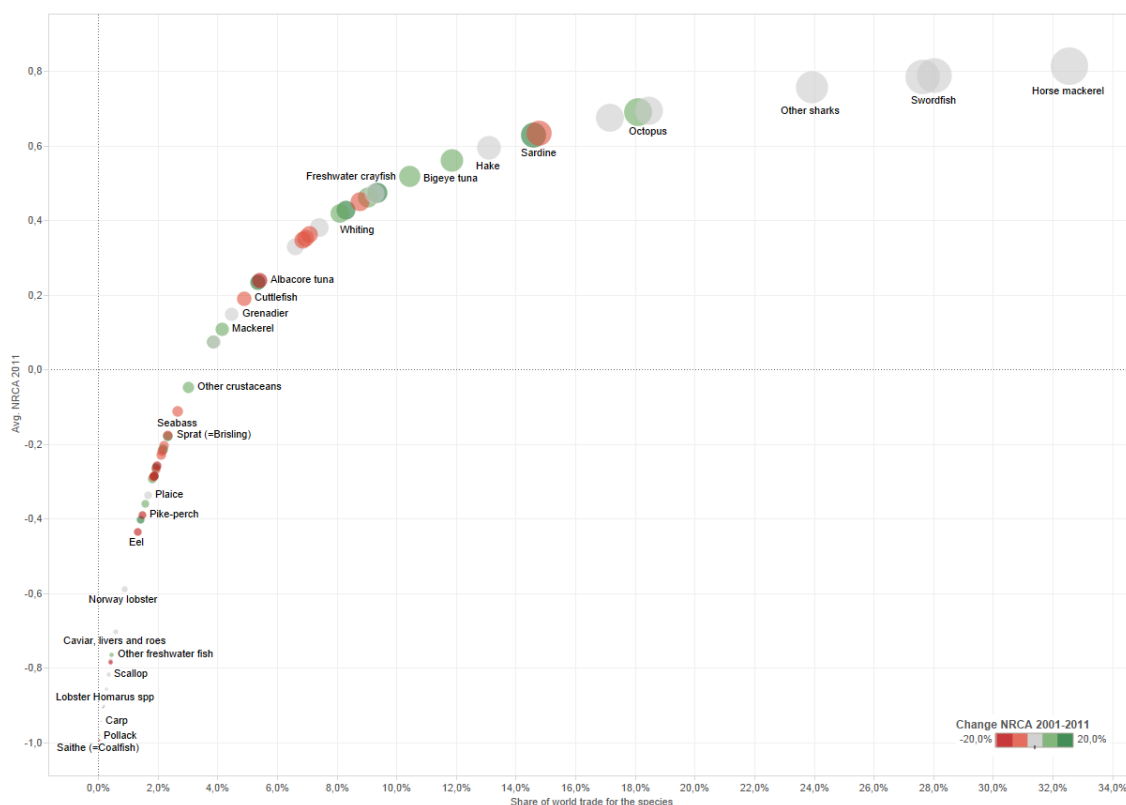
From 2001 to 2012, trade of Yellowfin tuna and squid remained rather stable in volume, export volume of octopus, miscellaneous tuna and other marine increased 19%, 17% and 10% respectively, while traded volumes of mackerel and Skipjack tuna rose sharply (by 314% and 119%, respectively).

In terms of value, exports of miscellaneous tunas, Squid and Other marine fish remained rather stable in average, while of octopus, yellowfin tuna e Skipjack tuna increased significantly (by 70%, four times and three times).



**Figure 5.21.9 - Spanish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

Spain has a comparative advantage higher than the rest of the world in several commercial species (Figure 5.21.10). As evidenced by trade flows, the highest comparative advantage on the international market correspond to Horse mackerel (NRCA = 0.81), Swordfish (NRCA = 0.79) and Skipjack tuna (NRCA = 0.78). For these three species, the NRCA remained stable between 2001 and 2011.



**Figure 5.21.10 - Normalized Revealed Comparative Advantage index (NRCA) for Spain, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

The largest part of the exports expansion occurred from 2005 to 2011 (Figure 5.21.11). Spain's exports expanded mostly at the intensive margin (i.e. exports of the same products to the same set of destination countries), but the activation of new trade flows contributed significantly to the exports changes in 2008 and 2012. Failures accounted for a not very significant part of the exports changes over the entire period.



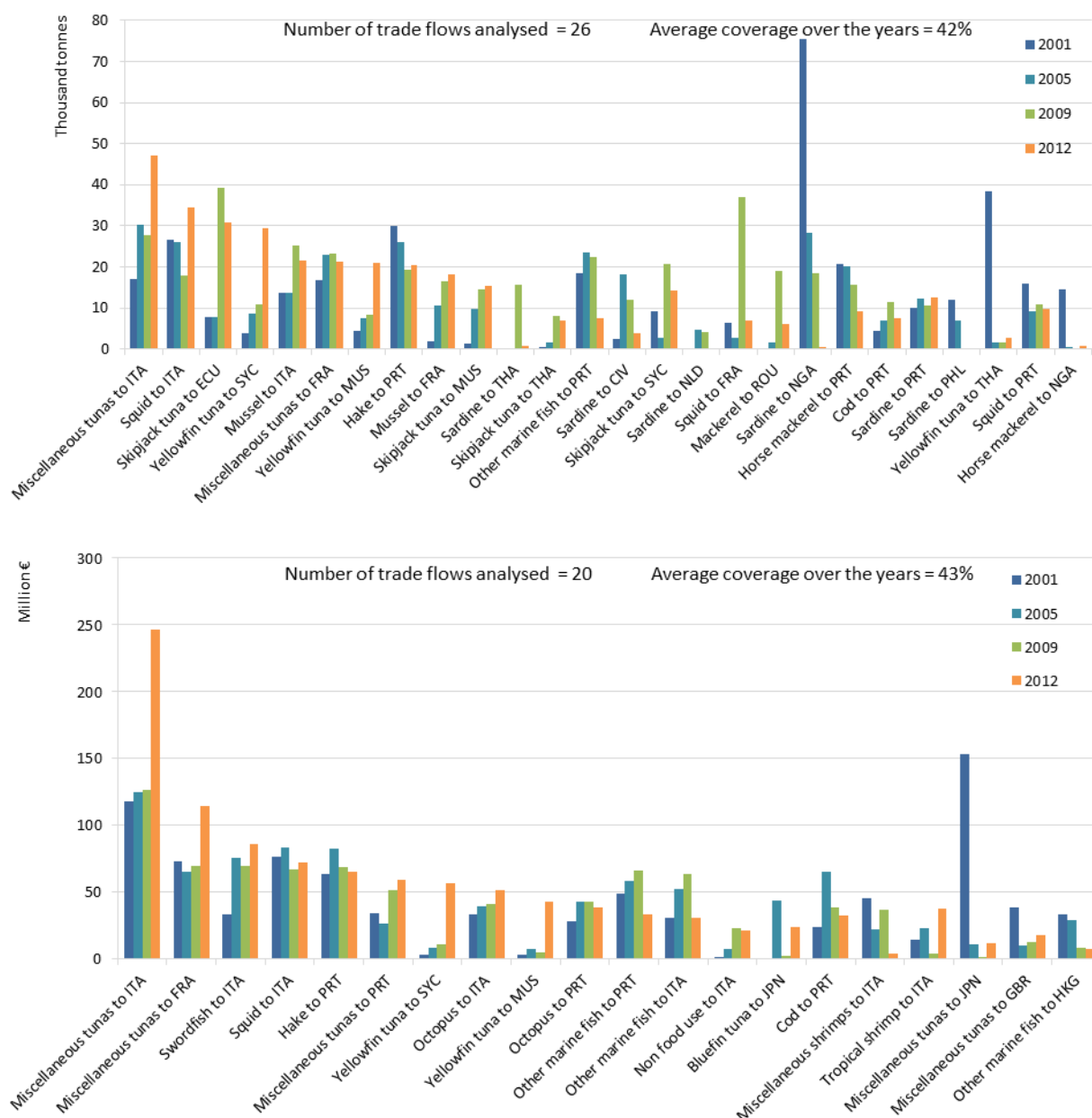
**Figure 5.21.11 - Spanish seafood exports margins: 2001-2012**

The following figures show the trend of the most relevant trade flows (combinations “country of destination-species”) for Spain, in terms of volume (top figure) and value (bottom figure). The list of the

most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists cover 42% of the overall trade in volume and 43% in value.

As mentioned above, seafood export volume increased 15% from 2001 to 2012. This resulted from the growth of several trade flows, such as the exports of miscellaneous tuna to Italy, Skipjack tuna to Ecuador and Yellowfin tuna to the Seychelles and the Mauritius (Figure 5.21.12).

Increase in trade of tuna, especially to Italy, France, the Seychelles and the Mauritius, highly contributed also to the rise of export value.



**Figure 5.21.12 - Spanish seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

As for seafood imports, the majority of exports are made up of frozen products (63% of the overall volume in 2012, corresponding to 52% of its value) (Figure 5.21.13). In 2012, Prepared/preserved and fresh products contributed 20% and 16% of the total in volume, respectively (25% and 20% in value).

Exports of all types of products increased significantly from 2001 to 2012, both in volume and value, and the highest increase corresponded to prepared/preserved seafood (+46% in volume and 53% in value). As a consequence, the contribution of prepared/preserved products to the total exports increased over the reference period, especially in terms of volume (from 16% in 2001 to 20% in 2012).

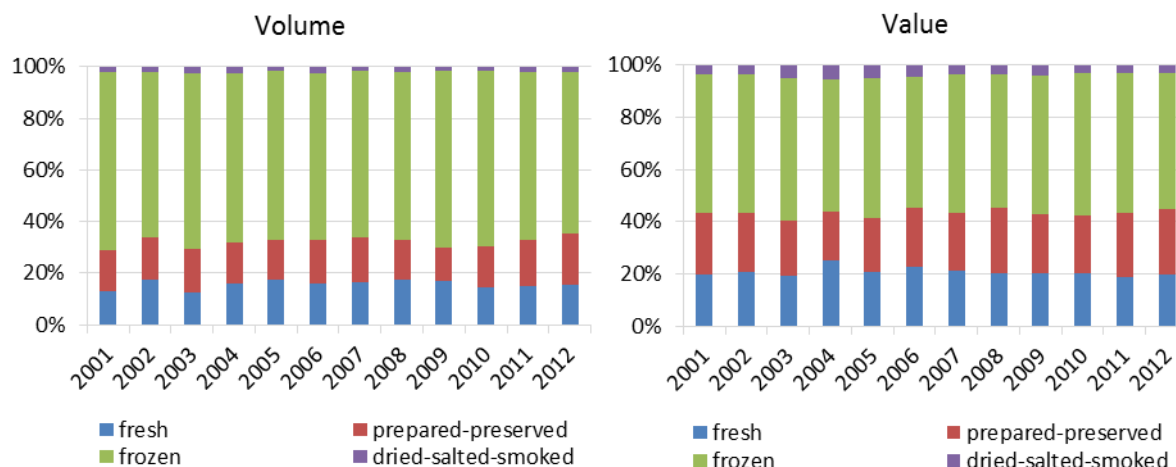


Figure 5.21.13 - German seafood exports trends by type of products: share in volume (left) and value (right)

Spanish seafood exports to its main countries of destination are mostly made up of non-processed products and the contribution of processed products to total exports remained rather stable over the reference period (Figure 5.21.14).

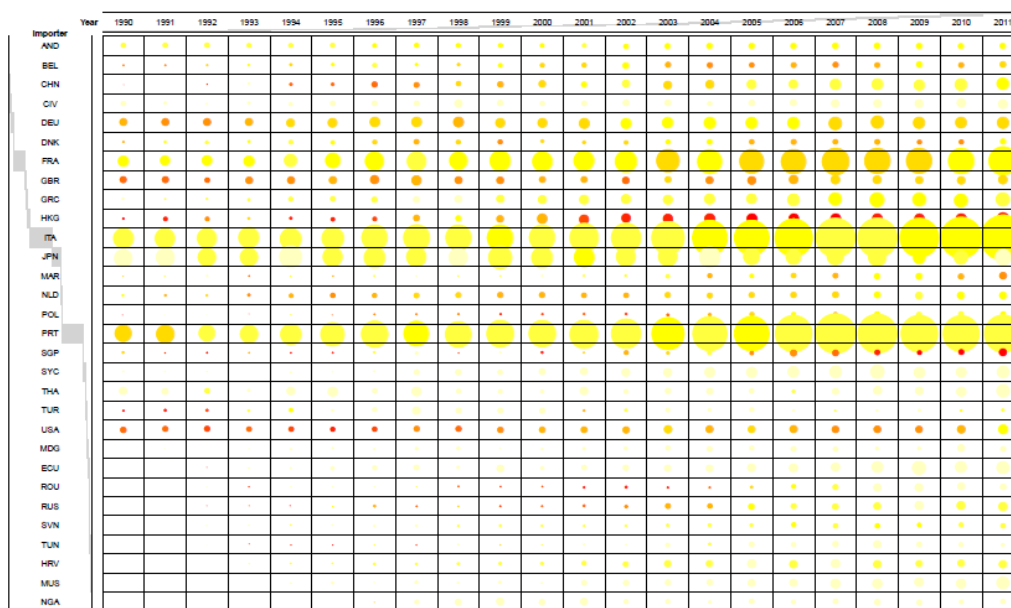


Figure 5.21.14 - Spanish seafood exports trends by main seafood suppliers and contribution of processed products to total export value (Note: size is proportional to the export value and the shading to the share of processed products).

## 5.22 Sweden

### Production

The Swedish fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Baltic Sea, Skagerrak, and Kattegat. In 2012, the Swedish fishing fleet consisted of 1,322 registered vessels. The major species, targeted by Swedish fleet are: Norway lobster, Northern prawn, Atlantic cod, Atlantic herring and European sprat. The total volume landed by the Swedish fleet in 2011 was 173 K tonnes of seafood, corresponding to a landed value of 117 M Euro.

The production of Swedish aquaculture in 2012 was 14,800 tonnes of fish, dominated by rainbow trout, which represented 79% of the total production. The production of Arctic char amounted to 1,849 tonnes, and of cultivated Blue mussels to 1,308 tonnes. Production volumes for 2012 indicate an increase of 2% compared to 2011. The value of aquaculture production was 49.8 M Euro in 2012, which also indicates an increase of 5% compared to 2011 (STECF, 2014b).

The total number of enterprises operating in the Swedish processing industry increased from 301 to 327, during the period 2008 to 2011, considering the enterprises processing fish as their main activity and not as their main activity.

The Swedish processing industry produces a wide range of fresh, chilled, canned and frozen products. These products are primarily based on herring, whitefish, prawn and roe. In the recent years, the processing rate has increased since the demand has shifted towards ready-to-eat products. Over the same period, the amount of whole fish sold has decreased. To be able to compete on the market, the Swedish fish processing enterprises, especially the larger ones, imports the largest part (approximately three quarters) of their raw material.

### Trade balance and exposure to trade competition

The trade balance of seafood for Sweden was negative almost during the entire analysed period. The export value exceeded the import value only in 2010, when the imports suddenly decreased, while the exports continued their growth (Figure 5.22.1). The highest trade deficit was observed in 2007, when the import value of seafood was higher than the exports one by 73%. On the other hand, the difference between the weights of imported and exported production has fluctuated around 0, with the highest positive difference (47%) in 2010 and the lowest (-27%) in 2004.

Given its geographical location, Sweden is a country of transit of seafood to the EU market and, in particular, is the major supplier of fresh Norwegian salmon to the EU markets. This is confirmed by Figure 5.22.1, which shows, on the one hand, the very high relevance of extra-community imports over the total imports and, on the other, a very small contribution of extra-community exports to the total exports. During the analysed period, the share of imports from third countries increased from 79% to 84%, while the exports to MS remained stable (95-98%).

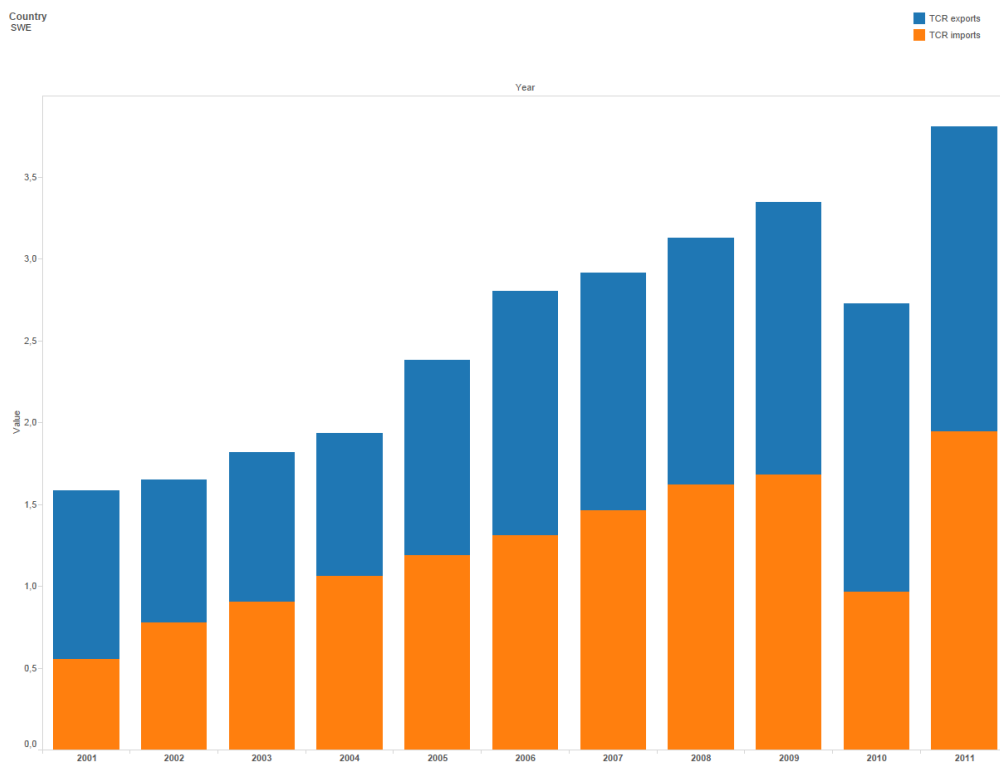
Import volume of salmon has increased by almost 30 times between 2008 and 2012 and, it contributed almost 70% of the total Swedish seafood imports, in 2012. After the accession to the EU, Sweden has become a transit country for Norwegian fish, especially salmon. In 2007, 15% of total EU imports of fish and fishery products entered Sweden and, in 2011 this share had increased to 58% (STECF, 2014c). According to Swedish estimates, nearly 80 per cent of the value of the fish that was included in the Swedish trade statistics 2009-2011 was re-exported to other countries, most likely without going through any processing in Sweden (STECF, 2014c).

The increase of the imports, which occurred over the reference period, resulted also from the negative trend of the domestic landings. From 2008 to 2012, national landings reduced by 36%, going from 214 K tonnes of fish to less than 180 K tonnes. This decline reflects the shrinking of the fishing fleet size which happened over the same period (number of vessels, vessel tonnage and vessel power reduced by 12%, 30% and 20%, respectively), mostly due to the EU-subsidized scrapping campaign and to the introduction of an ITQ system in the pelagic fishery (STECF, 2014c).



Figure 5.22.1 - Swedish seafood trade balance trends: value (left) and volume (right)

Swedish trade flows are quite high compared to the apparent consumption of seafood in the country (Figure 5.22.2). This is also confirmed by the exposure to trade competition index, which is calculated as the ratio between the trade value and the total seafood consumption in the country. In 2011, Swedish imports exceeded the consumption by 95% (TCR imports=1.95) and exports exceeded consumption by 86% (TCR exports = 1.86).



**Figure 5.22.2 – Trend of the exposure to trade competition index for Sweden**

### Imports

Sweden imported around 657.6 K tonnes of fish and seafood in 2012, compared to the imports of 144.0 K tonnes in 2001. The value of its fish imports also increased from 765 to 2,766 M Euro. The increase of import value was mainly driven by the changes in the imports structure. The average annual growth rate of the import value was around 16%, while it was equal to 20% for the import volume.

Figure 5.22.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 93% of the total volume of seafood imported by Swedish and 94% of its value.

The geographical distribution of the imports flows did not change significantly over the period 2001-2012, with extra EU imports representing 84% of the total import value during the entire period. Seafood imports from Norway contributed 76% of the total value of imports, in average over the period 2008-2012, but their share picked up to 82% in 2012. In the same year, the volume of imports from Norway represented 84% of the total volume of imports.

The other major importing countries for the Swedish market are: Denmark (contributing 6.4% of the total seafood import volume and 7.4% of its value, in 2012), China (1.2%, 1.7%) and Netherlands (0.7%, 1.1%).

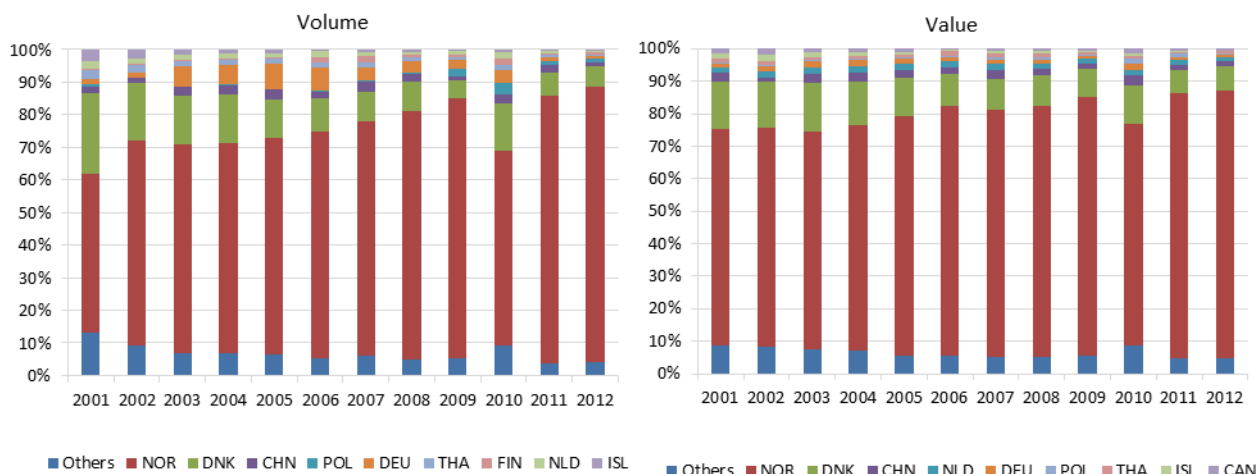


Figure 5.22.3 - Swedish seafood imports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.22.4 shows the shares in the trade of the most relevant commercial species. The imports of the species which were among the 10 most imported in any year of the period 2001-2012 cover, in average over the years, more than 91% of the total volume of seafood imported by Swedish and almost 92% of its value.

The most important imported species is salmon, which is traded almost entirely from Norway (only a very small share of imports comes from Denmark). Norwegian farmed salmon is one of the most imported raw materials used by the Swedish processing industry. In 2012, the imports of this species represented 69% and 67% of the total Swedish seafood imports, in volume and value respectively. Around 95% of the total imported salmon is fresh, 5% is frozen. The other most relevant species imported by Sweden are: cod (contributing 9.3% of the total volume of imports and 11.2% of their value, in 2012), shrimps (4.2% and 6.5%) and herring (3.0% and 1.5%).

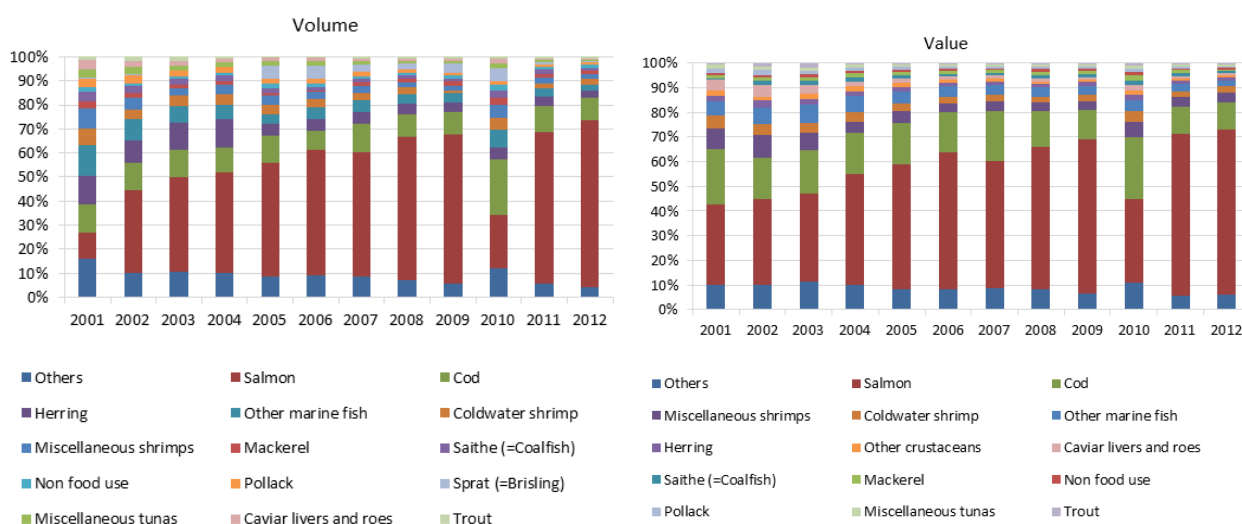


Figure 5.22.4 - Swedish seafood imports trends by most relevant commercial species: share in volume (left) and value (right)



Figure 5.22.5 shows the trend of the most relevant imports flows (combinations “country of origin-species”) for Sweden, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover, in average, 79% and 80% of the overall trade, respectively in volume and value.

Imports of fresh salmon and at, a lower extent, of dried/salted/smoked cod from Norway were the major drivers of the seafood imports growth occurred in Sweden over the reference period.

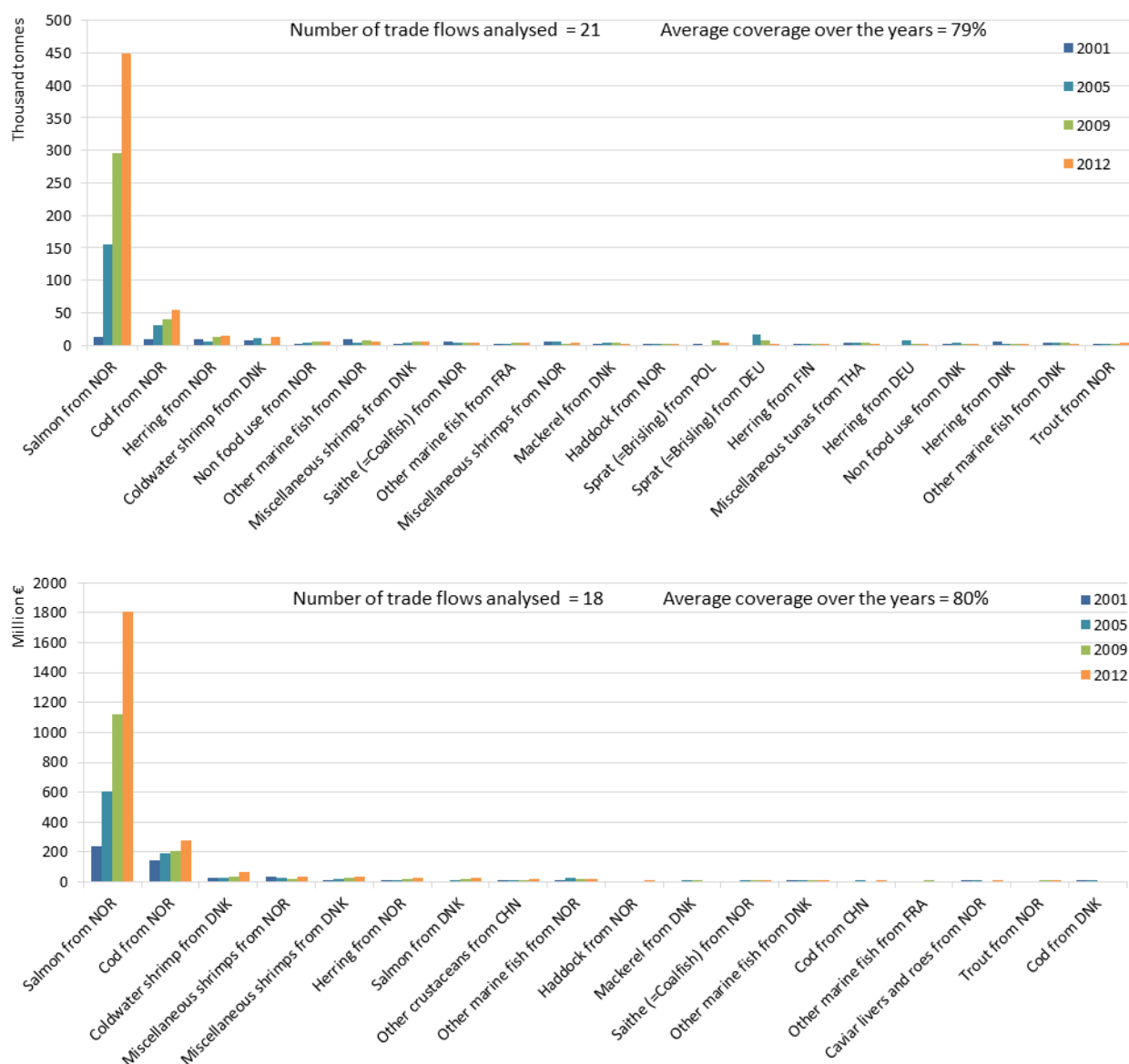


Figure 5.22.5 - Swedish seafood imports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.22.6 shows the trends in the composition of imports by processing and preservation status. The sharp decrease of the fresh fish (mainly salmon) imports in 2010 might be explained by the increase of the salmon price, due to shortage of supply on the global market in 2010. Cod is the second major species imported to Sweden from Norway. In 2012, 63% of the total volume of cod imports was made up of dried/salted/smoked products, the rest was equally distributed between fresh and frozen products.

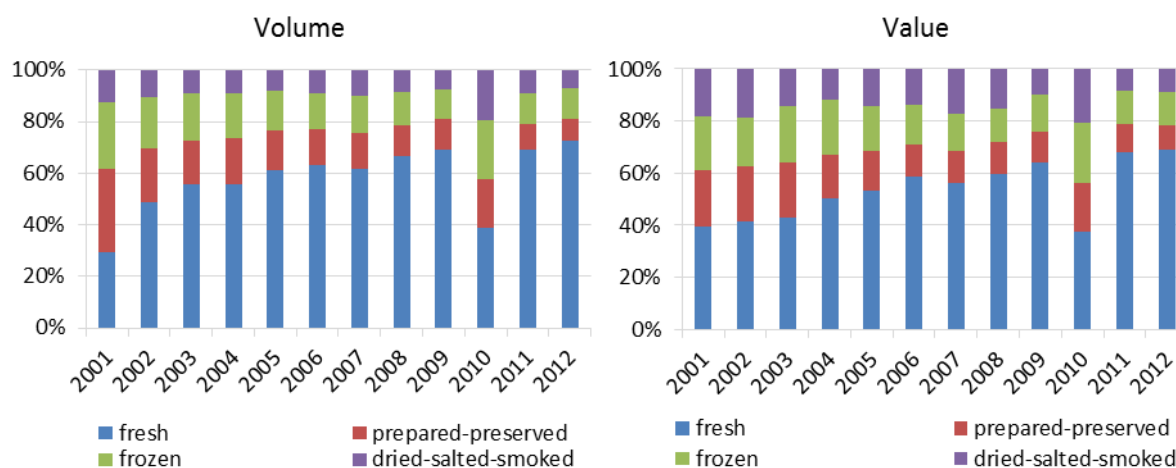


Figure 5.22.6 - Swedish seafood imports trends by type of products: share in volume (left) and value (right)

## Exports

Swedish exports amounted to 2,166 M Euro in 2012, corresponding to a total volume of 553 K tonnes. Exports increased every year of the reference period, except in 2011. The average annual increase of export value was 15.6% in the period 2001-2012, while the average increase of volume was around 8% p.a..

Figure 5.22.7 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries covered, in average, 85% of the total volume of seafood exported by Swedish and 81% of its value.

As Sweden has specialised in re-exporting Norwegian products to the EU markets, the share of intra EU exports has increased continuously over the reference period, going from 95% in 2001 to 97% in 2011.

In 2012, the major countries of destination of Swedish seafood exports were France (contributing 21% of the total value of Swedish exports and 18% of their volume), Poland (20%, 21%), Portugal (9%, 6%), Spain (8%, 8%), the United Kingdom (7%, 7%) and Denmark (6%, 16%). Poland started to become an important destination for the exports of Swedish salmon after its accession to the EU in 2004. Exports to Poland increased since 2004, while the value of the trade with Germany declined over the reference period. The increase of relevance for the exports for salmon is in term of volume, rather than in value indicating that there is no re-processing and added value produced. The exports of salmon by Sweden consist mainly in transit of Norwegian salmon towards re-processing activities in Poland.

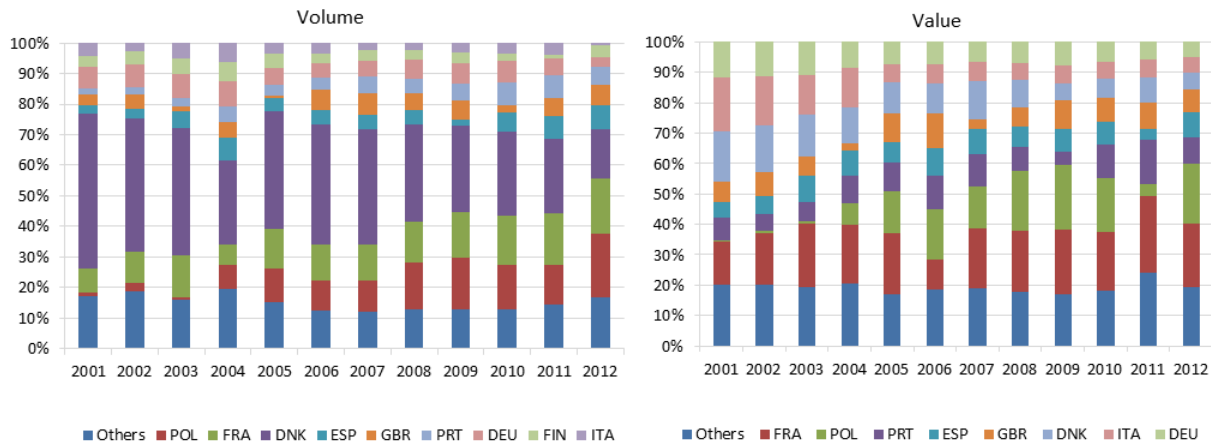


Figure 5.22.7 - Swedish seafood exports trends by most relevant suppliers: share in volume (left) and value (right)

Figure 5.22.8 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, Swedish seafood exports almost entirely, both in volume and value.

Fresh salmon and dried cod contributed the most to the overall seafood exports, as well as to the total imports. The main countries of destination for salmon are Poland, France, Spain and the United Kingdom, while Portugal and Spain are the main ones for dried cod.

The share of salmon reached 75% of the overall export value in 2012, corresponding to 66% of volume. Cod represented another 11% of value and 8% of volume. Low valued small pelagic species, traditionally caught by Swedish fleets – herring and sprat, contributed 3% in value and 16% in volume.

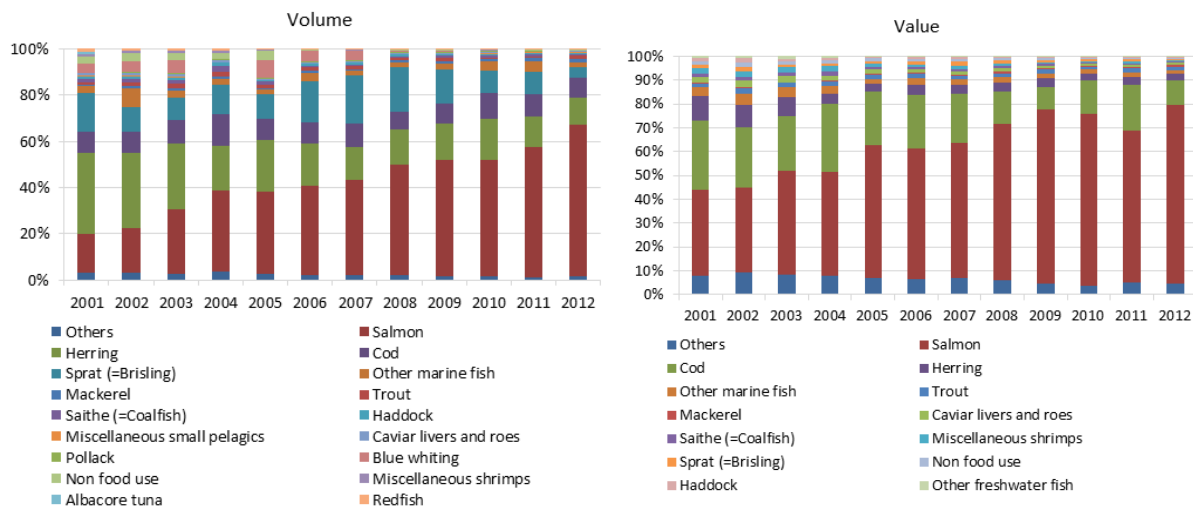
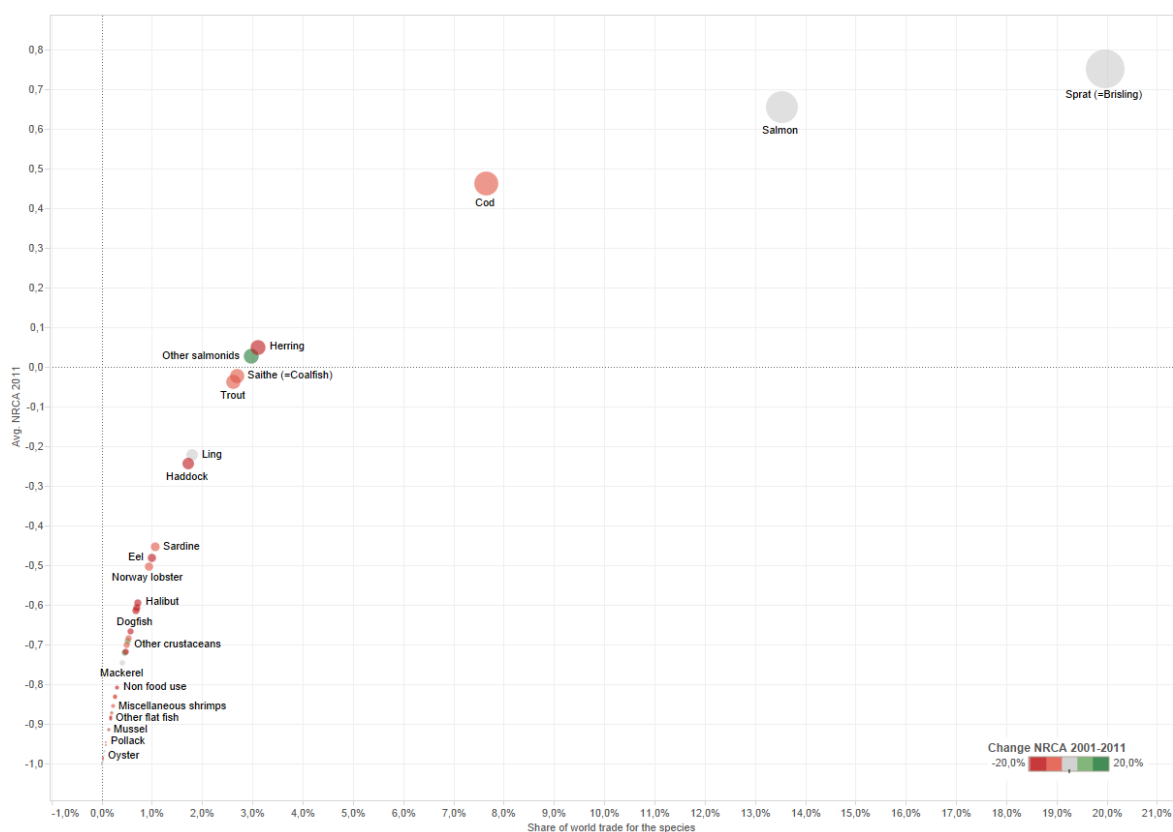


Figure 5.22.8 - Swedish seafood exports trends by most relevant commercial species: share in volume (left) and value (right)

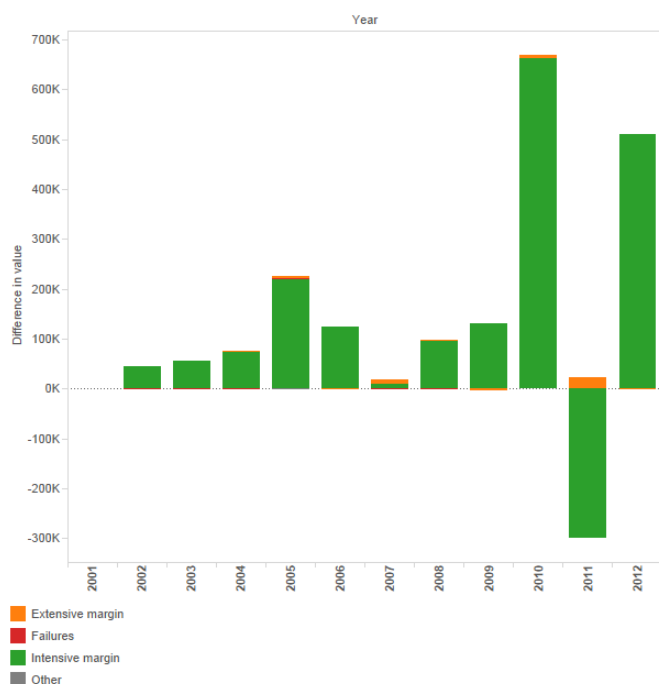
Figure 5.22.9 suggests that Sweden has a comparative advantage in sprat, salmon, cod and herring exports. The comparative advantage in cod and salmon exports derives from a strategic role of the country being a transit from Norwegian producers to European market. The trade of sprat and herring depends on the available fishing rights; therefore the competitive advantage in the global trade of this species depends on the status of the stocks and the countries shares of fishing rights in the Baltic Sea region.



**Figure 5.22.9 - Normalized Revealed Comparative Advantage index (NRCA) for Sweden, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

As stated before, Sweden has a privileged role in exporting Norwegian products to European market. The exports expansion occurred over the period 2001-2012 has been mostly at the intensive margin (expansion of existing trade flows to existing markets) and was concentrated especially in 2010 and 2012 (Figure 5.22.10).

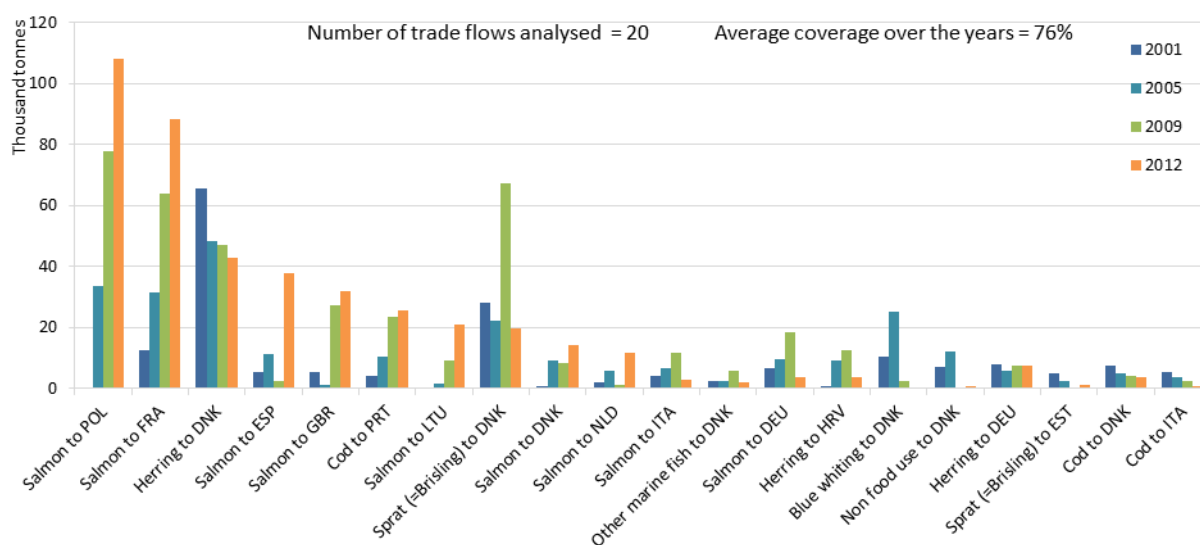
The exports growth in 2010 and the reduction in 2011 can be mainly attributed to changes in prices for the exports of salmon to Poland.



**Figure 5.22.10 – Swedish seafood exports margins: 2001-2012**

The following figures show the trend of the most relevant trade flows (combinations “country of destination-species”) for Sweden, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 76% and 72% of the overall trade, respectively in volume and value.

As in most of the cases for Baltic countries the major share of the trade flow to Denmark is represented by herring and sprat landings for fish meal and fish oil (Figure 5.22.11). Swedish exports increased by more than 2 times in volume and 4 in value over the reference period. This increase can be attributed mostly to the growth of exports of fresh salmon to the EU markets, especially to its main countries of destination (i.e. Poland, France, the United Kingdom and Spain), but also to other MS. The increase of the exports of dried cod, especially to Portugal, has also contributed significantly.



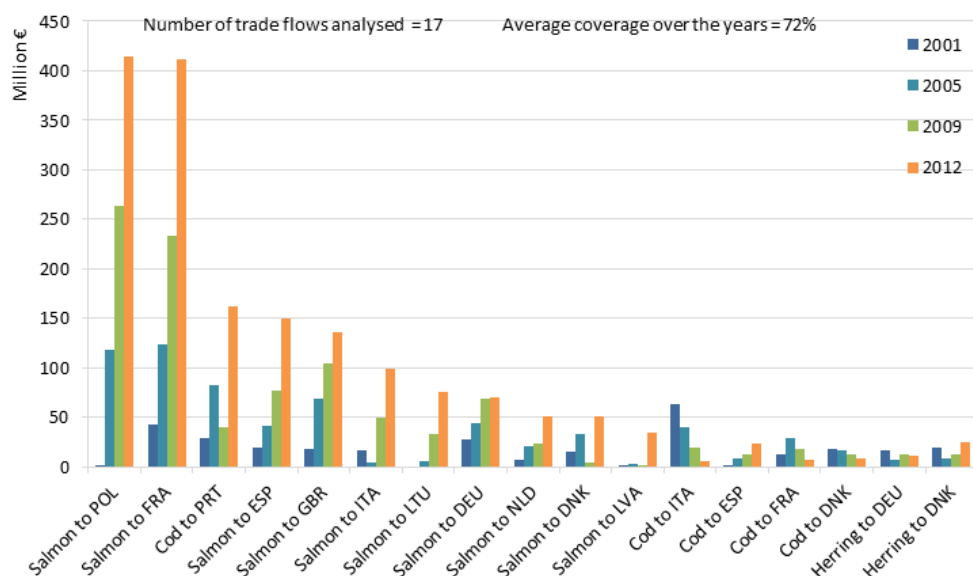


Figure 5.22.11 - Sweden seafood exports trends by most relevant trade flows: volume (top) and value (bottom)

Figure 5.22.12 shows the trends in the composition of exports by processing and preservation status. The relevance of fresh products over the total exports reflects the abundance of fresh salmon. Dried/salted/smoked products are also rather relevant, much more than for several other MS, mostly due to cod. Export volume of all the categories of seafood increased significantly over the reference period, except of prepared and preserved products, which reduced due to the decline of the trade of herring and other marine fish. In terms of value, the exports of all types of seafood increased; however exports of fresh salmon increased by 7 times from 2001 to 2012, while of the other seafood by 86%. This explains why the contribution of fresh products to the total export value is much higher at the end of the reference period than at the beginning.

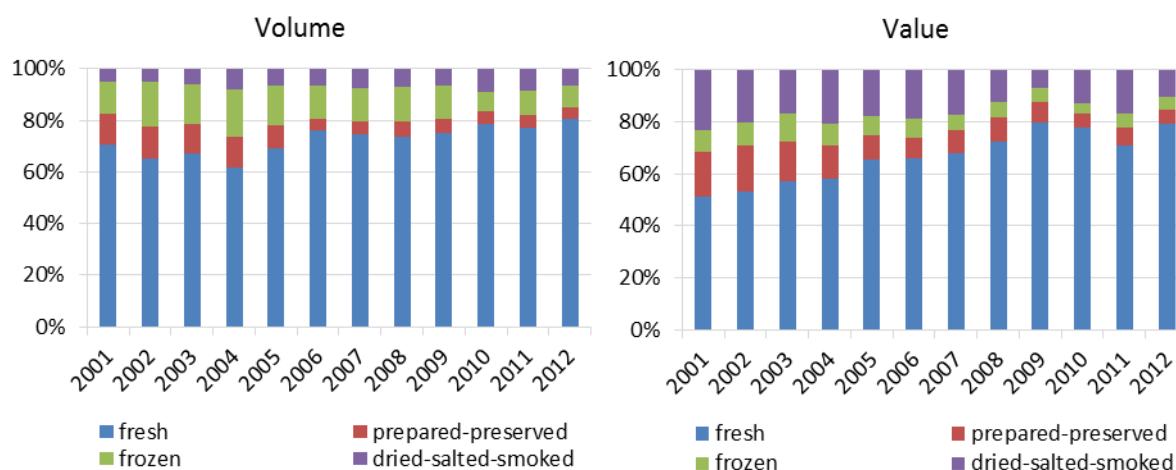


Figure 5.22.12 - Swedish seafood exports trends by type of products: share in volume (left) and value (right)

As stated before, the majority of Swedish seafood exports are made up of fresh salmon, destined to different MS, mostly Poland, France, Spain and the United Kingdom. Exports to Portugal, instead, are mainly processed, as around 80% of them is made up of dried cod (Figure 5.22.13).



Figure 5.22.13 - Swedish seafood exports trends by main seafood suppliers and contribution of processed products to total export value (the size is proportional to the export value and the shading to the share of processed products).

## 5.23 The United Kingdom

### Production

The United Kingdom fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Bering Sea, the North Sea, the West of Scotland, the English Channel and Western Approaches. In 2011, it caught 605 K of fish, 33% of which was mackerel. Other relevant commercial species were herring (10% of the total catches), scallop (9%), lobster (6%) and haddock (5%).

Aquaculture industry in the United Kingdom is concentrated on Atlantic salmon, representing 89% of the total farmed production in 2011 (corresponding to 177 K tonnes of fish), shellfish (around 8% of the total aquaculture production in 2011) and rainbow trout (3%).

The processing industry includes firms processing mixed species (white fish, shellfish and pelagic species), representing 52% of the total in terms of share of employment, firms processing exclusively demersal species (21%), only shellfish (20%) and only pelagic (8%) (Seafish, 2012).

### Trade balance and exposure to trade competition

The United Kingdom is a net importer of fish and fisheries products and its trade balance for seafood in 2012 was equal to -352 K tonnes, corresponding to almost -1.3 B Euro. Trade deficit in volume oscillated significantly over the reference period and, in 2012, it was 30% lower than in 2001. On the contrary, it deteriorated 14% in value (Figure 5.23.1).

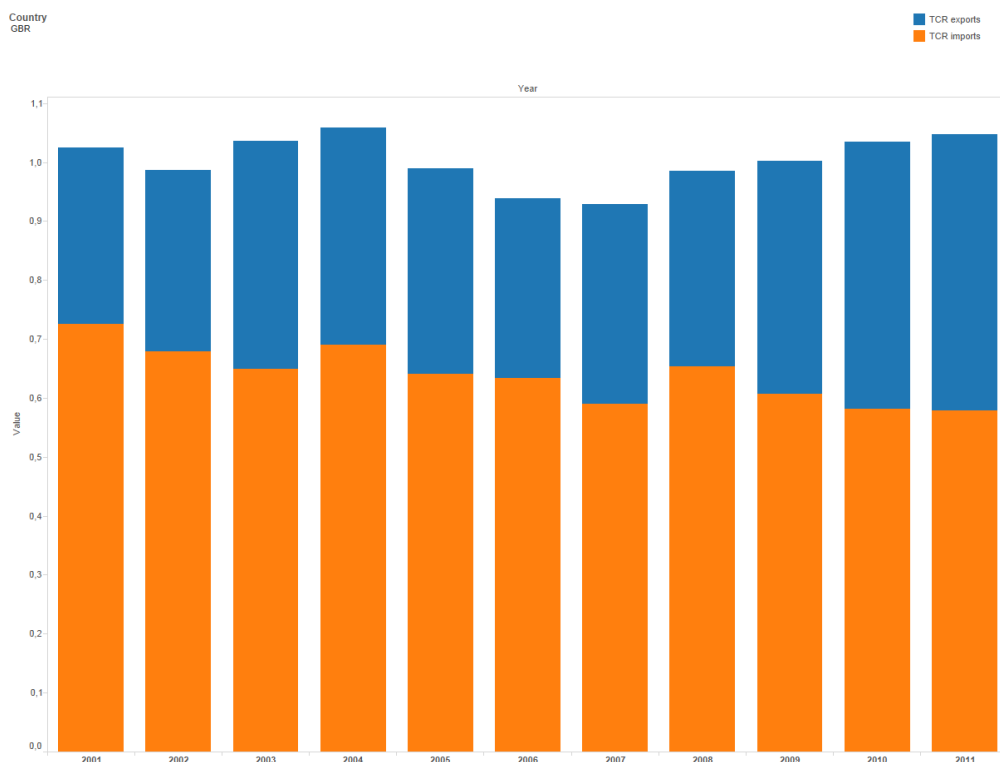
In 2012, the majority of seafood imports originated outside the EU, while the majority of exports was traded within the Community. The share of intra-community imports increased from 2001 to 2012 both in volume and value, while the contribution of intra-community exports declined over time.





**Figure 5.23.1 – The United Kingdom seafood trade balance trends: value (left) and volume (right)**

The United Kingdom is one of the MS which have the lowest exposure to trade competition. However, the values assumed by the TCR index increased continuously from 2007 (TCR = 0.93) to 2011 (TCR = 1.05) (Figure 5.23.2). Trade competition has been mostly driven by imports during the entire period, even if the contribution of exports increased significantly over the years (from around 30% of the total in 2001 to almost half in 2012).



**Figure 5.23.2 - Trend of the exposure to trade competition index for the United Kingdom**

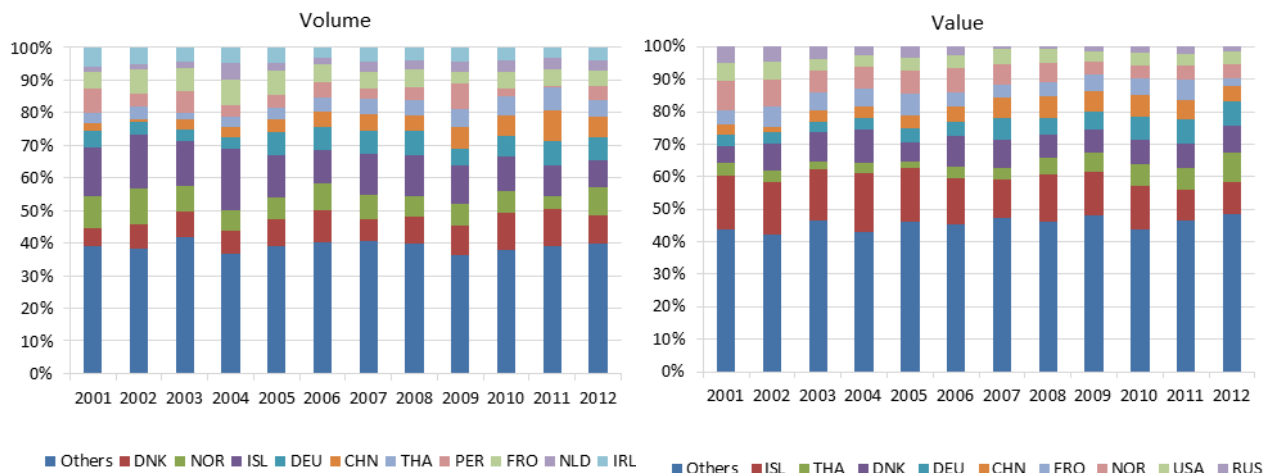
### Imports

The United Kingdom imported 774 K tonnes of seafood in 2012 (valued at 2.7 B Euro). Seafood import volume fluctuated significantly over the reference period and decreased 9% overall. On the other hand, its value increased 20%, at an annual rate of 2%. As mentioned above, in 2012, the majority of seafood imports originated outside the EU (63% of the total, in terms of volume, and 67% in value), but the contribution of intra-community imports was higher than in 2001, both in volume (34% vs. 23%) and value (33% vs. 21%).

Figure 5.23.3 shows the shares of the seafood imports from the most relevant countries (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood imports from these countries cover, in average over the years, 61% of the total volume of seafood imported by the United Kingdom and 54% of its value.

Fish trade patterns for the United Kingdom are very complex. In 2012, Denmark was the most relevant seafood supplier in terms of volume of imports, accounting for 9% of the total. The other most relevant partners were Norway (accounting for 9% of the total trade volume), Iceland (8%), Germany (6%) and China (6%). In terms of value, the five most relevant partners were Iceland (10%), Thailand (9%), Denmark (8%), Germany (7%) and China (5%).

Trade patterns changed significantly over the reference period. Seafood imports from Iceland and Norway contracted, both in volume and value, while imports from Denmark, Germany and several countries which were less relevant in the first years of the reference period increased sharply. Some examples are Sweden and Poland, within the EU and China, Thailand, and Vietnam, outside the EU.

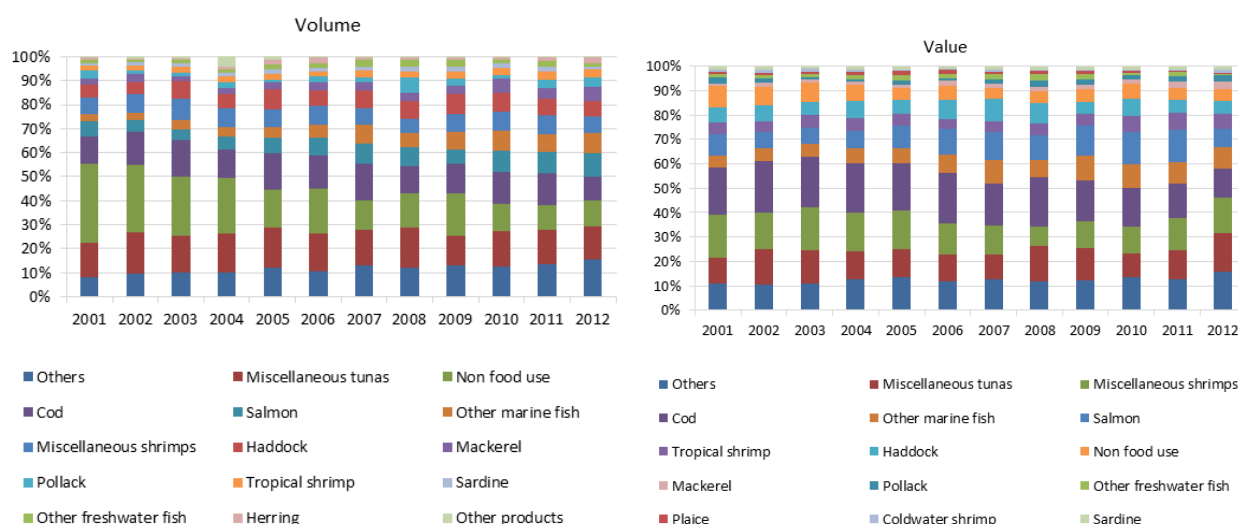


**Figure 5.23.3 - The United Kingdom seafood imports trends by most relevant suppliers: share in volume (left) and value (right) coverage of the trade with the selected partners: 61% in volume and 54% in value).**

Figure 5.23.4 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The imports of these species cover, in average over the years, more than 88% of the total volume of seafood imported by the United Kingdom and almost 88% of its value.

In 2012, 14% of the total the United Kingdom seafood import volume was made up of miscellaneous tuna, 11% of fish for non-human consumption, 10% of cod, 10% of salmon 9% of other marine fish and 7% of miscellaneous shrimps. miscellaneous tuna, miscellaneous shrimps, cod other marine fish and salmon contributed the most also to the overall value of imports (contributing 16%,14%, 12%, 9% and 7%, respectively), while fish for non-human consumption contributed only 5%.

Imports of other marine fish increased significantly over the period, 162% in volume and 121% in value. Trade of salmon also increased (37% in volume and 6% in value), while tuna increased in value (+81%) but decreased 9% in volume. Imports of cod and shrimps, instead, declined both in volume and value. On the other hand, imports of fish for non-food uses, which contributed 33% of the United Kingdom seafood import volume in 2001, contracted sharply over the reference period (by 70% in volume and 36% in value), as well as its contribution to overall the United Kingdom imports (from 33% to 11% in volume and from 9% to 5% in value).

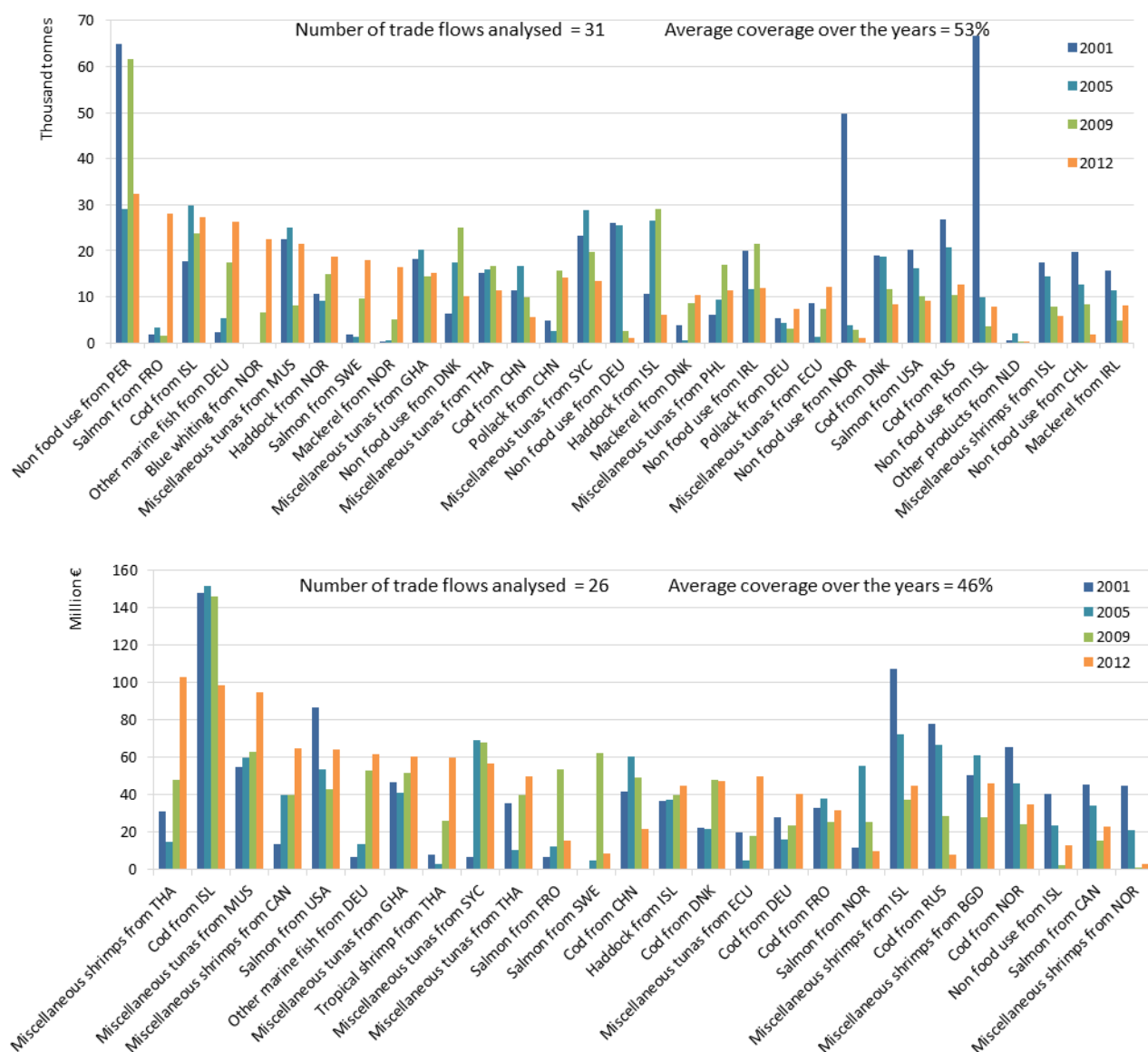


**Figure 5.23.4 - The United Kingdom seafood imports trends by most relevant commercial species: share in volume (left) and value (right) (coverage of the trade of the selected species: 88% in volume and 88% in value).**

Figure 5.23.5 shows the trend of the most relevant trade flows (combinations “country of origin-species”) for the United Kingdom, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 53% and 46% of the overall trade, respectively in volume and value.

As mentioned, imports of fish for non-food uses declined sharply from 2001 to 2012. This resulted mostly from the contraction of the trade with Iceland, Peru and Norway. On the other hand, other marine fish is one of the seafood items behind the increased trade with Germany. The figures do not capture the marked increase in the imports of herring from Denmark, which is behind most of the increased trade with this country both in terms of volume and value.

As observed before, imports from several countries which were not very relevant at the beginning of the decade rose sharply, for example Sweden. The trade with this country rose mostly as a result of the increased trade of salmon (imports of Swedish salmon increased significantly in volume over the period, while in value fluctuated markedly). Another example is Thailand, whose exports of miscellaneous and tropical shrimps to the United Kingdom have increased sharply in value.



**Figure 5.23.5 - The United Kingdom seafood imports trends by most relevant trade flows: volume (top) and value (bottom)**

Figure 5.23.6 shows the trends in the composition of imports by processing and preservation status. In 2012, around 43% of the total seafood imports were made up of prepared and preserved products (corresponding to 47% of their total value), 30% of them were frozen (33% in value) and 25% fresh (18% in value). From 2001 to 2012, the volume of fresh seafood imports almost doubled, of frozen imports remained stable and of prepared/preserved products decreased. As a consequence, the relative shares also changed significantly, especially for fresh imports (increased from 12% to 25%) and prepared/preserved imports (reduced from 61% to 43%).

In value, the imports of frozen seafood fluctuated over the period. On the other hand, trade of fresh and prepared/preserved products increased, making their relative shares increasing from 14% to 18% and from 42% to 47%, respectively.

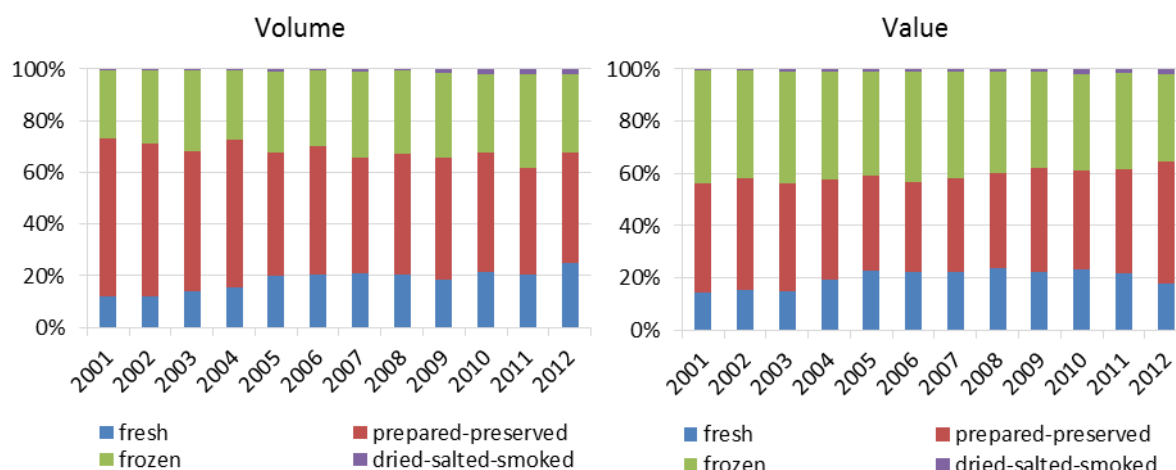


Figure 5.23.6 - The United Kingdom seafood imports trends by type of products: share in volume (left) and value (right)

Imported products are mainly processed, regardless the country of origin. However, imports from Norway (mostly made up of frozen cod and haddock) and from Sweden (mostly made up of fresh salmon, fresh herring and frozen mackerel) are mainly non-processed (Figure 5.23.7).

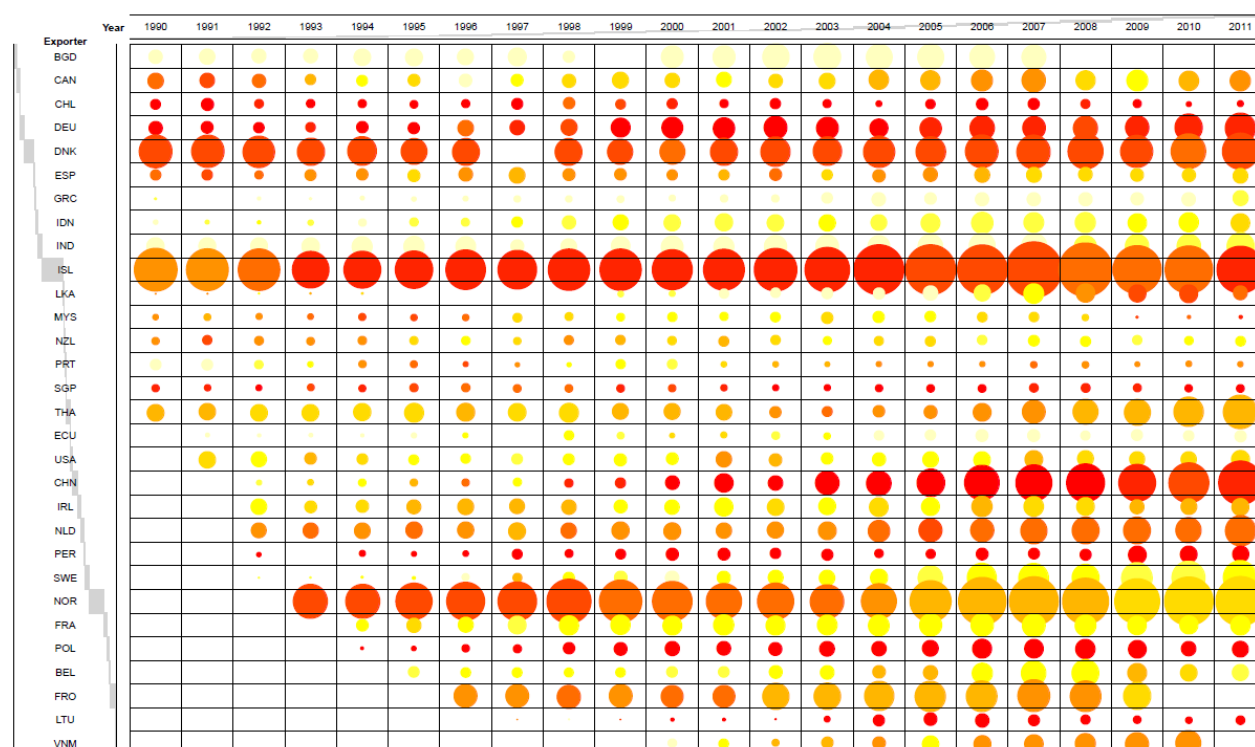


Figure 5.23.7 - The United Kingdom seafood imports trends by main seafood suppliers and contribution of processed products to total import value (Note: the size is proportional to the import value and the shading to the share of processed products).

## Exports

Exports of fish and fishery products from the United Kingdom increased from 357 K tonnes in 2001 (valued at 1.1 B Euro) to 422 K tonnes in 2012 (valued at 1.4 B Euro).

The majority of the United Kingdom seafood exports are directed within the EU (69% in volume, corresponding to 78% of their value); however the share of products exported outside the community

increased significantly over the reference period (from 21% to 29% in terms of volume and from 15% to 22% in value).

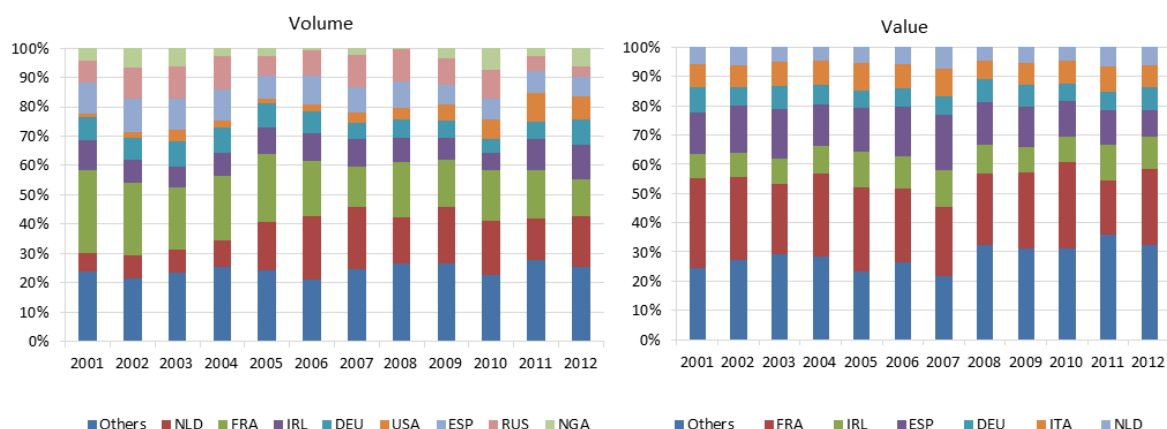
Figure 5.23.8 shows the shares of the seafood exports to the most relevant partners (countries which were among the “top 5” partners in any year of the period 2001-2012). Seafood exports to these countries cover, in average, 75% of the total volume of seafood exported by the United Kingdom and 71% of its value.

Seafood exports in 2012 were spread across several countries, more than in 2001. The main five countries of destination in quantities accounted for around 50% of the total the United Kingdom export volume in 2012, against a share of 64% in 2001. The corresponding share in value decreased from 70% to 62% over the period.

In terms of volume, the Netherlands was the main country of destination for the United Kingdom exports in 2012, importing 17% of the overall volume of the United Kingdom seafood exports. It was followed by France (accounting for 13% of the total volume), Ireland (12%), Germany (8%) and USA (8%). In value, the most relevant five countries were France (26%), Ireland (11%), Spain (9%), Germany (8%) and Italy (8%).

With the only exception of France, which reduced the volume of its imports from the United Kingdom by 47% from 2001 to 2012, the United Kingdom intensified its trade with all its most relevant partners and, especially, with USA (by ten times in volume) and Netherlands (by more than 3 times in terms of volume). Furthermore, trade with several other countries rose sharply, especially extra-community for example Taiwan (by 35 times in volume), the United Arab Emirates (by 32 times in volume), China (by ten times in volume) Sweden (by more than 5 times) and Norway (by more than 2 times), but also within the community, especially Poland (by 7 times in volume). On the other hand, Russia, which was the fifth most relevant partner for the United Kingdom in 2001 in terms of trade volume lost market shares (its contribution to total export volume reduced from 7% to less than 4%).

In terms of trade value, France, Ireland, Spain, Italy, Germany and Netherlands remained the main six countries of destination over the entire period. However, while the value of exports directed to Ireland and Netherlands increased significantly (67% and 32%, respectively), exports to France, Italy, and Germany grew moderately (7%, 21% and 16%) and to Spain decreased (-20%). Furthermore, the value of seafood trade especially with Poland and China but also with several other non-MS (e.g. Taiwan and Vietnam) rose sharply (in 2001, Poland and China contributed 0.3% each to the overall value of the United Kingdom fish exports, 3% and 4% respectively in 2012).

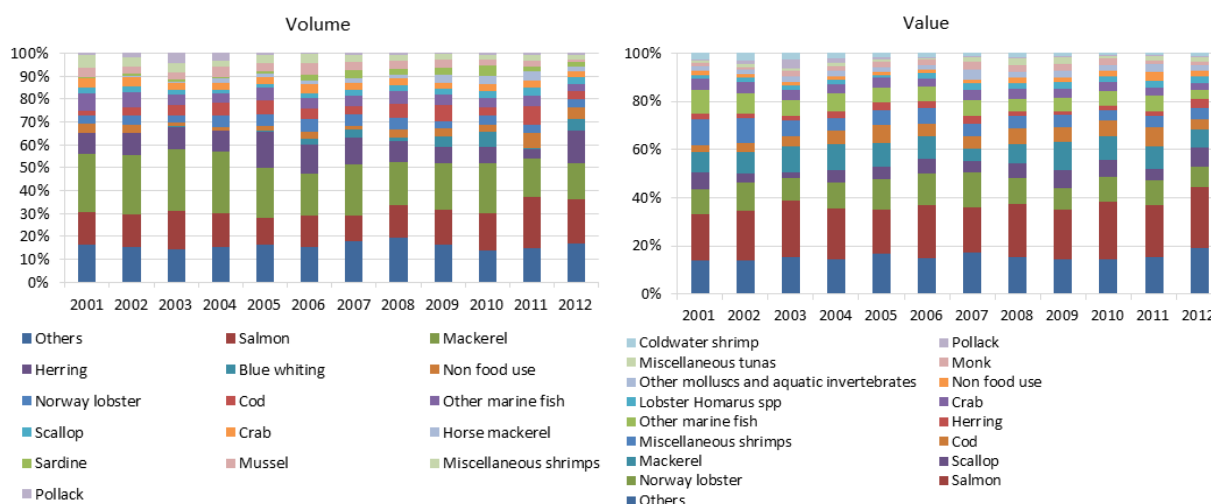


**Figure 5.23.8 - The United Kingdom seafood exports trends by most relevant suppliers: share in volume (left) and value (right)**

Figure 5.23.9 shows the shares in the trade of the most relevant commercial species (species which were among the 10 most imported in any year of the period 2001-2012). The exports of these species cover, in average over the years, 84% of the total volume of seafood exported by the United Kingdom and almost 85% of its value.

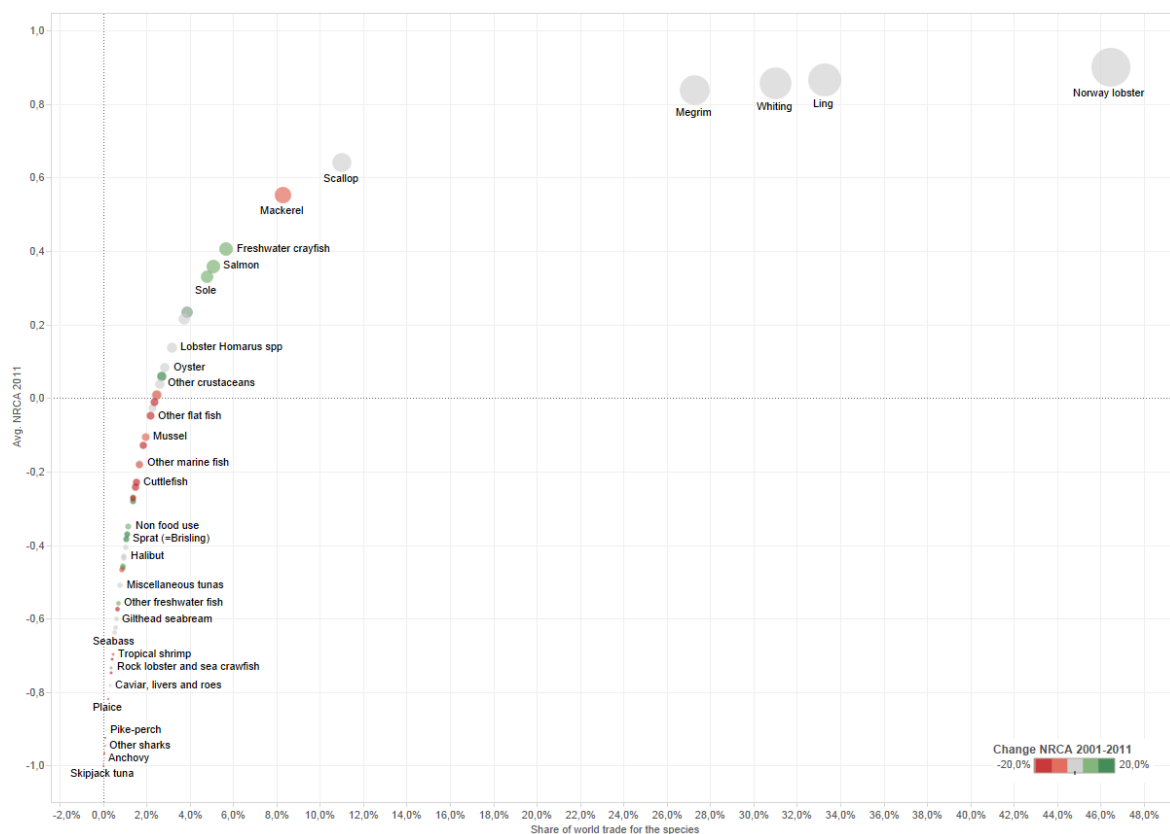
In terms of volume, salmon is predominant in the United Kingdom seafood exports (accounting for around 13% of them in 2012), followed by mackerel (11%), herring (10%), Blue whiting (3%) and fish for non food uses (5%). salmon contributes the most in terms of value (25% of the total exports in 2012), followed by Norway lobster (8%), Scallop (8%), mackerel (8%) and cod (4%). Export volume increased for all the most relevant commercial species (91% for herring, 59% for salmon, 24% for lobster, but more than 1,000 times for blue whiting and 59% for fish for non-human consumption), except for mackerel, the trade of which declined 27%. In value, it grew significantly for several of them (e.g. for salmon by 65%, for cod by 97%, and for scallop by 42%) but increased only 2% for lobster.

Trade of miscellaneous shrimps decreased significantly over time, both in absolute (by 57% in volume and 49% in value) and relative terms (their contribution to total exports reduced from 5% to 2% in volume and from 11% to 4% in terms of value)



**Figure 5.23.9 - The United Kingdom seafood exports trends by most relevant commercial species: share in volume (left) and value (right)**

The United Kingdom has the highest comparative advantage on the international market for Norway lobster, Ling and Whiting (NRCA = 0.90, NRCA = 0.87, NRCA = 0.86, respectively) (Figure 5.23.10). For all of them, the NRCA remained stable between 2001 and 2011. The competitive advantage increased between 2001 and 2011 for salmon, Freshwater crayfish and Sole while it decreased for Mackerel.



**Figure 5.23.10 - Normalized Revealed Comparative Advantage index (NRCA) for Germany, by species in 2011. Colour shading indicates changes in the NRCA between 2001 and 2011**

The exports expansion was discontinuous over time. The largest part of it occurred in 2010 and 2012, while the value of trade declined in 2007, 2008 and 2011. Most of the changes occurred at the intensive margin (i.e. exports of the same products to the same set of destination countries), but the activation of new trade flows contributed largely to the exports increase in 2012.

Considerable part of the expansion of exports between 2011 and 2012 on the intensive margin was related to exports of Clam to Spain, Norway lobster to China, horse mackerel to Egypt and other freshwater fish to Nigeria.

Failures accounted for a small part of the exports changes over the entire period and deriving from a reduction of trade flows for Mackerel between 2001 and 2003 to Moldova, Belarus, Haiti, Niger and Philippines (Figure 5.23.11).



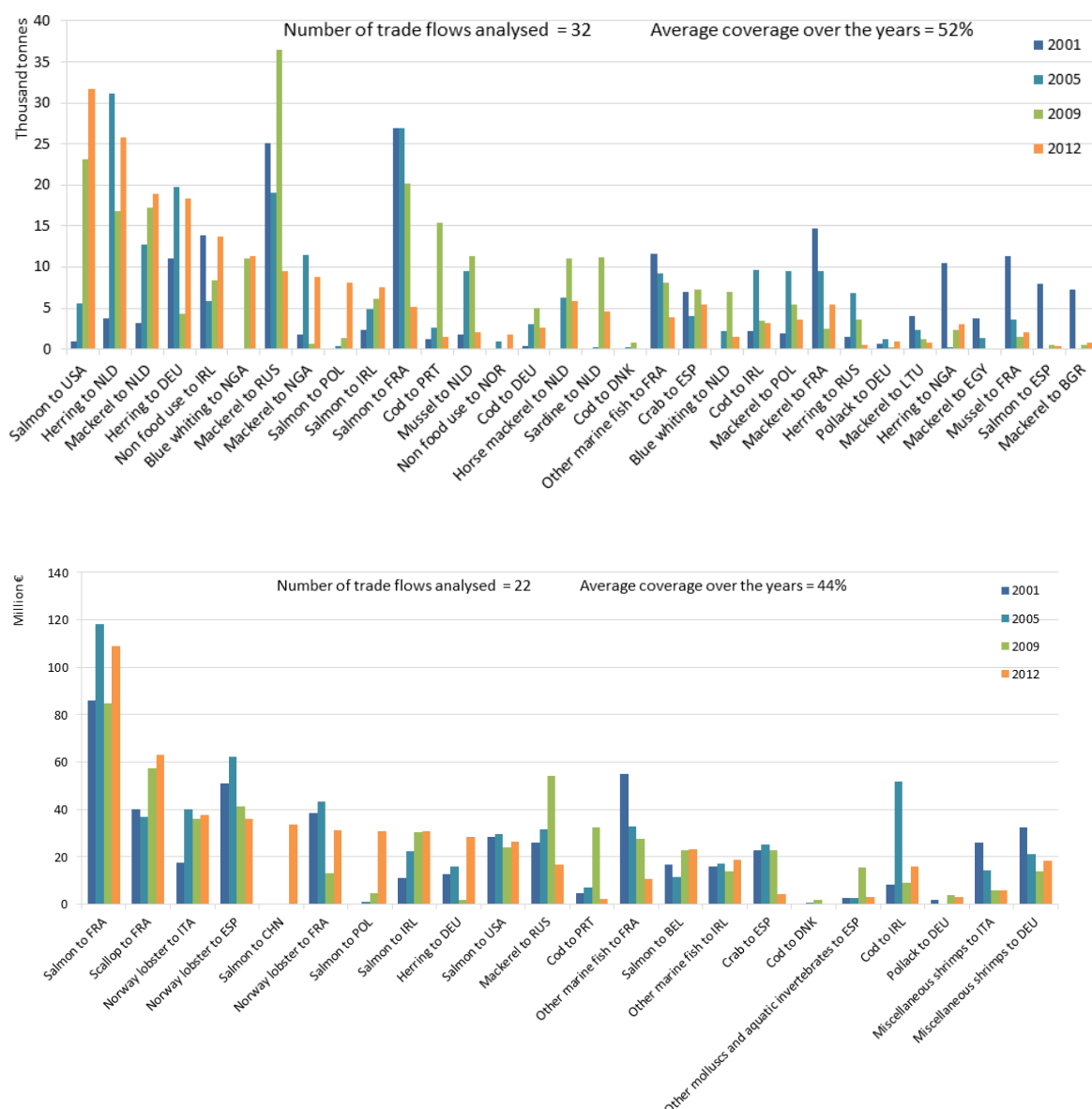


**Figure 5.23.11 - The United Kingdom seafood exports margins: 2001-2012**

The following figures show the trend of the most relevant trade flows (combinations “country of destination-species”) for the United Kingdom, in terms of volume (top figure) and value (bottom figure). The list of the most relevant trade flows includes the “top 10” in volume and value for each year of the period 2001-2012. The two lists respectively cover 52% and 44% of the overall trade, respectively in volume and value.

As mentioned, trade with France reduced 47% in volume. This resulted mostly from the decline in the trade of salmon, mackerel, other marine fish and mussel. On the other hand, exports of salmon to USA and of herring, mackerel and sardine to the Netherlands increased significantly explaining the overall growth of the trade with these two countries (Figure 5.23.12).

In terms of trade value, trade with several countries increased significantly over time; for example with Ireland and Poland, within the EU, and China, Taiwan and Vietnam, outside the EU. The increased trade of salmon was the main determinant for all of them.



**Figure 5.23.12 - The United Kingdom seafood exports trends by most relevant trade flows: volume (top) and value (bottom)**

In 2012, around 50% of the United Kingdom seafood exports were made up frozen products. Prepared/preserved and fresh products contributed 36% and 12% of the overall exports, respectively.

Fresh products contributed the most to the value of the United Kingdom exports (45% of it in 2012, 42% of which attributable to salmon), followed by frozen seafood (34%) and prepared/preserved products (15%).

Trade of frozen products increased 30% in volume over the reference period, driven by several commercial species, such as herring, blue whiting, lobster and cod, which has been exported mostly frozen over the entire period, as well as of few others, such as salmon, for which the contribution of frozen products to exports increased over time. Exports of prepared/preserved products also increased markedly (by 17% in volume), while exports of fresh fish increased only 5% (Figure 5.23.13).

Among these three categories of seafood, trade of prepared/preserved products increased the most in value over the period (62%) and, indeed, in 2012 it contributed 15% of the overall exports, against a share of 12% in 2001. Exports of fresh and frozen products increased 19% and 16%, respectively, but their relative shares reduced from 47% to 45% and from 37% to 34%.

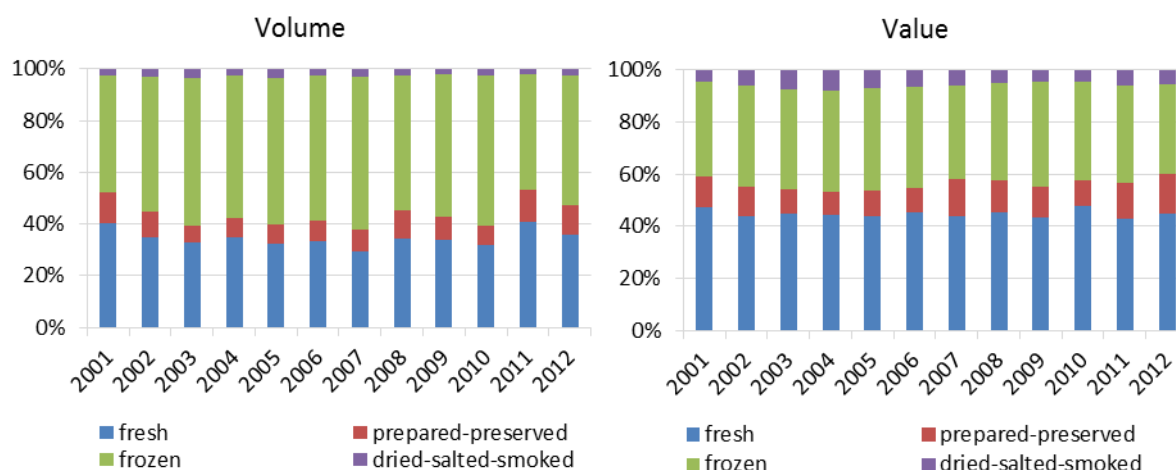


Figure 5.23.13 - The United Kingdom seafood exports trends by type of products: share in volume (left) and value (right)

The United Kingdom seafood exports to most of its main countries of destination (i.e. France, Spain, Italy and Netherlands) are mostly non-processed. However exports to Ireland and Germany tended to be more processed than the average over the entire reference period (Figure 5.23.14).

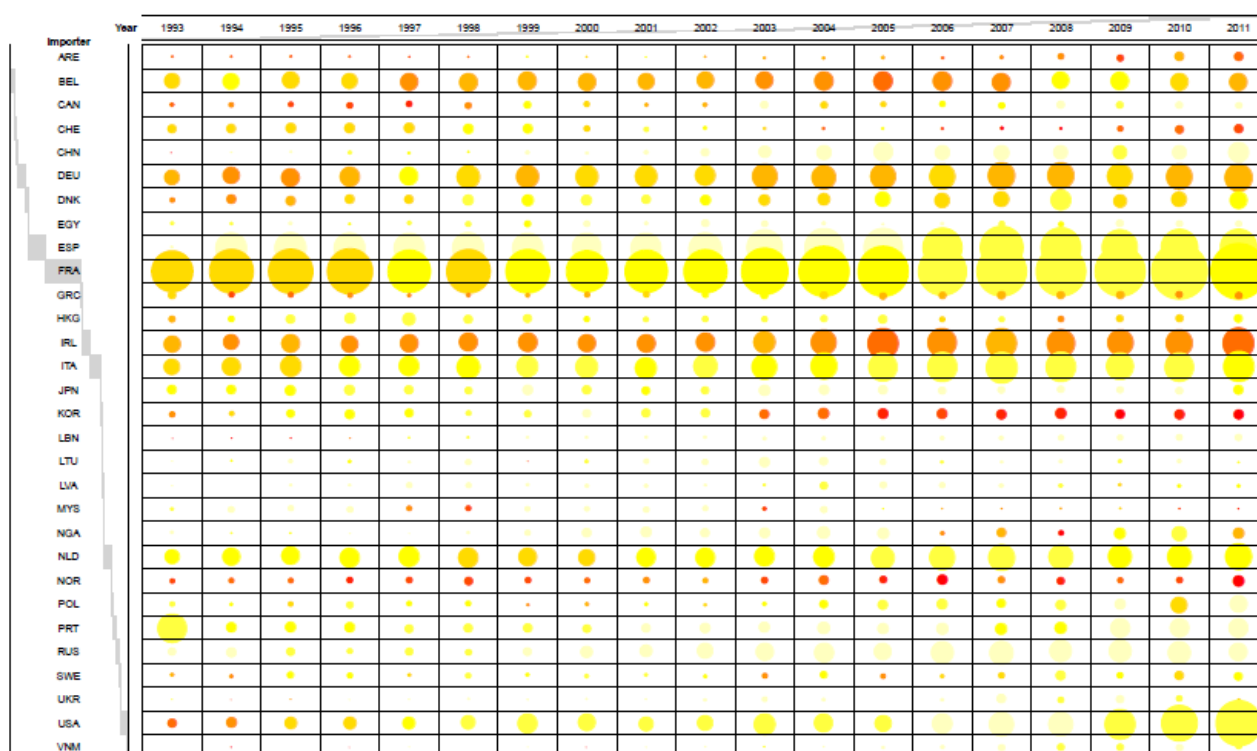


Figure 5.23.14 - The United Kingdom seafood exports trends by main seafood suppliers and contribution of processed products to total export value (Note: the size is proportional to the export value and the shading to the share of processed products).

## Annex I Data and methods

The data used in this report derives from the EUROSTAT COMEXT and from the UN COMTRADE databases. The data from EUROSTAT was extracted in August 2013. The data included the imports and exports in the period 1988-2013 by EU 28 Member States covering a total of 928 products and the following 235 partners.

ABW - Aruba; AFG - Afghanistan; AGO - Angola; AIA - Anguilla; ALB - Albania; AND - Andorra; ANT - Netherlands Antilles; ARE - United Arab Emirates; ARG - Argentina; ARM - Armenia; ASM - American Samoa; ATA - Antarctica; ATF - French Southern Territories; ATG - Antigua and Barbuda; AUS - Australia; Austria - Austria; AZE - Azerbaijan; BDI - Burundi; Belgium - Belgium; BEN - Benin; BFA - Burkina Faso; BGD - Bangladesh; Bulgaria - Bulgaria; BHR - Bahrain; BHS - Bahamas; BIH - Bosnia and Herzegovina; BLR - Belarus; BLZ - Belize; BMU - Bermuda; BOL - Bolivia; BRA - Brazil; BRB - Barbados; BRN - Brunei Darussalam; BTN - Bhutan; BWA - Botswana; CAF - Central African Republic; CAN - Canada; CCK - Cocos (Keeling) Islands; CHE - Switzerland; CHL - Chile; CHN - China; CIV - Côte d'Ivoire; CMR - Cameroon; COD - Congo, Democratic Republic of the; COG - Congo (Brazzaville); COK - Cook Islands; COL - Colombia; COM - Comoros; CPV - Cape Verde; CRI - Costa Rica; CUB - Cuba; CXR - Christmas Island; CYM - Cayman Islands; Cyprus - Cyprus; Czech Republic - Czech Republic; Germany - Germany; DJI - Djibouti; DMA - Dominica; Denmark - Denmark; DOM - Dominican Republic; DZA - Algeria; ECU - Ecuador; EGY - Egypt; ERI - Eritrea; Spain - Spain; Estonia - Estonia; ETH - Ethiopia; Finland - Finland; FJI - Fiji; FLK - Falkland Islands (Malvinas); France - France; FRO - Faroe Islands; FSM - Micronesia, Federated States of; GAB - Gabon; GBR - United Kingdom; GEO - Georgia; GHA - Ghana; GIB - Gibraltar; GIN - Guinea; GLP - Guadeloupe; GMB - Gambia; GNB - Guinea-Bissau; GNQ - Equatorial Guinea; Greece - Greece; GRD - Grenada; GRL - Greenland; GTM - Guatemala; GUF - French Guiana; GUM - Guam; GUY - Guyana; HKG - Hong Kong, Special Administrative Region of China; HMD - Heard Island and McDonald Islands; HND - Honduras; Croatia - Croatia; HTI - Haiti; Hungary - Hungary; IDN - Indonesia; IND - India; IOT - British Indian Ocean Territory; Ireland - Ireland; IRN - Iran, Islamic Republic of; IRQ - Iraq; ISL - Iceland; ISR - Israel; Italy - Italy; JAM - Jamaica; JOR - Jordan; JPN - Japan; KAZ - Kazakhstan; KEN - Kenya; KGZ - Kyrgyzstan; KHM - Cambodia; KIR - Kiribati; KNA - Saint Kitts and Nevis; KOR - Korea, Republic of; KWT - Kuwait; LAO - Lao PDR; LBN - Lebanon; LBR - Liberia; LBY - Libyan Arab Jamahiriya; LCA - Saint Lucia; LIE - Liechtenstein; LKA - Sri Lanka; LSO - Lesotho; Lithuania - Lithuania; Luxembourg - Luxembourg; Latvia - Latvia; MAC - Macao, Special Administrative Region of China; MAR - Morocco; MDA - Moldova; MDG - Madagascar; MDV - Maldives; MEX - Mexico; MHL - Marshall Islands; MKD - The former Yugoslav Republic of Macedonia, Republic of; MLI - Mali; Malta - Malta; MMR - Myanmar; MNE - Montenegro; MNG - Mongolia; MNP - Northern Mariana Islands; MOZ - Mozambique; MRT - Mauritania; MSR - Montserrat; MTQ - Martinique; MUS - Mauritius; MWI - Malawi; MYS - Malaysia; MYT - Mayotte; NAM - Namibia; NCL - New Caledonia; NER - Niger; NFK - Norfolk Island; NGA - Nigeria; NIC - Nicaragua; NIU - Niue; Netherlands - Netherlands; NOR - Norway; NPL - Nepal; NRU - Nauru; NZL - New Zealand; OMN - Oman; PAK - Pakistan; PAN - Panama; PCN - Pitcairn; PER - Peru; PHL - Philippines; PLW - Palau; PNG - Papua New Guinea; Poland - Poland; PRK - Korea, Democratic People's Republic of; Portugal - Portugal; PRY - Paraguay; PSE - Palestinian Territory, Occupied; PYF - French Polynesia; QAT - Qatar; REU - Réunion; Romania, NA; RUS - Russian Federation; RWA - Rwanda; SAU - Saudi Arabia; SDN - Sudan; SEN - Senegal; SGP - Singapore; SGS - South Georgia and the South Sandwich Islands; SHN - Saint Helena; SJM - Svalbard and Jan Mayen Islands; SLB - Solomon Islands; SLE - Sierra Leone; SLV - El Salvador; SMR - San Marino; SOM - Somalia; SPM - Saint Pierre and Miquelon; STP - Sao Tome and Principe; SUR - Suriname \*; Slovakia - Slovakia; Slovenia - Slovenia; Sweden - Sweden; SWZ - Swaziland; SYC - Seychelles; SYR - Syrian Arab Republic; TCA - Turks and Caicos Islands; TCD - Chad; TGO - Togo; THA - Thailand; TJK - Tajikistan; TKL - Tokelau; TKM - Turkmenistan; TLS - Timor-Leste; TON - Tonga; TTO - Trinidad and Tobago; TUN - Tunisia; TUR - Turkey; TUV - Tuvalu; TWN - Taiwan, Republic of China; TZA - Tanzania \*, United Republic of; UGA - Uganda; UKR - Ukraine; UMI - United States Minor Outlying Islands; URY - Uruguay; USA - United States of America; UZB - Uzbekistan; VAT - Holy See (Vatican City State); VCT - Saint Vincent and the Grenadines; VEN - Venezuela (Bolivarian Republic of); VGB - British Virgin Islands; VIR - Virgin Islands, US; VNM - Viet Nam; VUT - Vanuatu; WLF - Wallis and Futuna Islands; WSM - Samoa; YEM - Yemen; ZAF - South Africa; ZMB - Zambia; ZWE - Zimbabwe

The data was aggregated from the classification of products according to Common Nomenclature at 8 digits level of detail (CN8) to the classification in main commercial species used in the European Market Observatory for Fisheries and Aquaculture (EUMOFA). According to the EUMOFA classification, COMEXT trade figures were grouped in the following 70 species and classified by 4 classes of preservation method (dried-salted-smoked, fresh, frozen, prepared-preserved) and 3 classes of processing status (by-products, cut, whole).

Albacore tuna, Anchovy, Bigeye tuna, Blue whiting, bluefin tuna, Carp, Caviar livers and roes, Clam, Cod, Coldwater shrimp, Crab, Cuttlefish, Dogfish, Eel, Flounder, Freshwater crayfish, Gilthead seabream, Grenadier, Haddock, Hake, Halibut, Herring, Horse mackerel, Ling, Lobster *Homarus* spp, Mackerel, Megrim, miscellaneous shrimps, miscellaneous small pelagics, miscellaneous tunas, Monk, Mussel, Nile perch, Non food use, Norway lobster, Octopus, other, Other crustaceans, Other flat fish, Other freshwater fish, Other marine fish, Other molluscs and aquatic invertebrates, Other products, Other salmonids, Other seabreams, Other sharks, Oyster, Pangasius, Plaice, Pollack, Redfish, Rock lobster and sea crawfish, Saithe (=Coalfish), Salmon, Sardine, Scallop, Seabass, Skipjack tuna, Sole, Sprat (=Brisling), Squid, Surimi, Swordfish, Tilapia, Toothfish, Tropical shrimp, Trout, Turbot, Whiting, Yellowfin tuna,

The classification of EUMOFA represents an intermediate level of aggregation in respect of the more detailed classification at CN8 level used in trade statistics which is more appropriate for interpreting market trends for the products which are of greater interest for the EU market. In addition EUMOFA provides reference tables which allow merging trade, production and price data.

The reference to COMTRADE international trade statistics was needed to derive trade indices and analysing trade patterns also for other countries in the world.

The data from COMTRADE was extracted in December 2012. The data covered exports in terms of value in the period 1990-2011 from 97 world countries and for 120 seafood commodities classified according the Harmonised System classification at 6 digits of details (HS6).

In order to compare with EUROSTAT, COMTRADE data was also referred to main commercial species. For this purpose COMTRADE data was first disaggregated at CN8 digits classification and then grouped into the EUMOFA classification. The disaggregation from HS6 to CN8 was done using as a proxy the exports data to EU Member States reported in EUROSTAT. The underlying assumption was that the share of exports to the EU at this more detailed level, for a given exporter, year and aggregate, would be applicable to its exports towards any other country. This assumption was considered sufficiently robust considering the high share of EU trade in international trade.

When analysing the level of processing in trade flows, combinations of the processing categories, by-products and cut products, with all preservation categories were considered as processed products, while, whole - frozen and whole - fresh products were considered as unprocessed products.

Trade data does not include information on the origin of products and does not allow distinguishing if they are coming from fisheries or aquaculture. The expansion of aquaculture is one of the key drivers for the expansion of international trade. Important changes in trade patterns and the economic performance of national aquaculture and fisheries and seafood processing sectors in recent years is greatly affected by the activation of new trade flows involving aquaculture products. In many cases the origin can be assumed simply looking at the type of product and country of origin. For a more precise estimate of the share of aquaculture products in the trade flows, the trade data was linked to production data by species and source of production (aquaculture vs. capture) from FAO and the value of exports by main commercial

species was attributed to the aquaculture and fisheries origin proportionally to the respective ratios of primary production in terms of volume in total fish production.

In addition to descriptive analyses of trade flows by country, year, main commercial species and preservation and processing groupings the report include some analyses of the determinants of trade based on the following three indices which are frequently used for trade policy research

- Trade Competition Ratio (TCR), used to measure the exposure of domestic production to trade competition the extent of openness to trade of country;
- Normalised Revealed Comparative Advantage (NRCA), used to measure the competitive advantage of the exports of country for a given product;
- Margin of exports growth, used to measure how a country is increasing its exports either by expanding existing trade relations or by getting access to new markets.

The indices were selected on the basis of the availability of data and on the relevance for the seafood sector. An extensive review of the methodology for the calculation of trade indices their use and limitations in is given in (World Trade Organization and United Nations Conference on Trade and Development 2012).

### *Exposure to trade competition*

A very basic index to measure the openness of the economy to international trade is given by the ratio between imports and export value and GDP. This index is of difficult application for the analysis of disaggregated data for a specific sector. Given the small share of seafood trade value in respect of the general national GDP a better appreciation of the exposure to trade competition for the seafood sector would require a comparison in respect of GVA in the aquaculture, fisheries and seafood processing sectors. An alternative is to examine the ratio in terms of volume. In this case more relevance is given to the contribution of trade in terms of food security and food supply self-sufficiency rather than the contribution to the economy. Tveter\aaas et al. (2012) calculated an exposure to trade competition index for seafood as the ratio between imports and export volumes and apparent consumption. The underlying idea is that the higher is this ratio the higher is the relevance of trade in respect of the domestic consumption and hence the exposure of the domestic market to trade competition. In this study we follow a similar approach and in addition of calculating a general index for the global trade we decompose the index into its two components related to imports and exports as follows:

$$TCR = \frac{\text{Exports} + \text{Imports}}{\text{Apparent Seafood Consumption}}$$

$$TCR \text{ exports} = \frac{\text{Exports}}{\text{Apparent Seafood Consumption}}$$

$$TCR \text{ imports} = \frac{\text{Imports}}{\text{Apparent Seafood Consumption}}$$

Trade volumes were obtained from the COMEXT data, while seafood consumption was calculated from per capita seafood consumption data from FAO and population data from the World Bank.

### *Comparative advantage*

The Revealed Comparative Advantage index (RCA) (Balassa 1965) is commonly used to indicate how the trade of country for a given products may have an advantage in the international market. The RCA is calculated as the ratio of product k share in country l exports to its share in world trade.

$$RCA_k^i = \frac{x_k^i/x^i}{x_k/x}$$

Where  $x_k^i$  is country  $i$  exports of good  $k$ ,  $x^i = \sum_k x_k^i$  its total exports,  $x_k = \sum_i x_k^i$  world exports of good  $k$  and  $x = \sum_i \sum_k x_k^i$  total world exports.

Since the original RCA has no upper bound limit and is asymmetric, a simple normalization is used (Laursen 2000) to transform the index it into a symmetric version (NRCA) with lower and upper bound of  $-1$  and  $+1$ .

$$NRCA_k^i = \frac{RCA_k^i - 1}{RCA_k^i + 1}$$

At the boundaries a value of  $-1$  of the NRCA indicates that a country has a no exports for a given product while a value of  $+1$  indicates that a country has complete monopoly of the international market being the only one exporting a given product.

The comparative advantage index is showing the level of specialization of exports of a country on a given commodity in respect of the world average. A high value of the index is revealing, without explaining the reasons, that exporters have some comparative advantage on the international market for a specific commodity in respect of others commodities. Since the index is relative to the country total exports, high values are not necessarily indicating that the country is the highest exporter for a given species in absolute terms.

In this report the index was calculated for the years 2011 and 2005 considering the exports in value at the level of main commercial species as defined in the EUMOFA. The total was represented by the exports for all seafood commodities.

### *Margin of exports growth*

The change of exports for a given country and product or margin of exports growth may derive from expansion of existing trade flows or from the activation of new ones. By looking at how the variation of exports is distributed among these different components it is possible to draw conclusions on how the country is expanding towards new markets (new products and new destinations), consolidating existing markets (old products and/or old destinations), or on the contrary, how it is losing competitiveness by diminishing or completely dropping existing trade relations.

Exports margins may be decomposed in the following three main components:

- growth from the activation of new trade flows (extensive margin);
- changes in existing trade flows (intensive margin);
- abandonment of existing trade flows (failures).

The extensive margin can be further disaggregated to consider:

- changes due to the exports of new products to old destinations;
- changes due to the exports of old products to new destinations.

The margins can be calculated in reference to commodities, destinations or considering the combinations of both commodities and destinations.

In this report the extensive margins indices were calculated using exports in terms of value disaggregated at the level of main commercial species. In particular, the annual change of the country's seafood export value in the period 2001 to 2012 was disaggregated into four categories:

- intensive margin: trade flows present at least in one of the first three years of the reference period (i.e. 2000, 2001 and 2002), and at least in one of the last three years (i.e. 2010, 2011 and 2012);
- extensive margin: trade flows not present in any of the first three years of the reference period, and present at least in one of the last three years;
- failures: trade flows present at least in one of the first three years of the reference period, and not present in any of the last three years;
- other: trade flows present neither in any of the first three years of the reference period, nor in any of the last three years.



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