

The Atlantic bluefin tuna: structure and competitiveness of Italian fishing in the international trade

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1. Introduction

In Italy, the Atlantic bluefin tuna's catch (*Thunnus thynnus* Linnaeus, 1758) boasts old traditions and it is still today very important from the social and economic point of view. The Italian production holds a modest quota of the whole fished volume (1.1%) and of its value (0.9%) (IREPA), enough, however, for Italy to be the third most important producer on the world scale. Besides, the Atlantic bluefin tuna represents the main item exported, having about 10.0 % of the value of the sale of the fresh Italian fish products abroad (ISMEA, 2009).

For some years, the Atlantic bluefin tuna's fishing has been the core of a heated international discussion about the effects of over-fishing which, in the last decades, has helped reducing the natural stocks of this tuna further on. This issue has involved the need to gradually reduce the catch quota which, since 1998 and every year and/or every two years, are established by the *International Commission for the Conservation of Atlantic Tunas* (ICCAT) and shared by the 48 member countries which catch and/or grow Atlantic bluefin tuna, playing

Abstract

In this paper, after showing the productive and international trade background of the Atlantic bluefin tuna, we analyze the competitive position of Italy, important producer and exporter on world scale, compared with the main trade partners, carried out through competitiveness indexes based on trade data. The results highlight Italy's good competitive performance above all with Japan, which represents the main world reference market for the Italian product, but also with the United States, Malta and Turkey. The Italian competitive advantage with these countries is stronger for the product taken into account. On the other hand, we can notice a competitive disadvantage with the traditional markets supplying bluefin tuna, and with Spain in particular. The same is reckoned with the Southern Mediterranean countries which, in the last years, have contributed to increasing the world supply, thanks to the spread of mariculture systems. In this background, the increasing interest in the Italian Atlantic bluefin tuna, by the United States in particular, and by some Mediterranean countries and by Central Western Europe as well, could open new opportunities to the Italian trade.

Keywords: Atlantic bluefin tuna; International trade; Competitiveness; Italy

Résumé

Après avoir présenté le contexte de la production et du commerce international du thon rouge (Atlantic bluefin tuna), nous avons analysé la position compétitive de l'Italie, un des producteurs et exportateurs les plus importants au niveau mondial, par rapport aux principaux partenaires commerciaux, en utilisant des indices de compétitivité calculés à partir des données commerciales. Les résultats ont mis en évidence la bonne performance de l'Italie surtout à l'égard du Japon, le pays qui représente le principal marché de référence à l'échelle mondiale pour le produit italien, mais aussi à l'égard des Etats Unis, de Malte, de Chypre et de la Turquie. Dans le cas de ces pays, l'avantage compétitif de l'Italie est encore plus évident pour le produit considéré. Par ailleurs, nous devons signaler un désavantage compétitif de l'Italie par rapport aux marchés traditionnels qui fournissent le thon rouge, en particulier l'Espagne. Il en va de même pour les Pays du Sud de la Méditerranée qui, ces dernières années, ont contribué à accroître l'offre mondiale, grâce à la diffusion de l'aquaculture. Dans ce cadre, l'intérêt croissant vers le thon rouge italien, surtout aux Etats- Unis, mais aussi dans certains Pays Méditerranéens et de l'Europe Centrale et Orientale, pourrait ouvrir de nouvelles perspectives pour le commerce italien.

Mots-clés: Thon rouge; Commerce international; Compétitivité; Italie.

an important role on the dynamics of this sector and on the competitiveness of the countries in which the most catches are attained.

Also the spread of mariculture systems aimed to obtain, on the one hand, a standardized quality product, and, on the other hand, to stabilize the supply, didn't help solving the matter of the impoverishment of the stocks and of the sustainability of this tuna (Covino, 2003).

Actually, despite the attention paid to this product, both by the scientific world, with reference to the economic and trade aspects (Mylonas, La Gàadara, Corriero, Belmonte Rio, 2010; Ariji, 2010; Crescimanno, Di Trapani, 2007; De Stefano, Van Der Heijden, 2007; Paquette, 2003; Tanabe, 2000) and to the ecological and biological ones (Catalàn, Tejedor, Alemany, Reglero, 2011; Fromentin, Powers, 2005; Sarà, Sarà, 2006), and by the policy makers, the status of the stocks is at risk, as shown in the inclusion proposal for the

Atlantic bluefin tuna in Appendix I of the International Convention on Trade in Endangered Species (CITES), during the 15th CITES Conference of the Parties held in Doha from the 13th to the 25th March 2010 (Convention on International trade in endangered species of wild fauna and flora, 2010).

Nevertheless, in view of this stock increasing impoverishment, we can notice a growing world-wide demand for this product addressed first to sushi and sashimi preparation, not only in the Asian countries, which until the end of the '90s had monopolized the world market of this tuna, but in the Western countries as well, and

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in Northern America and Europe in particular, where the Eastern food culture has spread with an incredible speed in the last years (Bestor, 2001; Tobin, 1992; Miyake, Guillotreau, Sun C-H, Ishimura, 2010). Miyake et al. (2010) estimate that between 7,000 and 10,000 tons a year of sashimi and sushi in Europe and 20,000 tons in the United States are consumed.

In the light of these considerations, taking into account the strategic importance of the Atlantic bluefin tuna in the Italian exchanges of fish products and that in the literature no study has analyzed, with the methodology suggested in this paper, the competitiveness of the Italian product, this paper proposes to estimate the Italian competitive potential for the tuna on the international market with the individual world partners. This paper analyses, firstly, the reference background of the Atlantic bluefin tuna in the world context, and the dynamics of the Italian tuna exchange in the international trade of fish products. The analysis of the competitiveness for the different kinds of Atlantic bluefin tuna commercialized by Italy on the market of the main trade partners and the time dynamics will be dealt later. The discussion completes the work.

2. Market and political instrument

The analysis of the Atlantic bluefin tuna's world reference background has been dealt through the Food and Agriculture Organization of the United Nations data (FAOSTAT), which allowed us to outline the productivity development (period 1990-2009) of the Atlantic bluefin tuna's world exchanges (period 1990-2008) -the latter concerning the aggregate Atlantic (*Thunnus thynnus*) and Pacific (*Thunnus orientalis*) bluefin tuna- the data of Tokyo Central Wholesale market, to analyze the trend of prices, and the information taken from the ICCAT, to reconstruct the development of the catch quota ascribed to the member countries since their imposition.

Nowadays 48 countries are involved in the Atlantic bluefin tuna's world production coming from the catches in sea water and from breeding activities. According to FAOSTAT data, in the twenty-year period 1990-2009 the global supply follows a decreasing trend passing from 25,963 tons to 23,204 tons, entering a year average-cut rate of 0.5% (Fig. 1).

The negative performance concerned only sea water catches which, in the reference period, entered a year average-cut of 0.9 %, against, instead, a year average-increase of 22.9 % of the Atlantic bluefin tuna's quantities coming from breeding.

Considering only the sea water fishing, the world-wide caught quantities are on the whole 21,205 tons in 2009 (91.4% of the amount). The countries of the EU on the Mediterranean Sea hold an

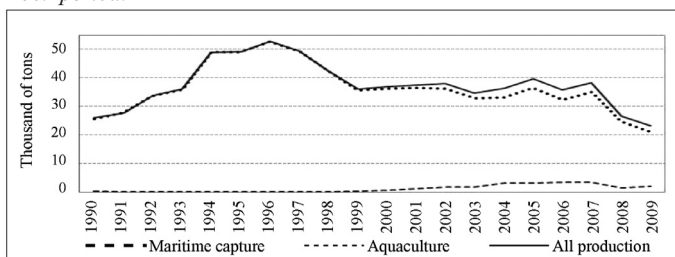
important catching quota, Spain with 4,177 tons (19.7%), France, with 3,453 tons (16.3%) and Italy, with 2,734 tons (12.9%), followed at some distance by Greece (1.8%), Malta (1.2%), Portugal (0.2%) and Cyprus (0.01%); altogether they hold more than a half of the world captured quantities (52.1%). Significant, world-wide, is the importance of the Southern countries of the Mediterranean Sea, and Morocco (10.7% of the catches on the whole), Tunisia (9.1%), Libya (5.1%) in particular, and more modestly, Algeria (1.1%). Moreover, it is not unimportant the weight of Japan (9.8%), Turkey (3.1%), Croatia (2.9%), Canada (2.5%) and the United States (2.2%). Finally, the captured Atlantic bluefin tuna's quantities in other countries are much less, among which The Republic of Korea, Dominican Republic, Mexico, China, Montenegro, Saint Pierre and Miquelon, which hold 1.39% of the world catches altogether.

In the last years, the global fish consumption has expanded with the help of aquaculture production as a strategic method to increase the production (Bailey, Jentoft, Sinclair, 1996; FAO, 2007; Longo 2011). As far as tuna-breeding is concerned, the production is of 1,999 tons in 2009 (8.6% of the overall production). More specifically, Croatia holds the best quantities (62.1% of the amount), Malta (18.5%) and Spain (14.6%). The production volumes are lower, instead, for Tunisia (2.4%), Turkey (1.7%), France (0.4%), Portugal (0.25%) and Italy (0.15%).

The steady decrease of the Atlantic bluefin tuna's catches in sea water is firstly due to the restraints to the catch itself imposed by the ICCAT. The quota assigned to the member countries for the Atlantic bluefin tuna's fishing by the international organization for the protection of the tuna, in fact, estimated on the previous years' catches and on the fishing traditions, have recorded, since their entry, a year cut of 4.6% being in 2010 of 15.3 thousand tons, of which 13.5 thousand tons for the Atlantic bluefin tuna's fishing in the Eastern Atlantic and Mediterranean Sea and 1.8 thousand tons for the fishing in the Western Atlantic Ocean. In 2011, in conformity with the suggestions of the Scientific Committee of the Commission, the TAC pass to 14.65 thousand tons (-4.2% compared with 2010), of which 12.65 thousand tons for the Atlantic bluefin tuna's fishing in the Eastern Atlantic and in the Mediterranean Sea and 0.65 thousand tons for the Atlantic bluefin tuna's catch in the Western Atlantic Ocean. In the same year, the member countries of the ICCAT which have held the best catches quota are Spain (2,411.01 tons), France (958.42 tons), and Italy (1,787.91 tons), among the member countries of the European Union, followed by Japan (1,398.67 tons), Morocco (1,223.07 tons), Tunisia (1,017.56 tons), USA (923.70 tons), Libya (902.66 tons), Croatia (366.1 tons), Turkey (535.89 tons) and Algeria (138.46 tons).

Also the environmental non-sustainability of some fishing systems adopted for the Atlantic bluefin tuna's catch has played an important role in the reduction of fished volumes. The most used world-wide system, but the most criticized from the environmental point of view as well, is that with purse seine (52,5%), followed by the long line (17,1%) and the one with fixed tuna fishing (15,4%). It's not unimportant, furthermore, the Atlantic bluefin tuna's sports fishing (6,1%) and the one with bait boat (5,8%). Other fishing systems are less important, generally very different from each other and linked to their local traditions.

Figure 1 - Global trend production of the Atlantic bluefin tuna 1990-2009 period.

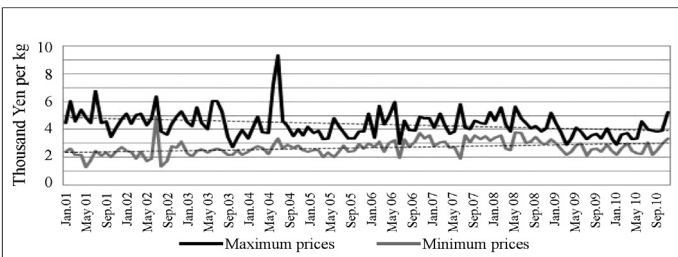


Source: Our elaboration con FAO data.

For the prices analysis of the Bluefin tuna we referred to the price quotation of the Tokyo Central Wholesale market, the most important one in the international price quotation for the considered product. The auction prices of the imported Bluefin tuna in the general markets are divided into two levels, the high level for the best quality fish and the lower level for the medium quality tunas (Catarci, 2007). The revealed price variability is related to qualitative aspects as well, the period of commercialization and the type of Bluefin tuna, caught or farmed.

The price analysis, carried out for the period 2001-2010, shows a decreasing trend of the average monthly maximum prices compared with an increased monthly minimum average prices, highlighting a progressive reduction of the gap between two price quotations (Fig. 2). In particular, the maximum annual average prices change from 4,836.2 yen per kilogram in 2001 to 3,817.9 yen per kilogram in 2010, marking an annual average decline of 2.1%. In the same period, the minimum average prices marked an increase by 1.8%, passing from 2,218.2 to 2,611.4 yen per kilogram, although these price quotations have shown in the last years a declining trend. The decrease of the prices registered in the period can be ascribed, on the one hand, to the economic recession that affected at the beginning of the nineties the Japanese economy and, on the other hand, the diffusion of farmed Bluefin tuna, which combines a good competitive price with the good features quality required for the preparation of sashimi.

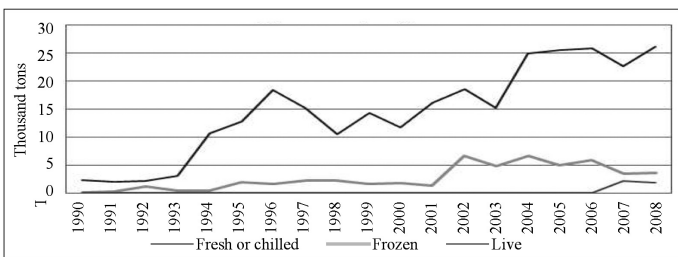
Figure 2 - Average monthly price (in Yen) per kilogram for fresh Bluefin Tuna (*Thynnus Thynnus*) at the Tokyo Central Wholesale Market - January 2001/December 2010 period.



Source: Our elaboration on Tokyo Central Wholesale Market.

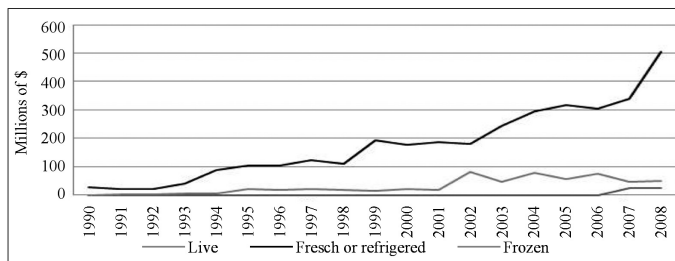
Concerning the international trade, the relevance of the bluefin tuna in the world tuna exchanges has grown significantly, according to FAO data. Specifically, the bluefin tuna represents 13.3% of the value (1.7% in 1990) and 2.0% of the volume (0.2% in 1990) of total tuna exports, in 2008; world exports of bluefin tuna amounts to 31.687 tons and to \$ 570.4 million (Figs. 3 and 4). The volume ex-

Figure 3 - Trend of Bluefin tuna's world exports by product tipology.



Source: Our elaboration con FAO data.

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ported shows a positive trend, although discontinuous during the period 1990-2008. Overall, exports shows on average both a 38.1% annual growth in volume and an increase in value of \$549 million.

According to the FAO statistics, bluefin tuna is marketed mainly fresh or chilled, achieving 82.7% in volume and 87.2% in value of total export in 2008. The share of frozen bluefin tuna export is lower (11.2% by volume and 8.5% in value), live bluefin tuna is even lower (6.1% by volume and 4.1% in value). The trend analysis of export flows for the three products marketed shows that the trade growth both in volume and in value depends almost entirely on fresh or chilled product, in the period considered.

The European countries, and Italy among them, keep, in the reference period, the leadership as one of the main world exporters concentrating 47.8% and 55.1%, respectively, of the overall exported volumes and values. Followed at some distance by the Asian countries (23.5% volumes and 25.5% of values), by the African (18.3% volumes and 11.3% values) and American ones (10.2% volumes and 8.0% values). The main destination markets for the bluefin tuna are the Asian ones though the European ones are considerable as well.

3. Materials and methods

Several approaches in the economical literature have been suggested for the competitiveness analysis which are different depending on the aim of the analysis - performance, potential, competitive process studies (Buckley, Christopher, Prescott, 1988) – on the level of the survey (micro, meso or macroeconomics), on the analysis space-time structure (Schimmenti, Ascuito, Galati, Carapezza, 2009; Ascuito, Crescimanno, Galati, 2007; Banterle, Carraresi, 2006). Consequently, a single definition of the concept of competitiveness does not exist. However, as argued by Lachaal (2001), despite the diversity of definition, it is possible to identify two common features. The first is that the competitiveness is a relative concept since the assessment of industry or business in the same country, is always done with respect to such entities. The second is that the competitiveness is not a static concept since it is related to the economic conditions in the country and to those of the international market.

According to Pitts and Lagnevik (1998), the competitiveness of an industry is the “ability to profitably gain and maintain market share in domestic and/or in foreign markets”, a general definition that can be adapted to represent our case study.

The tools employed in the empirical research for the evaluation of the competitiveness are many and fundamentally related to the level of analysis, macro, meso or micro level.

More specifically, in the proposed study, Italy's competitive performance is assessed for this single fish product on the international market, by analysing bilateral trade flows and market quotas and making use of specific indicators based on the principle of comparative advantage, which is widely used in economic literature (Traill, Da Silva, 1996; Frohberg, Hartmann, 1997; Havrila, Gunawardana, 2003; Fertö, Hubbard, 2003; Bavororà, 2003; Banterle, Carraresi, op.cit.; Hambalková, 2006).

Amongst the indices most commonly used for measuring comparative advantage is the *Revealed Comparative Advantage* (RCA), (Balassa, 1965) which shows the advantage held by a state in exporting a single product or group of products in relation to total trade. Alternative specification of revealed comparative advantage commonly known in the literature and which is derived from a modified version of Balassa's index, is the *Relative Trade Advantage* (RTA) developed by Vollrath (Vollrath, 1991). The Vollrath's index, that accounts for exports and imports simultaneously, differs from the RCA in its elimination of the double-counting of country and product, for which it has been much criticised. Vollrath, in addition, proposes a new version of the index (RC) in which the *Relative Export Advantage* (RXA) and *Relative Import Advantage* (RMP) are expressed in logarithmic form, but this of limited use where trade flux is limited or nil (Havrila, Gunawardana, op.cit.).

For the competitiveness analysis of Italian Atlantic bluefin tuna we have analyzed the exchanges on the basis of the data concerning export and import money flow taken from the Italian data bank of the Italian National Institute of Statistics (ISTAT) and in two different three-year periods (2004-06 and 2007-09). The choice of the reference period is bound to the availability of statistic data concerning the three commercialized Atlantic bluefin tuna's typologies (fresh or refrigerated, frozen or live). More in detail, the analysis of the Atlantic bluefin tuna's competitive performance has been carried out taking into consideration, on the one hand, the exchange flows concerning the 6-digit classification of the harmonized nomenclature (HS6), concerning the three commercialized typologies of Atlantic bluefin tuna², and, on the other hand, the 2-digit one (HS2), concerning the fish production system (class 06 of the harmonized nomenclature).

In order to outline the structure and geography of trade in Atlantic bluefin tuna, firstly the quota of the market was established for exports (*Export market share*, EMS) and for imports (*Import market share*, IMS). The EMS and IMS are expressed as:

$$EMS = 100 \left(X_{ij} / X_{iw} \right)$$

$$IMS = 100 \left(M_{ij} / M_{iw} \right)$$

In the formula, X and M stand for exports and imports. The indices j and w relate to the region, whilst i is the product. Market shares are expressed as values from 0 to 100; thus, a value of zero indicates that the exports (or imports) of a given product i from a given country j are nil;

whilst a value of 100 indicates that the entirety of exportation (or importation) of product i is carried out by country j .

In this paper, the RTA index of Vollrath (1991) is used to capture Italy's comparative advantage with respect to the individual world partners and the trade intensity ties between the partners.

Establishing the RTA allows us, lastly, to measure Italy's competitiveness in the international market for Atlantic bluefin tuna. The RXA expresses the export share for product i of a given country in the market j compared to the share held for other products; the index has a higher (or lower) unit value if the country's has an advantage (or disadvantage) in its competitive position for exporting product i . In the formula, X stands for exports and M stands for imports. The indices i and n relate to categories of products, whilst j and r relate to region.

$$RXA = \left(\frac{X_{ij} / X_{ir \neq j}}{X_{nj \neq i} / X_{nr \neq i}} \right)$$

There is a similar index for imports, the RMP, which expresses the import share for product i of a given country in the market j compared to the same share held for the remaining products; this indicator is greater (or less) than 1 if the country in question has an advantage (or disadvantage) in its competitive position for importing product i .

$$RMP = \left(\frac{M_{ij} / M_{ir \neq j}}{M_{nj \neq i} / M_{nr \neq i}} \right)$$

The RTA, obtained from the difference between the RXA and RMP, shows positive (or negative) values if the country in question has an advantage (or disadvantage) in its competitive position for trading in product i (Frohberg, Hartmann, op.cit.).

$$RTA = RXA - RMP$$

In most cases, the principle function of indicators used to measure competitiveness is not to identify internal or external factors that might influence the competitive performance of a country or of a sector; they offer, rather, a measurement of the ability of a country to compete on the international market. The analysis results, may, however, feel the effects of exchange rate between the national currency (in this case the euro) and that of the countries where you export in particular those that have different currencies, but also the income level of countries including are realized the exchanges (FAO, 1992). Another important effect is related to the re-export process among countries. With specific reference to the fishery sector, competitiveness may be influenced by several factors, some of the most important being the state of stock, the technological standard of fishing equipment, the economic impact of operative costs, globalisation of the market and consumer tastes, the capacity of companies to meet the requirements of food safety and, not least, international and EU common policy in the sector.

4. Competitiveness of the Italian Atlantic bluefin tuna

The Italian sale abroad of Atlantic bluefin tuna, in the three-years period 2007-09, reached an average value of 19.8 million Euros

² 030194 (Atlantic bluefin tunas, *Thunnus thynnus*); 030235 (Atlantic bluefin tunas "Thunnus thynnus", fresh and refrigerated); 030345 (Atlantic bluefin tunas "Thunnus thynnus", frozen). The statistics do not consider the processed bluefin tuna.

Table 1 - Trade in Atlantic bluefin tuna "Thunnus Thunnus" in Italy (.000 €).

	Exports					Imports			
	2004-06	EMS (%)	2007-09	EMS (%)		2004-06	IMS (%)	2007-09	IMS (%)
Fresh or refrigerated	18,347.0	100.0	14,407.8	100.0	Fresh or refrigerated	5,683.8	100.0	3,069.0	100.0
Japan	12,967.8	70.7	12,200.7	84.7	Spain	2,040.0	35.9	1,630.3	53.1
Spain	2,532.8	13.8	1,302.2	9.0	France	2,874.8	50.6	791.3	25.8
France	1,586.8	8.6	470.3	3.3	Tunisia	246.6	4.3	350.4	11.4
USA	255.3	1.4	291.8	2.0	Croatia	343.1	6.0	101.0	3.3
Malta	114.2	0.6	40.5	0.3	Greece	18.4	0.3	71.4	2.3
Others	890.1	4.9	102.3	0.7	Others	160.9	2.9	124.6	4.1
Live	-	-	5,405.3	100.0	Live	-	-	435.1	100.0
Japan	-	-	3,449.2	63.8	Algeria	-	-	380.0	87.3
Spain	-	-	806.1	14.9	Spain	-	-	38.4	8.8
Malta	-	-	617.4	11.4	France	-	-	11.6	2.7
Turkey	-	-	417.3	7.7	Malta	-	-	1.9	0.4
France	-	-	114.0	2.1	Netherlands	-	-	1.2	0.3
Others	-	-	1.3	0.1	Others	-	-	2.0	0.5
Frozen	1,368.0	100.0	0.3	100.0	Frozen	451.2	100.0	451.1	100.0
Malta	0.0	0.0	0.3	100.0	Spain	217.8	48.3	385.5	85.4
Japan	817.7	59.8	0	0	USA	0.0	0.0	29.1	6.5
France	486.1	35.5	0	0	Netherlands	133.9	29.7	12.1	2.7
Spain	49.2	3.6	0	0	Tunisia	0.0	0.0	10.7	2.4
USA	14.4	1.1	0	0	France	87.3	19.3	10.4	2.3
Others	0.6	0.0	0	0	Others	12.2	2.7	3.3	0.7
Total	19,715.0	100.0	19,813.6	100.0	Total	6,135.1	100.0	3,955.3	100.0
Japan	13,785.5	69.9	15,650.0	79.0	Spain	2,257.8	36.8	2,054.3	51.9
Spain	2,582.0	13.1	2,108.3	10.6	France	2,962.1	48.3	813.3	20.6
Malta	114.2	0.6	658.3	3.3	Algeria	0.0	0.0	380.0	9.6
France	2,072.9	10.5	584.3	3.0	Tunisia	246.6	4.0	361.1	9.1
Turkey	0.0	0.0	417.3	2.1	Croatia	343.1	5.6	101.0	2.6
Others	1,160.4	5.9	395.4	2.0	Others	325.5	5.3	245.6	6.2

Source: Our elaboration on ISTAT data.

(5.2% of exports of Italian fish products), against the 4 million Euros of imports (0.1% of imports) (Table 1). We are talking, in this case, of a product at net export with a year average trade balance of 15.9 million Euros. The main interchange item is that concerning the fresh or refrigerated Atlantic bluefin tunas which hold the 72.7% of exports and the 77.6% of imports; the live fish interchange is less significant and that of the frozen product is marginal.

The analysis of the trade flow development between the three-year periods 2004-06 and 2007-09 highlights, on the one hand, a good stability in exports concerning the Atlantic bluefin tuna on the whole, and, on the other hand, a reduction in supplying abroad products, fresh or refrigerated Atlantic bluefin tuna in particular. This fact caused an improvement of the normalized trade balance which passes from 52.5% of the three-year period 2004-06 to 66.7% in the

refrigerated product and for the frozen product, and Croatia (2.6%), for fresh or refrigerated bluefin tuna. The development of the quota shows a cut of France and Croatia's IMS and an increase of Spain, for both the typologies of product of which Italy is an importer; we can notice, therefore, an increasing interest in some markets of the Southern Mediterranean Sea, among which Algeria and Tunisia.

The analysis of Italy's competitive potential, carried out through the calculation of the Relative Trade Advantage index, has been quantified for the two three-year periods into account, in relation to the main trade partners, for the main types of bluefin tuna on the market, and respect to trade of fishery products on the whole.

For fresh or refrigerated products, a very high positive index value is obtained for Japan (380.51) (Table 2). The exports of this kind of product are, in fact, the 69.4% of the export amount of Italian fish products toward Japan. We have to notice a positive value of the index, even if very low, however, for the United States (6.00), being this country itself Atlantic bluefin tuna's net importer. Tunisia (-6.88) and Spain (-6.48), which are, as we have already said, important supplying markets for Italy, hold the most significant negative values.

In the reference period, Italy's competitive position decidedly improves compared with Japan's, though we can notice a light reduction in the exports value balanced, however, by an increasing weight that this kind of product holds in the abroad trade of Italy's fish products in the Japanese market. Also Italy's competitive advantage increases

Table 2 - Relative Trade Advantage index (RTA) of Italy with main partner countries Three-year average 2004-06 and 2007-09.

	Fresh or refrigerated		Live		Frozen		Total	
	2004-06	2007-09	2004-06	2007-09	2004-06	2007-09	2004-06	2007-09
Algeria	0.00	0.00	-	-14,987.80	0.00	0.00	0.00	-166.54
Croatia	-5.99	-2.80	-	0.00	0.01	0.00	-5.52	-2.15
France	-10.23	-3.70	-	0.05	6.83	-0.29	-8.75	-2.67
Japan	96.28	380.51	-	35.33	26.34	0.00	101.82	711.12
Malta	-6.09	-4.40	-	14.24	-12.86	0.00	-6.61	-1.88
Spain	-2.92	-6.48	-	-0.22	-5.29	-34.74	-3.07	-6.13
Tunisia	-2.42	-6.88	-	0.00	0.00	-1.29	-2.23	-5.36
Turkey	-0.04	0.00	-	-103.49	0.00	0.00	-0.03	121.99
USA	-4.48	6.00	-	0.00	2.92	-4.05	4.44	3.84

Source: Our elaboration on ISTAT data.

compared with the United States' one, considering the increase of the Atlantic bluefin tuna's exports value and the growth, though modest (0.1 percentage points), of the tuna's quota in the exports of fish products bound to the United States' market. We can notice, on the contrary, a worsening for Tunisia's competitive disadvantage, as a result of a higher penetration degree of Atlantic bluefin tuna coming from the country, and for Spain, due to the reduction of the Italian exports value together with an increase, though bullish, in imports of the same market. In the same time span we can observe a reduction of Italy's competitive disadvantage with France, Croatia, Malta and Turkey.

For live bluefin tuna, our country is at an advantage with Japan (35.33) and a disadvantage with Algeria (-14,987.80) and Turkey (-103.49).

Finally, for frozen bluefin tuna, there is a high negative index value with Spain (-34.74), related to the fact that more than 85.5% of import value of this type of product comes from the Iberian peninsula. During the period in question, there was a net worsening of the competitive disadvantage with Spain, but especially a consistent reduction in competitive advantage with France, Japan and the United States, countries which, however, absorb a quota of imports which barely signifies, and towards whom there were no exports of Italian products over the last two-year period.

5. Discussion

The analysis of the world reference background of Atlantic bluefin tuna has shown in the last years a steady cut in catches in sea water partly due to the severe policy implemented by the ICCAT to protect the tuna, but also to the adoption of fishing systems more and more sustainable. This fact has kept alive an increasing interest in mariculture plants spread on some Mediterranean countries, in Croatia, Malta and Spain in particular, causing as an effect a progressive increase of a world offer of breeding product. The Atlantic bluefin tuna's market is still held almost completely by Japan, which today holds about the 90% of the world demand for tuna, though in the last years the consumption has spread in Europe and Northern America as well, as a result of a preference for healthy food and the globalization of food culture (Marion, Furtado, Proano, Corridoni, Al Musalli, Blanca, 2010).

Italy's competitive advantage for Atlantic bluefin tuna in the international market has been analyzed using the Relative Trade Advantage index developed by Wollrath built on the base of money flows of imports and exports and applied to the bilateral trade. The results of the empiric analysis highlight that Italy, third most important world producer, has got a strong competitive advantage, strengthened in the reference period, with Japan which represents the main reference market for the Italian export product, fresh or refrigerated in particular, but with the United States and Malta too. We can notice, moreover, a reduction of Italy's competitive disadvantage in the trade relationships with the traditional supplying market and with France and Croatia in particular. A further strengthening of Italy's competitive disadvantage with Spain and Tunisia comes out, which represent important markets for the supplying of fish products and of Atlantic bluefin tuna in particular, both fresh, refrigerated and frozen, bound to satisfy the demand of a few exclusive restaurants and circumscribed in well-defined geographical areas

which, actually, are the same of the places in which, in the past, they used to fish with fixed tuna nets (Scarpato, Simeone, 2005).

For Italy the differentiation of reference markets for Atlantic bluefin tuna's export gains, in detail, a strategic value to avoid that a possible economic unfavourable trend of Asiatic markets may have a negative impact on the Atlantic bluefin tuna's chain.

In this context, the increase in the Atlantic bluefin tuna's consumption in the Western Countries in particular offers concrete opportunity for the Italian product which, on the base of the analysis results, finds good spaces both in the Northern America, in which in the last years the oriental food culture has rapidly spread, and in some Mediterranean countries, Malta and Turkey for instance, and of the Middle West Europe, which may be important consumption areas for the Atlantic bluefin tuna.

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