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A Research on Determination of Fish Marketing Margins in Istanbul Province of Turkey

Ferhan Kaygısız[1*], Mustafa Eken[2]

[1] Istanbul University, Veterinary Faculty, Department of Animal Breeding and Husbandry, 34320, Istanbul, Turkey;

[2] Istanbul Metropolitan Municipality (IMM) Department of Fisheries Wholesale Market Kennedy Street, No:11 Kumkapı/Fatih, 34130, İstanbul, Turkey.

Tel: +0212 4737070 / 17210, Fax: +0212 4737241

E-mail: ferhan_64@yahoo.com

Abstract

The aim of this study was to determine the distribution of the mediator margins and marketing costs throughout the fishermen, brokers and retailers per one kilogram of commercially most preferred species in the sample of Istanbul province, Turkey. The primary data was collected with questionnaires conducted on brokers and the intense interviews with retailers. The most common commerce channel as fishermen-broker-retailer-consumer was examined. Marketing margins of fishermen and retailers active in fish marketing channels were calculated by examining the difference between monthly sales price and monthly purchase price at every stage in the study. The percentages of fishermen's income, brokers' income, marketing costs, retailers' costs and retailers' income within one kilogram of fish were varied between, 32.78% and %54.84; 4.46% and 7.40%; 2.56% and 4.42%; 26.66% and 48.02%, 6.67% and 12.04% respectively. The fact that; fishermen must sell their products through the cooperative to prevent low price formation during the auction and to reduce marketing expenditures was achieved. In order to increase producer income, it is very important to increase the amount of fishery products marketed through cooperatives by changing the brokerage system where fishermen market their products by borrowing.

Keywords: Fish, marketing channel, marketing margin, marketing cost.

Introduction

Turkey has great potential for fisheries where the sector provides significant revenue and employment capacity. It is crucial to utilize the existing resources effectively and sustainably. Sea fish production accounts for 49.51% of total fisheries with an amount of 537.345 tons (FALM, 2015), and a ratio of 6.6% for Istanbul province (Benli, 2009). This suggests that the region is an important potential in terms of natural resources and that the potential needs to be protected. Restructuring of the fish supply chain is crucial to reduce the amount of hunted fish (Sayın, Karaman, Mencet, & Taşçıoğlu, 2011). When examined the marketing system of fisheries products in Turkey, it is seen that four channel marketing activities are carried out: (1) direct to the fish market, (2) direct from the boat to the commissioner, (3) transfer to the processing plant and (4) from boat to the cold air depot.

Most of the fish caught in Marmara Sea is sold in Istanbul. For this reason, the Istanbul Metropolitan Municipality (IMM) Directorate of Aquaculture is the largest state that plays a decisive role in Turkey's aquaculture market. Due to the nature of the region, demand is growing in the process; the supply is gradually narrowing due to many negative factors. This is why retail fish prices are rising. However, fishermen and fishermen who avail themselves of fish and other seafood are not able to benefit from the material aspect. Because of the lack

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of organization (non-cooperation), a satisfactory income is far away. In this respect, the "distribution" function of fish marketing is very important. In order for the fishing activity to be profitable, a suitable distribution channel must be selected to ensure that the conditions under which fish and other seafood are to be handled are met on time and with minimal expense. According to products, the length of the channels, the number and types of intermediaries vary. In water products mostly; a multi-stage structure in the form of fishermen (producers), brokerage commissioners (wholesaler or semi-wholesaler), retailer-consumer. In provinces with fish markets, the fish caught are gathered in wholesale markets and sold to retailers via brokers, following an auction. Some of the commissioners work as wholesalers, while others operate as semi-wholesalers and retailers (Benli, 2009).

There are great numbers of studies conducted to research fish marketing margins. Aswathy, Narayanakumar, and Harshan (2014) determined the structure of marine fish marketing in the state as well as the efficiency in different marketing channels. The analysis revealed that the marketing efficiency was high for commercial species and intermediaries were grabbing a significant share of the consumer's rupee. Aswathy and Abdussamad (2013) analyzed the efficiency of marine fish marketing system in Tuticorin through different indicators like marketing margins, percentage share of fishermen in consumers' rupee, monthly price fluctuations and marketing efficiency index. The results indicated that fishermens' share in consumers' rupee varied from 35% to 80%. Sadhidas, Narayanakumar, and Aswathy (2011) determined, a macro level analysis of the efficiency of domestic marine fish marketing in India during the period 2000-2008 showed that, lobsters (80.37%), sharks (77.12%), seerfish (75.22%) and mackerel (71.29%) earned comparatively higher share of the consumer rupee for fishermen than the other varieties. The prices of high value fishes were comparatively stable than the low value fishes. Abassian, Karim, Esmaeili, and Ebrahimzadeh (2012) attempted to estimate the economic function of factors affecting the date marketing margin in the province. The results of estimation of marketing margin functions obtained through utilizing a combination of models including the Price Increase Model, Relative Price and Marketing Margin. Data analysis indicated that farm-gate price and harvest margin of dates were among the highly influential factors on the entire marketing margin. Panikkar and Sathiadhas (1989) examined the fish marketing system prevailing in Kerala, the price structure, seasonal and spatial price variations, marketing margins of commercially important varieties of fish and the share of fishermen as well as middlemen in consumer's rupee. Fishermen's share in consumer's rupee varied from an average of about 40% for cheaper variaties of fish to about 65% for high priced varietes. Sathiadhas and Panikkar (1992) attempted to discuss the marketing margins, and producer's and middlemen's share in consumer's rupee for ummercialIy important varieties of marine fish in Madras region of Tamil Nadu. The study revealed that the retailer's margin ranged from 19% to 45% and the wholesale's margin 4% to 27% of the consumer price. Marketing expenses including transportation and handling charges ranged from 4% to 14%. The analysis indicated that fisherman's share varied from 32% to 72%. The fishermen got higher share in consumer's rupee for quality fishes for which consumer preference was comparatively high. Kumar et al. (2008) conducted a study in all the major coastal states and some selected inland states to understand the domestic marketing of fish in India. The marketing efficiency was found more in the case of marine species than freshwater species, since the latter travel longer distances from the point of production to consumption centre, passing many intermediaries as compared to the former. The fisherman's share in consumer's rupee shown variations across species, marketing channels and markets. Sathiadhas and Kanagam (2000) examined the fish marketing system prevailing in India, price structure, marketing margins of commercially important varieties offish and the share of fishermen as well as middlemen in consumer's rupee at selected centres

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of Gujarat, Maharastra, Karnataka, Kerala, Tamil Nadu and Andhra Pradesh during 1996-97 by direct observation. The fishermen's share in consumers' rupee varied from an average of about 30% to 68% for different varieties. Marketing costs including transportation ranged from 6% to 13%, wholesalers from 5% to 32% and retailers from 14% to 47% of consumers' rupee for different varieties of fish. Considerable inter-state variation in consumers preference and fishermen's share in consumer rupee for different varieties of fish was observed. Ali, Gaya, and Jampada (2008) determined the economic analysis of fresh fish marketing in Maiduguri Gamboru market and Kachallari Alau Dam Landing Site of Northeastern Nigeria. The Marketing margin was 38.38%, while the producer's share was 61.62%. Problems associated with fish marketing included spoilage during storage (30%); high cost of fishing materials (23.33%) and high cost of transportation (13.33%).

A limited number of studies have been conducted in Turkey to investigate margins in the animal and animal product marketing system (Topçu, 2004; Sayın et al., 2011; Yazıcı, 2011). The socio-economic structure of fishermen has been investigated in other studies in the field of fisheries economics (Ünal, 2003; Çeliker et al., 2006; Güngör, Özen, & Güngör, 2007; Çeliker et al., 2008; Benli, 2009; Ceyhan & Gene, 2014). Some of the studies are related to fishery cooperatives (Ünal & Yercan, 2006; Akyol, Ceyhan, & Ünal, 2006; Doğan, 2010). However, no study has been found to investigate-in detail, the marketing margins of the fish marketing channel in Turkey. This is thought to be due to data collection difficulties.

Sustainability of the production of aquaculture depends on the producers receiving sufficient income. Determining the prices and margins that occur in the fish marketing channel will contribute to the determination of policies that will prevent the decrease in the producer income that should be applied in the sector (Sayın et al., 2011).

The aims of this study were to determine 1) the margins of the intermediates for commercial prescription fish species, 2) to determine the marketing expenses of the intermediaries operating in the fish marketing channel, 3) to determine the share of fishermen, brokers, retail fishermen and marketing expenses within the retail fish price, based on the
research findings.

Materials and Methods

Research data for the 2013-2014 fishing season were collected from primary and secondary sources. The primary data was collected with questionnaires conducted on brokers located in the wholesale fish market of Istanbul metropolitan municipilaty and the intense interviews with retailers.

As secondary data, IMM Aquaculture Directorate and TUIK records, and previous studies related to the subject has been benefited. The data were collected between January 2015 and July 2015 where the study covers fishermen who only produce by hunting.

Data Collection

The data related to the economic activities of the commissioners were obtained as a result of face-to-face surveys with 40 brokers working in fish wholesale market. purposive sampling technique was used to identify the commissioners. As a result of the interviews made with the authorities of the Aquaculture Department, commissioners who were reported to be able to provide reliable data were selected. The share of the selected commissioners in the total amount of fish that is currently traded is 69.5% and the share in selected products in the

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survey is 68.7%.

The districts located in five different regions of Istanbul (Küçük Çekmece, Bakırköy, Kadıköy, Bostancı, Pendik) were randomly selected to gather information on the activities of retail fish mongers. The retail fish mongers were selected purposefully in accordance with the information gathered during the interviews with the fishermen and consumers in these districts and intense interviews are held with 20 retailers providing reliable information (Islam, Miah, & Haque, 2001; Ali et al., 2008; Kumar et al., 2008; Bozyiğit & Doğan, 2008). In similar investigations, it is reported that the nature of the interviewees, the relevance and reliability of the information they provide are more important than the number of interviewees. For this reason, it was decided that sufficient interviews were made when the responses were similar in the interviews (Bozyiğit & Doğan, 2008).

Primary data collected from commissioners and retail fish sellers are information on sales quantities, fish marketing costs, price formation, retail fish prices, and marketing issues they face. Retail fish prices are based on the declaration of the interviewed retailers. The sale prices of the auction are obtained from the records of IMM Water Products Directorate.

Marketing Margins Calculation

Marketing margins for fish in 2013-2014 season for Istanbul were determined. In the study, marketing margins of fishermen and retailers operating in fish marketing channels were calculated by taking the difference between the monthly selling price and the monthly purchase price at each stage (Topçu, 2003; A1i et al., 2008).

The findings related to the return amount of the fish price paid by consumer to the fishermen calculated as follows (Sathiadhas & Panikkar, 1992; Topçu, 2003; Sayın et al., 2011):

Fisherman's share = Fish market price x 100 / Retail price.

The calculation of the share of retailer margin in a kg of retail fish price is calculated as follows (Sathiadhas & Panikkar; 1992; Topçu, 2003; Sayın et al., 2011):

Retailer's margin share = Retailer margin x 100 / Retail price

The fisherman supplies the fishes through the brokers. The first price formation in the case of fish is realized by selling the products that the commissioner receives from the fishermen, selling them to retailers through auction.

Marketing Costs

The costs incurred by fishermen after they become product fish, withholding tax, municipal tax, commission fee, and value added tax. These expenses are made by the broker on behalf of the producer in fish.

The cost of the commissioners is the cost of the rent, the employee fee, electricity, water, telephone and other expenses. In the study, brokerage costs were calculated annually and divided by the annual amount of fish held, which was found to be brokerage cost per kg fish.

Retailers' costs include rent, employee fees, electricity-water, ice, transportation, taxes, shrinkage, and other expenses other than product purchases. Retailers' costs are calculated at 80% of the remaining value after deducting the purchase price from the fish sales price, based on the retailer's declaration.

Net Margins Calculation

The gross income of the commissioner is calculated at 12% of the sale price of the fish auction. Commissioners cut off the costs they are incurred from the manufacturer. For this reason, the net income of the broker was found by deducting the commission fee from the rent of the shop, the employee fee, electricity, water,

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telephone and other expenses.

The income received by the producer is received after the sales in fish market. This income includes fishing (production) expenses. To calculate the income received by the producer, value added tax rate of 8% broker receives from the producer is added after subtracting 2% withholding wage, 3% municipal duties, 12% brokerage fee and 18% as a added tax from the income brokers obtain in the auction sales.

Retailers' net margin was calculated at 20% of the remaining value after the purchase price was subtracted from the fish sales price. The calculation was made by taking into consideration interviews with retail fish dealers. In the study marches of different fish species were examined. Fish species have been selected from among the most traded fish species in IMM Wholesales market. The fish species selected were *Engraulis encrasicolus* (European anchovy), Trachurus trachurus (Horse mackerel), Merlangius merlangus (Whiting), *Mullus barbatus* (Red mullet) and *Pomatomus saltatrix* (Bluefish). The fish species selected consist 84.4% of the total amount of fish caught. Marketing margins for fish species are calculated and compared.

Results and Discussion

Fishermen Shares and Retailer Margins

In the aquaculture sector, there are units such as commissioners, cooperatives, processing facilities, retail outlets, restaurants and mobile dealers within the marketing chain. It is the most intensely used channel with marketing channel, fisher-broker-retailer-consumer marketing channel, which is considered in the study. Marketing channel used in the study, the channel of fisherman-broker-retailer-consumer, is the most frequently used one. In a study on the structure of fish marketing (Benli, 2009), the boat owners' preference rates of different marketing channels (brokers, restaurants, retail stalls, their own sales, the processing plants) were 30.59%, 23.53%, 18.82%, 12.94%, 5.88% and 3.53% respectively. The rate of those who use their products in their own consumption is 4.71%. All of the fish catchers in large quantities prefer brokers and processing facilities, while other groups reported that they set the marketing pattern according to their product volume. It is stated that the rate of fisheries marketed via cooperatives is 6.5% (Benli, 2009).

Table 1 shows the fishers' shares in the retail price and the margins of the retailer and the margins in the retail price according to the fish species.

It is stated that the share of fisherman in retail price paid by the consumer is ranging between 39.95% and 66.67% (table 1). *E. encrasicolus* has the lowest rate whereas the *M.barbatus* has the highest. The margin of the retailer varies depending on the price paid by customer and the payment received by the fisherman. Gross marketing margin includes the fisherman's expenditure in fish market, broker's fee, retailer expenses and the retailer's profit.

The share of retailer's margin in selling price is the highest (60.05%) for *E. encrasicolus* while the lowest (33.33%) for the *M. barbatus*. When the share of fishermen's shares and retailers in the price paid by consumers is compared, it is determined that for the *E. encrasicolus* and *M.merlangus*, retailer's share is high; for *T. trachurus* and *M. barbatus*, producer's share is high and for *P. saltatrix*, they receive equal shares.

Expenditures and Incomes of Fisherman, Broker and Retailer

The expenditures of fisherman, broker and retailer and the shares of net incomes within the retail selling prices are calculated and demonstrated in Table 2.

In Table 2, considering the price consumer pays for a kg of *E. encrasicolus*; 32.78% (2.56 TRY) of it

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goes to the fisherman, 2.56% (0.20 TRY) for the fish market expenditures, 4.48% (0.35 TRY) to the broker, 48.02% (3.75 TRY) for the retailer expenditures and 12.04% (0.94 TRY) to the retailer; for a kg of *T. trachurus*; 41.84% (4.36 TRY) of it goes to the fisherman, 3.36% (0.35 TRY) for the fish market expenditures, 5.66% (0.59 TRY to the broker, 39.35% (4.10 TRY) for the retailer expenditures and 9.79% (1.02 TRY) to the retailer; for a kg of *M. merlangus*; 32.89% (8.11 TRY) goes to the fisherman, 2.64% (0.65 TRY) for the fish market expenditures, 4.46% (1.10 TRY) to the broker, 48.01% (11.84 TRY) for the retailer expenditures and 12% (2.96 TRY) to the retailer; for a kg of *M. barbatus*; 54.84% (36.00 TRY) goes to the fisherman, 4.42% (2.90 TRY) for the fish market expenditures, 7.40% (4.86 TRY) to the broker, 26.66% (17.50 TRY) for the retailer expenditures, 6.67% (4.38 TRY) to the retailer; for a kg of *P. saltatrix*; 41.13% (46.30 TRY) to the fisherman, 3.31% (3.73 TRY) for the fish market expenditures, 5.55% (6.25 TRY) to the broker, 40.00% (45.03 TRY) for the retailer expenditures and 10.00% (11.26 TRY) to the retailer.

Commissioners cover the costs of their own activities from the fees they receive. While the share of income in the fish price is low, the average amount of fish they trade is more than fishermen and retailers, so the total cost per unit falls. There are 2500 boats in Istanbul, whereas there are 100 brokers working actively in İMM Water Products Directorate. Since the marketing rate through brokers is high (30.5%), they are determinants of commissioner price formation.

It has been determined that the fishery income obtained after the fisherman's cost and brokerage fee are deducted from the sales price of one kg of retail fish is between 32.78% and 54.84% compared to fish species. The share of the fisherman's expenses in the price paid by the fisherman is the lowest at 2.56%, highest at 4.42%; the share of brokerage fees is 4.46%, the highest is 7.40%; the share of retailer expenses was 26.66% at the lowest, 48.02% at the highest; the retailer net margin was the lowest at 6.67% and the highest at 12.04%. Retailers obtained the most profit per kilogram of fish from anchovy and quail fish. These are followed by lupus, horse mackerel and red mullet. In some studies, it has been reported that the share of fish in low value fish is lower (Kumar et al., 2008). In the study, there was no relationship between the values of the fishes and the margins.

The share of total marketing expenses in the marketing channel varies between 38.48% and 55.11%. It is seen that the share of the expenses made to deliver the water products to the consumers in Istanbul is high. Especially during the retailer's expense, the price of fish increases. The cost elements at this stage consist of rent, employee fees, electricity-water, ice, transportation, tax, shrinkage and other expenses other than product purchases. The distribution of these expenditure factors within the total cost is 11.80% rent, 45.71% worker fees, 3.49% electricity-water, 4.00% ice, 13.29% transportation, 11.78% tax and 8.00% wastage. Besides, withholding tax, municipal duties and broker’s fee from the expenditure factors fishermen made affect the income of the producer. Regulations of reducing the marketing expenditures will both increase the producer’s income and help

consumer purchase fish for less by affecting the fish prices.

In a study conducted in Iran in 2010 (Shai, Zeratkish, & Foroughi, 2012), it is stated that the share of the expenditures within retail fish price for trout marketing is 10.12%; in the study Sathiadhas and Kanadam conducted in Iran in 1996-1997, it is reported that the share of marketing expenditure including transportation within retail price is 6-13% (Sathiadhas and Kanadam, 2000). The study of Sathiadhas and Panikkar (1992) demonstrates that the share of the marketing expenditure within the retail fish price varies between 4% and 14%. In this study, findings are that the share of marketing expenditures is higher than the findings of other studies.

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Within the price consumer pays, the share of the incomes before the reduction of the expenses fishermen made in the fish market varies between 39.95% and 66.67% according to the fish species. In the study conducted in Nigeria in 2008, fishermen's share within the price consumer pays is reported to be 61.62% (Ali et al., 2008). In the study Dağtekin (2010) conducted in Trabzon province, it is stated that fishermen's share within the retail price is 54% for *E. encrasicolus*, 60% for *T. trachurus.* In their study involving Marmara coast of Istanbul province in 2007, Güngör et al. (2007) reported that only 20% of the price consumers pay for the fisheries returns to the fishermen. In a study conducted in Iran in 2010 (Shai et al., 2012), within retail fish price, the fishermen's share is calculated to be 80%, wholesaler's 16% and retailer's 4% for trout marketing. In the studies conducted at different times in Indian and Iran considering different fish species and marketing channels, it is reported that the fishermen's share is determined to be between the range of 48%-80% (Sathiadhas et al., 2011), 35%-80% (Aswathy & Abdussamad, 2013), 60-75% (Aswathy et al., 2014), 34%-74% (Kumar et al., 2008), 30%-68% (Sathiadhas & Kanadam, 2000), 40%-65% (Panikkar & Sathiadhas, 1989), 32%-72% (Sathiadhas & Panikkar, 1992) within the retail fish price.

One of the most important problems of fish marketing in Istanbul is lack of fishermen's organization. Therefore, fishermen's bargaining power is low and they have a minute amount of contribution to the price formation. Fishermen accept the price determined by the brokers. This situation limits the fishermen's revenue. Direct sales via cooperatives will be for the benefit of producer and consumer. The fact that broker cuts and the rate of value added tax are high increases the marketing margins and causes the fish prices to rise.

Other problems are determined to be low subventions, difficulty in finding financing, expensive fishing equipment. In a study conducted in Istanbul (Benli, 2009), the satisfaction rate of the fishermen about marketing system is reported to be 45.65%.

A producer-oriented marketing system which works actively will be for the benefit of both the fishermen and the sector. Besides supporting the organization of fishermen, existing cooperatives must be empowered and determinant in the management. A stable environment for the producers can be provided through resource management, price formation, establishing supply demand equilibrium via cooperatives (DM, 2014).

Changing the brokerage system where fishermen become indebted while marketing their products, reducing the broker cuts, increasing the subventions, reducing the value added tax applied to fisheries are measures that will reduce the fishermen's expenditures. The economic activity in the sector will be recorded by reducing the value added tax, and this situation will affect national economy positively by causing increase in traceability and tax revenues.

Conclusion

Even though the product does not undergo a long process in fish marketing in Istanbul province until it reaches to the consumer, it is observed that the fishermen's share is low. Insufficient marketing service activity causes the market to be non-transparent. Increasing the rate of fisheries marketed via cooperatives can make marketing channels more active in Istanbul. To prevent low prices during auctions and reduce the marketing expenditures, the fishermen must sell their products via cooperative. Fishermen can provide their requirements such as material, obtaining loan, cold chain plant, packaging via cooperatives and become economically strong. Fishermen must be encouraged to become a cooperative in the production and marketing field and the cooperatives must be supported.

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Table 1. Fishermen's share and retailer's margins and their shares in the retail price

Fish Species	Fishermen's share		Retailer's margin		Retail price
	TRY	%	TRY	%	TRY
E.encrasicolus	3.12	39.95	4.69	60.05	7.81
T. trachurus	5.30	50.86	5.12	49.14	10.42
M. merlangus	9.86	39.98	14.8	60.01	24.66
M. barbatus	43.76	66.67	21.88	33.33	65.64
P. saltatrix	56.29	50.00	56.29	50.00	112.57

*1 USD=2.25 TRY

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Table 2. Incomes and expenditures acquired by fisherman, broker and retailer within the price consumer pays according to the fish species (TRY and %)

	E.encrasicolus	*T.trachurus*	*M.merlangus*	*M.barbatus*	*P.saltatrix*
Fisherman's income[1]	2.56 (32.78)[3]	4.36 (41.84)	8.11 (32.89)	36.00 (54.84)	46.30 (41.13)
Fisherman's fish market expenditures	0.20 (2.56)	0.35 (3.36)	0.65 (2.64)	2.90 (4.42)	3.73 (3.31)
Auction price[2]	3.12	5.30	9.86	43.76	56.29
Broker's fee	0.35 (4.48)	0.59 (5.66)	1.10 (4.46)	4.86 (7.40)	6.25 (5.55)
Broker's expenditures	0.32 (4.09)	0.32 (3.07)	0.32 (1.30)	0.32 (0.49)	0.32 (0.28)
Broker's net income	0.03 (0.38)	0.27 (2.59)	0.78 (3.16)	4.54 (6.91)	5.93 (5.27)
Retailers' buying price[2]	3.12	5.30	9.86	43.76	56.29
Retailer's expenditures	3.75 (48.02)	4.10 (39.35)	11.84 (48.01)	17.50 (26.66)	45.03 (40.00)
Retailer's selling price[2]	7.81	10.42	24.66	65.64	112.57
Net margin of the retailer	0.94 (12.04)	1.02 (9.79)	2.96 (12.00)	4.38 (6.67)	11.26 (10.00)

[1] The fishing (production) expenditures of the fisherman are not taken into account.
[2] 8% VAT included.
[3] Figures within the parantheses are percentages to total.