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FISH TRADE AND THE CONSTITUTION OF ITS PRICES IN ALGERIA: AN EMPIRICAL APPROACH

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ARTICLE INFO	ABSTRACT
	The fisheries sector in Algeria plays different economic and social roles. But the food role it plays is the main one of this sector. Despite all the potential provided by the public authorities to develop this sector and provide the consumer with a qualitative and cheap product; the consumer still suffers from expensive prices of fish. In this context, this paper tries, through an empirical and analytic study, to shed light on the fish trade and to analyse the constitution of fish prices in Algeria.Our research defends the following thesis: "On the contrary to other products, the absence of organisation of the commercialisation chain of fish trade and the absence of facilities of fish commercialisation, on the one hand, and the absence of an institutional approach for the fisheries in Algeria, on the other hand, are all factors that make the prices of fish not submitted to economic calculations, and not depending only on the law of supply and demand.". So, this study is aimed at guiding public intervention in the field of organising the activity of fisheries, setting supervising tools and organising the fish market. It is also aimed at searching mechanisms and procedure necessary to improve the supply of local market with various fisheries products with reasonable price.

INTRODUCTION

The fisheries sector in Algeria plays, likewise other economic sectors, different economic and social roles. Its importance varies from a coastal country to another. This depends on the volume of available fisheries resources and on the human and material potentialities provided to its exploitation. The alimentary role of the fisheries activity is absolutely the major one of this sector. In fact, it is a main source of nutrition and proteins (Emile Didier FIOGBE *et al.,* 2009). Fish represents 16 % of the proteins consumed by the humans. More than 02 billion persons get proteins from fisheries products(FMI, 2009). Algeria, as a coastal country, has got 1280 km of coasts and a 9.5 million-hectares-area exploitable maritime area depending on the national jurisdiction and allotted to the fisheries activity. The reserves of fishery resources of Algeria are of 500.00 tons. Within the framework of the economy of fisheries and fishery resources, there is an important operation, the one of commercialization of fish. Through this operation the prices are determined and their impact on different parties operating within the market is known.

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The commercialization, being an intermediate operation between the production and the consumption, makes it possible to reveal the efficiency of the operation of production and to show the degree of accordance or discordance between the supply of goods and the demand. In this framework, we can ask this question: "How the price of fish is established in Algeria? Which ring or rings make the greatest profit of the fish commercialization chain?. To ask this question, in advance, we make the following hypothesis: the absence of an accounting method and of an institutional approach as regards the fisheries, on the one hand, and the absence of organisation of the long product commercialisation chain, on the other hand, make the price of fish out of any economic calculation, but determined by other external factors.

MATERIALS AND METHODS

We have used in this study a quantitative analysis of data available on the national level (the Ministry of Fishing and halieutic resources 2014, National Office of Statistics), as well as on the international level (FAO, IMF). We have also used a qualitative analysis on the basis of available data (interviews with different operators in the sector). On the basis of an economic calculation, we have fixed a set of index that

participate to the economic analysis of the sector, in order to try to rethink the constitution of fish prices in Algeria (mainly the sardine which constitutes 84% of the national production), and to determine the parties who make the greatest profit from the high prices of fish. We will make a study and an analysis of the constitution of fish prices in Algeria through the following plan: We will rely on the following methodology to calculate the total costs of production of small pelagic fish (sardine).

RESULTS AND DISCUSSION

Analysis of the Market of Fishery Products in Algeria:

The market of products is known to be the place where the demanders meet with the suppliers of goods and where the price and the quantity of balance is determined (Coase, 1974). One of the aspects of fisheries activity in Algeria is that it is a craft-like traditional one, as it is the case in other Mediterranean countries. (Oliver and Franquesa 2005) Beyond
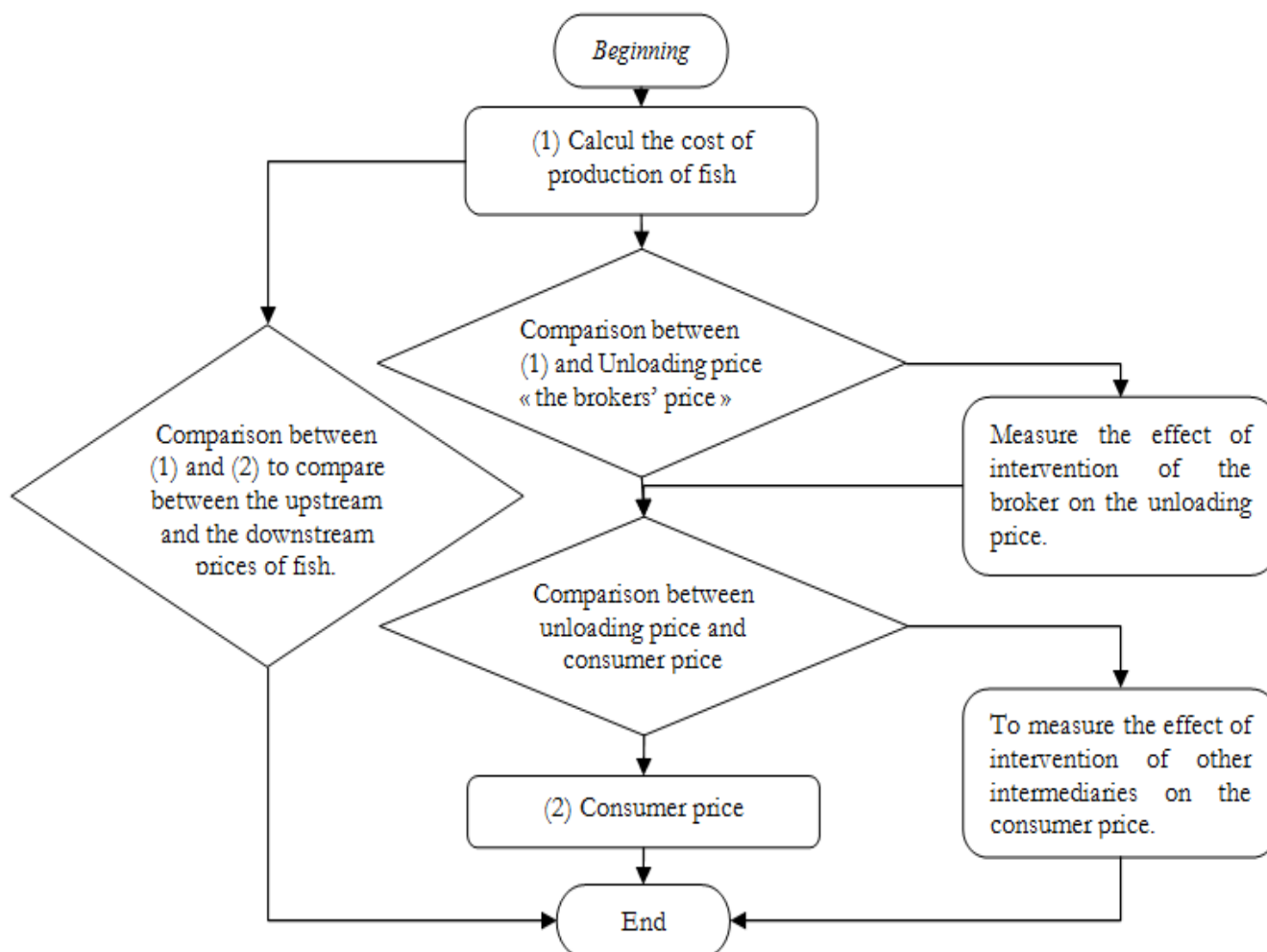
Graph 1 method of study and an analysis of the constitution of fish prices in Algeria

Table 1. Methodology of estimating the cost of 01 kg of small pelagic fish (sardine)

Reckoning		(1)	(2)	(3)	(4)	(5)	(1)+(2)+(3) +(4)+(5)=(6)
(1)	DZD/ fishing effort	Depreciation	Cost of workforce	Cost of commerciali- zation (share of the agent)	Cost of fuel	Other costs (stock exploitation duties, sanitation …)	Total costs of production in a venture
(2)	Kg/ fishing effort	Average production by fishing effort	Average production by fishing effort	Average production by fishing effort	Average production by fishing effort	Average production by fishing effort	Average production by fishing effort
(3) =(2)/(1)	DZD/Kg	Depreciation	Cost of workforce	Cost of commerciali- zation (share of the agent)	Cost of fuel	Other costs (stock exploitation duties, sanitation …)	Total production costs of 01 kg

Source: Personal realization on the basis of results of the field study (2014)

that, the profession lacks of organisation. Those are a set of factors that make the prices of fish not depending only on the "will of consumer, being the demand on the one hand, and the supply of producers, on the other hand." Yet, there are other factors and determiners which make the prices of fish determined in different terms from other goods.

Actors intervening in the constitution of fish prices

The operation of fish commercialization depends on a series of intervening actors. Each has got its importance in providing the consumer with fishery products.

Fishing Boat Captains (Raïs)

The captain is the leading person who commercially exploits the boat. In Algeria, "captains" (Raïs) are the proprietors of boats and of production means for all professional categories (draggers, sardine fisher, Small Scale Fishing) (Chakour, 2006).

Agents (brokers)

An agent is the person who has a sort of delegation from the captain, giving him the authority and mission to work for the captain, through concluding deeds of sale and purchase on behalf of the principal (captain).

Wholesale Dealers

The wholesale dealer constitutes the third ring of the chain of commercialization of fishery products, after the producer and the agent.

Retailers

The retailer is the last ring of the chain of commercialization of fishery products. According to the majority of "seamen" the retailers are the main actors in the fish market. We can distinguish two types of retails markets: (Chakour, 2006).

Street Retailers

They practise the lowest cost and most profitable activity. The retail trade by street retailers plays a key role in the distribution of fishery products. This kind of trade is dedicated to small pelagic fish (sardine).

This makes it possible, unlike all other types of retail trade, to reach the greater number of consumers, mainly in urban areas, but also sometimes distant rural areas that are far from fisheries and markets. This type of sale is also aimed at the lower classes of society, since a wide range of the society consumes sardine.

Sedentary Retailers

These are the retailers having one or more selling tables in different fisheries. Such retailers directly sell fish at the fishing port. Others use booths in the public markets. A third category of this type of retailers practises this activity in places dedicated to the sales of fresh fish and known as "fishmongers" (FAO, 2009).

Description of Wholesale of Fish and Bargaining in Fish Markets in Algeria

We can distinguish two types of systems of fish sales: auction sale and silent sale.

Auction Sale

This type of sale is generally done in big fishing ports. Fish is spread out on the docks or in fishmongers, where it is set in boxes of unique colour and weight. Each time, the salesman (broker, captain or a member of the crew) announces publicly the offered price, and so on until the final price is fixed.

Silent Sale

This system differs from the previous one in that each client gives his proposal of price in whispers to the salesman (broker, captain or a member of the crew), without announcing it to other clients. In this case, each client has to suggest his proper price in order to win the deal. In the negative, this means that the suggested price is lesser than the highest one suggested by some client else.[1]

The study of evolution of Fish Prices in Algeria

The analysis of evolution of fish prices in Algeria will permit us to reveal the potentialities of the sector and its capacity to face the demand on fishing products; and to determine the problems hindering the good functioning of this production activity.

Table 2. The evolution of consumption prices of some species of fish in Algeria, 2001- Aug. 2014

Species	Average price (DZD)					Shift (%)			
	2001	Aug. 2013	Jan. 2014	Feb. 2014	Aug. 2014	2001- Feb. 2014	Feb. 2013- Feb. 2014	Aug. 2013 Aug. 2014	2001- Aug. 2014
Fresh sardine	88.16	301.10	397.67	410.78	311.92	365.95	2.72	3.59	253.81
Red Shrimp	607.52	1897.46	1980.23	1967.78	1858.92	223.9	2.27	-2.03	205.98
Goatfish	462.10	1231.41	1247.29	1311.23	1251.30	183.75	1.73	1.61	170.79
Bream	322.26	983.77	1038.50	1003.09	1063.24	211.27	-7.85	8.08	229.93
Silver hake	468.43	1198.28	1223.07	1257.09	1240.61	168.36	-0.04	3.53	164.84

Source: ONS(2014), 'Indice des prix a la consommation', publication N°219, office national des statistiques, Alger, septembre, 05.

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[1] - Since the broker and the captain (raïs) are convinced of the financial profit resulting from the silent sale; they prefer to use the silent sale system, because the price is mostly fixed by the broker.

While tackling the question of the evolution of fish prices in Algeria through time, we will take a whole image of the general tendency of the evolution of some species of fish in Algeria. This is shown in the following table: The previous figure shows that the prices of fish in Algeria are increasing continuously, mainly the sardine fish which is the first fish consumption in Algeria (84 % of the total Algeria fishing production). We notice that its price increased from 88.16 DZD in 2001, to 410.78 DZD in February 2014; i.e. an increase of 365.95 %. This is a high percentage. The same has happened with the red shrimp, goatfish, bream and silver hake, whose prices have risen respectively of 223 %, 183%, 211 % and 168%.

Analysis of unloading prices and of the evolution of small pelagic fish (sardine) production in Algeria

The following figure shows the relationship between the evolution of sardine unloading prices[2]and its production in Algeria between 2001 and 2013:From the figure above, we deduce the fluctuation in sardine production in front of the increasing unloading price (Broker price). This increase affected directly the prices and the level of individual consumption.

The price, for many years, is directly proportional to the production, especially in the absence of an accountancy method within the fisheries in Algeria where the prices are determined through non-market factors (Christian 2002). Besides, if the unloading prices are compared to the prices of selling fish to the consumer, the difference is huge. This shows that the upstream price of fish (broker price) contributes at a large scale to the rise of its downstream price (consumption price). This negatively affects the level of individual consumption. In order to assess the upstream price of fish (production price), we will try to estimate the cost of production of small pelagic fish (sardine) in Algeria. Then, we will analyse the constitution of price and the chain of distribution of fishery products, so that we understand the very expensive prices and determine the parties taking benefit from.

An attempt to estimate small pelagic fish (sardine) production costs

The total costs are the sum of the total fixed cost (TFC) and total variable cost (TVC).(FAO1999) However, in the case we are studying (that of estimating the cost of production of 01 kg of sardine) we will consider all costs as fixed for a single fishing trip.
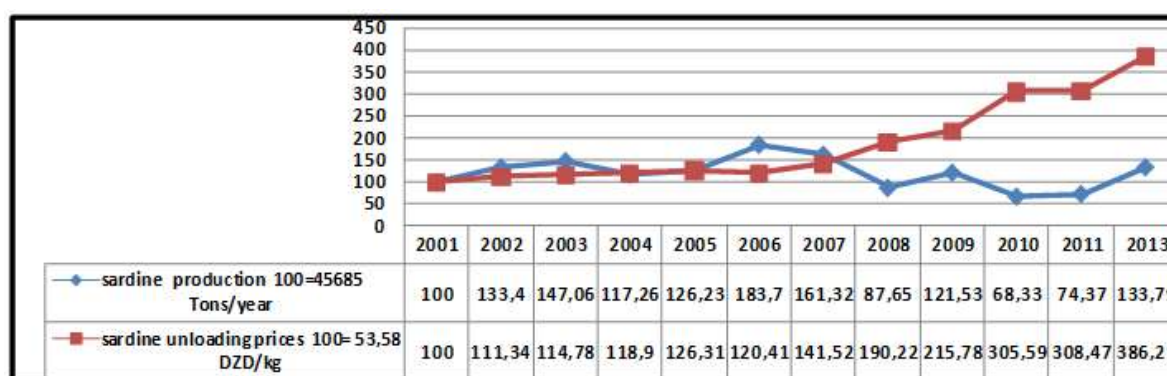
Source: Personal realization on the basis of data from the Ministry of Fisheries and halieutic Resources, 2014.

Figure 1.The scale evolution of sardine unloading prices and its production in Algeria, (2002- 2013). Basic Year: 2001

Table 3. Average depreciation expense of sardine fishing boats

Operation		(1)	(2)	(3)	(2).(3)=(4)	(1)/(4)=(5)
		Boat price(I)	Duration of life of boat (year) (T)	Number of fishing trips of boat per year (S)	Duration of life of boat in terms of fishing effort (n)	Depreciation expense
Unit		DZD	Year	Fishing trip/year	Fishing trip/year	DZD/fishing trip
Boat of 11 m	(1)	14000000	[25-30]	112	3080	4545.45
Boat of 14 m	(2)	15000000	[25-30]	112	3080	4870.13
Boat of 16 m	(3)	18000000	[25-30]	112	3080	5844.15
Boat of 18 m	(4)	30000000	[25-30]	112	3080	9740.25
Boat of 21 m	(5)	40000000	[25-30]	112	3080	12987.01
Average	(6)=[(1)+ (2)+ (3)+ (4)+ (5)]/ (5)	23400000	[25-30]	112	3080	7537.398

Source: Personal realization on the basis of results of the field study (Aug. 2014).

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[2] - The unloading price: It is composed of the turnover of the company. In case of existence of a broker, the unloading price is mostly fixed by them. The study of this price will enable us to determine the income of fishing units, on the one hand, and that the prices fixed by different intermediaries existing in the chain of commercialization of the product are mostly determined on the basis of this price.

Calculation of depreciation "d"

The depreciation of each fishing boat by fishing trip may be calculated as follows: (Chakour and Boncoeur, 2005).

$$(02): d=I/ (T.S)=I/n$$

Table 4. Monthly income of the employees of the professional category "sardine fishing boat"

Income of:	Boss of coastal fishing	Mechanic	Repair of fishing nets	Lamplighter	Ship's boy	Fisherman
Min. Wage	9	6	3	6	1	3
DZD	135000	90000	45000	90000	15000	45000

Source : S .C .Chakour (2011), 'Étude de la rentabilité de la pêche à ElKala', Projet, Gouvernance de l'Environnement Marin et Littoral en Algérie. GEMALIT, IRD, France, 2011.

Table 5. Cost of workforce onboard a sardine fishing boat

-	-	(1)	(2)	(3)	(4)	(5)	(6)=N-(1+2+2+4+5)	(7)= [(1)+ (2)+ (3)+ (4)+ (5)+ (6)]	(8)= (7)*12	(9)= (8)/112
-	-	R_{pp}	$R_{méc}$	$R_{rép}$	R_{lam}	R_{mou}	R_m	C_{mo}	C_{mo}	C_{mo}
Unit	-	DZD/ month	DZD/m onth	DZD/ month	DZD/ month	DZD/ month	DZD/month	DZD/month	DZD/year	DZD/fishing effort
N=[10-15]	N=Min=08	135000	90000	45000	90000	15000	3*45000=135000	510000	6120000	54642.85
	N=Max=15	135000	90000	45000	90000	15000	10*45000=450000	825000	9900000	88392.86
	N1=Moy	135000	90000	45000	90000	15000	225000+450000/2 =337500	712500	8550000	71517.85
N=[16-20]	N=Min=16	135000	90000	45000	90000	15000	11*45000=495000	870000	10440000	93214.28
	N=Max=20	135000	90000	45000	90000	15000	19*45000=855000	1230000	14760000	131785.71
	N2=Moy	135000	90000	45000	90000	15000	495000+855000/2 =675000	1050000	12600000	112500

Source: Personal realization on the basis of the results of the field study (2014)

We deduce from the table above that the average depreciation expense of sardine fishing boats is directly proportional to the size of the boat. It represents an average of 7537.398 DZD per fishing trip.

Calculation of the costs of workforce

The costs of production vary from a boat to another. As for small pelagic fish, it depends on the number of the crew. The following table shows the monthly income of the employees of the professional category "sardine fishing boat". The minimum wage is 15 000 DZD. According to the table above, the cost of workforce in each fishing trip may be estimated as follows:

We have:

N: the number of fishing crew;
C_{mo}: total cost of workforce;
$C_{mo.N1}$: average cost of workforce of fishing boats employing 08 to 15 employees;
$C_{mo.N2}$: average cost of workforce of fishing boats employing 16 to 20 employees;

According to the data above, the average cost of workforce onboard a sardine fishing boat becomes as follows:

$$(04): C_{mo}=(C_{mo.N1}+ C_{mo.N2})/2$$
$$=(71517.85+112500)/2=92008.92 \text{ DZD/fishing effort}$$

Cost of commercialization

This cost is the share of the "agent" (broker). It represents 10 % of the turnover and may be estimated as follows:

- Determination of the cost of production of 1 kg of small pelagic fish (sardine): According to the analysis above, the cost of production of 1 kg of sardine may be estimated as in the following table:

From the table above, we deduce that the cost of production of 01 kg of sardine is 107.89 DZD. If we compare it to the average cost of fish at unloading for the year 2013, which is of 206.93 DZD, we deduce that there is an increase of 86% more than the cost of production. This is a high rate which explains that a high upstream price affects significantly the final consumption price. This result helps to orientate the intervention of public authorities in the field of fisheries activity and determine tools of control and organization of fish market in Algeria, especially the activity of brokerage. The comparison of the cost of production and the cost of unloading (the turnover of a fishing unit) to the price of sale to the consumer, which oscillates between 300 and 500 DZD, shows that the difference is very big. All these results lead us to analyze the canals of commercialization of fisheries resources and determine the parties who make the most benefit of these expensive prices.

Channels of Commercialization of halieutic Resources in Algeria

It is meant by "channels of commercialization of fisheries resources" all the stages of introducing goods until they are sold to the consumer (FAO, 2014). In order to understand the constitution of prices of fisheries products, it is necessary to tackle the channels of distribution of such resources and to determine the different operators intervening in the constitution of prices. We can distinguish three main chains of distributing fish in Algeria.

First Chain

The channels of commercialization in Algeria differ from a region to another. The long channel is the main one of distributing fisheries products in Algeria. It characterizes the regions of abundant and well organised production. There are four interveners in this chain instead of the captain (raïs). (Chakour, 2006) this chain may be diagrammed as follows:

Table 6. Average cost of commercialization of small pelagic fish (sardine) "share of the broker: 2011-2013

Reckoning		(1)	(2)	(3)=(1).(2)	(4)=(3)/10	(5)=(4)/112
		Average sardine production	Average cost of unloading	Average turnover	Share of the broker	Share of the broker
Unit		Tons/year	DZD	DZD/year	DZD/year	DZD/fishing trip
(1)	2011	33975.9	165.27	5615196.99	561519.69	5013.56
(2)	2013	61121.96	206.93	12647967.18	1264796.71	11292.82
(3)=(1)+(2)/2	Average	47548.93	186.1	8848855.87	913158.2	8153.19

Source: Personal realization on the basis of data from the Ministry of Fisheries and halieutic Resources

Table 7. Estimation of cost of production of 1 kg of sardine

Reckoning		(1)	(2)	(3)	(4)	(5)	(1)+(2)+(3)+(4)+(5)=(6)
		Depreciation	Cost of workforce	Cost of commerciali-zation (broker's share)	Cost of fuel	Other costs (stock exploitation duties, sanitation …)	Total costs of production per trip
(1)	DZD/trip	7537.398	92008.92	8153.19	2000	1444.65	991287.23
(2): average production	kg/trip	1030	1030	1030	1030	1030	1030
(1)/(2)=(3)	DZD/kg	7.32	89.32	7.91	1.94	1.40	107.89
Percentage of (3)	(%)	6.87	82.78	7.33	1.79	1.29	100%

Source: Personal realization on the basis of the results of the field study (2014)

Producer → Agents « Brokers » → Wholesale Dealers → Retailers → Consumer

Second Chain

In this case, the fishermen (captain or one of the crew), sell the product to the wholesaler without intervention of a broker. The wholesaler, then, sells the product to the retailers.

Third Chain

Within the operation of commercialization of fish, there is direct commercialization from the producer to the consumer without any brokerage (MAAPF, 2012). In this type of chain, the fishermen may sell directly their products to the retailers. But this type is not the major one in Algeria, unless in some fishing shelters (equipped or natural), and in some dry harbours of limited production where the operation of sale does not require advanced transportation and commercialization means (Sahi and Bouaicha, 2003).

Analysing the Constitution of Prices of Fisheries Products in Algeria

The constitution of fish prices starts from the price fixed by the producer and ends at the price of sale to the consumer, including a set of stages (three stages without brokers and four in their presence). There are profit margins and costs resulting of the distribution of fish and resulting in high prices at the end (Biacabe *et al.*, 2011).

Determination of price by the producer

In case of intervention of brokers, the price is almost fixed by them, as in figure 04

Determination of intermediary Price

The determination of price by brokers is the second stage of constitution of fish prices after that of producer. The brokers of the chain of distribution take into consideration the costs of commercialization and the benefit margin to fix the price ofral, there are two cases of price determination by brokers, as in the figure bellow: The table above makes it possible to better understand the performance of fish market and the main interveners in it. It becomes clear that the price at the stage of brokers depends mainly on the profit margin fixed by each broker (price of broker (P_i)=Price of Producer (P_p)+Profit margin (MB), on the one hand; and on the marginal cost, on the other hand. so, the final price of the product depends greatly on the profit margin taken by the wholesaler and the retailer respectively, on the one hand, and on the intervention of brokers, on the other hand. The following equation:

$$(11): PV_d = PA_c = PV_M + r_1(PV_M/100) + r_2(PV_m/100)$$

r_1: the profit margin taken by the wholesaler;
r_2: the profit margin taken by the retailer.

Effect of broker intervention of fisheries products in Algeria

The brokers have got a very important role in the fish market. They are committed to sell the quantities of fish they bought from the suppliers. The broker is responsible of determining the price of sale. The profit margins gained by the other brokers (wholesalers and retailers) depend on the price fixed by the main broker. However, in Algeria, brokers do not generally belong to the sector of fisheries. This makes them acquire the quality of traders who do not care about the durability of the activity but just about the "profit" and about reinvesting the great sums they gain from fisheries activity (10 % of the turnover of the fishing unit) outside the primary sector. This state of things affects the durability of fishing activity (Chakour, 2014). The effect of intervention of brokers on the final price of fish may be shown as in the following figure: The analysis of constitution of small pelagic fish production costs shows that the broker represents 7.33% of sardine production cost (about 561519.69 DZD to 1264796.71 DZD per year).

	Case of intervention of brokers	No broker intervention
Method of calculation	$RT=CA$: Turnover or total income of fishing Q: Quantity RB_M.: Gross Income of broker RB_P. Gross Income of producer PV_M.: Unit sale price of broker $RB_P = CA - RB_M$ $= (Q.PV_M) - RBM$	RB_P.: Gross Income of producer $RT=CA$:Turnover or total income of fishing Q: Sold Quantity PV_M.: Unit sale price of broker $RB_P = CA = Q.PV_M$
Constitution of prices	**Producer:** P_p.: Unit Price for Producer **Broker:** PV_M.: Unit sale price (broker) $\Rightarrow PV_M = P_p$	**Producer:** P_p.: Unit Price for Producer
determination of price for brokers	**determination of price for brokers**	**determination of price for brokers**

Source: Said-Chaouki Chakour (2013) '*économie des pêche et des ressources halieutique-une approche interdisciplinaire pour un développement durable de la pêche en Algérie*', presses Académique Francophones, France, Edition N°01, 221-22.

Figure 2. Determination of fish price by the producer

First case: intervention of brokers	**Second case: non intervention of brokers**
given that: $RB_M - (Q.PV_M) = RB_P$	given that: $CA= Q.PV_M$ RB_P
RB_M. : Gross Income of broker $RB_M = 10\%(CA) = 0.1(Q. PV_M)$ so the determination of price becomes as follows: broker: PV_M wholesaler: PA_m PA_m.: Price of Purchase of wholesaler $\Rightarrow PA_m = PV_M$	$PA_m = PV_M$ **the price is determined as follows:** P_p: unit Price for Producer PA_m.: Price of Purchase of wholesaler $\Rightarrow_m = PV_M$
RB_m.: Profit Margin for the wholesaler PA_d.: Price of Purchase of retailer $PV_m = PA_d = PV_M + MB_m$ so, the determination of price becomes as follows: Wholesaler: PV_m Retailer: PA_d $\Rightarrow PV_m = PA_d$	MB_m.: Profit Margin for the wholesaler PA_d.: Price of Purchase of retailer $PV_m = PA_d = PV_M + MB_m$ so, the determination of price becomes as follows: Wholesaler: PV_m Retailer: PA_d $\Rightarrow PV_m = PA_d$
MB_d: Profit Margin for the retailer PV_d: Price of Purchase of retailer $PV_d = PA_c = PV_m + MB_d$ $= PV_M + MB_m + MB_d$ so, the determination of price becomes as follows: Retailer: PV_d Final Consumer: PA_c $\Rightarrow PA_c = PV_d$	MB_d.: Profit Margin for the retailer PV_d.: Price of Sale of retailer $PV_d = PA_c = PV_m + MB_d$ $= PV_M + MB_m + MB_d$ **so, the determination of price becomes as follows:** Retailer: PV_d Final Consumer: PA_c $\Rightarrow PA_c = PV_d$

Source: Said-Chaouki Chakour (2013) '*économie des pêche et des ressources halieutique-une approche interdisciplinaire pour un développement durable de la pêche en Algérie*', op.cit, 197-98.

Figure 3. Method of calculation and constitution of price at the stage of intermediary

This affects the price of sale of the product to the other brokers and, consequently, on the final price of fish. Beyond that, and beyond the method of silent sale method adopted by the brokers to sell fish; there is a great number of brokers, mainly in the Algiers and in the west of Algeria, who give financial aid to the producer fishermen and the wholesalers they work with. This fact makes the fishermen and the wholesalers depend financially on the brokers who oblige them to submit to the brokers' conditions so that the brokers can control the channels of commercialization of fish in upstream and downstream and become able to manipulate the supply of fish and to orientate it in the way it profits mainly to them. Consequently, the brokers' power and control of the market become greater.
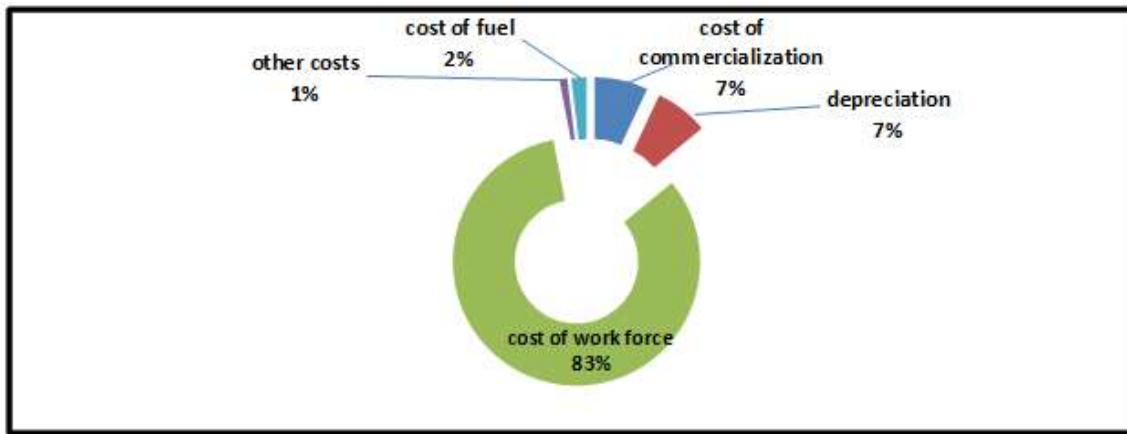
Figure 4. Constitution of small pelagic fish production costs

Suggestions to organize the fish market and supply the consumer with a product of good quality and reasonable price

According an official character to the profit margin of intermediary

Legalizing the activities of distribution and commercialization of fisheries products is susceptible to guarantee the rights of the interveners in the operation of fish commercialization. Such a legalization should be based on the purchase price because the profit margin gained by the broker in each circle is based on the purchase price resulting from the previous circle (i.e. according an official character to the relationship between the profit margin and the purchase price) (Chakour, 2006). The said legalization should also be based on the fact that the profit margin of the retailer be greater than that of the wholesaler, because the wholesaler benefits from the economy of scale through selling great quantities and gaining more profit from commercializing fish in a relatively short period. As for the retailer, they take longer time to sell the product and support consequently more fees (mainly concerning sardine which quickly gets damaged).So, the legalization of the margin and obliging the wholesalers to give the purchase invoices to the retailers will contribute supply the consumer with a product of low price.

Reorganizing the role of brokers

In view of the purposes of this study (supplying the consumer with a qualitative product), it is necessary to reorganize the profession of broker and determine their assignment through the diminishment of the great role they play in controlling the price of sale of the product; on the one hand, and to deduce a part of their income (10% of the turnover of the fishing unit) to be added to turnover of the establishment, on the other hand, so that this situation may be alleged and its effects diminished.

Encouraging street retailers (Conditioned fish-selling motorbikes)

This kind of sale makes it possible to avoid many costs and duties, and consequently increases the profit margin of the retailers, on the one hand, and decreases the final price of consumption, on the other hand. Moreover, this kind of sale (conditioned motorbikes) satisfies sanitary conditions and makes it possible to reach the consumer (mainly in distant areas that are far from fisheries) and supply them with good quality products.

Encouraging aquaculture

The balance between supply and demand may be reached through the encouragement of investment in aquaculture as a complementary activity, especially aquaculture in sea waters. Specially in the irreversible character of the management of the halieutic, resources (Chakour and Guedri 2014).

Abolishing silent sale

Silent sale makes the price of fish determined on a large sale by the brokers. So, keeping auction sale as the only kind of sale makes the price of fish get determined on the basis of supply and demand. This will permit more transparency in the market of fish and in the chain of commercialization, and limit speculation.

Creating a specialized organism to manage fisheries and protect the rights of small fishermen

Such an organism rectifies the imbalances in the markets of fish in matters of supply and demand. It should supply the market with extra products in case of decrease of supply, and avoid the fall of prices in case of overproduction through the absorption of a part of the supply and its reorientation into transformation industries. This is susceptible to protect the rights of both producers and consumers.

Creating modern fisheries

The creation of modern fisheries in all fishing ports will contribute to improve material and working conditions for fisher craftsmen, diminish speculation and valorize the activity of fishing. Modern fisheries will also improve the quality of fisheries products (using plastic crates, washbasins, stocks, sanitation products, …), and contribute to diminish the major role played by brokers in controlling the prices of sale,

affecting the profit margin for other types of brokers, and the final price of fish.

Conclusion

The analysis of fish market in Algeria has shown to what extent the brokers are dominating it and are manipulating the supply. The results of the study give evidence that supplying the consumer with a quality product of reasonable price, depends on the good organization of the long chain of commercialization of the product, and mainly on the organization of intervention of brokers and determination of their role. It depends also on the creation of necessary facilities for the commercialization of fisheries products. Beyond that, an accountancy method and an institutional approach are the main elements missing in fishing units in Algeria. Consequently, the price of fish dos not obey to any economical account, but to other, external, factors. In fact, the captain calculates his fishing income on the basis of calculation of crew's and broker's income. This shows the narrow eyed vision of captains to the sustainability of fishing units. Conversely, we find that the expensive prices do not make the profit of the producers (particularly fishermen); but are mainly profitable to the captains then to great agents or intermediaries operating in the field of commercialization, especially to brokers. Hence, the annual income of a fisherman does equal neither the efforts they lavish nor the risks to which they get exposed in the fulfillment of their activity, especially in the context of shares practiced in the division of revenues.

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