The economic development of the French fisheries : the major trends of supply and demand

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Introduction

In the context of an economic crisis with the recession in 1993 and a fall-off in demand, the combination, in the beginning of 1993 and 1994, of the following events led to a drop in prices which triggered off a social faintness in the French fishing industry, e.g. the adjustment of exchange rates, the reduction in air-freight tariffs, etc...

The problem is not so much about the significance of the short term drop in prices - which is usual at this time of the year- but about the long term trends which this sector has been subject to for decades.

Beyond the resource's biological constraints, the 1975 difficulties of French fisheries have revealed their vulnerability and dependence on the market of competitive agricultural products, the international market of sea products and the financial and industrial sectors that impose their regulations.

We have here a national example which will show you to what extent the fisheries sector is economically dependent on its financing means and on the evolution of the final demand beyond the resource's constraints. We will therefore notice the importance of prices and profits forecasts in the investment dynamics of the fisheries sector.

The evolution of the French fishing fleet and its financial situation :

After a whole decade of limited investments (1965-1975), the fisheries sector has undertaken to modernize and improve its productivity. In a period of 5 years, landings per person jumped from about 12 tonnes per year to about 20 tonnes between 1977 and 1982. This has led to an increase in the capitalistic intensity due to the fleet's partial renewal and the transformation of existing units. The profits obtained were more the result of a reduction in staff (workers) rather than an increase in production. Consequently, the work force apparent productivity has reached a certain level of stability similar to the 1982 level.

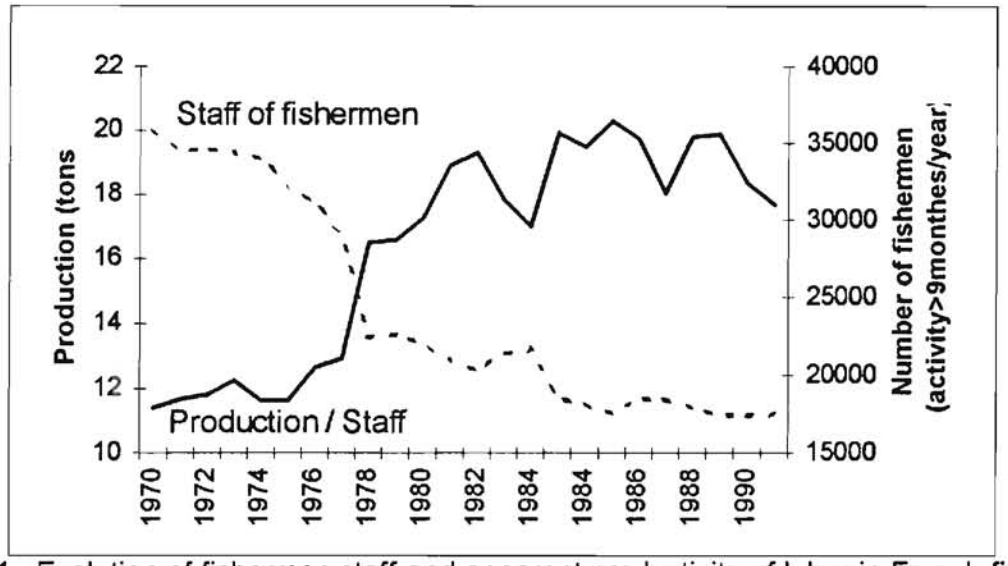


Figure 1 : Evolution of fishermen staff and apparent productivity of labor in French fisheries (Source : CNPM)

This modernization effort was prompted by the state-granted aids for enhancing artisanal fishing in order to protect employment and set up a secure social climate. Financing terms have loosened between 1978 and 1987 with the reduction in the necessary self-financing rate from 10 % to 8%. In 1960, this rate applied on loans granted for shipbuilding reached at least 15 %. The fisheries sector benefits from low-interest rate loans with a nominal rate of 5% over 12 years.

Since the implementation of the second multi-annual guidance programme set up by the European Union in matters of Common Fisheries Policy, the French fleet has decreased of more than 35 % (from 11.200 vessels in 1988 to 7000 vessels in 1993). In terms of "puissance totale installée", the reduction reached about 11 %. It covered paticularly small units and old vessels. Out of 4.200 vessels which have ended their activities, there were 4000 vessels of less than 12 metres long. Out of all the French fishing boats, their share dropped from 80 % to less than 73 % . There were essentially old boats which have ceased their activities. Between 1989 and 1990, the majority of boats have operated for more than 20 years (Durand & al., 1992).

	< 12 m		12 - 16 m		16 - 25 m		>25 m		TOTAL
1983	9454	81,07%	928	7,96%	993	8,52%	286	2,45%	11661
1984	9571	81,37%	921	7,83%	998	8,48%	272	2,31%	11762
1985	9351	81,25%	923	8,02%	987	8,58%	248	2,15%	11509
1986	9295	81,43%	913	8,00%	977	8,56%	230	2,01%	11415
1987	9234	81,32%	904	7,96%	983	8,66%	234	2,06%	11355
1988	9071	80,67%	930	8,27%	1012	9,00%	231	2,05%	11244
1989	8156	78,72%	929	8,97%	1043	10,07%	233	2,25%	10361
1990	6556	75,76%	850	9,82%	1022	11,81%	226	2,61%	8654
1991	5449	73,66%	765	10,34%	981	13,26%	202	2,73%	7397
1992	5185	73,85%	715	10,18%	944	13,45%	177	2,52%	7021

Table 1 : Breakdown of French fishing vessels by length *(source : CAAM)*

Along with the fleet's physical evolution over the last 15 years, a modification in catches occured with especially an increase in the effort focused on up-market species such as sole fish or sea bass. Sole catches have increased of more than 105 % between 1977 and 1992, jumping from 4.432 tonnes to 9.089 tonnes. Simultaneously, sea bass catches have increased of 75 %, reaching about 3000 tonnes. It is also interesting to compare the value of landings of the first ten species in 1970 with the results obtained in 1992. Only catches of sole, angler fish, dublin bay prawns and hake increase or remain relatively stable while all the other catches decrease noticeably.

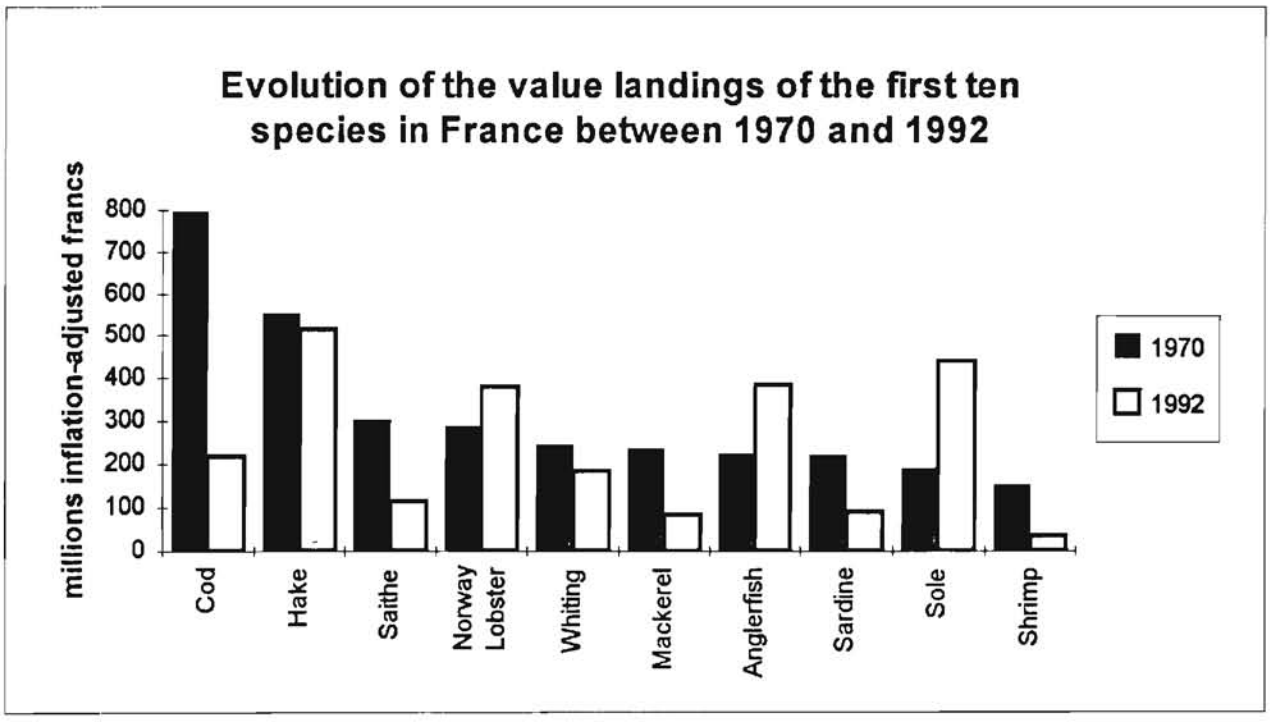


Figure 2 : Evolution of the value of landings of the first ten species in France between 1970 and 1992 (source : CNPM)

Despite its modernization effort, the French fleet still suffered money shortage. According to the data available on fishing firms profitability, these firms have succeeded to recover from the 1970s' oil crises. Moreover, they took advantage of

the moderate price of fuel since 1986. It is important to mention that energy comes in the first place in terms of intermediary consumptions ; it accounts for 10 to 15 % of the turnover according to the vessels and the type of fishing. However, the debt and financial costs of fishing firms affect the results which are often deficitary despite a significant self-financing (cash flow).

To explain the recent evolutions of the sector's financial situation, we have synthesized the results of 2 samples of 18 to 25 metres long vessels. One result covered the year 1987 and 117 vessels and the other covered the year 1990 and 92 vessels, that is to say 12 % of this size units.

According to these samples, the performance ratios of the 18 to 25 metres long vessels remained stable between 1987 and 1990. The rates of added value and turnover were relatively stable during this period ; they reached respectively about 62 % and 8%.

The evolution of the results of sampled vessels shows the important average increase on average in "circulating" capital, especially for fixed assets. In a period of four years, the latters have increased of 64 % in nominal price. This has led to an important deterioration of the gross economic profitability. It decreased from 35 % in 1987 to less than 20 % in 1990.

	1987	1990	
Total Assets	100%	100%	+52%
among Net Worth (1)	16.3%	15.4%	+42%
Long term Liabilities (2)	66.8%	71.1%	+62%
Current Liabilities (3)	16.9%	13.5%	+23%
Fixed Assets (4)	74.0%	79.7%	+64%
Current Assets (5)	26.0%	20.3%	+17%
Working Capital total assets less current liabilities	11.4%	7.7%	
Added Value / Turnover	62.1%	61.6%	
Return on net worth	93.4%	53.3%	
Return on capital employed	15 %	8 %	
Profit margin	8.0%	7.5%	
Profitability	15.4%	8.1%	
Asset utilization	1.92	1.09	
Sample size	117	92	
Vessels with positive operating profit	110	63	

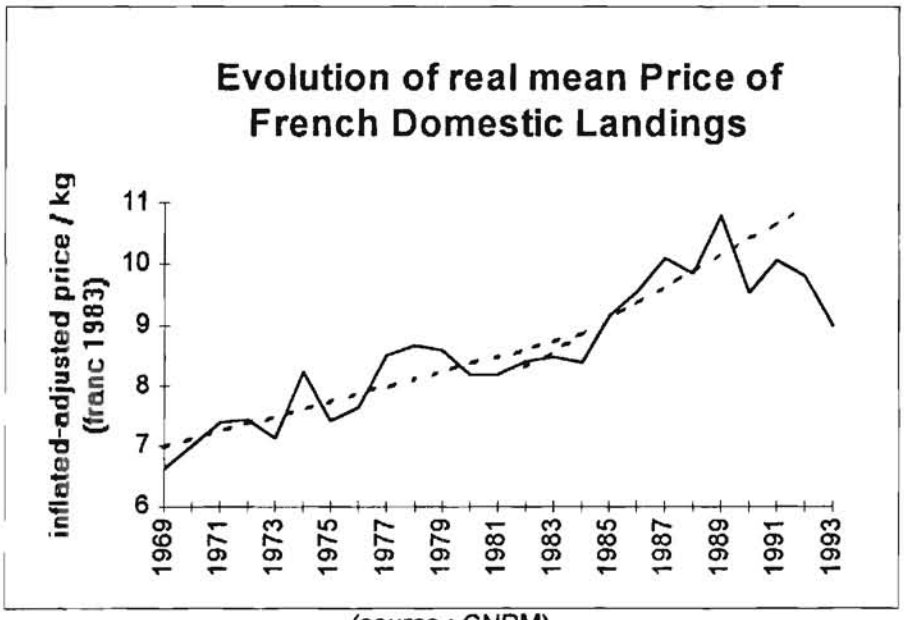
Table 2 : Main operating and balance sheet ratio of French fishing vessels 18-25 metres long (sources : IFREMER - CGPA)

Long term loans were the fundamental source of financing which maintained a permanent level of capital increase. The assets' share of resources has decreased from 16.3 % to 15.4 % between 1987 and 1990. This means of financing through low-interest loans have increased the return on assets. In 1990, this return on capital amounted to 53.3 %. It would have reached only 50.1 % with the dividing-up of resources of 1987 results, that is to say a return of 3.2%.

The relative stability of the activity in terms of turnover per vessel and the important increase in "circulating" capital have reduced sharply the global return on investments. In 1990, one Franc invested would produce twice less than in 1987, reducing by half the return on capital. Moreover, we notice during this period an

important gap between the progression of the need in working capital (cyclical jobs - cyclical resources) and the working capital itself, respectively 46 % and 7% which would predict cash-flow problems for certain vessels.

The renewal of the fleet at the discontinuance of activity might have contributed to such results. However, very few fleet reductions have been registered in the category of vessels analysed. This tendency would result from new constructions (about 50 constructions for the whole fleet) and especially from modernization investments due to an accelerated increase in the average price at landing and to the anticipation of a high profit rate ; Lantz and Juinquiera-Lopez (1992) have showed the importance of this rate on investments in the fisheries sector in France through an accelerator-profit model. Clark (1976) has already brought to the fore this phenomenon indicating that, with the absence of a limitation of the access to fishery, a progressive increase in prices would lead to a steady increase in the fishing effort and/or the capital. This factor has probably been amplified since it is considered as a financial lever and an exploitation lever and the relative speeding up of the mean landing prices.



(source : CNPM)

The financial lever index, calculated as the ratio of the return on shareolders' funds and the return on capital employed more net interest, was increasing to more than 3 all along the period. As for the coefficient of exploitation lever[1] which is the ration of the variations of production and the variations of the trading statement, it continued its progression. Evaluated at 2.3 according to 1987 and 1988 accounts, it has jumped to about 6 between 1989 and 1990. Its evolution indicates (1) an important

[1] Coefficient of exploitation lever =

$$\frac{\dfrac{\Delta \text{ trading statement}}{\text{trading statement}}}{\dfrac{\Delta \text{ volume of production}}{\text{volume production}}} = \frac{\text{turnover - variable costs}}{\text{turnover - variable costs - fixed costs}}$$

increase of fixed costs, (2) a level of production reaching the break even point and (3) the sensitivity of trading statement to landing prices.

Combined with the financial lever, the lever of exploitation provided the sector with important profits but it also increased the risks due to its upward and downward trends. However, these risks are limited by the system of remuneration "by share" of the crew since the fluctuations of turnover and working costs are distributed between the shipowner and the fishermen (Platteau, 1989) and maximise their function of utility (Plourde & Smith, 1989).

If we put aside the constraints inherent to the resource, the conditions of "valorization" of catches play a fundamnetal role in the formation of the vessels' turnover. They can also upset the financial equilibriums of fishing vessels. One of the important conditions is the households demand in sea products since the majority of production is for domestic consumption. This makes us wonder about its evolution.

The evolution of the global demand

Households consumption long-term trends are tributary of economic and demographic factors which are balanced according to the types of products. Consumers' behaviour progresses slowly but its direction is clear. The evolutions of the structure of expenses by function can evaluate it. Therefore, we notice that with the increase of the living standard, the share of budget spent on foodstuffs requirements decreases. It decreased from 23.5 % in 1975 to almost 19 % in 1993. Foodstuffs long term elasticity has decreased from 0.57 in 1980 to 0.47 in 1990 over the total expenses.

Since 1980, the economic environment is characterized by :

- deep changes occuring in the evolution of prices of the different categories of products especially among the sources of products providing proteins. The mean yearly mark-up rate between 1985 and 1991 were : meat 3.5%, poultry 0.5%, dairy produces 2.3%, and fish 5.3%.

- the irregularity of the evolution of household purchasing power which has decreased since 1991 after three years of record for the decade :

	Population	Purchasing power of disposable income per capita	Consumption per head in volume		Population	Purchasing power of disposable income per capita	Consumption per head in volume
1980	0.5	-0.6	0.9	1986	0.5	1.9	3.2
1981	0.6	2.0	1.5	1987	0.5	-0.1	2.2
1982	0.6	1.9	2.8	1988	0.5	2.7	2.6
1983	0.5	-1.3	0.4	1989	0.5	3.4	2.6
1984	0.5	-1.2	0.5	1990	0.6	2.6	2.0
1985	0.5	1.2	1.8	1991	0.6	1.1	0.9
				1992	0.6	1.8	0.6

Table 3 : Evolution of consumption per head in % with regard to the year previous
(source : National Accounting)

The evolution of household consumption of sea products :

There is a wide range of sea products consumed in France particularly fresh products with more than 750.000 tonnes in 1992.

The figures of the apparent consumption (national production + imports - exports) calculated according to landings, indicate the increase in quantities of fresh products per capita available on the market. After having decreased from 13.28 kg to 13.08 kg between 1977 and 1982, these figures have increased to 13.24 kg in 1992. However, fresh sea fish figures have continued their decrease (from about 8 kg/head/year in 1977 to less than 6.5 kg/head/year in 1992) for the benefit of amphibiotic fish especially salmonids.

	1977		1982		1992	
	Tons	kg/hab	Tons	kg/hab	Tons	kg/hab
Fresh Sea Fishes	422 583	7,95	429 890	7,91	364 315	6,39
Crustaceans	51 883	0,98	41 559	0,76	39 522	0,69
Bivalves	231 472	4,36	225 634	4,15	281 881	4,94
Cephalopodes			12 018	0,22	19 291	0,34
Amphibiotic Fishes	1 597	0,03	2 229	0,04	50 511	0,89
FRESH PRODUCTS	705 938	13,28	711 330	13,08	755 520	13,24
Frozen Sea Fishes	147 527	2,78	151 589	2,79	169 752	2,98
Frozen Crustaceans			20 067	0,37	50 527	0,89
Frozen Shellfishes			7 597	0,14	22 303	0,39
Frozen amphibiotics Fishes	11 424	0,21	17 141	0,32	31 760	0,56
FROZEN PRODUCTS	147 527	2,78	196 394	3,61	274 342	4,81
SALTED, SMOKED or DRIED PRODUCTS	14 375	0,27	11 387	0,21	8 303	0,15
SEA PRODUCTS	867 840	16,33	899 741	16,54	1 038 165	18,20
CANNED PRODUCTS	146 176	2,75	158 500	2,91	202 699	3,55

Table 4 : Evolution of apparent consumption in Sea Foods *(source : CNPM, customs)*

According to surveys conducted by the National Institute of Statistics (INSEE) on households consumption, the evolution of consumption in volume by type of products shows the growing share of crustaceans-molluscs-shellfish and of frozen products since 1976, while fresh fish consumption decreases sharply till 1991 despite an important recovery at the end of the 1980s.

	1976	1985	1987	1989	1991
Fresh Sea Fishes	5,34	5,17	4,99	5,11	4,73
Crustaceans	1,23	1,26	1,48	2,13	2,00
Frozen Products	<0,50	0,94	1,17	1,80	1,49

Table 5 : Evolution of household of sea food products in kg / head / year
(source : INSEE surveys)

According to the national accountancy data, the average annual growth rate[2] in volume of all sea products would have regained its level of pre-1970, increasing from less than 1% between 1975 and 1985 to 2.3% later. Therefore, this segment of foodstuffs consumption has developed faster than the joined segment of meat and milk after 1985.

	from 75 to 85			from 85 to 91		
	Sea food products		Meat	Sea food products		Meat
	fresh	processed	Milk	fresh	processed	Milk
indice of value	11,90%	14,10%	11,30%	8,90%	11,50%	5,20%
indice of prices	11,30%	10,30%	9,10%	6,50%	1,80%	3,40%
indice of volume	0,60%	3,40%	2,10%	2,30%	9,40%	1,80%

Table 6 : Mean yearly growth rate (source : National account)

The low level of development of sea products between 1975 and 1985 (fresh sea food products : +0.6% and meat : 2,1%) is due to the reduction in the private disposable income and to the impact of the evolution of prices. The adjustment of econometric models indicated that the demand in sea products was in a progressive glut with an increase in the living standard (Meuriot, 1983). The elasticity fish expenses/total consumption was then evaluated to 0.43 and the elasticity fish expenses/relative prices to -0.24. Moreover, the econometric analyses of relations existing between household socio-demographic characteristics and their expenses per product show (1) the importance of foodstuff habits, (2) women rate of activity (bloch, 1983). Therefore, the age of the householder has a positive and growing impact on the share of foodstuffs budget spent on fresh and salted-smoked-dried products and a negative impact on canned and frozen products. At the same time, the wife's activity has a negative impact on fresh fish and, to a lesser degree, frozen or appertized fish ; the "pseudo-elasticities" (elasticities valued in relation to qualitative variables) of these three categories of products are respectively -0.7, -0.3 and -0.2.

From 1985 and especially 1986, households purchasing power progressed thanks to the important reduction of the inflation. The trend of consumption in volume per head increased sharply. The evaluations of sea products elasticities to total consumption have increased to 0.74 in 1992 while evaluations of the whole category of foodstuff reached less than 0.5. However, demand is not homogeneous and varies more or less according to products.

The grading of products by elasticity in relation to foodstuffs expenses makes us distinguish between staple goods and up-market products. We notice that not any processed product is considered as a staple good (elasticity / income < 1) :

[2] the differences in the evaluation of apparent consumption by kg/capita/year among the national accountancy, the INSEE enquiry and landings are due to the fact that the first two sources take into account the weight of the product consumed while the last source considers the equivalent of the product in gross weight.

	Elasticity in relation to foodstuff budget
Whiting, cod	between 0,6 and 0,9
Cooked meal Pilchard, mackerel, other fresh fishes	near 1 but less than 1
Salted, smoked or dried fishes Frozen fishes	more than 1
Whole of sea food products Canned fishes	between1,1 and 1,2
Whole of canned fishes-shellfishes	between 1,2 and 1,3
Whole oyster-shellfishes	between 1,4 and 1,5
Sole, anglerfih Canned or frozen shellfihes	between 1,5 and 1,8

Table 7 : Elaticities of some sea food products in relation to whole foodstuff budget (source : INSEE)

These trends reappear in terms of the apparent evolution per specie and the evolution of prices at landing. We can distinguish 3 categories of products :

- staple goods rarely consumed when processed and which are deteriorating in volume and in value (herring). However, the price of species often consumed in fillet has remained stable (whiting).

- staple goods that are included in the composition of processed goods (cod, saithe) remained stable thanks to the new marketing means (frozen and cooked products).

- Up-market value products (angler fish, sole fish...) whose level of consumption or prices have remained the same as the level of households consumption.

	Apparent Consumption kg / head						Mean landing price a kg (Franc 1983)					
	angler-fish	sole	cod	saithe	whiting	herring	angler-fish	sole	cod	saithe	whiting	herring
1974	0.21	0.18	0.87	1.25	0.69	0.61	14.27	38.61	10.31	5.48	5.68	3.88
1980	0.34	0.15	1.17	0.83	0.76	0.40	13.07	42.04	13.07	5.26	5.26	3.52
1985	0.35	0.23	1.15	1.09	0.58	0.48	16.93	37.60	10.26	4.70	6.01	1.94
1990	0.38	0.25	1.35	1.21	0.44	0.55	20.65	38.19	12.06	4.69	6.81	1.24
1991	0.33	0.26	1.17	0.95	0.46	0.47	22.94	35.56	12.90	5.37	6.90	1.18
1992	0.32	0.25	1.03	0.86	0.42	0.33	22.31	34.10	10.81	4.79	5.72	1.12

Table 8 : Evolution of apparent consumption and landing prices (source : CNPM)

Conclusion and discussions

In less than 20 years, many changes occured in the French fisheries. Thanks to public grants, they have modernized their fleet along with adjusting their production to the market especially up-market value species. This is clearly illustrated by the evolution of the structure of catches.

During the second half of the 1980s, this phenomenon developed due to the increase of the domestic demand in sea products and a good economic context. The fancy of consumers for noble species led to an increase in prices and consequently to a noticeable increase of investments by forecasting future profits valued from past profits. This contributed to increase the effects of financial and exploitation lever and accentuate the economic risks on the sector because of the current situation of an over-exploitation of the resource.

Since the shift occured in the households consumption trend in 1990, up-market species prices at landing have started to decrease, prices with a very high coefficient of elasticity compared to the total consumption. The 1993 slump accentuated this drop in prices leading the sector into one of the most dangerous crises that it has ever known.

Therefore, it would seem that the fisheries sector in France has gone through a deflationary crisis further to the speculations made on the fish price, the decrease of the domestic demand and an uncontrolled growth of investments.

Moreover, the development of the French fisheries would be stopped now because the domestic demand in sea products has been altered with the appearance of processed sea products like frozen cooked courses. Actually, a part of the reason for the drop in fresh seafish sales is competition from the development of the processed products stream. Twenty years ago, the French fisheries were growed because they directly adjusted their production to domestic market. Today, they must do it to seafood processing industry.

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