

JAPANESE SEAFOOD CONSUMPTION: AN ANALYSIS OF AT-HOME CONSUMPTION AND GENERAL TRENDS

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ABSTRACT

In the world, Japan has a special place in the fish consumption, as Japanese people are among the most important consumers of aquatic food products, and Japan ranks first as fish importer, for supplying about half of its market. Thus the changes in the Japanese seafood market are susceptible to have a considerable impact on fisheries and aquaculture sectors in numerous countries.

Changes in fish consumption in Japan must be considered in the general context of deep changes which affected the Japanese food system, notably a diversification in the type of food consumed through internationalization, and more recently changes in the place and mode of consumption.

Our aim is to identify the main changes in the seafood consumption in Japan over the last 10 years. We used the data issued from the Family Income and Expenditure Survey which allows to analyse the trends in at-home consumption for fish and shellfish, for the main groups of products and the main commodities, and the variation of consumption regarding to the income and to the age of the head of household. The decrease in at-home consumption is confirmed, especially for young people, while eldest people appear as an over-consuming subgroup. The lack of available information about the other types of consumption (out-of-home and intermediate consumption), which importance has been dramatically growing, and about the consumption by one-person households, limits the capacity to draw definitive conclusion and invites to further investigation.

Keywords: Japan, seafood, consumption

INTRODUCTION

Over the world in the fish sector, Japan draws a peculiar attention because of the highly important role of fish in its traditional and contemporary economy, culture and food pattern. Japanese people are among the most important consumers of fish in the world (66.2 kg/cap in 2003, Source FAO). The supply of Japanese market has changed gradually from a national supply to an increasing share of imports, reaching 47 % in 2001 of the 8.55 million tons market for human consumption (Fisheries Agency, 2003). Japan being the first importer of fish in the world, the trends in Japanese fish market are surveyed by numerous public or private actors in the world. FAO Globefish published in 1998 a global study of this market (Basir et al., 1998), using *inter alia* the detailed results of Williams (1998) who studied the changes in market structure and seafood consumption over two decades (cf Note 1).

After an important rise until the beginning of the 70s, the apparent consumption of aquatic food products in Japan shows variations between 63 kg/cap and 72.7 kg/cap (in equivalent live weight, source FAO and Japan Fisheries Agency), with maxima in 1973, 1988, and 1994, and minima in 1992 and 1998. Basir *et al.* (1998) and Williams (1998) mentioned a slowly declining trend, but the recent years again show an increase followed by a stagnation. Nevertheless, the existence of variations along 30 years invites to be cautious about interpretation.

Some dramatic changes in food consumption and general economic situation

The changes in the consumption of aquatic food products take place in an overall context of deep changes in the Japanese food pattern since World War II (Sakamoto, 1994), marked by a very important diversification of food products and recipes through westernisation and internationalisation of food habits,

and a growing use of processed food products. The composition of the diet has changed: decrease of cereals, increase of meats and dairy products, while aquatic food products showed a more limited increase. In the daily per-capita intake of protein, the aquatic food products supplied 15.6 g in 1960 and 20.1 g in 2001, and represent approximately a stable share of the total protein intake (22 % and 23 % respectively), while the livestock products passed from 8 % to 32 % (Japan Fisheries Agency, 2003).

Japan has changed from the status of a country with a low daily caloric intake (1400 Kcal/capita in 1945) based on a traditional diet (rice – fish – vegetables) to the one of an industrialized country with a very diversified diet, but keeping a relatively limited daily calorie intake (in 2001, 2700 Kcal/capita-day, source FAO) compared with Western developed countries (3450 Kcal/capita-day). This limited energy intake and the balance in a diet rooted in the traditional pattern with a large place for fish, up to now has conferred to the Japanese food pattern a unique status known as favourable to health, but some questions emerged recently about its conservation (Itoh, 1994).

The diversification in food patterns allowed by the growth of revenues has reached a maximum in the period of very high economic growth, from 1975 to about 1990, where it reached a sophistication of meals and a « Gourmet Boom ». This diversification is linked with important changes in the Japanese society, including a decrease of time for cooking along with the development of women work, the increase of the time devoted to leisure, notably outing in restaurants, and the new consumption modes of women and seniors. Inside families, there has been an increased flexibility, or individualization, of food patterns, according to the daily life schedules of the family members. Altogether, from the mid-70s within the last 20 years, there is an increasing trend to eat food not prepared at home, so that it is usual today to distinguish three segments : “Naishoku” for the meals prepared and consumed at home (at-home consumption), “Gaishoku” for food consumed in restaurants (out-of-home consumption), and an intermediate form, “Nakashoku”, for cooked food and ready-to-eat meals bought outside and consumed at home or elsewhere (intermediate consumption). The growth of “intermediate food consumption” has been boosted by big changes in food distribution and development of a flourishing “food-service”: growing market share of supermarkets and convenience stores proposing ready-to-eat food, increasing number of fast-food stores (Anon., 1997).

The burst of the “bubble economy” in 1989 and the subsequent economic stagnation have considerably affected the behaviour of consumers, faced with uncertainty in employment and economy, who became cautious. Concerning food consumption, the following period is showing a tapering off of food expenditure per capita in real terms and of calorie intake, and a stabilization of the components of the meal, while, noticeably, the expenditure for out-of-home consumption and intermediate consumption continued to grow (Anon., 1997).

Fish market and consumption

The traditional Japanese seafood consumption is famous not only by a high quantitative level but also a very rich and diverse culture regarding to the species, recipes, occasion of consumption, regional differences. Using the data about household consumption, Wessels and Willem (1994) studied the seasonal and regional patterns of seafood consumption, and Johnson et al. (1998) did a comparative study of seasonality for meat and fish.

Concerning the changes of the consumption within the last decades, the seafood consumption in Japan has been influenced not only by the general changes upper described but also by specific changes which occurred in the fishery industry: growing competition on the markets from imported fish, deep changes in the organization of the fresh fish supply chain (Hamada, 2000) with a growing market share of the supermarkets (reaching 65 % in 1999, Source Fisheries Agency 2003) while traditional central fish market lose their importance, competition between meats and fish on the basis of inferior prices of chicken and pork making them very competitive for numerous fishery products (Taya 1998 in Williams and Taya 1999). Basir et al (1998) mentioned a decrease in the average quantity of seafood consumed [at-home] by household over the period 1992 – 1995 and interpret it as a direct consequence of the economic slowdown. Studying from 1982 to 1995 the households expenditure on seafood, and the

seafood prices at fishing port and in wholesale markets, Williams and Taya (1999) found a general downward trend for prices, of about 25 %, while the general expenditure on seafood declined, and explained them not solely by a decline of demand but by an increasing pressure by supermarkets and department stores on producers and wholesalers. Tada (2000) showed, for the main commodities, the existence of a price linkage between Japanese market and international market. Concerning new forms of consumption, along with the trend mentioned for all food, seafood consumption shows an increase the consumption of value-added products and the increase of eating-out (Basir et al. 1998, Williams 1998, Williams and Taya 1999).

In our study, we tried to analyse the recent evolutions of Japanese seafood consumption after the mid-nineties, and to see if there have been some changes compared to the previous observed trends.

AVAILABLE DATA FOR CONSUMPTION ANALYSIS

We used mainly the data issued from the Family Income and Expenditure Survey, published annually by the Statistics Bureau of the Ministry of Public Management, Home Affairs, Posts and Telecommunications, now called the Statistics Bureau of the Ministry of Internal affairs. Relying on a monthly survey of a representative sample of about 8000 households of two-and-more persons households excluding agriculture, forestry and fisheries households, this annual survey provides an extensive set of data describing the general economic situation, and the households expenditures and purchases in all consumption sectors, including food, among which “fish and shellfish”, with different sub-groups (cf Note 2).

We selected several indicators to describe the general economic situation and food consumption. For the consumption of aquatic food products, we used this set of data over a 20 or 24 years period (1981-2004) in order to analyse the trends of at-home consumption in expenditure and purchased quantities when available, for the sub-groups.

The Family Income and Expenditure Survey also provides data according to several socio-economic variables, among which we considered:

- the annual income, with 5 quintiles considered,
- the age of the household head, with eleven classes considered until the 90'S (five-year classes from 24 years'old) and six classes later (ten-year classes from 29 years'old).

We analysed over a cycle of 20 years (1982, 1992 and 2002) the effect of income and age on the consumption expenditure (and purchased quantity, when available) for the two most important groups of aquatic food products: “total fish and shellfish”, “fresh and frozen fish and shellfish”. The most recent data, for 2004, were also considered.

As the number of persons per households is continuing to decrease (for all households, from 3.69 in 1986 to 3.19 in 2004, with a recent stabilization), we shall consider for all variables the per-capita data, and express the values in real terms as yen 2000 (deflated with general CPI).

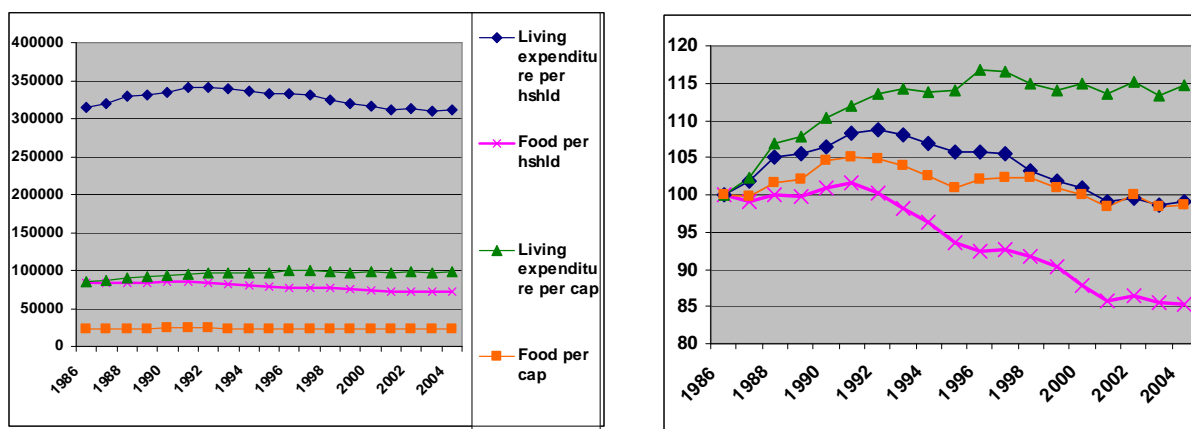
General situation of income and expenditures

After the collapse of the Economic Bubble, the Consumer Price Index shows a continuation of growth until 1998, then a deflation period until 2003, with a stabilization in 2004 (expressed with index 100 in 2000 : 90.3 in 1989, 101.3 in 1998, 97.7 in 2003 and 2004). Nevertheless, the households income which was on a rising trend since 1981 showed a stagnation and then a decrease. For workers households on a national basis, the average monthly disposable income in real terms (Yen 2000) rose from 395,237 Yen in 1981 to 466,525 Y in 1989, reached a maximum at 494,198 Y in 1997 before declining to 450,830 Y in 2003, before a slight increase (455,451 Y) in 2004. As for the monthly disposable income per capita, the declining trend is less accurate in the recent period : 104,010 Y in 1981, 140,000 Y at maximum in 1997, 130,874 Y in 2004.

The monthly living expenditure of all households in real terms (Yen 2000) interrupted its growth as soon as 1993 and showed a decrease before a recent stabilization at a level close to the one of 1986 (314,133

Yen in 1986, 311,364 Yen in 2004). But the living expenditure per capita in real terms continued to grow until 2000, and the following years show a stabilisation around 15 % above the 1986 level: 85.131 Yen in 1986, and 97.606 Yen in 2004.

As in most of industrialized countries, the share of food in households budget has been on a long term decreasing trend: in 2004, food represents 23.0 % in the living expenditure of all households, versus 26.8 % in 1986. On another hand, the expenditures for food per household in real value, which were still on an increasing trend at the end of the 80's, have been strongly impacted by the economic recession and show a continuous decrease since 1992, with a recent trend to stabilization. But again, the expenditure for food computed per capita exhibits a different trend, as the decrease of the beginning of the 90's turns earlier into a stable trend at a level close to the one of 1986 (22,500 Yen 2000 per month in 2004, 22,793 Yen 2000 per month in 1986). (Figures 1 & 2)



Figures 1 and 2 : Average monthly expenditure (left, in yen 2000; right, in Index, 100 = 1986) for total living expenditure and for food per household* and per capita - Source: Statistics Bureau, Japan

* for All Households of Two-and-more persons, excluding agriculture, forestry and fisheries households

In a situation of long term stagnation of total food expenditure per capita, looking at the trend per subgroup (Figure 3) allows interesting observations : the main expenditures (cereals, meats, vegetable and seaweed, fish) have all been on a continuous downward trend during the 90's, but became stabilized since 2001, except for fish. On another hand, despite the stagnation of total expenses for food, those for "eating-out" and "cooked food" have continued to grow, but the expenditure for eating-out shows a stabilization since 1997, while the expenditure for cooked food strongly grew until 2003 (Figure 3). In fact, the shares of the three types of consumption in the total food expenditure per capita changed importantly over the period 1981 – 2004 : for at-home food consumption 71 % in 2004 vs 80.4 % in 1981, for out-of-home consumption 18.0 % in 2004 vs 13.9 % in 1981, for intermediate consumption 11.0 % of total in 2004 vs 5.7 % in 1981, the latter showing the strongest growth rate (91 %) over the same period.

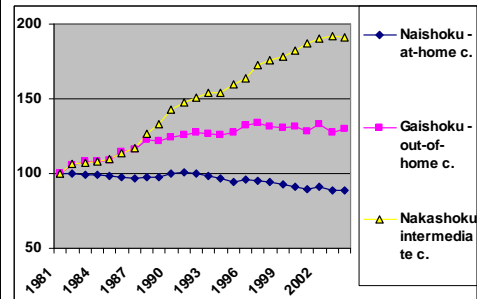
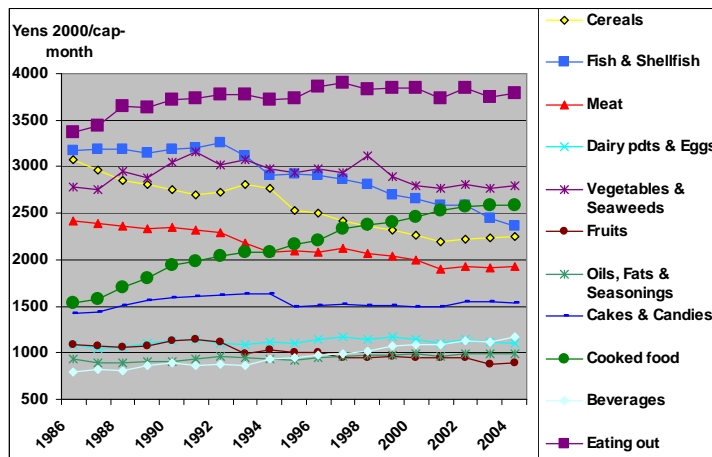


Figure 3 : Average monthly expenditure for food per capita (deflated, yen 2000) for All households (2-person-and-more, excluding AFF) – Source: Statistics Bureau, Japan

Figure 4 : Index for Yearly expenditure per capita for the three types of food consumption (deflated Y 2000)

Consumption of aquatic food products

Total fish and shellfish, and main groups

Among the main groups of food items in a monthly average household budget computed per capita (Figure 3), the total fish and shellfish show the most important expenditure at the end of the 80's until 1992, with a stable trend around 3200 Yen 2000 per capita, followed by a continuous decrease representing – 27 % between 1992 and 2004.

Considering the main groups of fish products (Figure 5), the monthly average expenditure per capita show similar trends, with a stronger decrease for “salted and dried fish” (- 33 %), “fish paste products” and “other processed fish” (both – 29%), and a lighter decrease for fresh and frozen products: only -16% for shellfish, and -25% for fish which represents the biggest share of the total (54.8%).

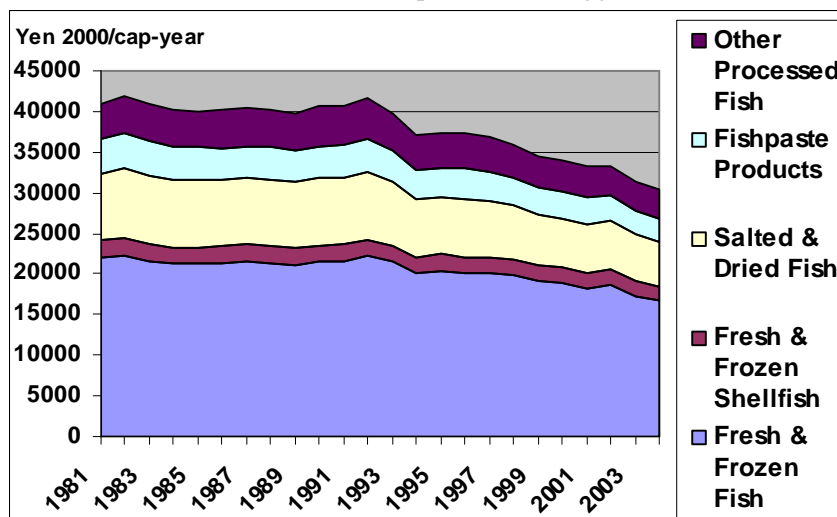


Figure 5 : Yearly expenditure per capita* for at-home consumption of aquatic food products - Source: after Statistics Bureau, Japan

* in All households of 2 and more persons (excl. Agriculture, Forestry, Fisheries Hslds)

Using the equivalent available data for purchased quantities per capita (Fig.6), it appears that the decrease of consumption in quantity is not as heavy as in value, and on a more continuous basis: between 1991 and 2004, - 10.3 % for the “fresh and frozen fish”, - 10.2 % for the “fresh and frozen shellfish”, - 12.0 % for the “salted and dried fish”.

The important decrease in expenditure for aquatic food products is very much explained by a decrease of prices in real terms (Fig.7) for two groups: continuous since 1982 for salted and dry fish (2004/1981: - 23.3 %), but less important for fresh and frozen fish (2004/1981: - 15.9 %) and more accentuated since 1992 after variations in the 80’s. The case of shellfish is very different, as their price is stable in trend over the two decades (2004/1981: + 1.23 %), with a recent upward trend.

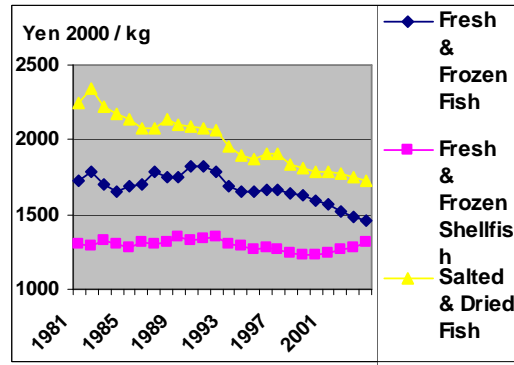
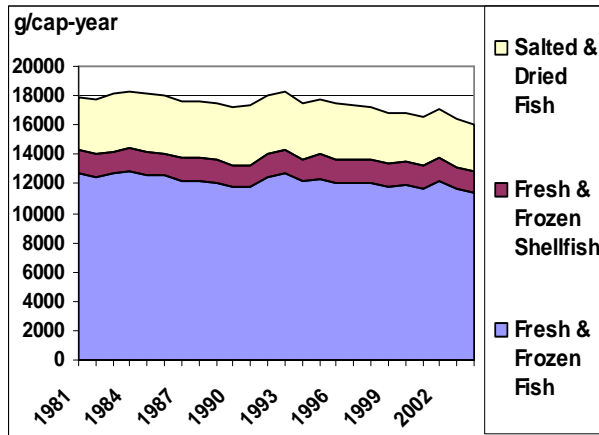


Figure 6: Yearly quantities purchased per capita* for at-home consumption of aquatic food products

Figure 7: Average purchase prices (Yen 2000 / kg) for at-home consumption of aquatic food products

Source: after Statistics Bureau, Japan - * in All households of 2 and more persons, excl. AFF households

Effect of income and age

The data of expenditure for at-home consumption of “total fish and shellfish” in five income quintile groups over 20 years (Fig.8) show that there is an important effect of income in 1982 and 1992, especially between the three highest income levels. Interestingly, that effect is getting attenuated in 2002, and the discrepancies between the three first groups (I, II and III) are strongly buffered. The data for the year 2004 are confirming this trend. We found the same trend for “fresh and frozen fish and shellfish”. On purchased quantities of “Fresh and frozen fish and shellfish”, the same phenomenon is found, and is visible as soon as 1992. Within the last decade and so, the effect of income on at-home consumption, both in expenditure and quantity, seems to be disappearing for low and middle income groups.

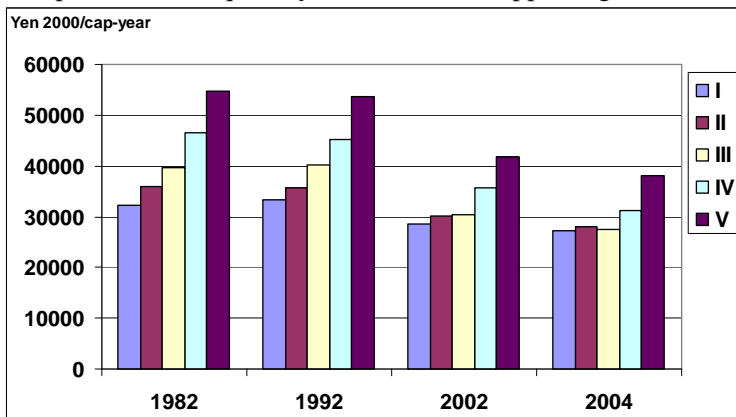


Figure 8: Effect of income on Yearly Expenditure per capita (yen 2000) for at-home consumption* of Total Fish and Shellfish, Source : Statistics Bureau - *in All households of 2-and-more persons, exc. AFF

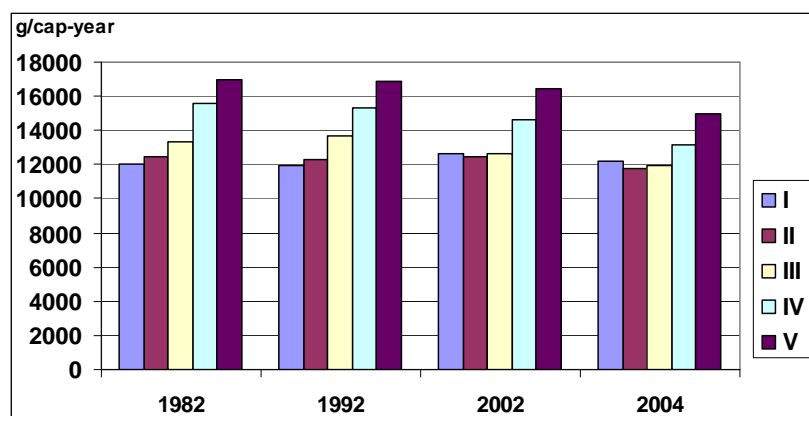
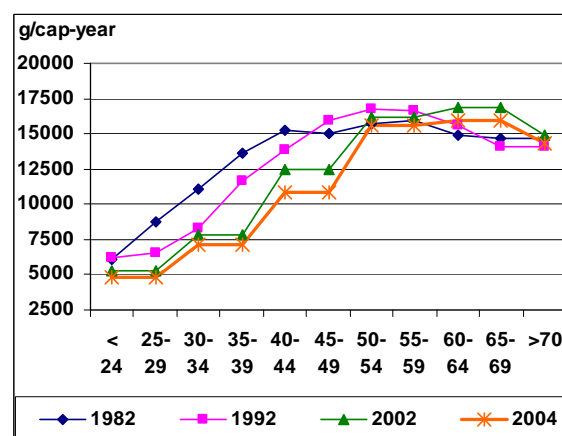
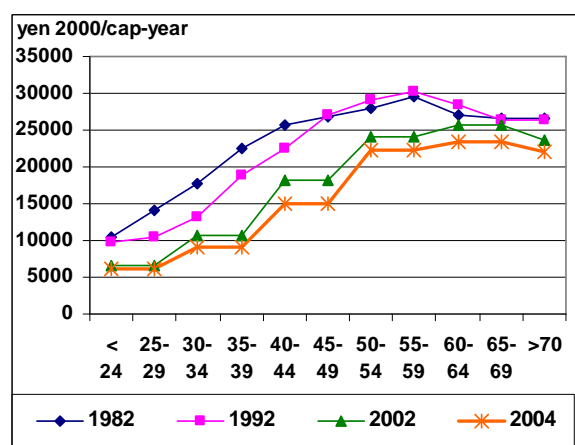


Figure 9 : Effect of income on Yearly purchased quantities per capita (deflated, yen 2000) for at-home consumption* of Fresh and Frozen Fish and Shellfish - Source : Statistics Bureau, Japan
 * in All households of 2-and-more persons, excluding Agriculture, Forestry & Fisheries households

The analysis of the effect of age of household head, over two decades, brings very striking results (Fig. 10 & 11):

- As soon as 1982, one can observe, both in expenditure and quantities, an important effect of age, characterized by an inferior level of consumption for young classes, a development of consumption for middle age classes, and for senior classes, a level of consumption inferior to the one of middle age classes but still high.
- But considering the changes from 1982 to 2002, it appears that this trend is getting stronger along the time, and the curve is being delayed : young classes consume less and enter later into a significative consumption, senior classes re-inforce their level of consumption, both in expenditure and quantity. It is particularly visible in 2002, and confirmed by data of year 2004, and interestingly, senior classes consume a higher quantity in the recent times than one decade before.



Figures 10 & 11 : Effect of age of Household Head on At-home consumption* of Fresh and Frozen Fish and Shellfish, comparison over 20 years and 2004, Source : Statistics Bureau, Japan
 * in All households of 2-and-more persons, excluding Agriculture, Forestry & Fisheries households
 Left, Figure 10: Yearly expenditure per capita (Yen 2000) Right, Figure 11: Quantities per capita (g)

A possible effect of price has been looked at through a focus on the year 2002 :

- Between the Income Quintile Groups (Fig. 12): a growing level of purchase prices is the main factor explaining the increase of expenditure with the income level. For the three first groups I, II, III it is the only factor, as the purchased quantity does not vary, but for groups IV and V, there is also a small additional effect of a growing quantity,
- between the classes for Age of household head (Fig.13), we found also a general effect of age, with growing purchase price with age, which is usually the consequence of the elevation of income with age; but there is also a combined and important effect of quantity, growing with age, except for the eldest class which shows a decrease in quantity but an increase in purchase price, indicating a choice of higher value species, or of value-added products.

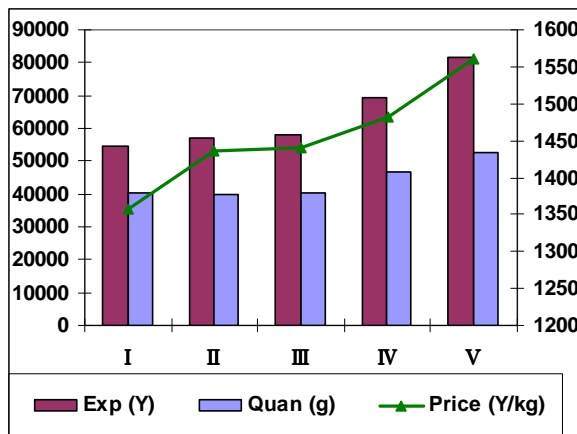


Figure 12: At-home consumption of Fresh & Frozen Fish & Shellfish in 2002 - Yearly expenditure, quantities and prices per Year Income Quintile Group, per household – Source: Statistics Bureau, Japan

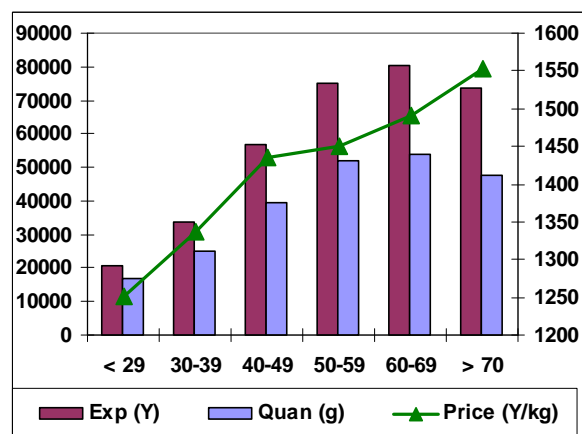


Figure 13: At-home consumption of Fresh & Frozen Fish & Shellfish in 2002 - Yearly expenditure, quantities and prices per Age Group of Household Head, per household - Source Statistics Bureau, Japan

DISCUSSION

Our study allows to characterize the situation of at-home consumption of aquatic food products by family households within the last years, and to compare it with the trends observed by previous authors. The decrease of at-home consumption observed in the mid-90's by Basir et al. (1998), Williams (1998) and Williams and Taya (1999) has been continuing, despite low prices - except for shellfish-. Although the economic recession met by Japan after the Bubble collapse seems to be on the end, and while the expenditure on the other animal food, meats, has stopped to decrease, expenditure for at-home consumption of seafood is still on a downward trend. Further investigation would be necessary to analyse the competition and substitution between meats and seafood in the recent period, and to understand the determinants of the consumers' choices.

The decline of consumption in young age classes was already mentioned by Williams (1998), and is very confirmed by the trends in the recent years. In the mid-1990's, young people are considered to be wanting to try new products, to buy from new sources, to try new ways of cooking and eating (Williams 1998). The question whether the young people are going to adopt more traditional patterns later in life, with a growing seafood consumption, was also opened, referring to other authors as Taya (1994) in Williams (1998), or Kusakabe and Anderson (1991) in Williams (1998). The relative decrease observed a decade later also for middle-age classes suggests that it is not the case. On another hand, the senior classes appear to be over-consuming classes more than before, and this must be related with the importance of health concerns, particularly among aged people. Health concerns was identified as one of the main drivers of

food purchase in Japan, along with convenience and quality according to Tokoyama and Egaitu (1994), and this is apparently always true. The seniors represent a high and growing share of the Japanese population (people above 65 years old are 18.6 % of the population in 2002, and should reach 20% in 2006) and appear to be today the most important consumers of seafood in Japan, for the at-home consumption in two-and-more person households.

Our study, using only the data from the Family Survey, has inherent limits, which keep several questions without answers. One is due to the very limited knowledge of fish consumption through out of home (Gaishoku) and intermediate consumption (Nakashoku), making especially difficult to understand what innovation today is entering the Japanese diet, as far as aquatic food products are concerned. Indeed, the FIES provides bulk expenditures data concerning these two types of consumption, as a total and considering the different types of items included. But these data do not allow a separate analysis according to the type of raw material, nor about the consumed quantities. Only ad-hoc studies, or specialised studies on these economic sectors, may bring further information. Looking at the Japanese food consumption in general, fish can obviously be considered as a main component of these two types of consumption:

- because fish dishes are very important in out-of-home consumption, in restaurants specialised in fish (in sashimi, sushi, eel, fugu...), or unspecialized (tempura, izakaya, nomiya,...),
- some dishes are rarely prepared at-home and mainly bought as prepared food (Nakashoku), as shown by an inquiry of 2003 in 900 households in Tokyo and Osaka areas (Anon., 2004): fish dishes represented 23 % of the quoted dishes bought already prepared, and those dishes were said to be prepared at home for only 6 % of the dishes in at-home consumption.

All previous studies (Basir et al. 1998, Williams 1998, Williams and Taya 1999) insist on the growing importance of value-added products based on seafood proposed in convenience stores and supermarkets, and it is likely that there is some compensation of the decrease in at-home consumption through this new segment of the market. This could be especially true for young people, as Taya (1994) in Williams (1998) mentioned that young people obtain a high proportion of their food needs from eating out, especially from convenience stores (about 80 %), using them as “personal refrigerators”. It may be also the case for eldest people when they pay for high price products.

Another obvious limit of our study is the exclusion of some groups of the population from the Expenditure and Income Survey: on one hand, Agriculture, Forestry and Fisheries households, and on the other hand, the one-person households. The latter appears to be today a growing subgroup of the population, reaching 28.5 % of the population in 2002 (Statistics Bureau, Japan, in Anon. 2005). Moreover, they are important consumers through intermediate consumption and out-of-home consumption: an inquiry performed from August 1999 to March 2000 on 674 questionnaires (Anon.,2000) showed that individual persons (students, single office ladies, workers living alone) spend 35 % of their food budget for intermediate consumption and 44 % for out-of-home meals, while these data were respectively 15 % and 21 % for seniors, and 14 % and 15 % for housewives (for the whole family). The need for further investigation is thus clear, before drawing a conclusion about the overall trends of the consumption of aquatic food products in Japan.

Conclusion

Through this analysis based mainly on expenditures of two-and-more-persons households over two decades in Japan, some noticeable changes are found in the at-home consumption of aquatic food products: decrease in at-home consumption but with a probable increasing role of other forms of consumption, late entry and lower consumption of young classes in the consumption of fish and shellfish, high consumption of eldest classes. The lack of knowledge about consumption through other types of consumption (out-of home and ready meals) and by one-person households prevents from drawing

general conclusion about the whole Japanese consumption of seafood, but this study suggests to pay attention to trends which can be of importance in the future. Moreover, at the time we finish this paper, the economic indicators show that Japan has entered a phase of new growth which may allow changes in the expenditures of households for food, and namely seafood as both premium and healthy food.

REFERENCES

- Anonymous, 1982, 1992 - Annual Reports on the Family Income and Expenditure Survey, *Statistic Bureau of the Ministry of Public Management, Home Affairs, Posts and Telecommunications, Japan*.
- Anonymous, 1997 – Structural Changes in Japan’s Food System. SGII n°17, *Food and Agricultural Policy Research Center, Tokyo*, 104 p.
- Anonymous, 2000 – Shinseki no shohisha nakashoku kodo : kojins shufu shiruba kara no sangens. (*New trends in intermediate consumption: three dimensions approach about individual persons, housewives and aged people*), Gaishoku sangyo sogo chosa kenkyu centa (*Center for research and studies about out-of-home consumption*). 2000, 6, 111p. (*in Japanese*).
- Anonymous, 2002 - Annual Report on the Family Income and Expenditure Survey, *Statistic Bureau of the Ministry of Internal Affairs and Telecommunications, Japan*.
- Anonymous, 2004 – Gaishoku sangyo tokei shiryoshu 2004 (*Statistics of out-of-home consumption sector, year 2004*). Gaishoku sangyo sogo chosa kenkyu centa (*Center for research and studies about out-of-home consumption*). 580 p. (*in Japanese*).
- Anonyme, 2005 (in French) – L’évolution de la demande des consommateurs sur les marchés prioritaires du Canada: Japon (The evolution of the consumers’s demand on priority markets for Canada : Japan). *Agriculture et Agroalimentaire Canada, Bulletin n°1, Octobre 2005*, 9 pp.
- Basir A., Pawiro S., Ferdouse F., 1998 – The Japanese seafood market, *FAO Globefish*, Vol 56, 125 p.
- Itoh K., 1996 – Economic development and patterns of food consumption in Japan. In: APO 1996, « Dietary intake and food consumption in Asia and the Pacific », *Report of Asian Productivity Organization Symposium 13-20 Dec. 1994*, 49-62.
- Fisheries Agency, 2003 – Annual Report on Fisheries Sector.
- Hamada E., 2000 - Structural change and prospect of fishery product market in Japan. *Journal of Japan Regional Fisheries, April 2000, special issue*, 45-57.
- Johnson et al. (1998)
- Roheim-Wessels C. and Willem J.E., (1994) – Seasonal patterns and regional preferences in Japanese household demand for seafood. *Canadian Journal of Agricultural Economics*, 42, 87-103.
- Sakamoto S. 1996 – Trends in economic and socio-demographic factors affecting food consumption. In: APO 1996, « Dietary intake and food consumption in Asia and the Pacific », *Report of Asian Productivity Organization Symposium 13-20 Dec. 1994*, 264-283.
- Tada M., 2000 – Japanese fish demand and price linkage with foreign markets. *Proceedings of IIFET 2000, Corvallis, USA, July 10-14 2000*, 7 pp + tab., CD.
- Tokoyama H. and F. Egaitsu, 1994 - Major Categories of Changes in Food Consumption Patterns: Japan 1963-91, *Oxford Agrarian Studies*, 22(2).
- Williams S.C., 1998 – Long-term and recent trends in the Japanese seafood industry: implications for exporters. University of Queensland Graduate School of Management, Monograph n°1/98.
- Williams S.C. and K. Taya, 1999 – Prospects for the Japanese seafood market in the late 1990s: implication for Australian exporters. *Australasian agribusiness review*, Vol. 7, paper 5, 8 p.

ENDNOTES

Note 1: Basir et al. (1998) reproduce in their Globefish Report the whole text of a report by Williams in Annex 3, but without mentioning the date of Williams publication, and unfortunately nor including any

list of references (in their report, and at the end of Williams's report). We consider that the reference we found in Williams and Taya (1999), and that we mention here as Williams (1998), corresponds to the report included in Globefish Report.

Note 2 : "Fish and Shellfish" includes several sub-groups : 1/ "Fresh fish and shellfish" (including fresh, chilled and frozen fish and shellfish), where « fish » includes finfish, cephalopods, and crustacean, and « shellfish » which includes bivalves and gastropods. 2/ "Salted and dried fish". 3/ "Fishpaste products". 4/ "Other processed fish".

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