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Salmon demand trends by the variations of expenditure elasticity

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Abstract: The future demand forecasting will be expected by the observation for current level and direction of the change of expenditure elasticity. This document studies the salmon demand trends in Japanese market by the variations of expenditure elasticity of workers' households between 1981 and 2009. Expenditure elasticity is one of the indicators to understand the demand trends. The relation between income and expenditure elasticity was computed by the linear least squares method. Yellowtail, octopus, shrimp (or prawn), scallop and salmon showed bigger demand despite of the increase of supply. Though the expenditure elasticity of fresh salmon has decreased since 1981, it has turned upward after 2005. The expenditure volume of salted salmon was bigger than that of fresh salmon from 1981 to 1993. However, the expenditure volume of fresh salmon has been bigger than that of salted salmon since 1994. The expenditure ratio of salmon to seafood per person per year showed more than 10%.

Key words: fresh salmon, salted salmon, expenditure elasticity, income of workers' households, demand and supply

Introduction

The demand theory of microeconomics shows that variations of income affect demand (Lipse, 1992). The demand trends vary and do not vary by the increase of income of workers. Demand not only can increase or decrease but can not vary. Expenditure elasticity is one of the indicators to understand the demand trends. The future demand forecasting will be expected by the observation for current level and direction of the change of expenditure elasticity. This document studies the salmon demand trends in Japanese market by the variations of expenditure elasticity of workers' households of the past three decades between 1981 and 2009.

Methods

The supply (= fishery production + exports) of main fishes in the Japanese market was calculated by using of the annual statistics of fisheries and aquaculture production of

the ministry of agriculture, forestry and fisheries. The expenditure elasticity of main fishes to the income of workers' households was calculated by using of the annual statistics of family income and expenditure survey of the ministry of internal affairs and communications. The relation between income and expenditure elasticity was computed by the linear least squares method (Minotani, 2003). The distribution ratio of fresh, cold and salted salmon was calculated by using of the annual statistics of the Tokyo metropolitan central wholesale market. The calculated period was for thirty years from 1981 to 2009.

Results

1) Relationship between variability of supply and expenditure elasticity from 1981 to 2009 (Fig. 1)

The supply of main fishes to Japanese market has changed greatly except tuna and bonito for thirty years from 1981 to 2009. The supply of squid, horse mackerel, saury, short neck clam, sea bream, flounder and sardine in 2009 was more decreased than that in 1981. In the fishes whose supply decreased, the expenditure elasticity of sea bream, short neck clam, horse mackerel and sardine was bigger than 0.6. On the other hand, the supply of salmon, saury, octopus, yellowtail, scallop and shrimp (or prawn) in 2009 was 2 to 4 times increased than those in 1981. In the fishes whose supply increased, the expenditure elasticity of yellowtail, octopus, shrimp (or prawn), scallop and salmon was bigger than 0.6. The nearer 1 of expenditure elasticity, the bigger the fishes demand. The nearer 0 of expenditure elasticity, the less the fishes demand. Yellowtail, octopus, shrimp (or prawn), scallop and salmon showed bigger demand despite of the increase of supply.

2) Annual variability of expenditure elasticity of fresh salmon, salted salmon, fresh seafood and salted seafood (Fig. 2)

The expenditure elasticity of fresh salmon, salted salmon, fresh seafood and salted seafood from 1981 to 2001 was compared. The expenditure elasticity of fresh seafood and salted seafood was 0.86 ± 0.05 , 0.80 ± 0.06 , respectively. The expenditure elasticity of fresh salmon and salted salmon was 0.71 ± 0.16 , 0.73 ± 0.10 , respectively. The demand of fresh seafood and salted seafood was stable remarkably for thirty years. Though the expenditure elasticity of fresh salmon has decreased since 1981, it has turned upward after 2005. The annual variation of the expenditure elasticity of salted salmon was bigger than that of fresh salmon.

3) Variability of expenditure of salmon items by workers' households (Fig. 3)

Salmon items were classified chum salmon, sockeye salmon, coho salmon, Atlantic salmon and other salmon by using of the annual statistics of the Tokyo metropolitan central wholesale market. The ratio of expenditure volume of salmon items by workers' households was calculated in accordance with the ratio of purchase volume of salmon items in the wholesale market. The expenditure amount (yen) and volume (g) of salmon items per year of workers' households from 1981 to 2009 was $7,506 \pm 1,309$ yen/year, $4,895 \pm 326$ g/year, respectively. The expenditure volume of salted salmon was bigger than that of fresh salmon from 1981 to 1993. However, the expenditure volume of fresh salmon has been bigger than that of salted salmon since 1994. The expenditure volume of coho salmon not only has held the largest share of fresh salmon but that of chum salmon has increased stably in fresh salmon since 1994.

4) Variability of expenditure ratio of salmon to seafood per person per year (Fig. 4)

The size of households was 3.61 ± 0.41 persons from 1981 to 2009, 3.80 persons in 1981 and 3.43 persons in 2009. The expenditure volume of seafood except processed products decreased to 11,308 g/person/year in 2009 from 17,113 g/person/year in 1981. However, the expenditure volume of salmon was 1,248 g/person/year in 2009. It was the same level as 1,257 g/person/year in 1981. The expenditure ratio of salmon to seafood per person per year in workers' households was calculated. The ratio of expenditure amount (yen) has increased since 1995 and showed 10% in 2009. The ratio of expenditure volume (g) has been increasing consistently since 1981 and reached 11% in 2009.

Conclusions

Yellowtail, octopus, shrimp (or prawn), scallop and salmon showed bigger demand despite of the increase of supply. Though the expenditure elasticity of fresh salmon has decreased since 1981, it has turned upward after 2005. The expenditure volume of salted salmon was bigger than that of fresh salmon from 1981 to 1993. However, the expenditure volume of fresh salmon has been bigger than that of salted salmon since 1994. The expenditure ratio of salmon to seafood per person per year showed more than 10%.

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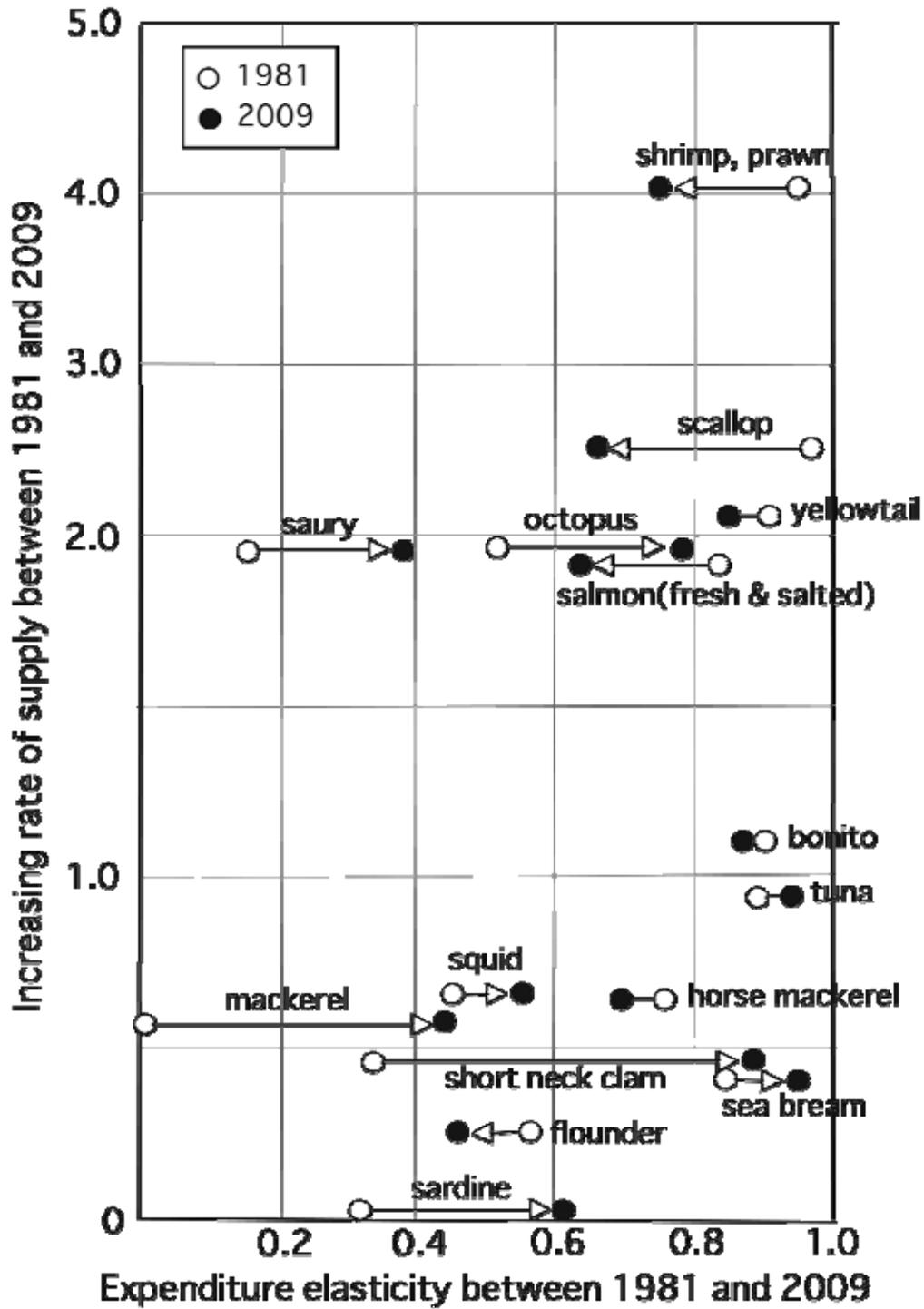


Fig.1. Relationship between variability of supply and expenditure elasticity from 1981 to 2009.

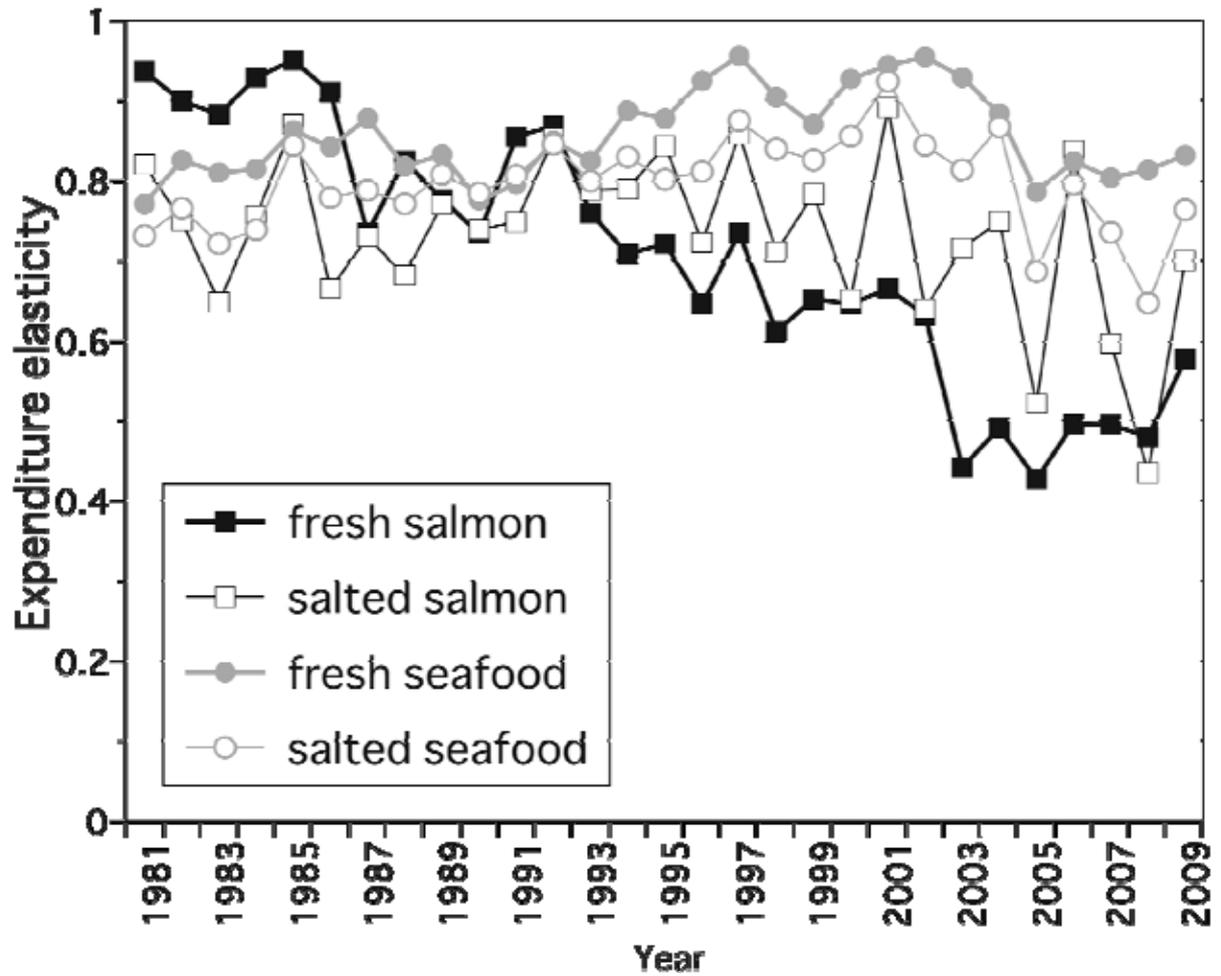


Fig.2. Annual variability of expenditure elasticity of fresh salmon, salted salmon, fresh seafood and salted seafood.

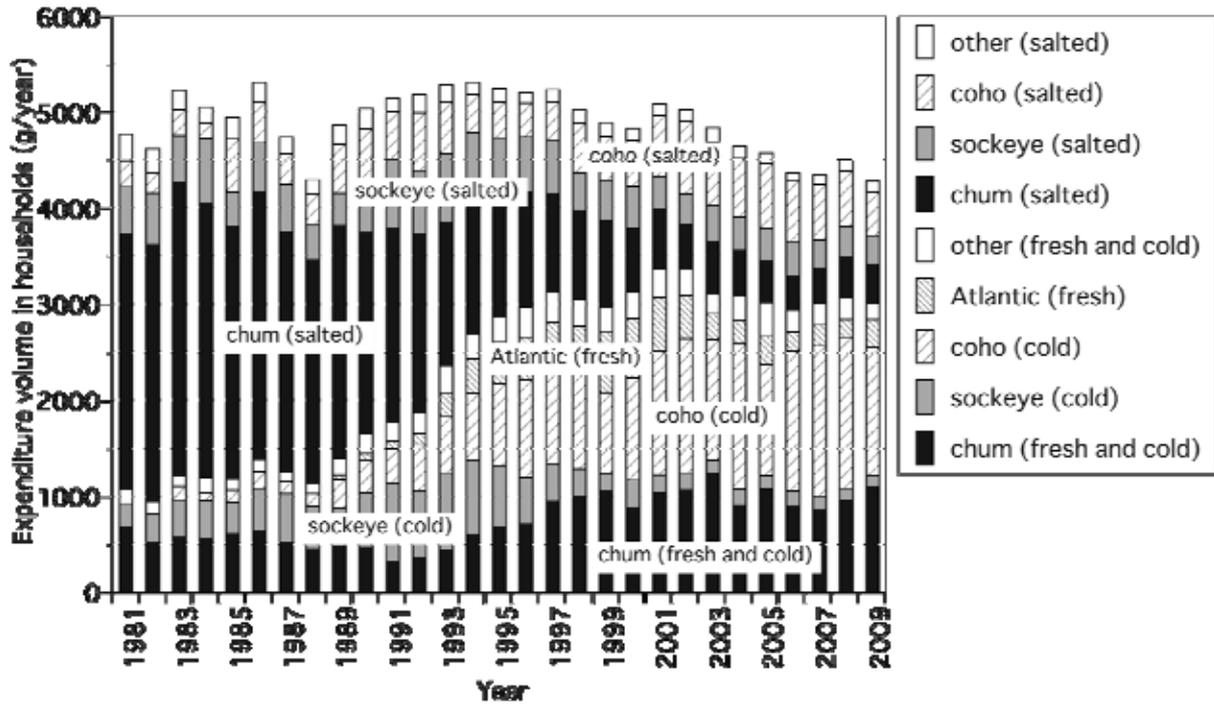


Fig.3. Variability of expenditure of salmon items by workers' households.

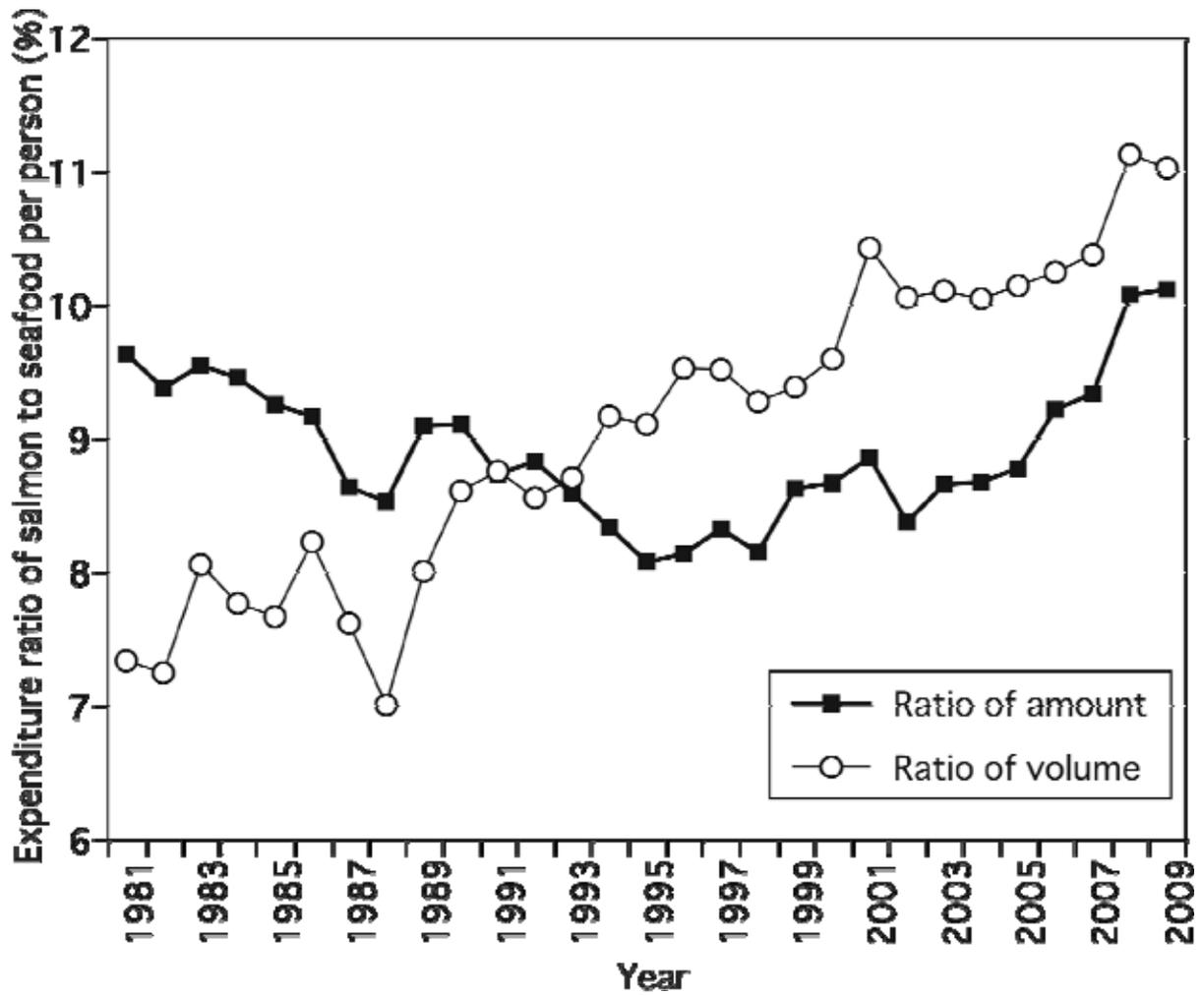


Fig.4. Variability of expenditure ratio of salmon to seafood per person per year. Expenditure ratio was showed by purchase ratio of salmon to seafood in workers' households.