Aquaculture production and trade world wide survey

Josupeit H.

Aspects économiques de la production aquacole

Zaragoza : CIHEAM
Cahiers Options Méditerranéennes; n. 14

1995
pages 9-28

Aquaculture production and trade world wide survey

H. JOSUPEIT
FISHERIES DEPARTMENT
FAO
ROMA
ITALY

SUMMARY - The paper covers the major trends in world aquaculture production during the past decade. The impact of increasing aquaculture production on world trade is discussed in detail for shrimp, salmon, sea bass and sea bream.

Key words: Aquaculture, trade, shrimp, salmon, sea bass, sea bream.

RESUME *- "Production aquacole et étude du marché mondial". Le document traite des tendances de la production aquacole dans le monde au cours de la dernière décennie. L'impact de croissance de la production de l'aquaculture sur le marché mondial est discutée en détail pour la crevette, le saumon, le bar et la dorade.*

Mots-clés : *Aquaculture, marché, crevette, saumon, bar, dorade.*

Production

In 1993, total world fish production, both from capture fisheries and from aquaculture, reached a new record of over 101 million MT. This record was entirely due to an increase in aquaculture production. In fact, capture fisheries totalled 85.4 million MT, which was lower than the 1988/89 peak.

Aquaculture production has shown a steady growth over the years, and is estimated at 15.9 million MT (excluding seaweeds). This figure compares to 6.9 million MT 10 years earlier. The share of aquaculture in total fish production has gone up over the years. In 1993, cultured fish production accounted for about 16% of total production, double its share one decade earlier.

When concentrating on fish as food for human consumption, the importance of aquaculture is even higher: some 21% of fish production for human consumption is cultured. Not surprisingly, this share has increased in recent years. Capture fisheries for human is about steady at around 57 million MT during the past 8 years.

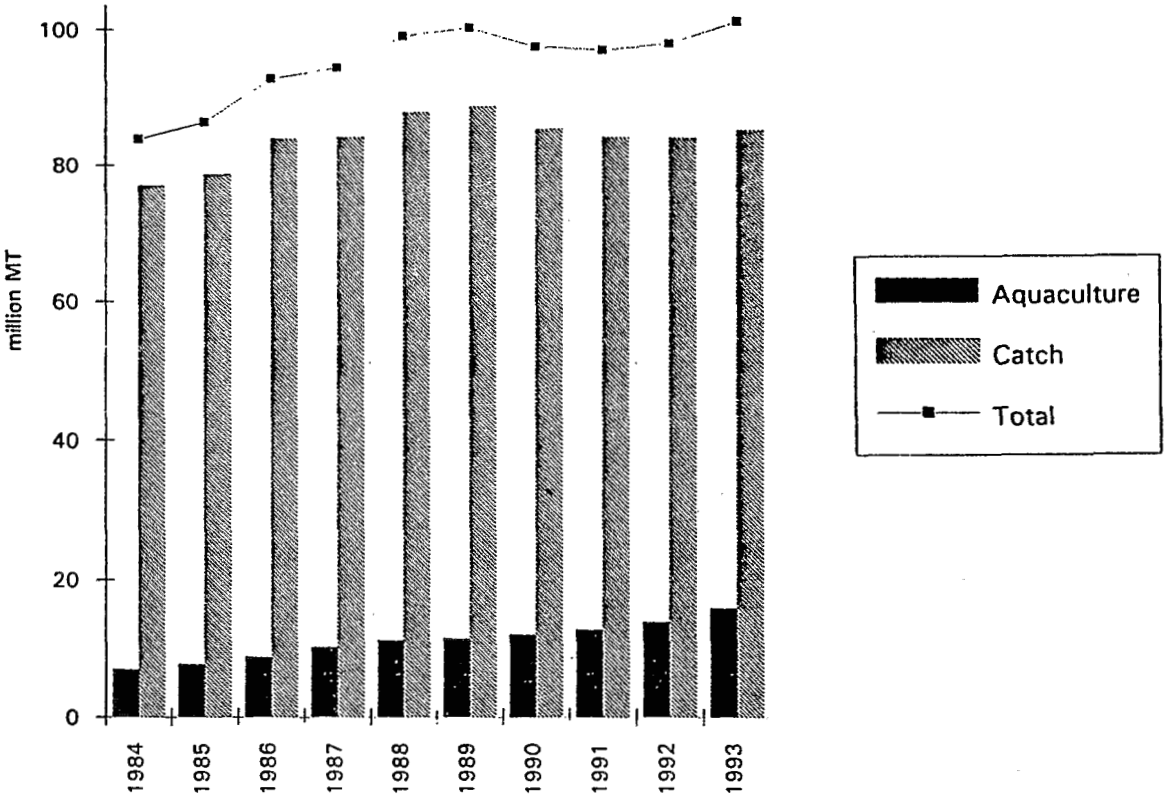

Fig. 1. Wild and cultured production.

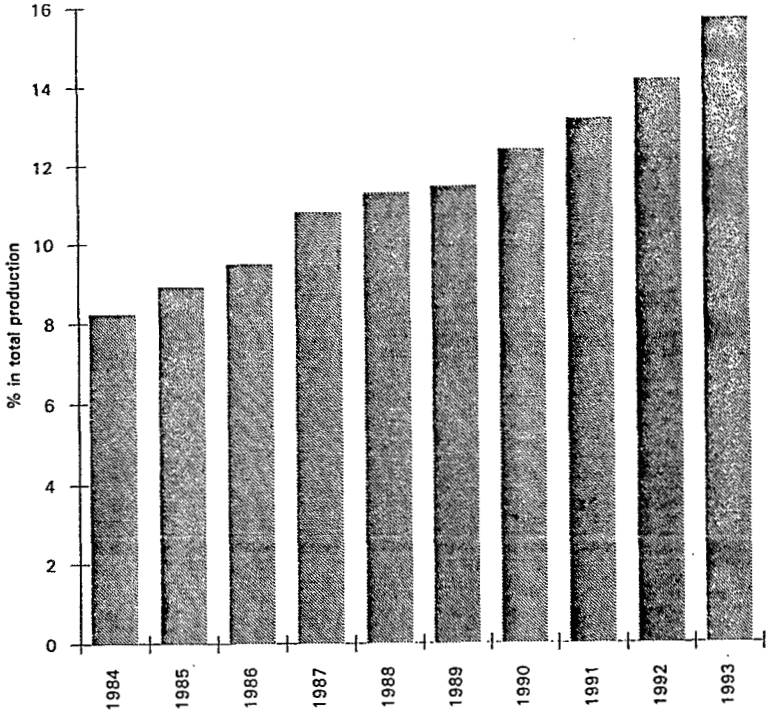

Fig. 2. Aquaculture share in total production.

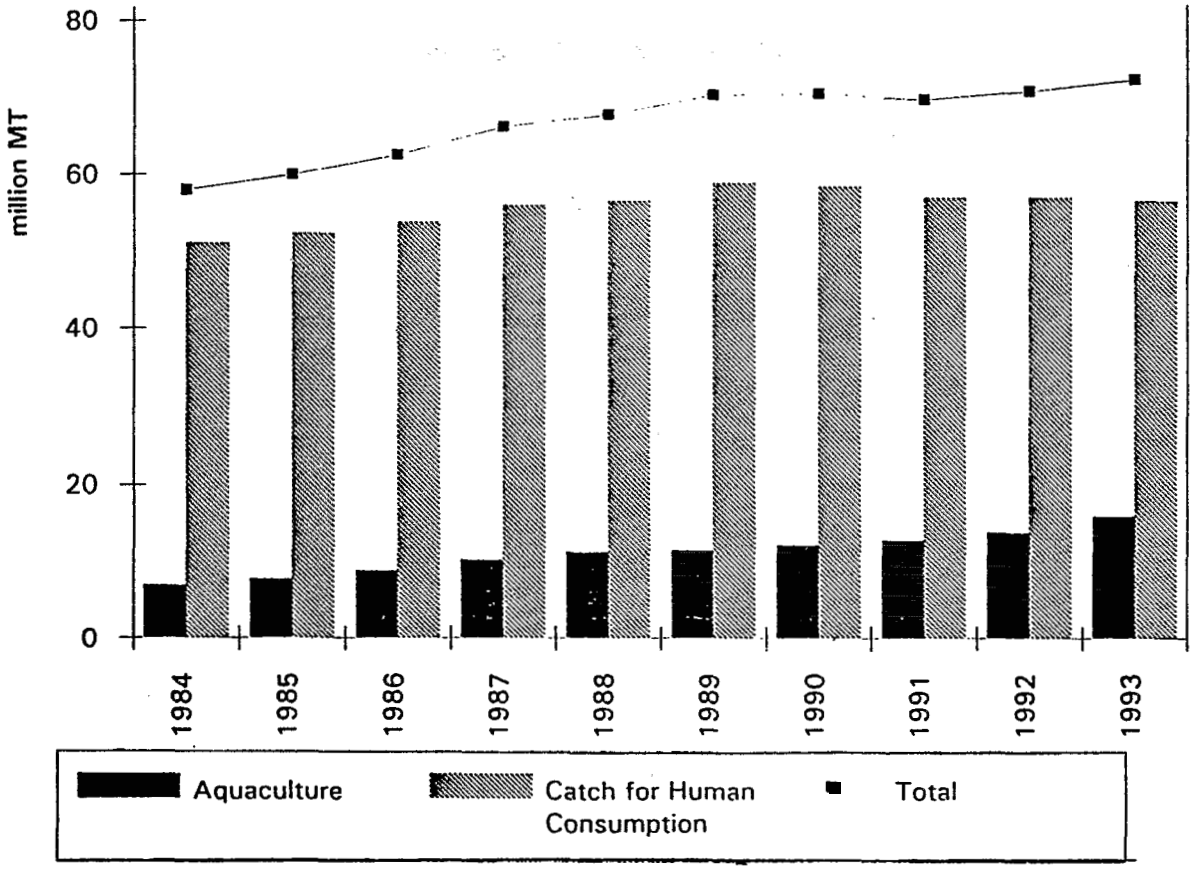

Fig. 3. Wild and cultured production for human consumption.

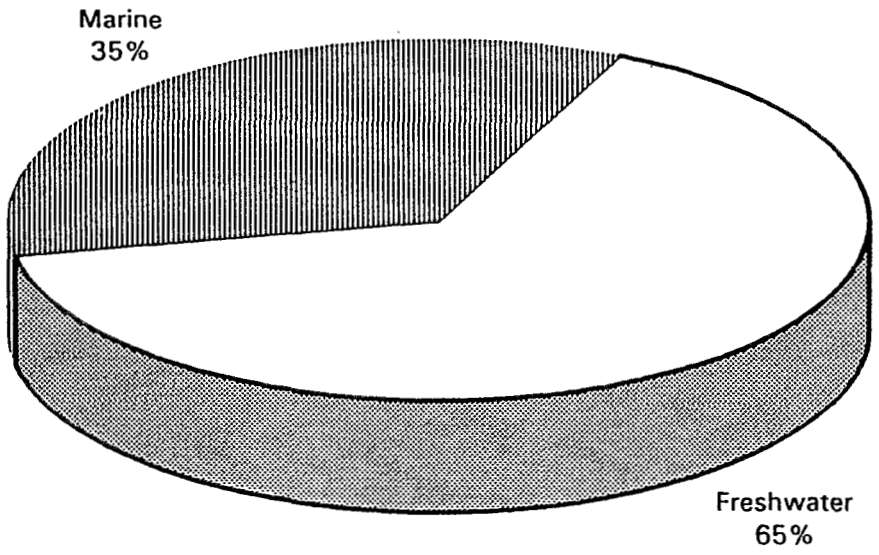

Fig. 4. Aquaculture: marine *versus* freshwater.

65% of the total aquaculture production is coming from freshwater, the remainder is cultured in marine waters. A surprisingly low share of total aquaculture production is represented by marine fish - including salmon - which represents a mere 7% of total aquaculture production. Salmon is the main "marine" species produced with 250 000 MT. Japanese amberjack and Japanese sea bream are second and third major important marine fish. Coho salmon is with 50 000 MT the fourth major marine species cultured.

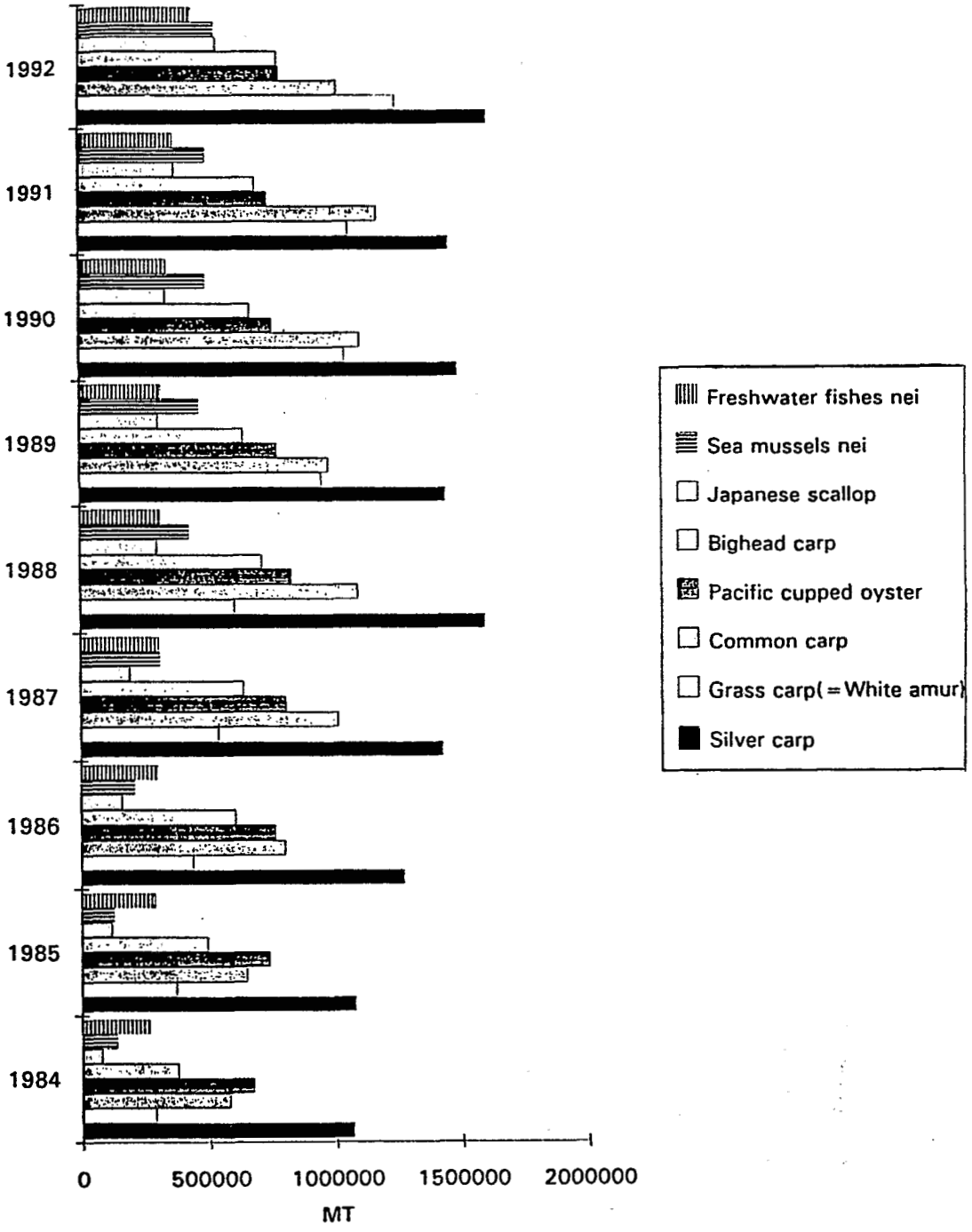

Fig. 5. Aquaculture production by species.

Among freshwater fish cultured, carp represents the lion's share with 66%. Tilapia, American catfish and rainbow trout are also of some importance in total aquaculture production from freshwater.

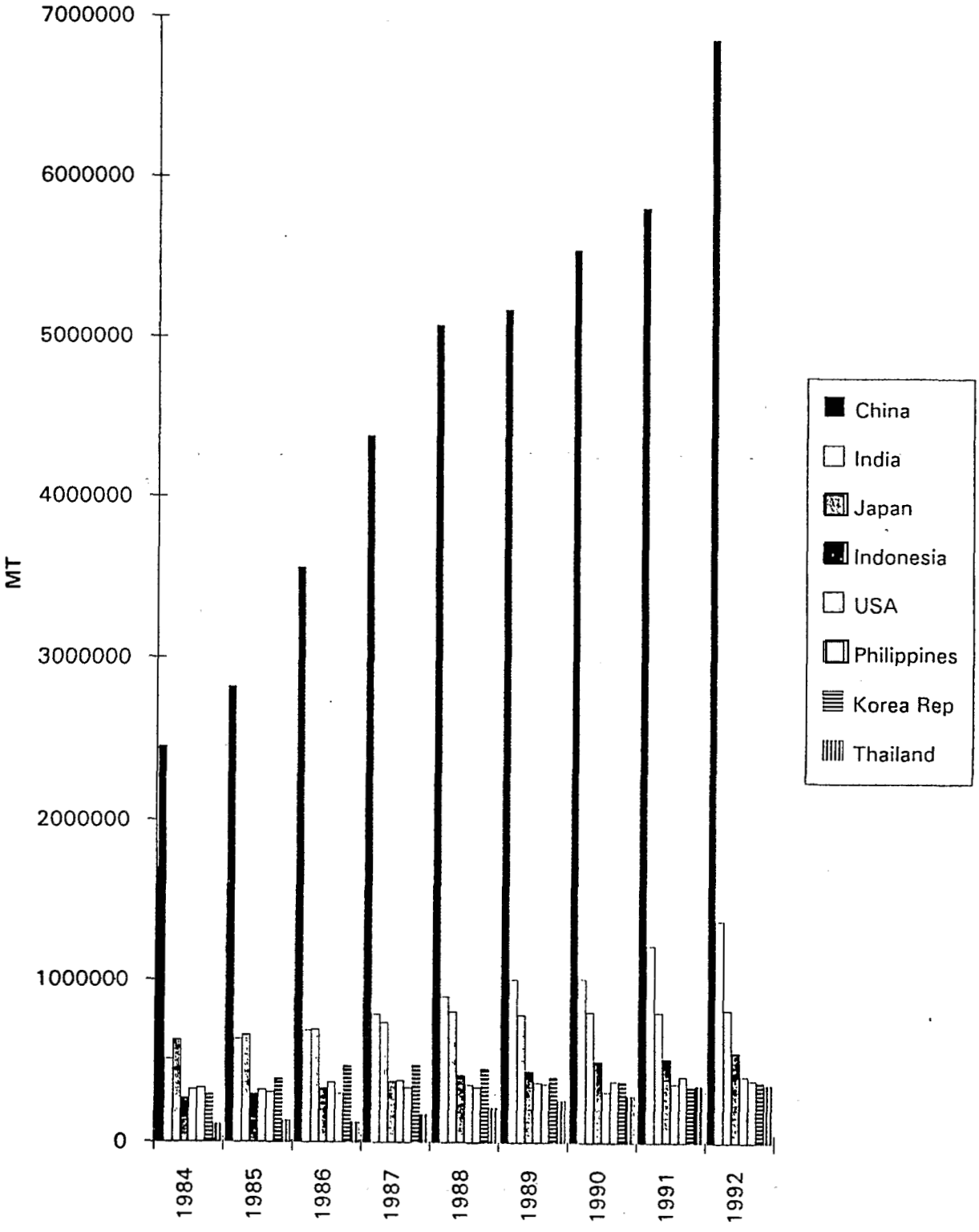

Fig. 6. Aquaculture production by country.

About 1 million MT of cultured species are in the shellfish category, with shrimp as the outstanding animal. 3.5 million MT of mollusc are cultured every year, of which 99.9% are bivalves. Mussels and to a lesser extent oysters are the main species cultured among the mollusca category.

China is by far the main producing country with some 10 million MT. Japan and India each produce 1.4 million MT. The Republic of Korea, the Philippines and Indonesia are other important aquaculturing countries. These figure underline the fact that Asia accounts for more than 80% of total world aquaculture production.

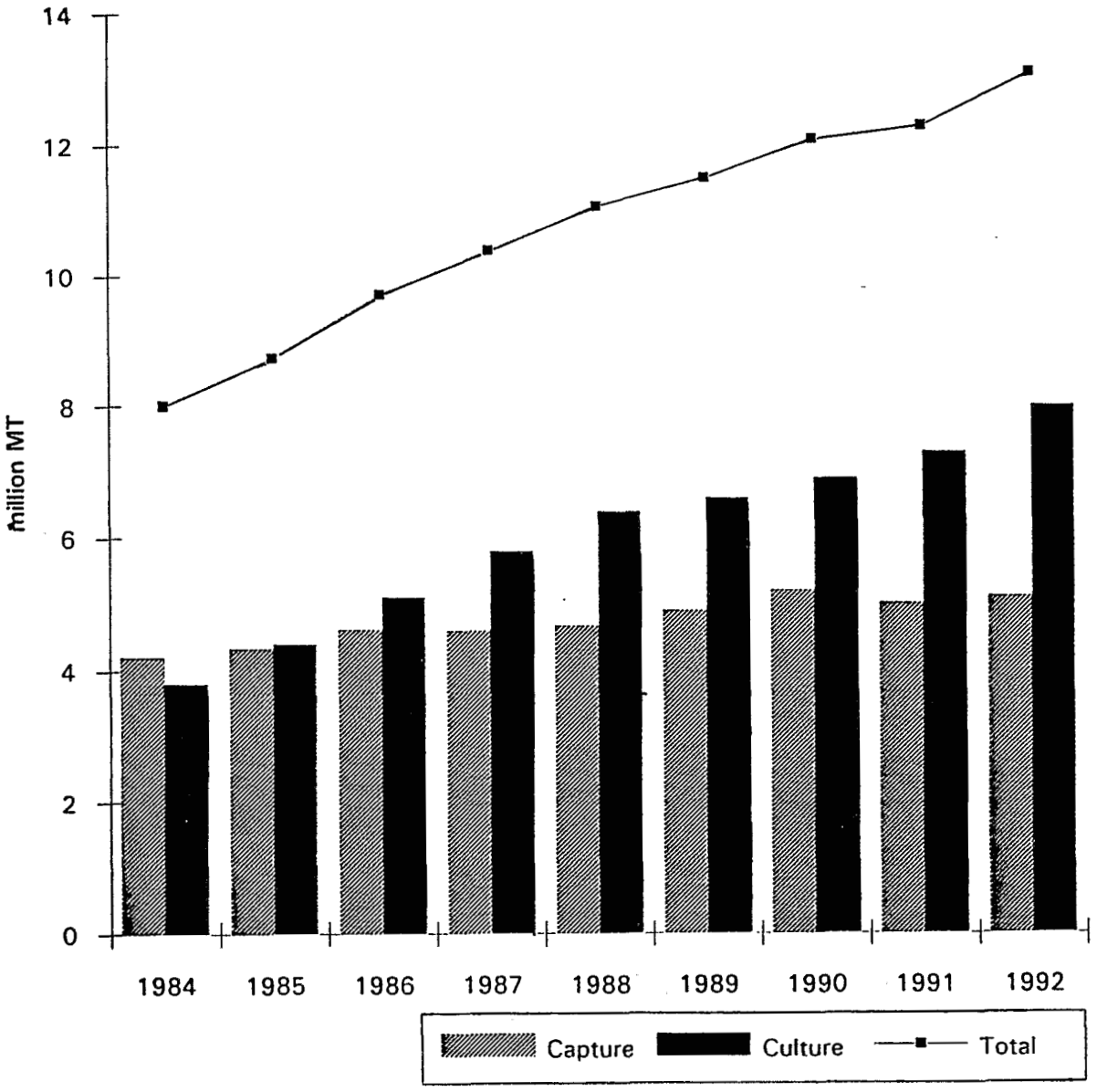

Fig. 7. Freshwater fish production.

The importance of aquaculture for freshwater fish production has increased strongly in the past decade. While in 1984, capture inland fisheries was still outpathing aquaculture, at present cultured freshwater fish production is about 50% ahead of wild freshwater catch.

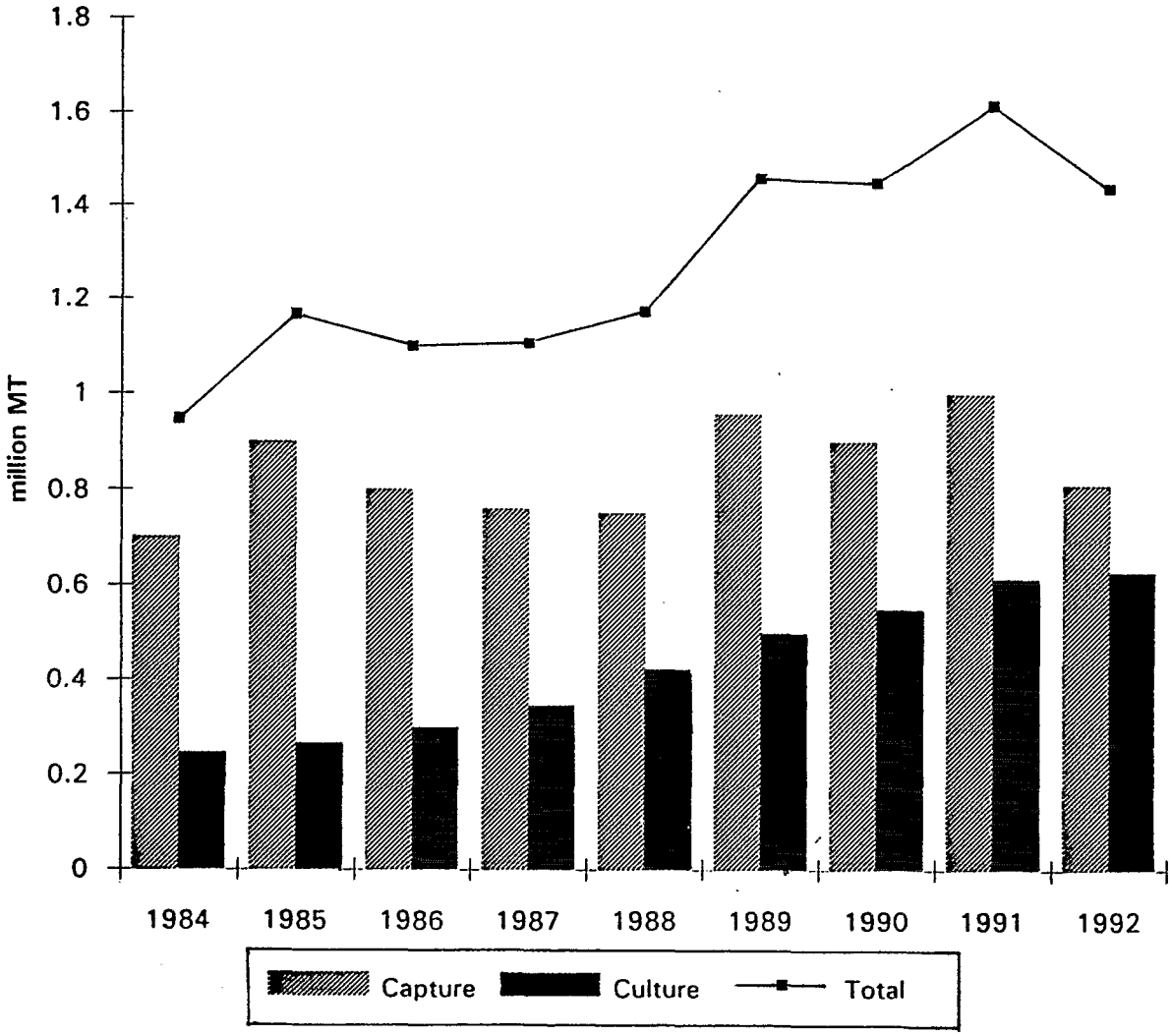

Fig. 8. Salmonids production.

Wild salmon catch has fluctuated widely over the years, while cultured salmon and trout production has grown steadily during the years under consideration. It looks likely that a certain stage, say sometimes at the turn of the century, cultured salmonids will outstrip wild salmonids.

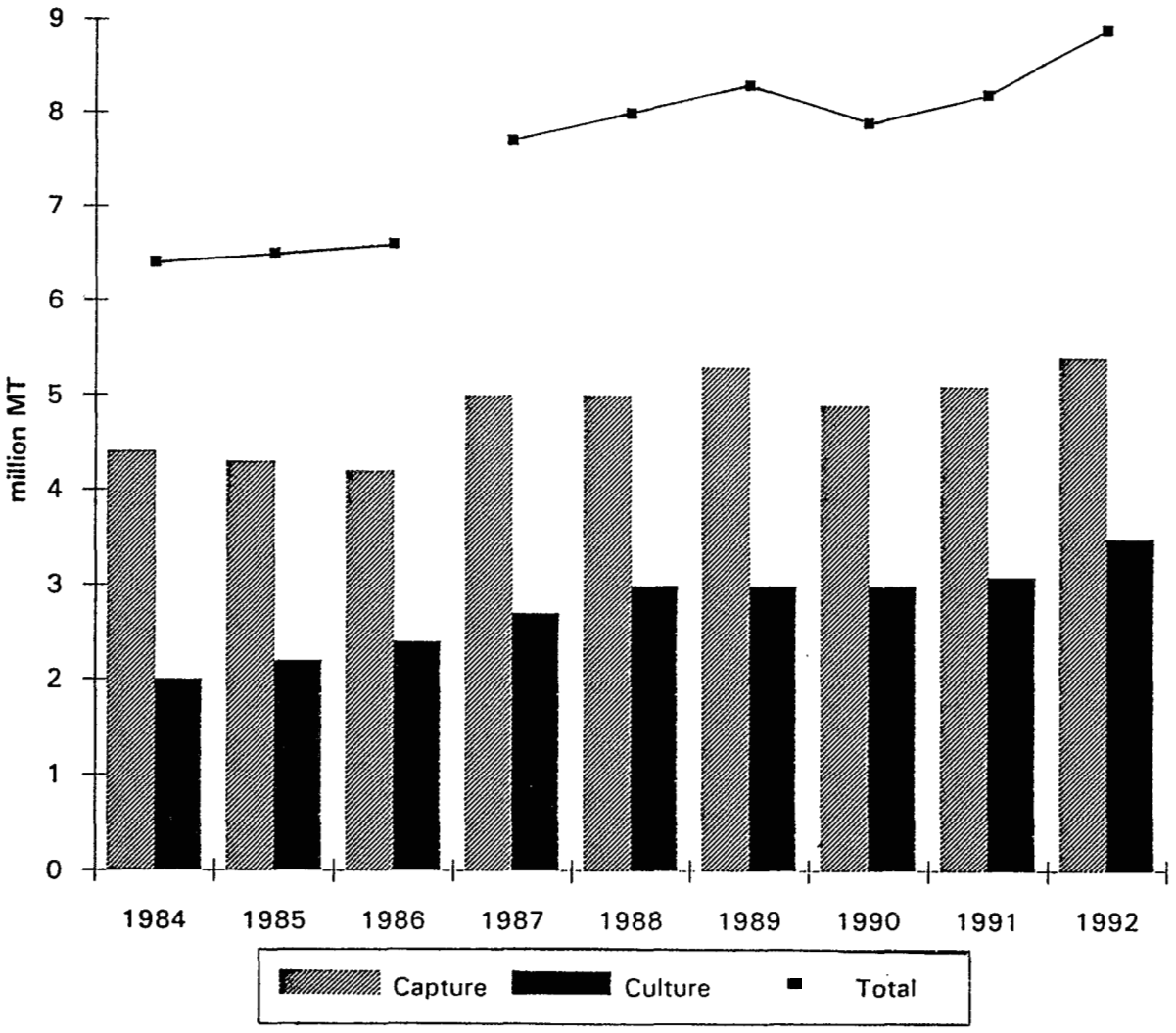

Fig. 9. Mollusca production.

Though mollusca culture has grown in recent years, capture mollusca production is still more important than aquaculture. Capture and Aquaculture both have contributed to the impressive growth of mollusca production over the years: At present some 9 million MT of mollusca are produced, which compares to 6.5 million MT ten years ago.

Capture shrimp production has reached a plateau of 2-2.1 million MT during the past years. Before the set-back in 1993, shrimp aquaculture had grown steadily, and had contributed significantly to the impressive growth of worldwide shrimp production.

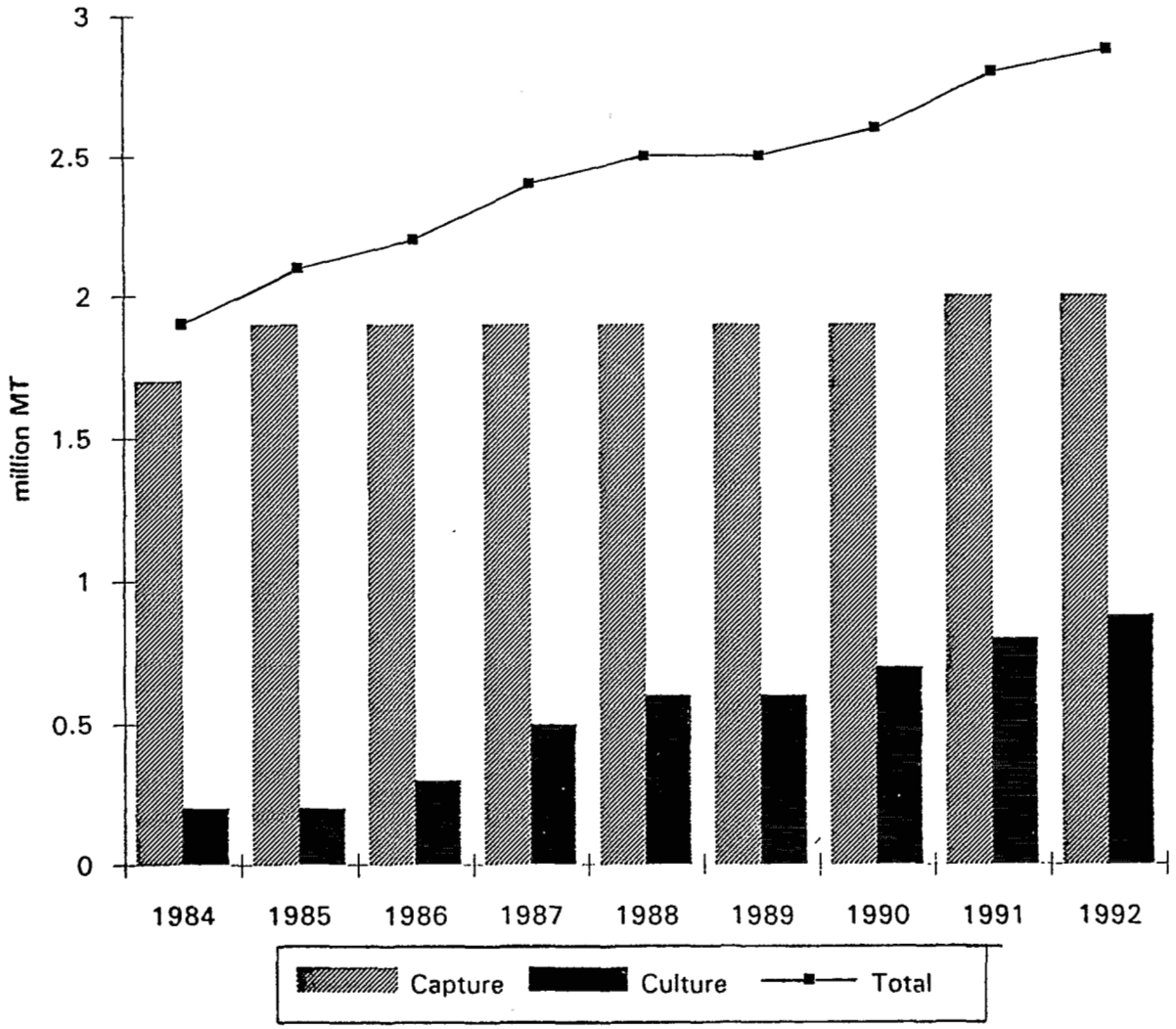

Fig. 10. Shrimp production.

Trade

The volume of international fish trade has grown substantially over the past few decades. The quantity of fish and fishery products entering international trade continued to grow also in 1993, but due to lower prices for most commodities, the value of fish exports declined somewhat. Total value of fish trade exceeded US$ 40 000 million in 1993.

The importance of developing countries in international trade of fish and fishery products went up. Developing countries as a group accounted for 48% of world trade in 1993, up from 45% in 1992 and 43% in 1983. Fish has become one of the developing world's chief food exports. No other nutritious food is exported in such large quantities from the South to the North. Another fact underlining the importance of

developing countries as fish exporters is that Thailand took the lead, becoming the main fish exporter in the world overtaking the United States. Total Thai exports were US$ 3 400 million in 1993, a 11% increase over 1992.

Compared with other agricultural commodities, fish plays an outstanding role as a earner of foreign exchange: the net-exports of fishery products were US$ 11 000 million in 1993, much higher than coffee, banana, rubber or other typical commodities.

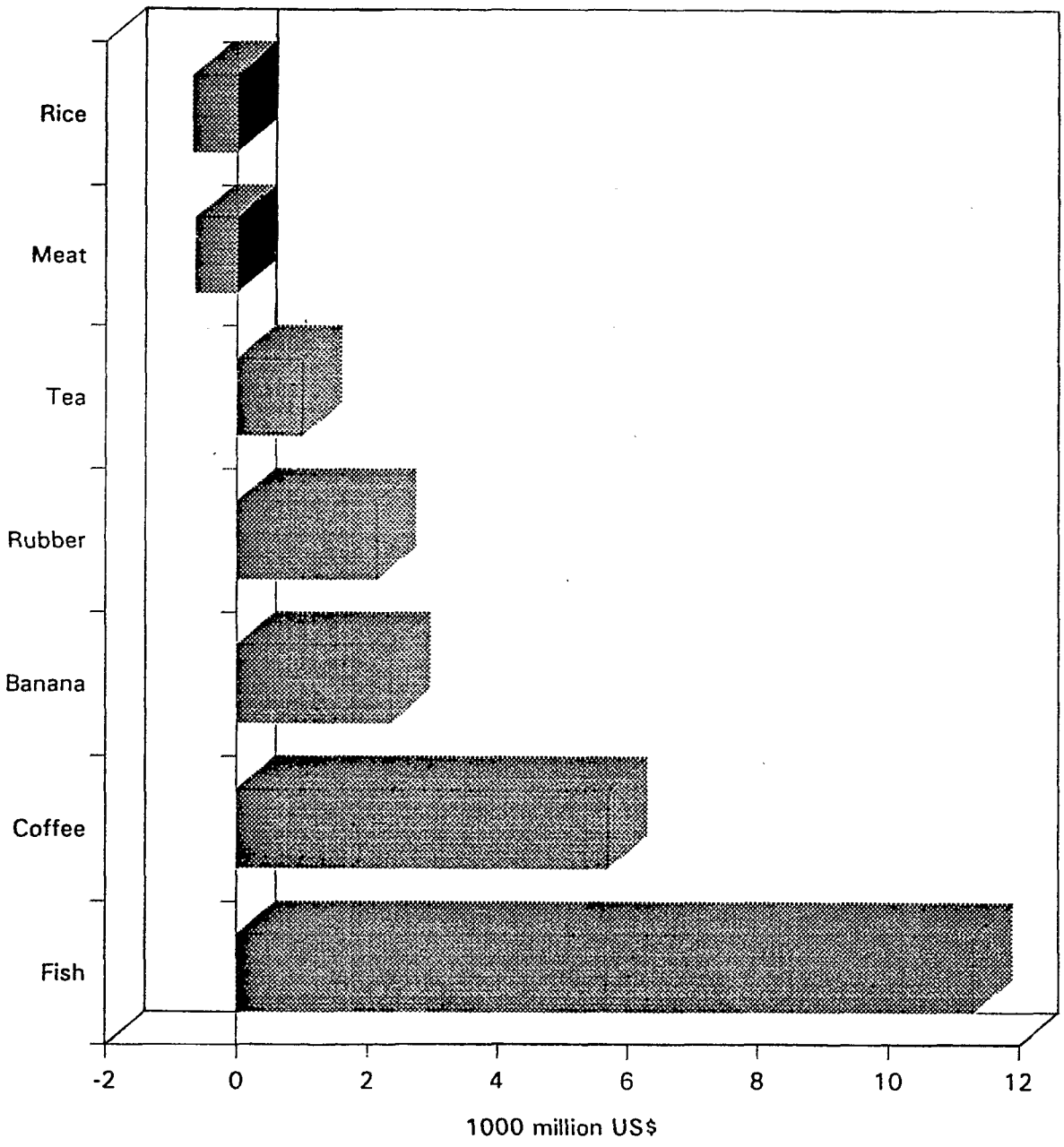

Fig. 11. Net exports by developing countries.

Trade patterns of fishery products have been influenced by the culture of high value species which are normally destined for export markets. Two fish commodities which have experienced a substantial increase in trade due to aquaculture have been salmon and shrimp. Trade in shrimp products doubled during the last ten years to reach 1.0 million MT.

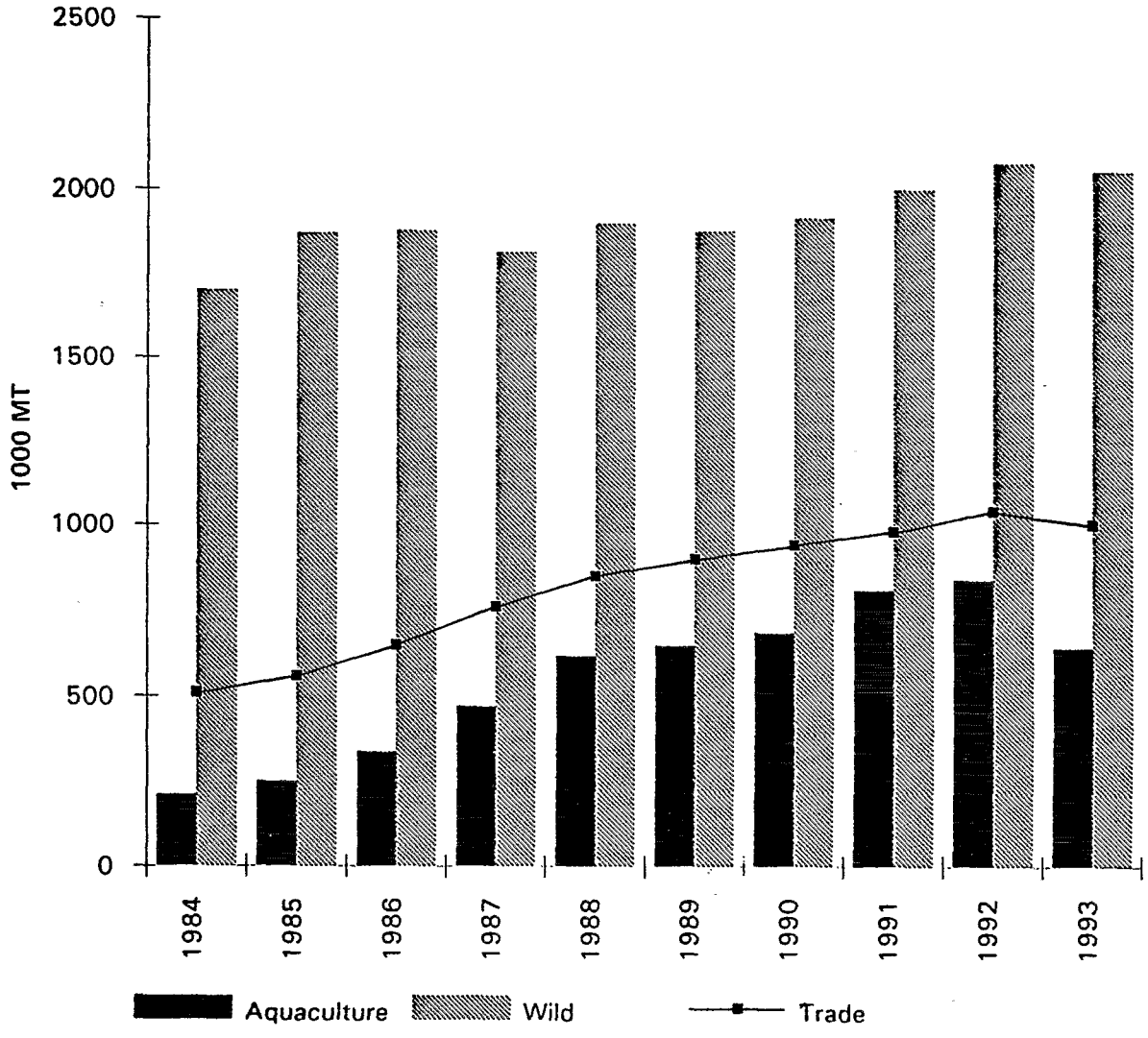

Fig. 12. Shrimp production and trade.

Fresh and frozen salmon exports, too, more than doubled during the same period, with fresh salmon trade showing the most impressive growth. Major increases in aquaculture production have generally created market disturbance leading to sudden declines in prices.

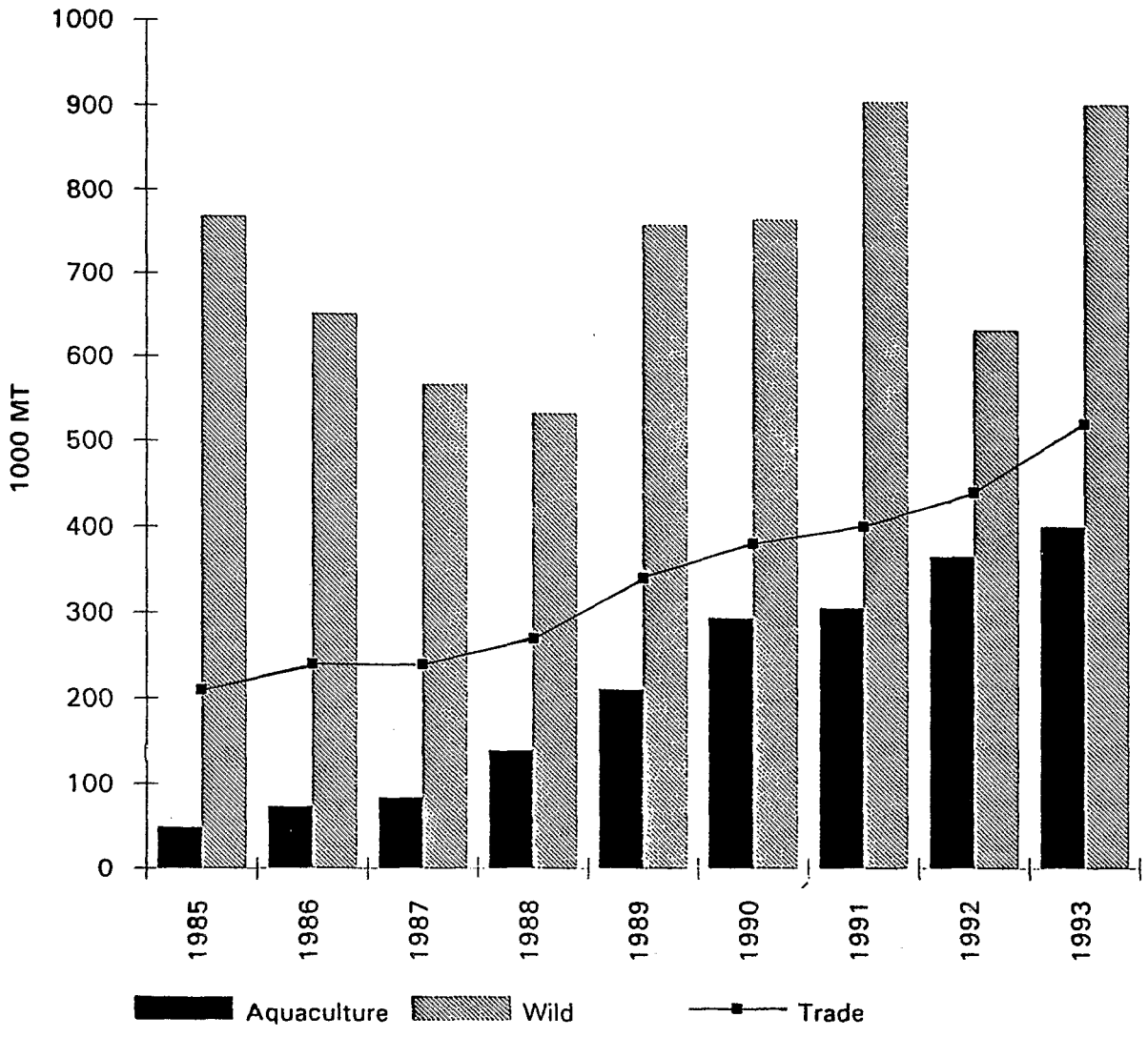

Fig. 13. Salmon production and trade.

Shrimp

In 1989, prices of shrimp declined by some 40% as Chinese cultured shrimp came on the market, similarly in 1991, prices collapsed as Thai shrimp flooded the market.

Shrimp aquaculture production peaked at 840 000 MT in 1992, with China as the main producer. In 1993, this country put the international shrimp market into a turmoil. Rumours on diseases in Chinese shrimp ponds started to spread around September 1993, and prices soared immediately. Unfortunately for the Chinese shrimp industry, these were not only rumours. Chinese shrimp aquaculture output declined from 220 000 MT in 1992 to 55 000 MT in 1993 and 35 000 MT in 1994. The market has not recovered yet, and at present (February 1995) shrimp prices continue to go up.

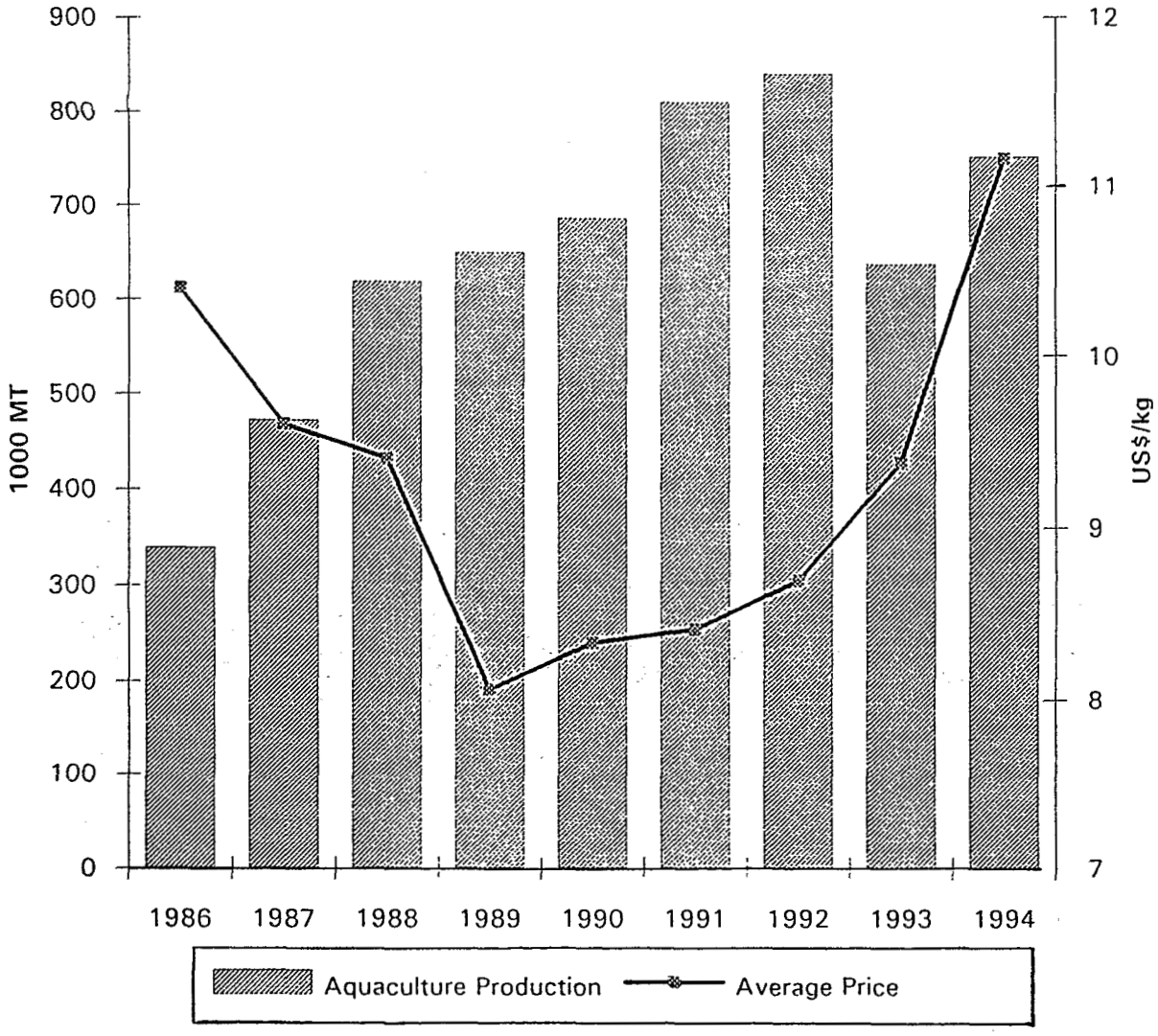

Fig. 14. Shrimp aquaculture production and average price.

The shrimp aquaculture industry recovered (see Figure) somewhat in 1994, but this increase was entirely due to a production hike in Thailand. This country is now the world's main shrimp culturist with 225 000 MT in 1994, roughly 75 000 MT more than in 1993. The Chinese cultured shrimp production continued to suffer from disease and other problems and the 1994 production is estimated at 35 000 MT, another 40% down from 1993.

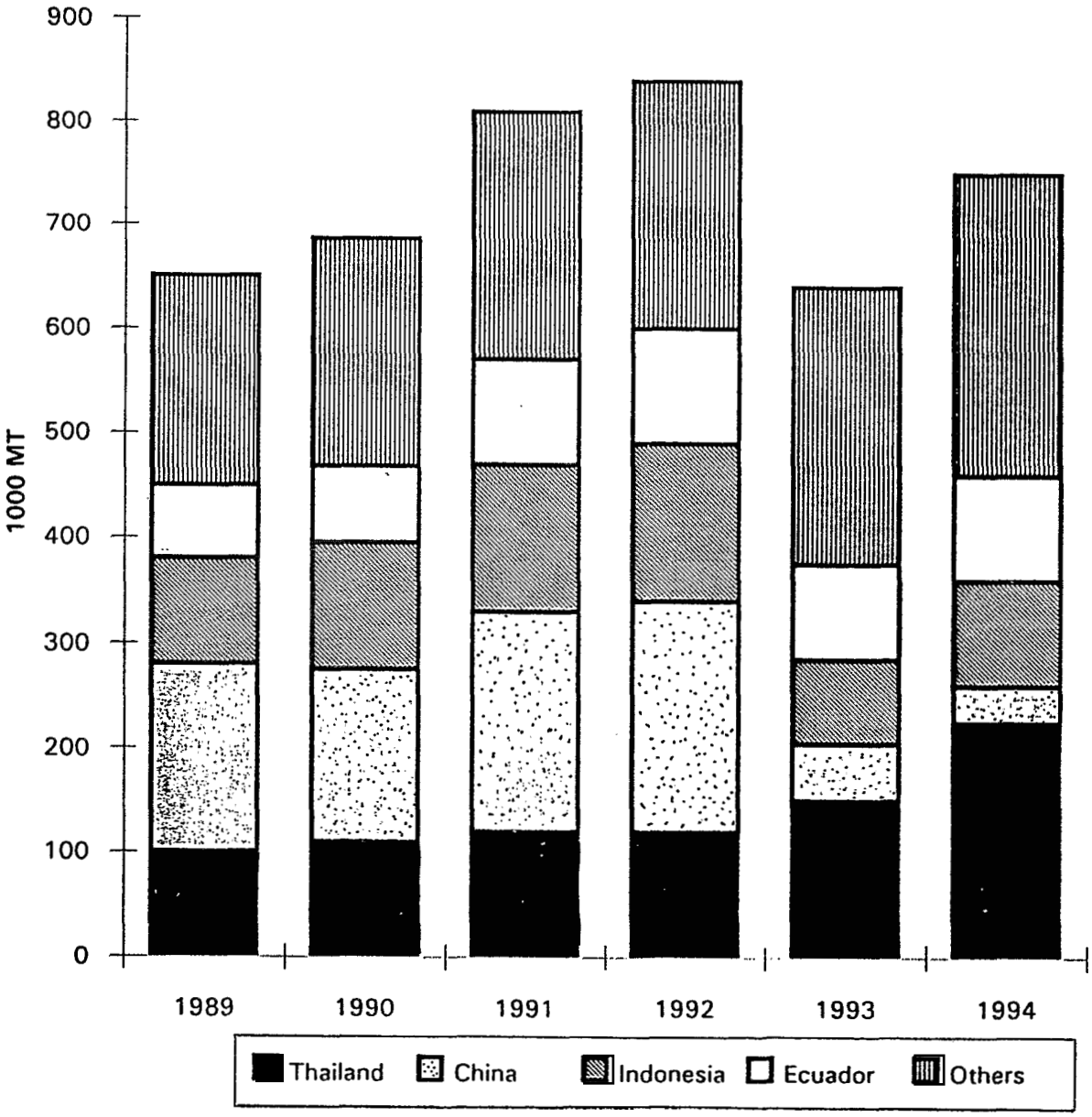

Fig. 15. Shrimp aquaculture production by country.

Indian shrimp aquaculture production was estimated at 70 000 MT in 1994, but first reports on the 1995 crop talk about a major disaster fro the production of the southeast coast of India. Unconfirmed rumours report on viral disease for the Vietnamese shrimp aquaculture in the opening months of 1995. Thailand is practically the only country which managed to expand its shrimp production without incurring in these problems. The country has learned from the setback of its aquaculture industry in the late 1980's, and the present shrimp farms, especially the ones along the south coast all have devices that guarantee the water quality in the ponds.

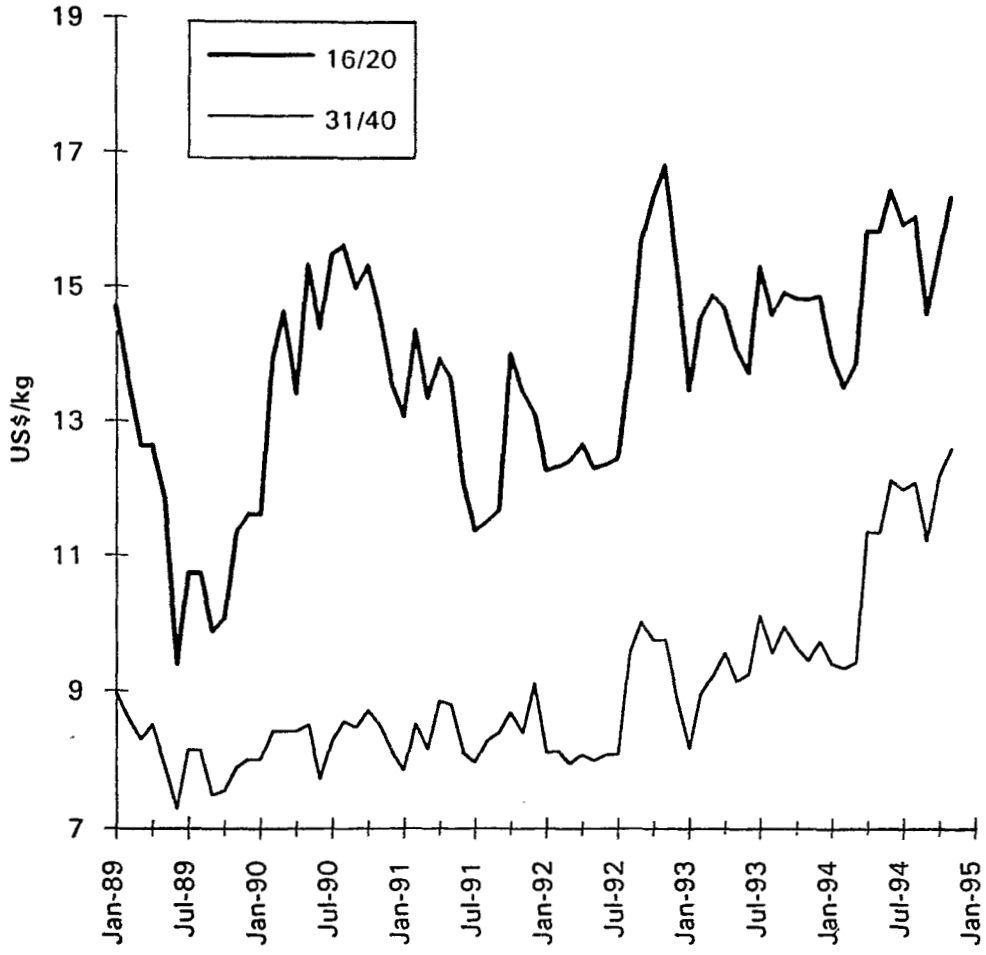

Fig. 16. Wholesale prices of Black Tiger shrimp.

Salmon

Salmon prices declined sharply in 1989 and 1991, when huge Norwegian salmon production came on the market. The stabilization process by Norwegian salmon producers was successful, as further production increases in 1993 and 1994 did not lead to drastic price declines. Nevertheless, the present price of Atlantic salmon, the main species cultured, is about 40% below the pre-1989 price.

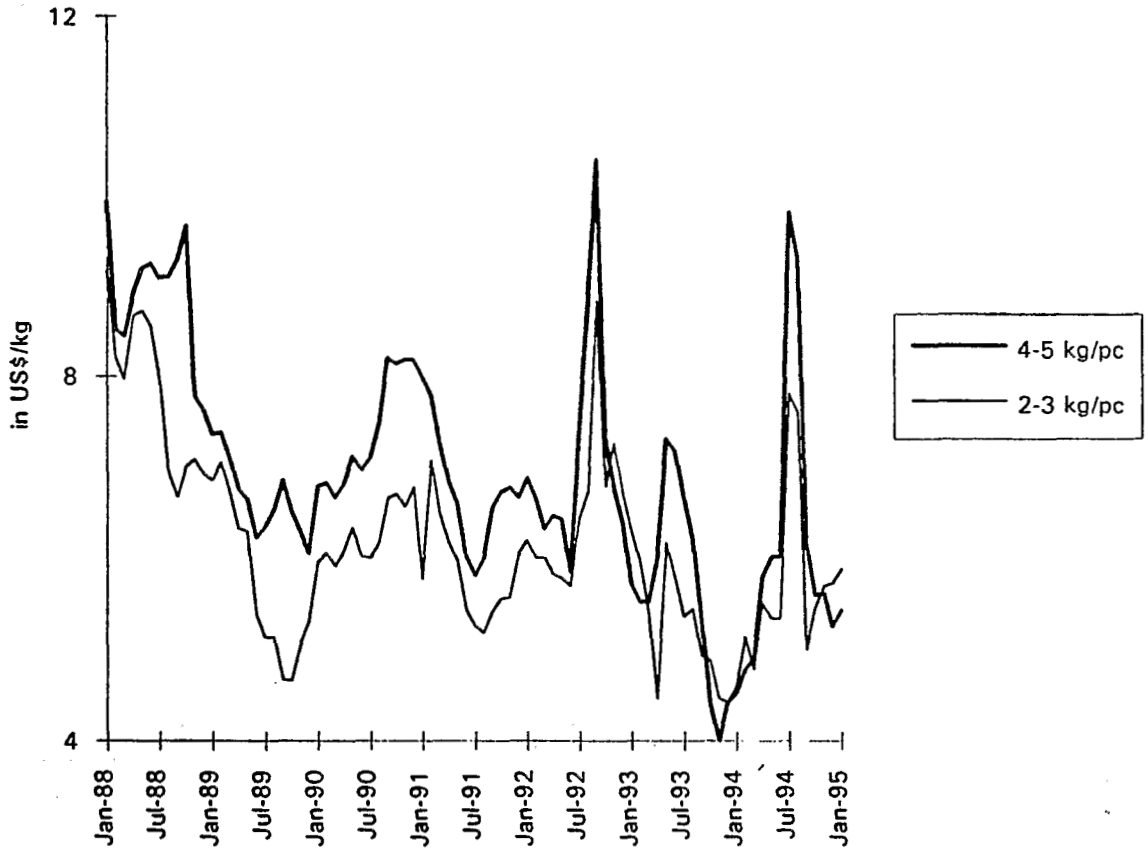

Fig. 17. Fresh Atlantic salmon prices.

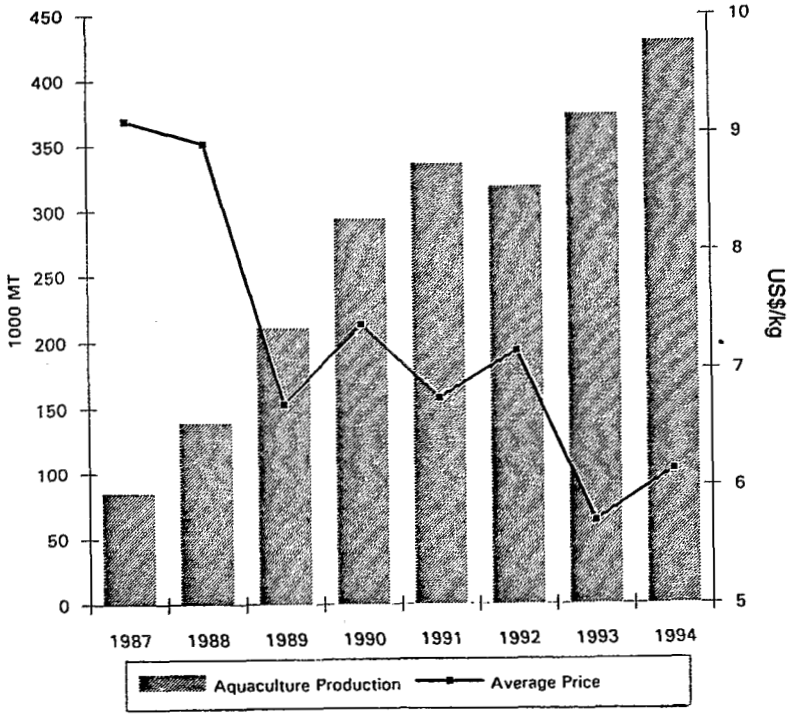

Fig. 18. Salmon aquaculture production and average price.

Norway is by far the main salmon producing country, accounting alone for 48% of world salmon aquaculture. In 1995, the country is forecast to produce 250 000 MT. In order to not upset the market and creating price problems for the Norwegian salmon farmers, the exporter organizations are continuous looking for new markets for their products. China has been identified as a potential market, though the Chinese cuisine is not very appropriate for the use of salmon.

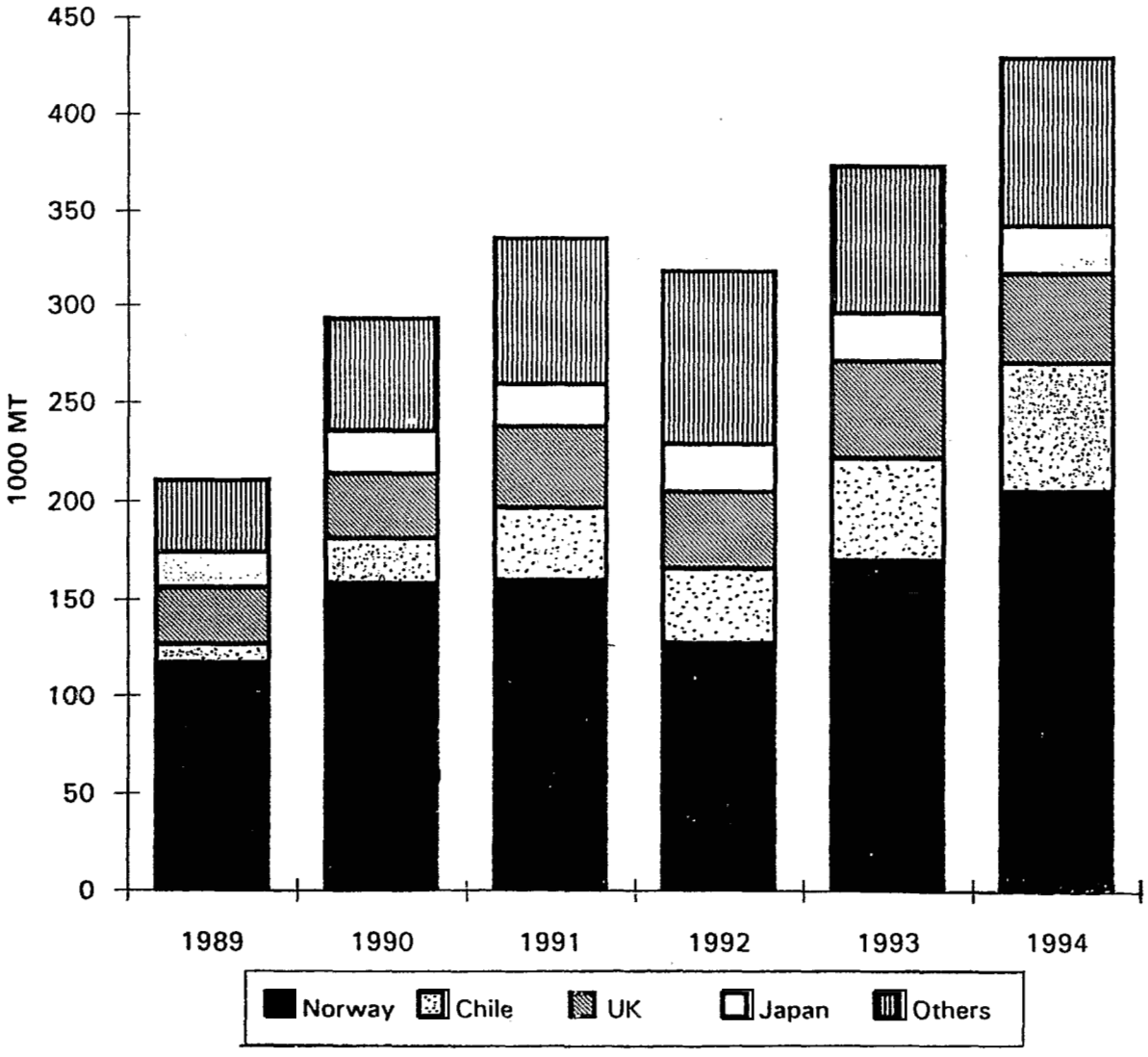

Fig. 19. Salmon aquaculture production by country.

Sea bass and sea bream

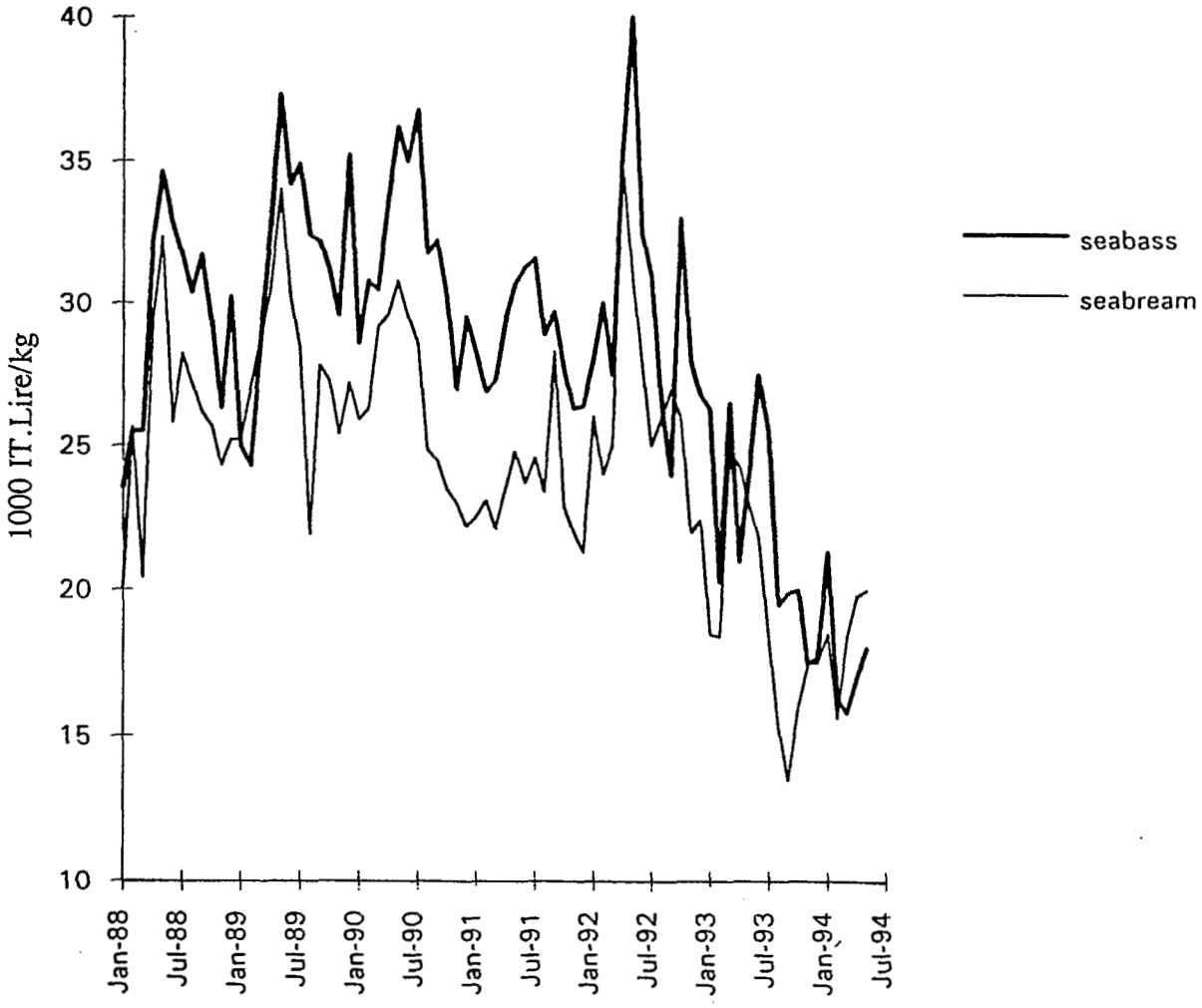

Fig. 20. Italian wholesale prices.

Sea bass and sea bream are species where culturing is just coming into full swing. In 1994, the combined aquaculture production of these two species is estimated at 18 000 MT, which compares to 7 000 MT in 1990. In 1995, the production figure is expected to grow even more strongly, as Greece, the main producer, forecasts at production of both species at 35 000 MT. Italy is the main market for these species, but prices have declined sharply as additional supplies entered the market. Sea bass and sea bream prices used to be around US$ 20.00 per kg, but have declined in the main producing periods to below US$ 10.00 per kg.

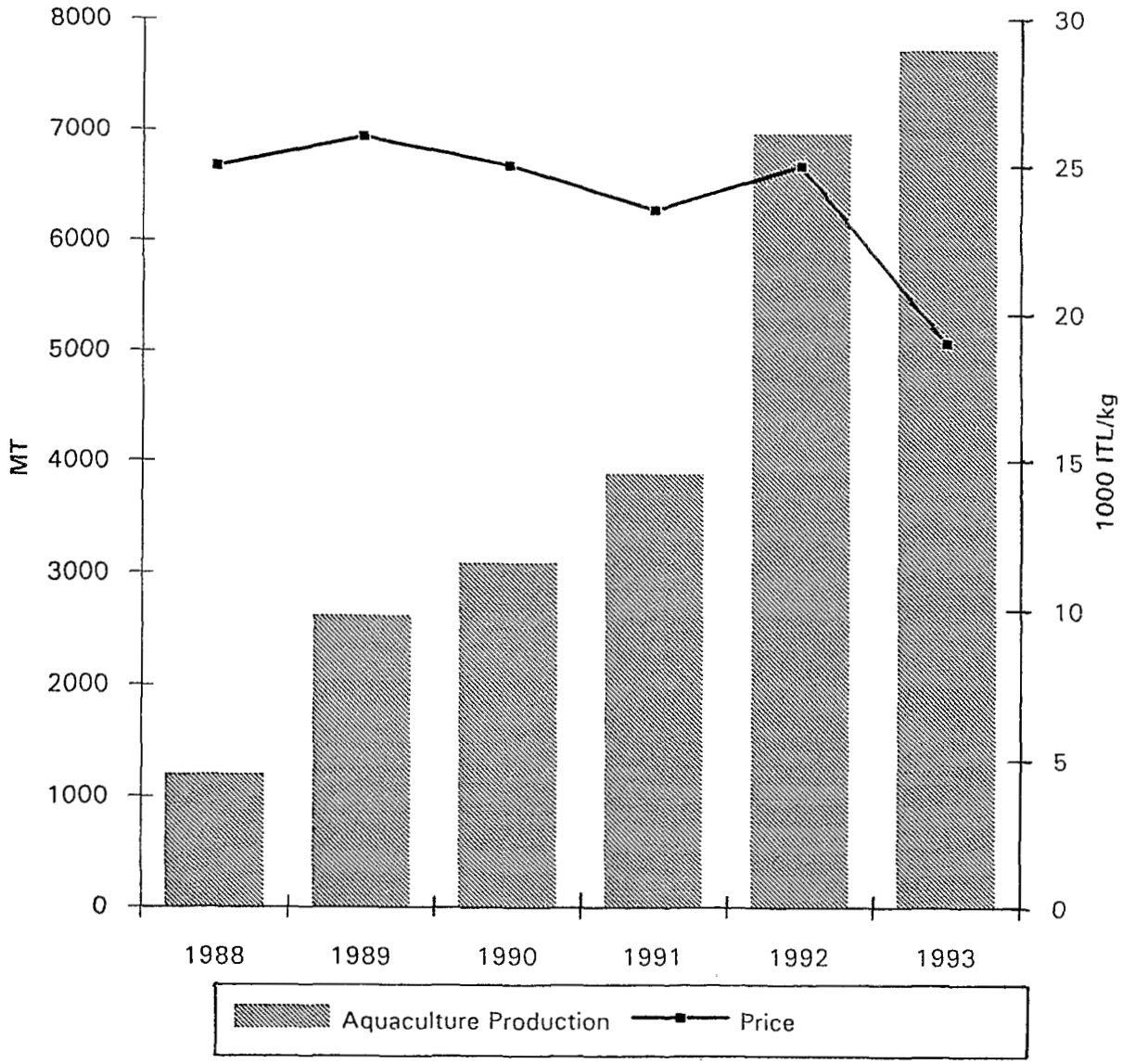

Fig. 21. Sea bream aquaculture production and wholesale price.

Gilthead sea bream aquaculture production in 1993 reached 7 700 MT, which compares to 1 200 MT in 1988. By 1998, the production is expected to exceed 25 000 MT. As the sea bream market is confined to Italy, a market which hardly will be able to absorb the additional quantities, prices are expected to drop even further. It is forecast the by 1995, prices will be only half of what they used to be when the sea bream farms started.

Italy used to be the world's main sea bream producer with 3 000 MT, but the strong increase in recent years, makes Greece the main sea bream culturing country. Turkey and Egypt are also important producers of sea bream.

Sea bass from aquaculture reached a production level of 8 500 MT in 1993, which compares to 1 000 MT in 1988. Projections put the level of cultured sea bass output at 14 000 MT in 1995. Market predictions are difficult, especially as the economic situation in Italy, the main market, continues to be confused. The weakness of the Italian lire has a major impact on the price levels of sea bass, and if this weakness continues, The Greek aquaculture industry will find themselves in major troubles. Farms have successfully tried to open up markets in Germany and UK.

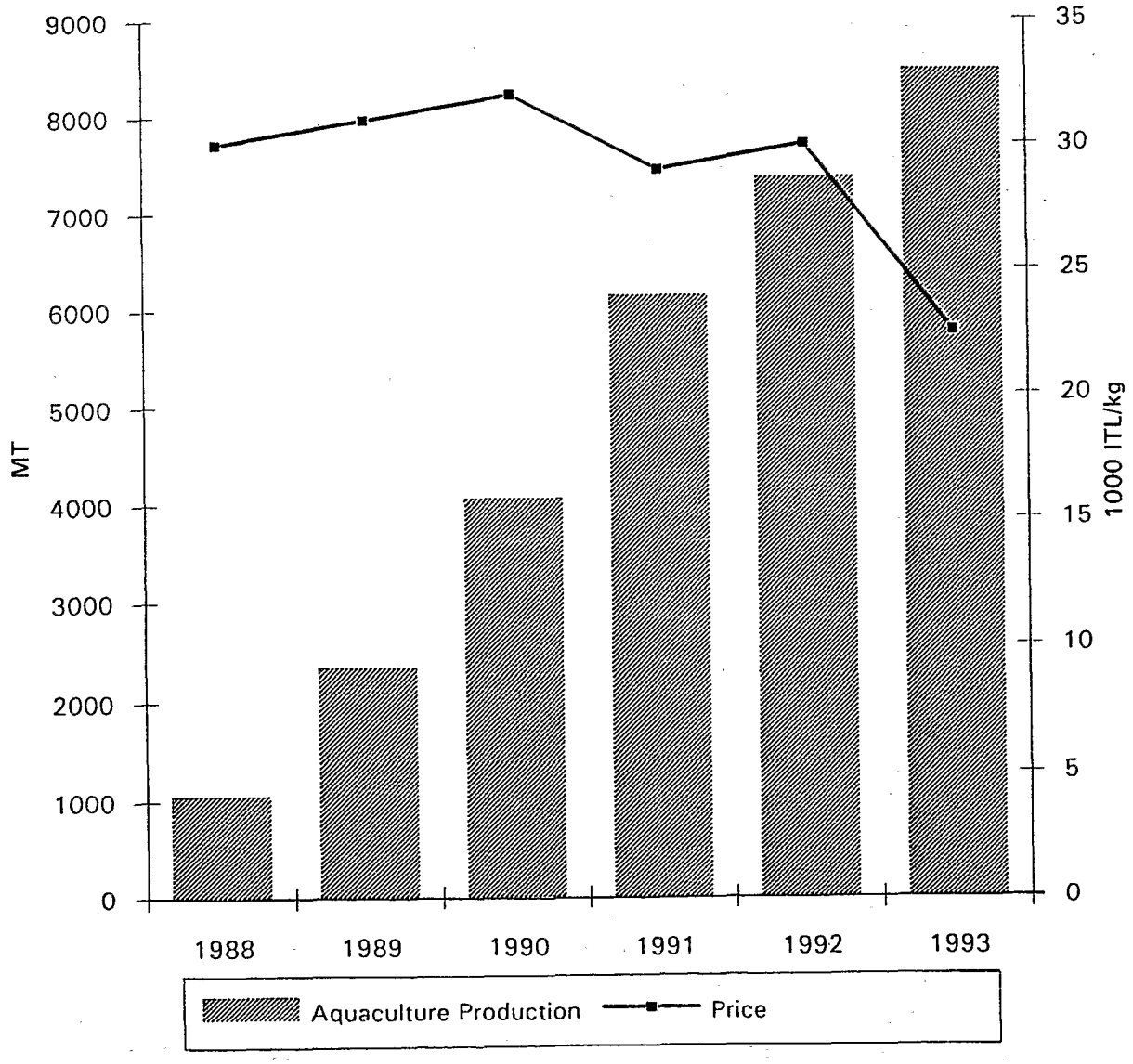

Fig. 22. Sea bass aquaculture production and wholesale price.