

Analysis Of Sardine Markets

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Introduction

This presentation will investigate sardine markets from a global perspective and the role Pacific sardines, harvested off the U.S. west coast, play in the global market. I will start out by reviewing world harvests and production of sardines over the 1984-98 period. I will then narrow the focus to global production and trade of Pacific sardine. Finally, I will look at U.S. landings and trade in Pacific sardine, and conclude by noting market opportunities that potentially exist for west coast landings. The analysis relies on international harvest and trade data from the U.N. Food and Agricultural Organization's global harvests and trade databases; the Pacific Fishery Management Council's PacFIN Management Data Base for west coast sardine landings and the NMFS foreign trade data base for U.S. international trade in Pacific sardine.

Global Harvests, Production and Trade

Globally there has been an appreciable decline in overall harvests of small pelagics since 1994 (Figure 1), with sardines and anchovies contributing most to this trend. Global sardine harvests began a significant decline in 1988, falling 64% from 14.0 million metric tons to 5.0 million metric tons by 1998. The sardine decline was offset by a sharp rise in anchovy harvests starting in 1991. Anchovy harvests peaked at over 14.0 million metric tons in 1994, and by 1998 had fallen 64% to just over 5.0 million metric tons. Global herring harvests have also declined in recent years, while mackerel harvests have increased.

Following the pattern in harvests, global production of sardine products dropped more than 80% from 3.6 million metric tons to 0.7 million metric tons from 1988 to 1997. After a sharp drop initially, foreign trade in sardines has trended upwards since 1992 (Figure 2). Countries that relied on domestic harvests for the bulk of their sardine production before the decline have had to turn to foreign sources to supplement domestic production.

The decline in global sardine harvests has occurred almost entirely in the Pacific. This reflects the collapse in Japanese and South American sardine resources, even with the recovery of the Pacific sardine off the U.S. west coast. Harvests in the Atlantic and Indian Oceans actually increased between 1994 and 1998 (Figure 3). Japan, Chile and Peru have been the major harvesters in the Pacific, joined more recently by Mexico. Between 1984 and 1998, Japan, Chile and Peru depended on the Pacific for 100% of their total sardine harvests, Mexico 99%. In 1984 these nations accounted for over 80% of the sardine harvest from the Pacific; by 1998 their combined share had declined to just over 60%. Japan and Chile have suffered the most severe harvest declines; harvests by Mexico and Peru increased over the period (Figure 4).

The decline in Pacific harvests most noticeably reflected in the production of meal and oil and frozen sardines. Global meal and oil production decreased from 1.3 million metric tons in

1984 to about 0.1 million metric tons in 1997; global production of frozen sardines fell from 1.2 million metric tons to 0.3 million metric tons over the same period. As a share of total production, meal and oil fell from 35% to less than 15%, while frozen production held at about 40% of total production for the period after peaking at 63% in 1993 (Figure 5).

Japan, Chile, Peru and Mexico were the leading producers of sardine commodities over the 1984-97 period, averaging about 80% of total production. Japan was by far the leading producer, even though its total production fell from over 2.0 million metric tons at the beginning of the period to just over 0.3 million metric tons by the end (Figure 6).

International trade in sardine commodities is dominated by frozen sardines that are consumed directly or used in the production of a number of processed products. At the beginning of the 1984-97 period, Japan was the world's leading exporter of sardine commodities, primarily frozen sardines, with over 50% of the total (Figure 7). However by the end of the period Japan's share of global exports had shrunk to less than 5% of the total, with Ecuador, predominately canned sardines, becoming the new leader. Brazil and the Philippines, frozen sardines for canning, and Malaysia, canned sardines, accounted for the greatest combined share of global imports during the 1984-97 period (Figure 8).

U.S. Harvests and Trade of Pacific Sardine

U.S. harvests and trade of Pacific sardines are relatively minor from the global perspective. U.S. landings of Pacific sardines have climbed from virtually nothing in 1989 to nearly 60,000 mt in 1999 (Figure 9). The bulk of landings are destined for export, most of the balance goes into domestic markets for canned sardine.

Exports are primarily in the frozen form, although exports of fresh Pacific sardines rose from near zero in 1997 to almost 5,000 mt in 1999. Exports of preserved Pacific sardine have been relatively minor (Figure 9). Exports of frozen Pacific sardines increased significantly in 1995 and in 1998. By 1999 over 30,000 mt of Pacific sardines were being exported, mainly to Australia (Figure 10). The Philippines has been a major purchaser of fresh, U.S.-caught, Pacific sardines; more recently, Australia has become the primary export market (Figure 11). Western Samoa, Malaysia and Panama have been the major markets for preserved exports, although there is no consistent purchase pattern (Figure 12).

Price trends for U.S. exports of Pacific sardines have been relatively stable for frozen and preserved exports over recent years, but much more variable for fresh exports. The real price (1997 dollars) for frozen exports decreased over most of the 1989-99 period, but has held fairly steady at about \$.20 per pound since 1995 (Figure 13). This reflects the dominance of frozen exports to Australia where they are used as lower valued animal feed in bluefin tuna grow-out operations. (As a rule of thumb, frozen prices greater than \$.50/lb indicate human consumption.) The real price for fresh exports has been more erratic, indicating use for both human consumption, Philippines, Japan and others, and for non-human consumption i.e. animal feed in Australia (Figure 14). The real price for preserved exports has averaged about \$.80 per pound over the 1989-99 period (Figure 15).

For most of the 1989-97 period, the price (1997 dollars) of U.S. exports of frozen Pacific sardines was greater than the average global price (Figure 13). This was also true for fresh exports (Figure 14). This suggests a relatively stronger demand for U.S. frozen and fresh Pacific sardines in the global market, that there is a quality difference that makes these products more preferred. On the other hand, the U.S. price for preserved Pacific sardine exports did not differ as much from that of the global average during 1989-97, suggesting that preserved Pacific sardine products may be more of a substitute in the global market.

Concluding Comments

- Even though there has been a significant decline in global sardine harvests and production since 1988, global sardine commodity prices have remained fairly stable, even moving downward. This suggests that other species and products are being substituted for sardines in the major global markets, otherwise one would expect upward pressure on prices.
- In major sardine harvesting and producing nations such as Japan, production and exports have declined and imports have increased. The sardine sector of the economy would be expected to concentrate on the highest valued uses within the country. This may present market opportunities in countries that have relied on Japan for sardine exports, as well as within Japan itself.
- A comparison of U.S. Pacific sardine frozen and fresh export prices with global averages suggest that U.S. products are of relatively high quality.
- U.S. exports of frozen Pacific sardine have cornered the market for bluefin tuna food in Australia. The U.S. has shipping advantages in the Australian sardine fish food market, because reasonable freight charges and frequent service; Pacific sardines caught off the west coast are high in oil, and because they are caught close to shore are of higher quality which promotes rapid growth in bluefin.
- Mexican labor costs low, but lack freezing capacity therefore unable to supply substantial quantities of frozen sardines to Australian tuna farms. U.S. has advantage over Mexico due to reliability of source.
- Mexico also farms bluefin and this could become a significant market for California sardines in the future. Japan imports frozen sardine from U.S. mainly as feed for farmed yellowtail.
- Strong demand for large frozen sardines in hand laid boxes for tuna longline bait.
- Promote consumption of Pacific sardines for health and nutritional purposes.

Figure 1. Trends in global Coastal Pelagics Species harvests, 1984-98.

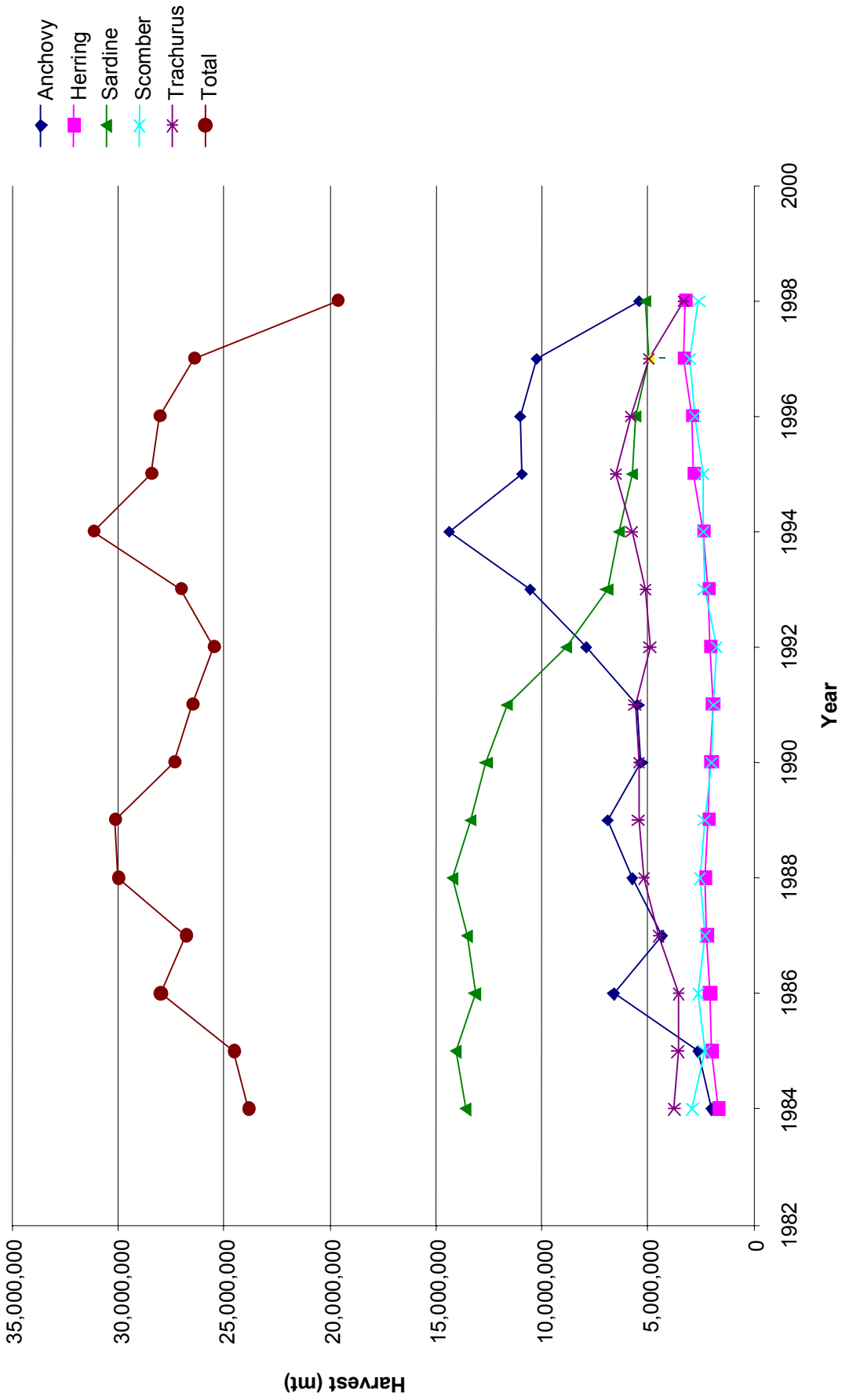


Figure 2. Global sardine harvests, production, exports and imports, 1984-97/98.

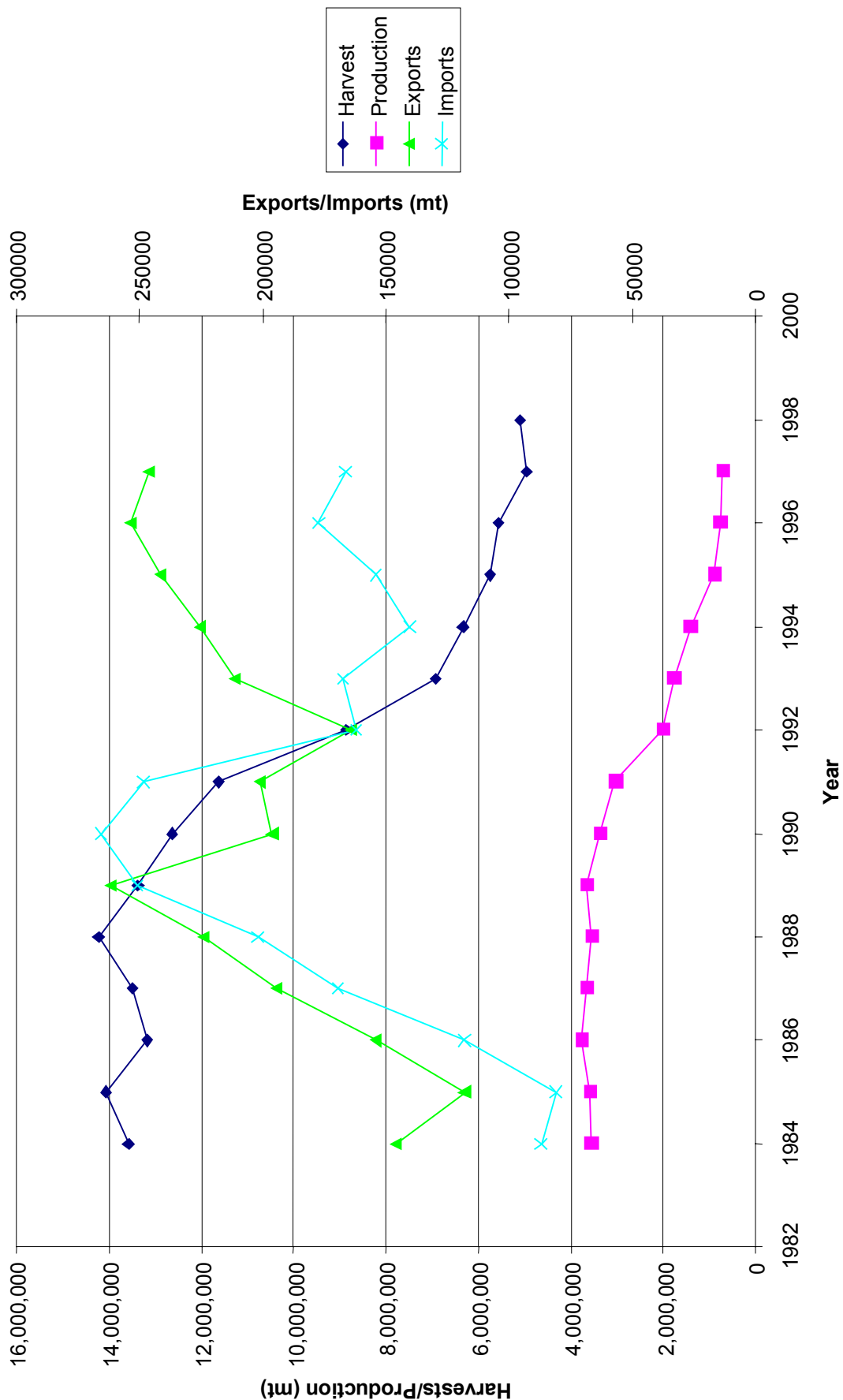


Figure 3. Global sardine harvests by ocean, 1984-98

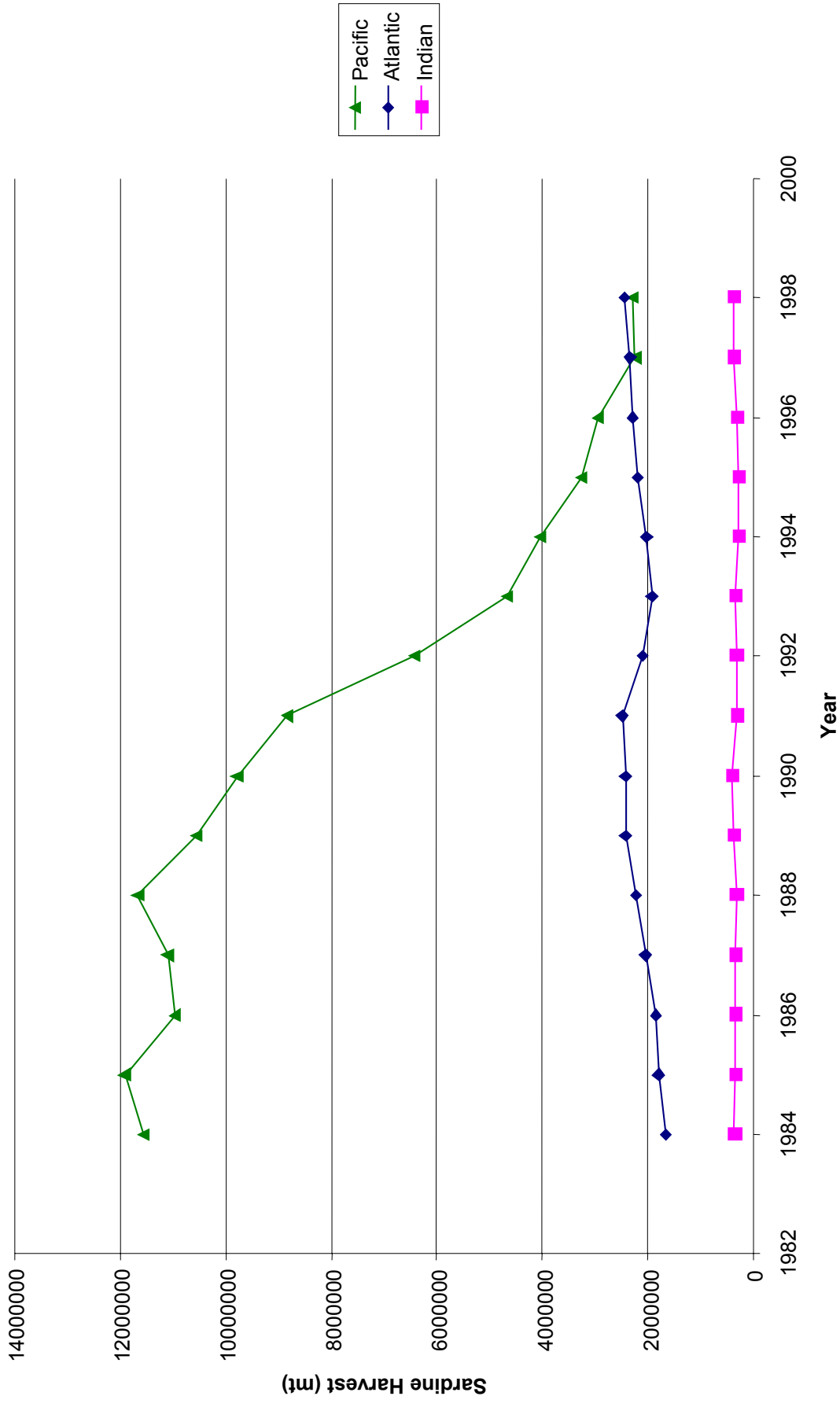


Figure 4. Pacific Ocean sardine harvest shares by leading harvesters, 1984-98.

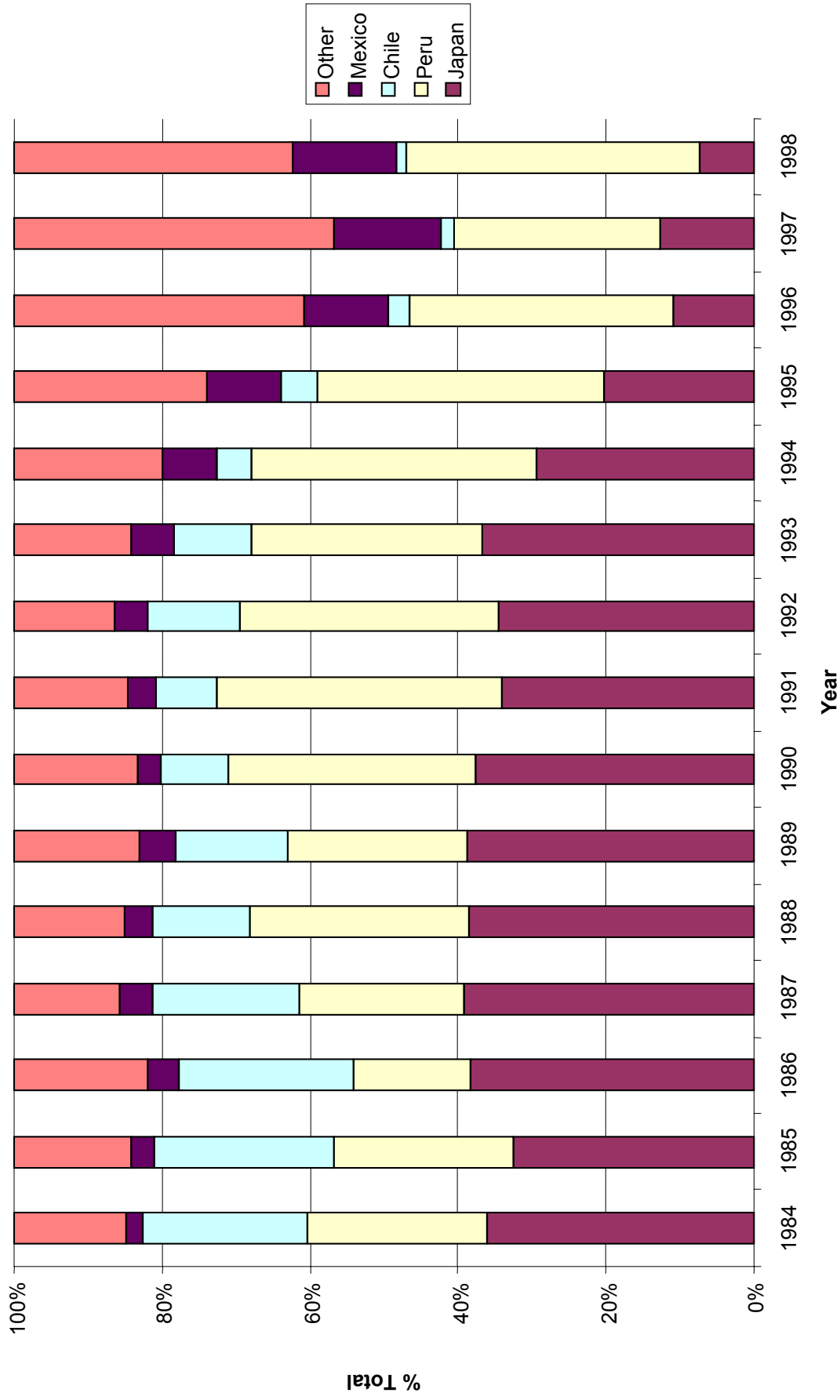


Figure 5. Trends in global sardine production, 1984-98.

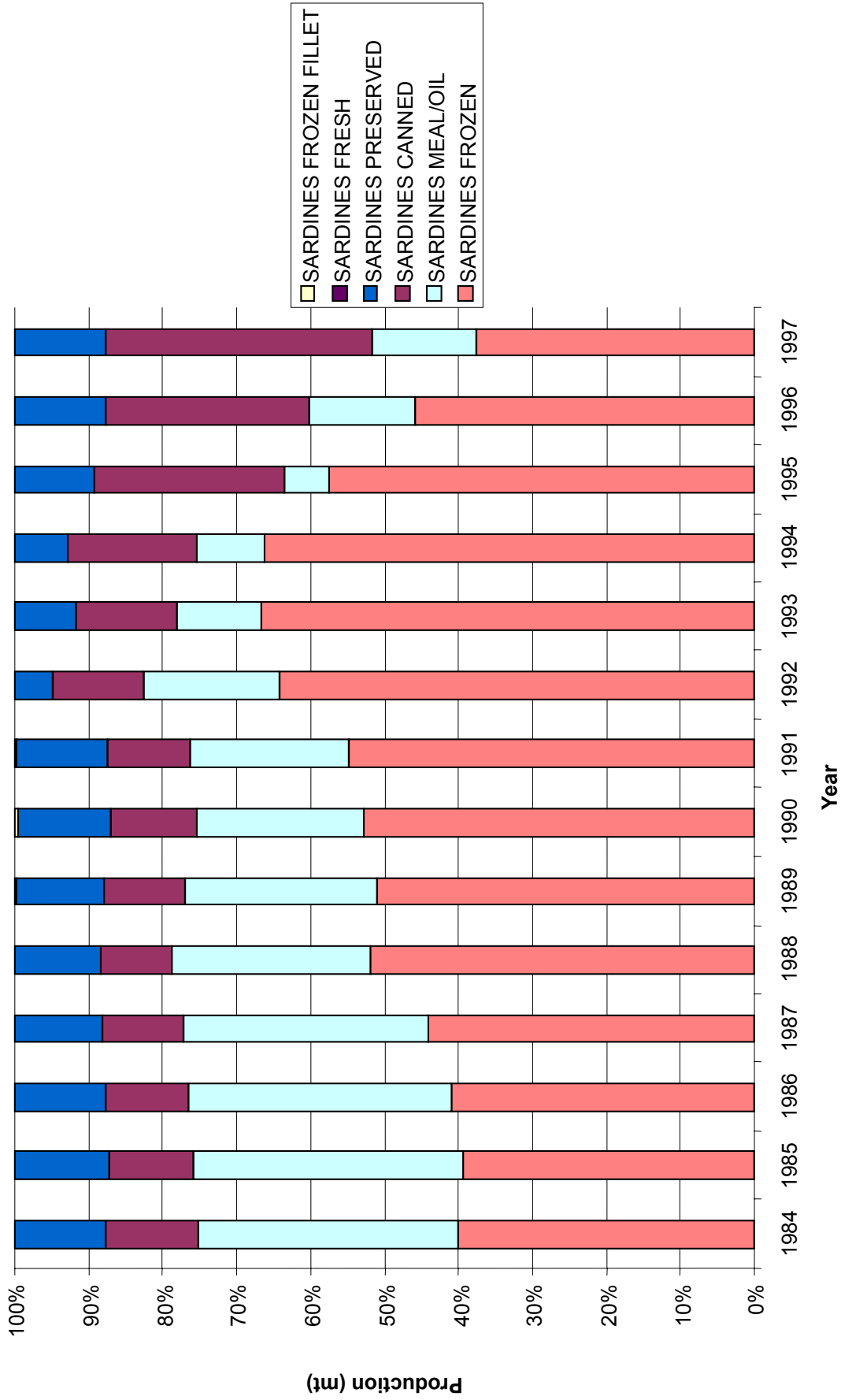


Figure 6. Global sardine production shares by leading producers, 1984-97.

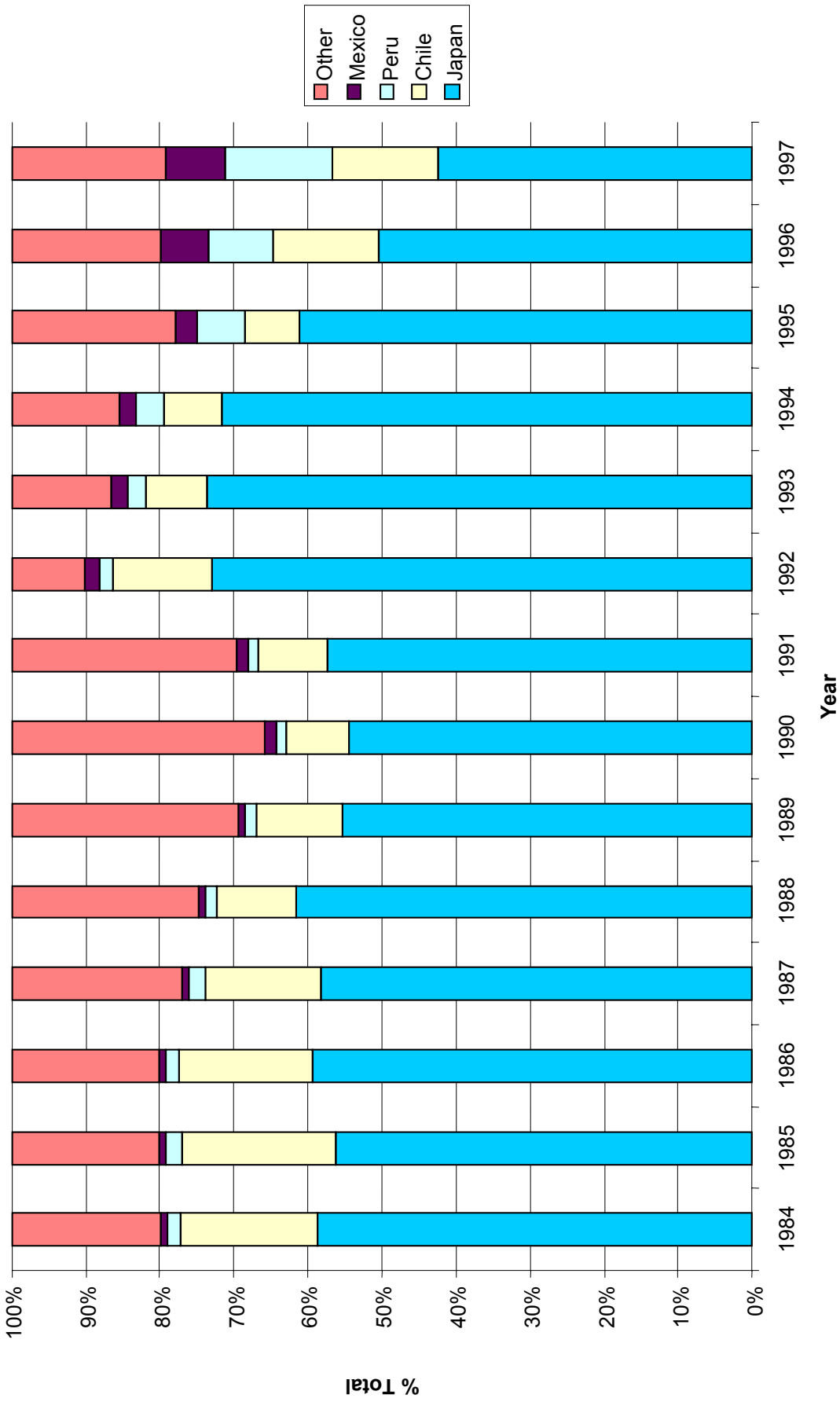


Figure 7. Global sardine export shares by leading exporters, 1984-98.

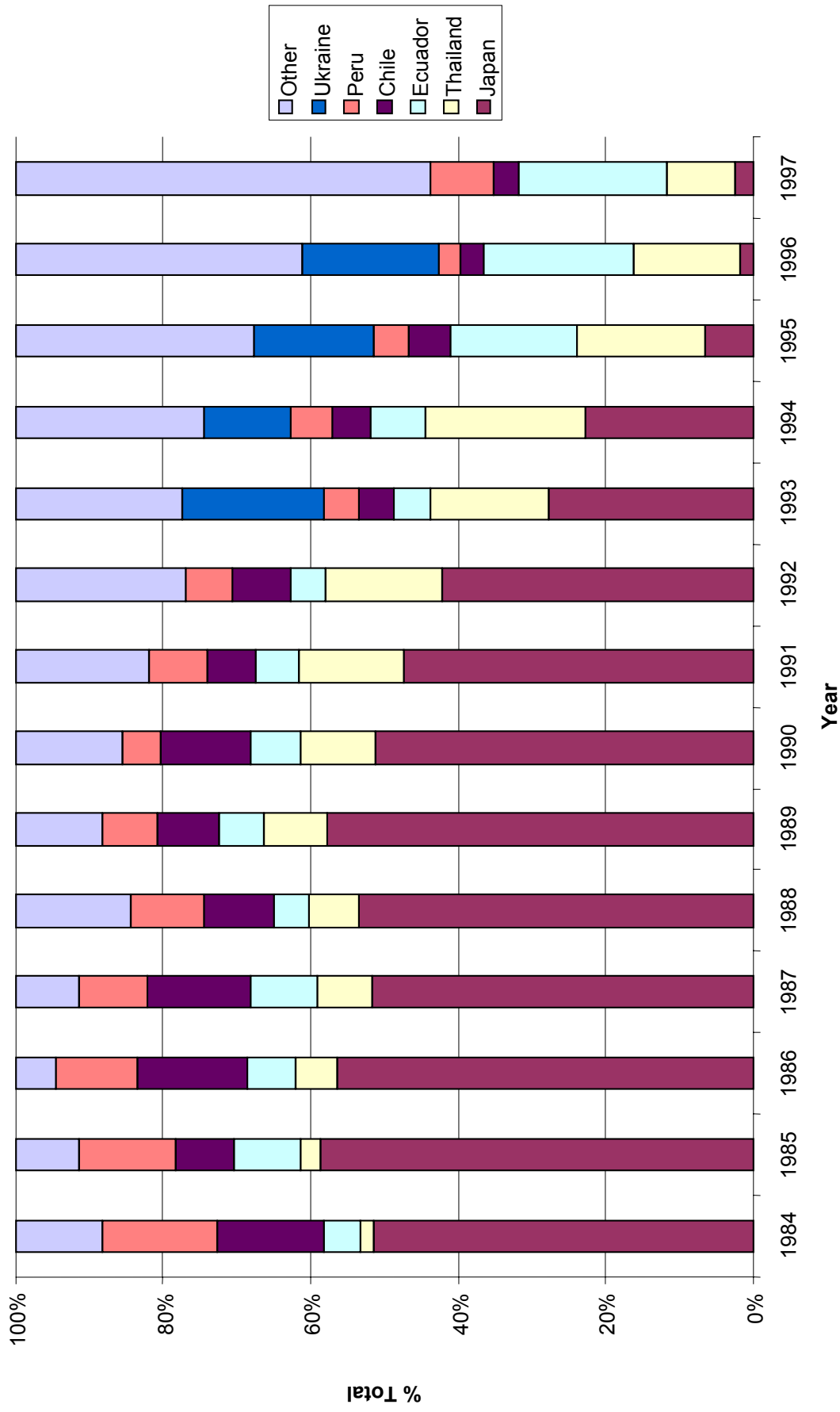


Figure 8. Global sardine import shares by leading importers, 1984-97

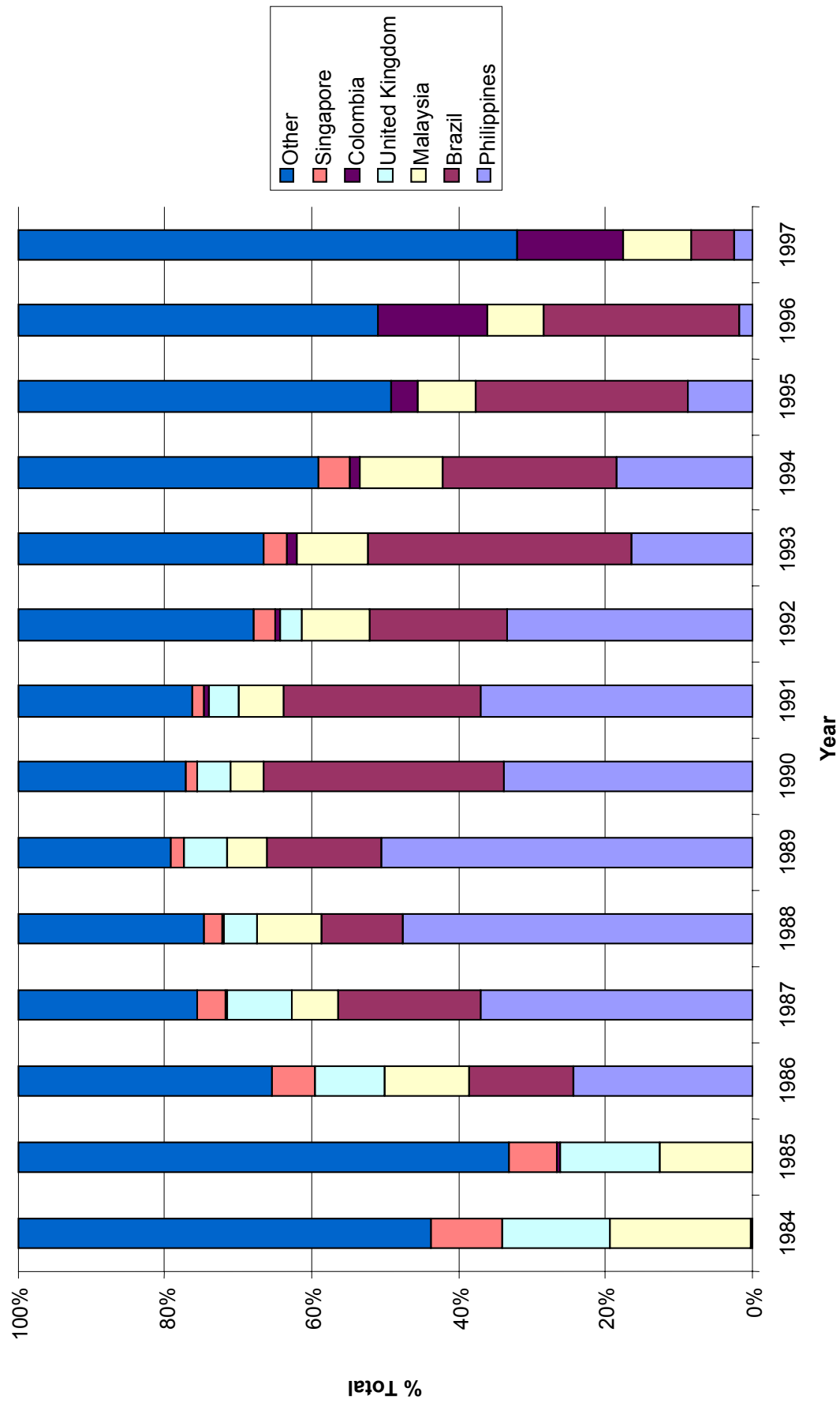


Figure 9. U.S. landings and exports of Pacific sardine, 1989-99.

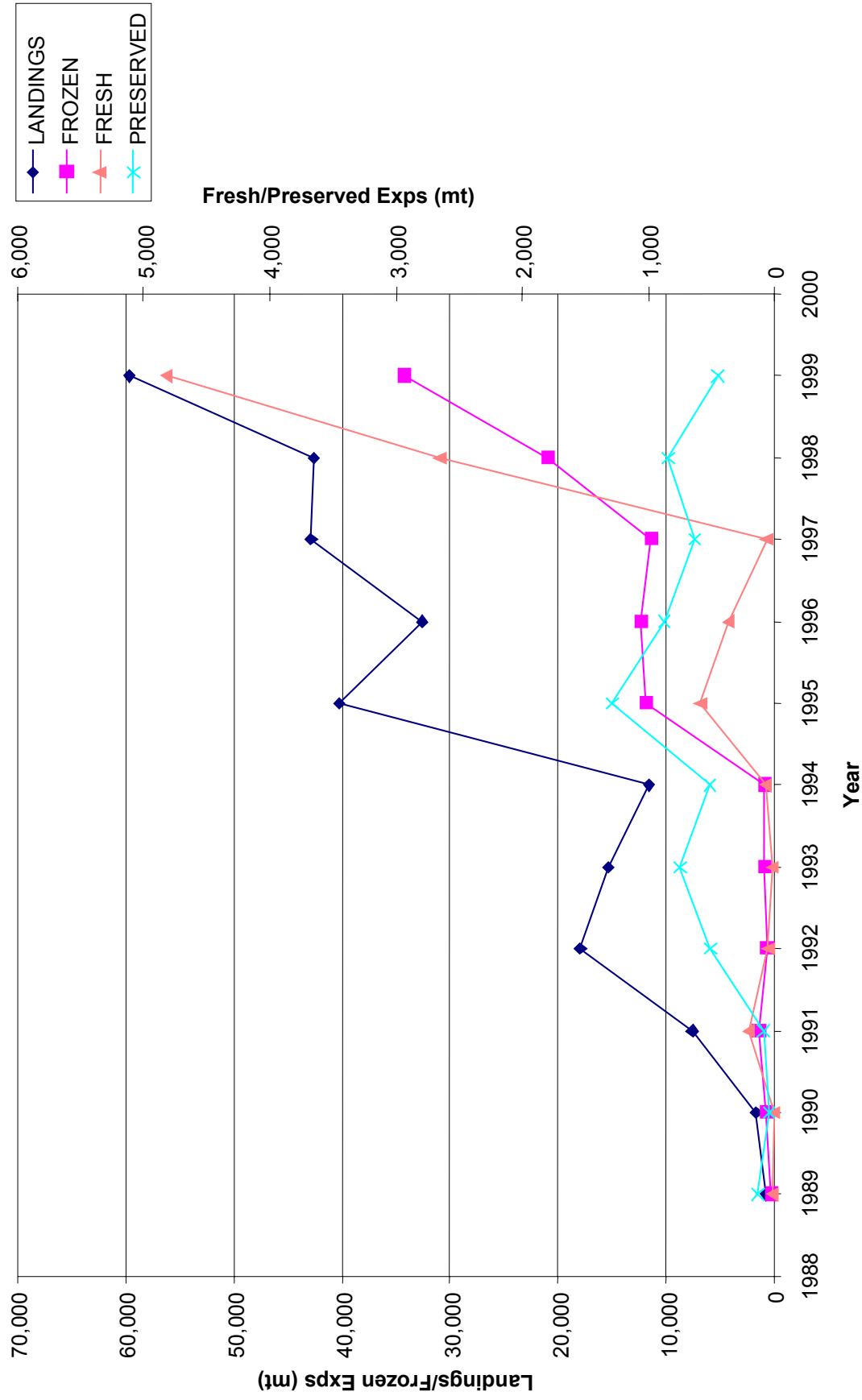


Figure 10. U.S. export shares of frozen Pacific sardine by major destinations, 1989-99.

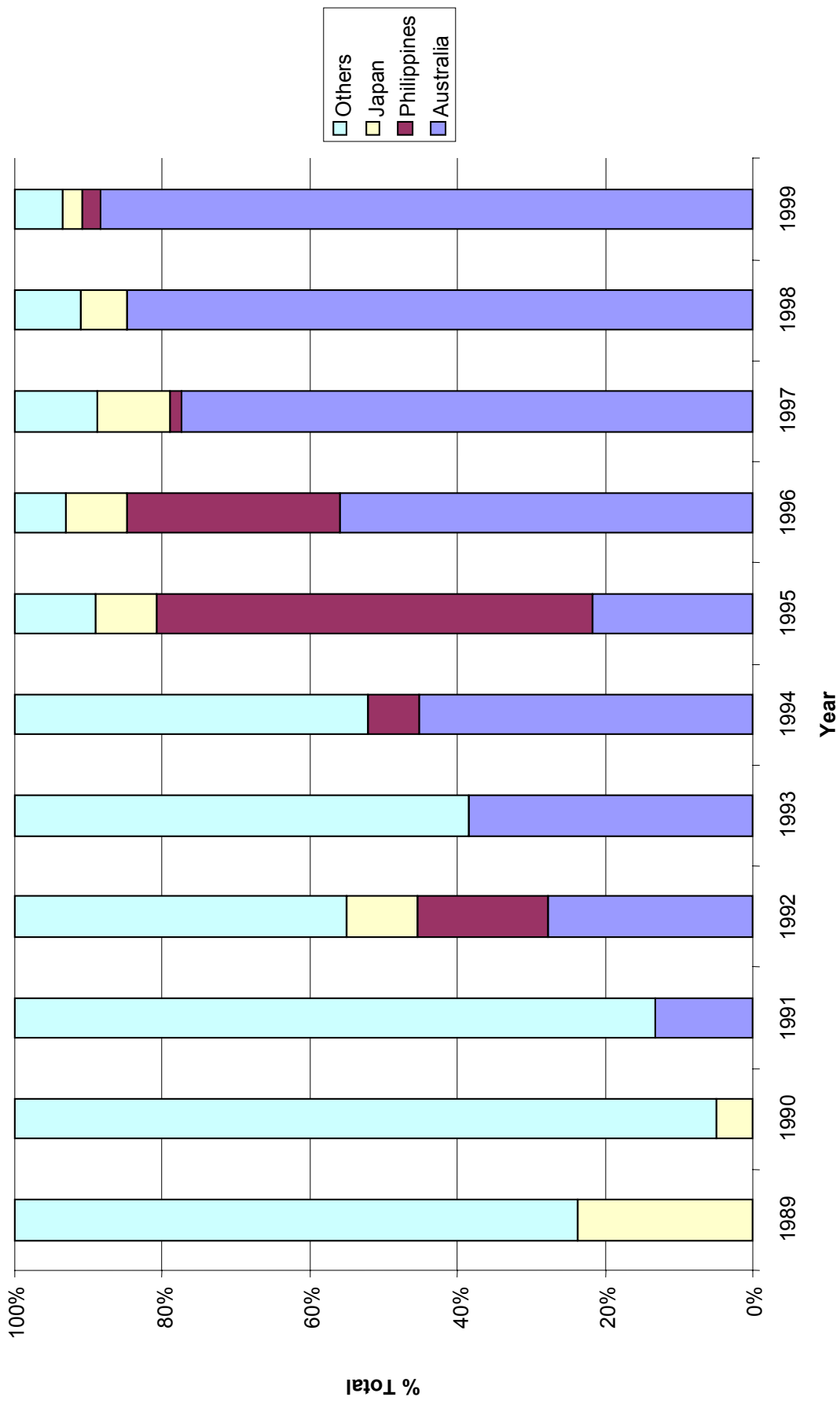


Figure 11. U.S. export shares of fresh Pacific sardine by major destinations, 1989-99.

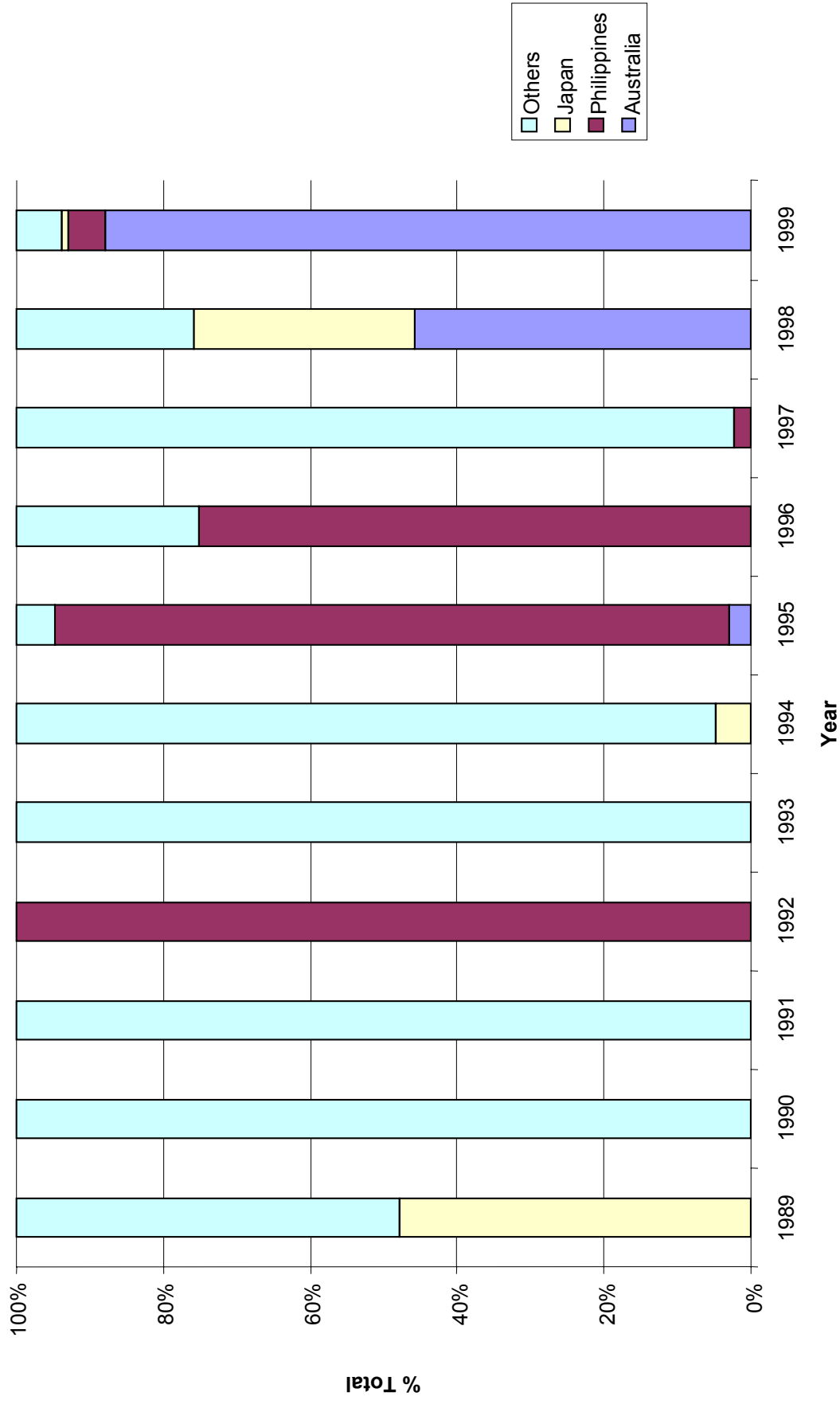


Figure 12. U.S. export shares of preserved Pacific sardine by major destinations, 1989-99.

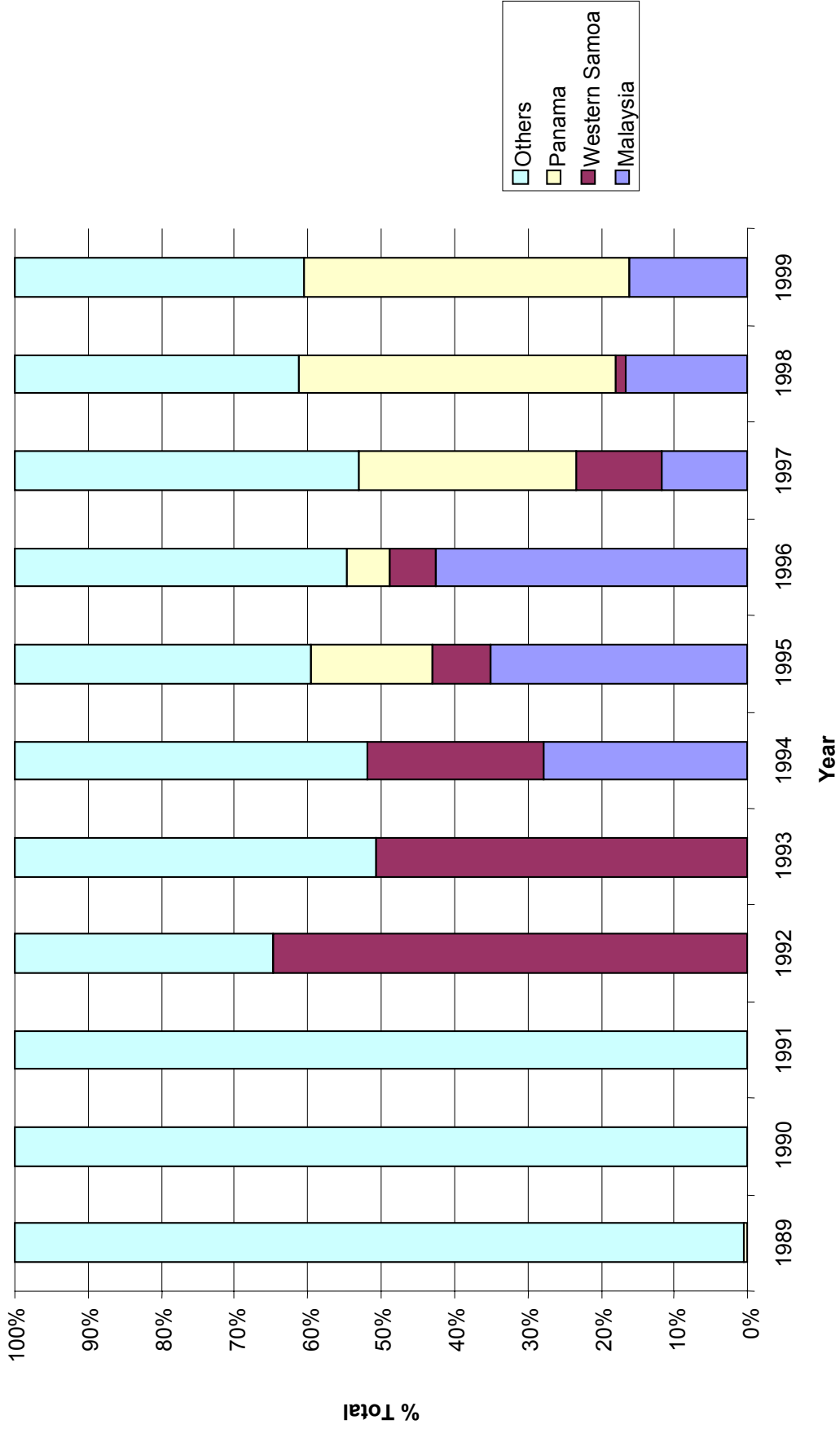


Figure 13. Trends in global frozen sardine export prices and U.S. frozen Pacific sardine export prices, 1989-97.

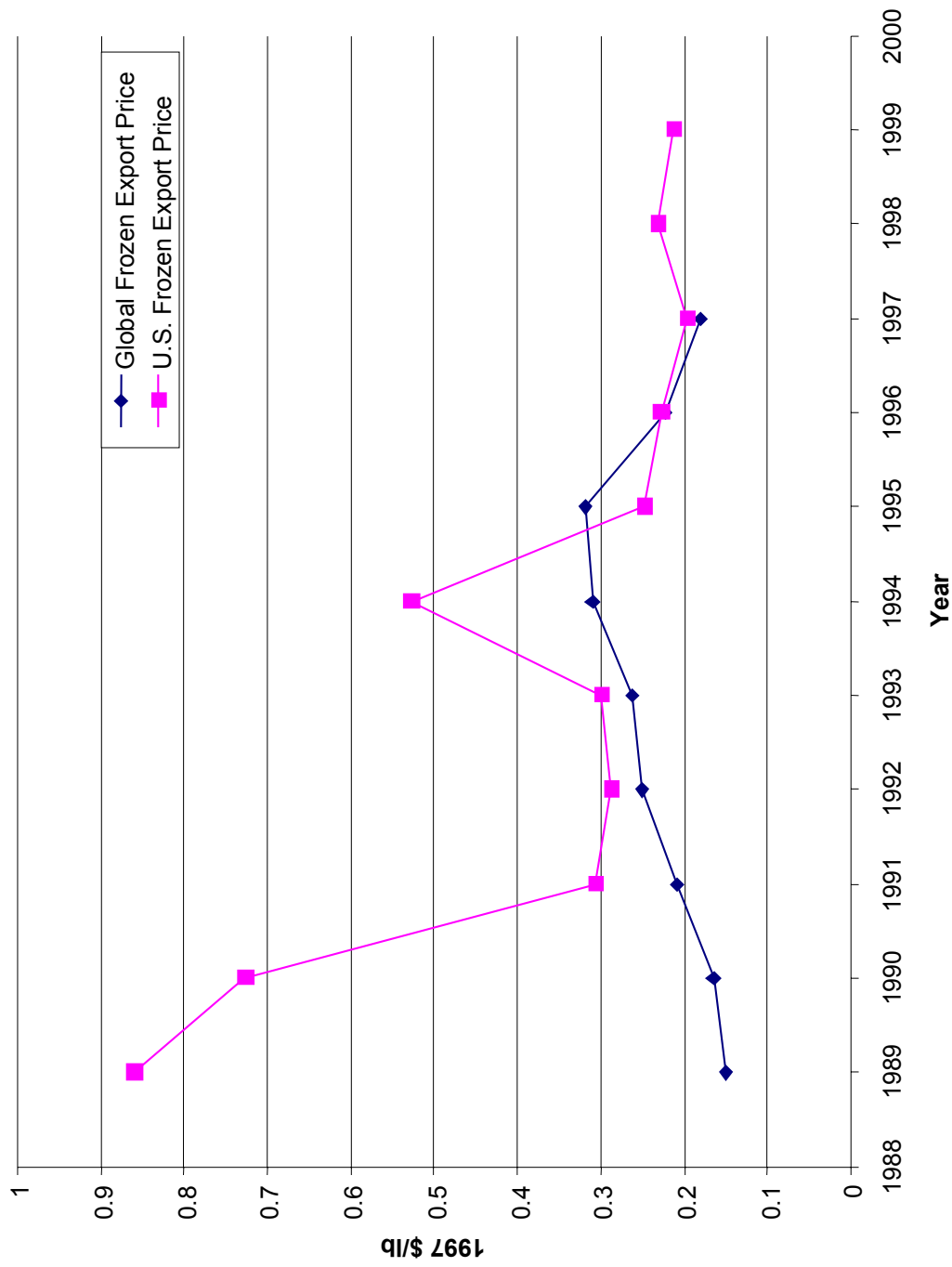


Figure 14. Trends in global fresh sardine export prices and U.S. fresh Pacific sardine export prices, 1989-97.

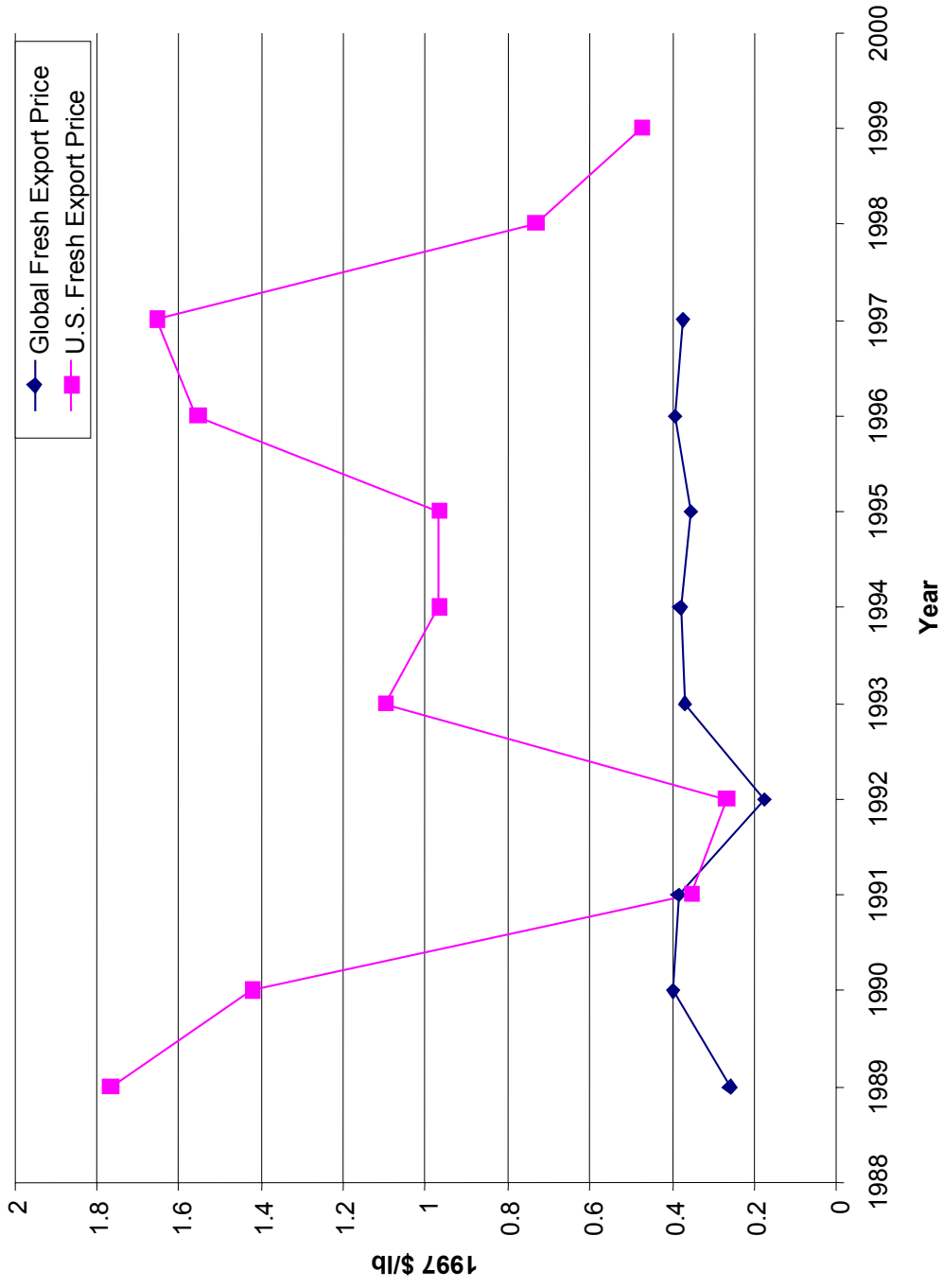
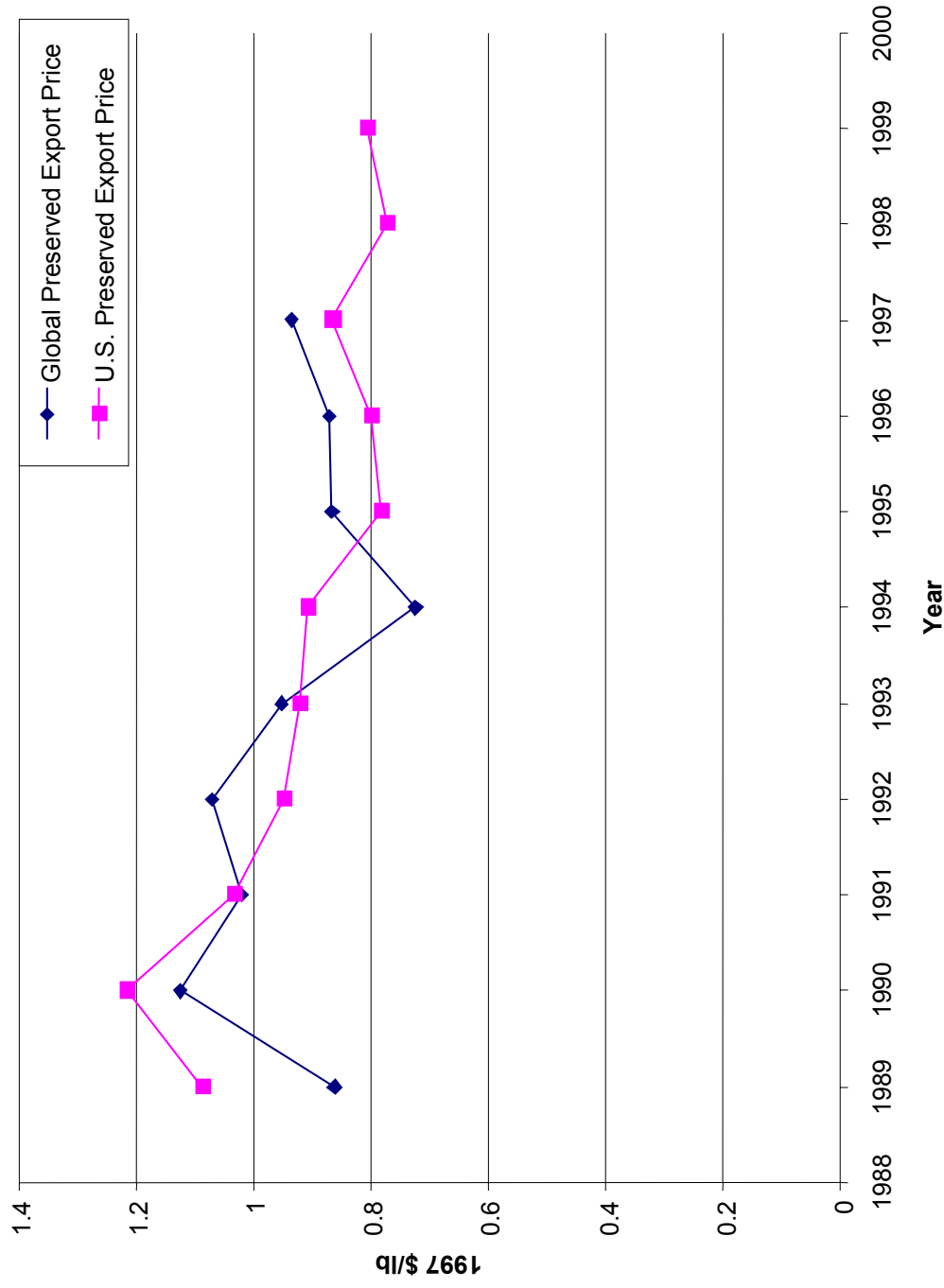


Figure 15. Trends in global preserved sardine export prices and U.S. preserved Pacific sardine export prices, 1989-97.



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