

2. This vessel population was stratified on the basis of four variables: (a) active or lost vessels; (b) material, i.e. wood or steel vessels; (c) age; and (d) gross tonnage. The percentages of the stratified universe were used to determine the stratifying quotas for the sample.

3. First-stage sampling involved the selection of the following six home ports with the largest vessel registration: Biloxi, Mississippi; Brownsville, Texas; Corpus Christi, Texas; New Orleans, Louisiana; and Tampa, Florida. Vessel registration in these ports represented 84.8 per cent of the statistical universe. While elimination of nine other ports of registration from final sampling reduced considerably the cost of field work, it was thought that the exclusion of these ports would not affect appreciably the representativeness of the sample. The findings substantiate this contention, since it was found that no less than 49 ports throughout the Gulf of Mexico area were used for fish landings by the 225 sampled vessels.

4. The second-stage or final sampling consisted of drawing a stratified random sample of 225 vessels from the first-stage sample. The size of the final sample was determined on the basis of a formula which provided for a minimum number of vessels, plus an additional number of vessels in the proportion of the vessel population in the Gulf of Mexico to the total vessel population in the continental United States.

5. Although high ownership turnover and mobility of vessel owners during the period under investigation, 1950-1954, made necessary substitution of a number of originally sampled vessels for other vessels from the statistical universe, the representativeness of the sample does not seem to have been impaired significantly. Substitution was done within each stratum and chi-square analysis of the final sample was the known universe by age and gross tonnage has yielded probability values. .50 P .30 and .70 P .50 respectively, which are satisfactory.

6. Sample design provided for the study of 50 per cent of the total number of years the sampled vessels were insured from 1950-1954. The study of insurance files was done on the basis of availability of insurance records among leading insurance agents and firms in the area. Further statistical tests on the reliability of the sample will be made as soon as the processing of the insurance information under progress will permit.

Ways and Means of Stabilizing the Shrimp Market

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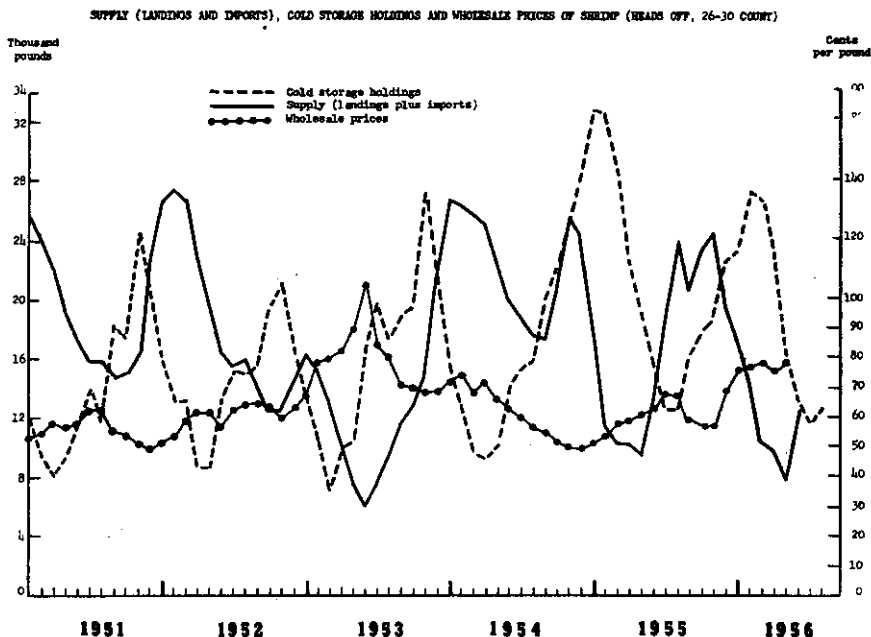
FIGURE 1 SHOWS certain basic data on shrimp for the period January 1951 to April, 1956, including:

1. Shrimp landings and imports in pounds.
2. Cold storage holdings in pounds.
3. Wholesale prices of shrimp, heads-off (combined for New York, Chicago and Boston) in cents per pound.

This chart shows some relationships which are basic to the shrimp industry and which are basic for the development of our theme.

First, supplies (landings and imports) reach peaks during the months Sep-

Figure 1



tember to November of each year. Since 1951 these peaks have been at about the same level, namely, 17 to 27 million pounds (heads-off), while lows recur regularly during the months of March to April and always repeat with a certain consistency—between 8 to 11 million pounds per month. Taking landings alone, the peaks amount to 15 to 22 million pounds, and the lows to 5 to 10 million pounds.

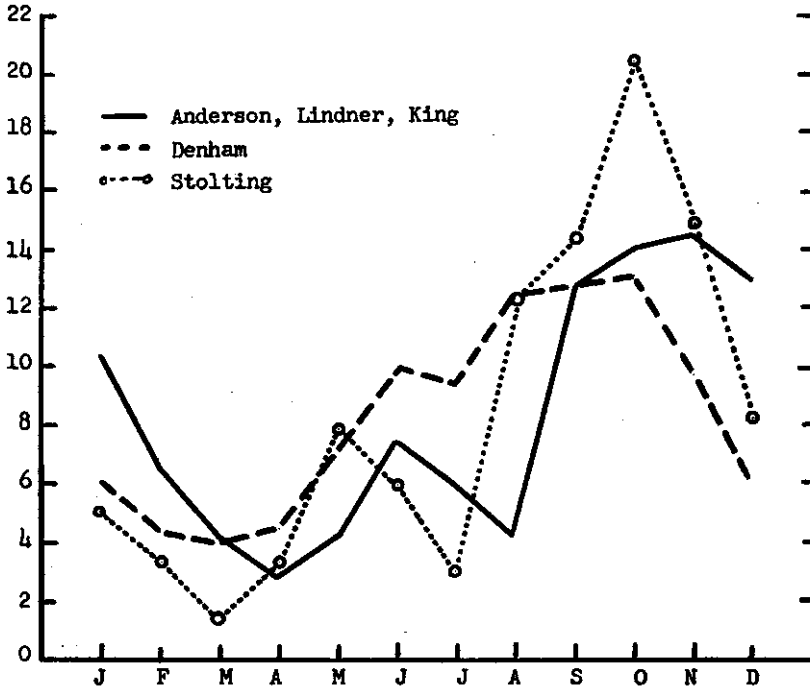
This regularity in peaks and valleys of supply were not the same in earlier years, as illustrated by Figure 2.

Again from Figure 1, peak landings are usually followed by peak inventories. In 1951, landings and imports were about 24 million pounds during November. Cold storage inventories at the same time were 22 million pounds, and increased in January, 1952 to 26 million pounds. In 1952, inventories built up only slightly after landings increased; however, in September-October 1953, inventories again followed the trend of supply. In 1954, they increased drastically, due to very low prices at producer and wholesaler level. In 1955, the relationship between landings and inventories returned to normal.

Figure 1 also shows an obvious inverse relationship of supplies and prices. Prices reach a low in October-November and a high in May and June. This fact stands out clearly in 1950, 1951 and 1953. An exception occurred in the year 1954, when prices reached a peak in the month of January, and in 1952 when the peak was reached in the fall. However, the price variations as to seasons are not as intensive as the supply variations. The 1950 wholesale market prices of shrimp (combined prices Chicago, New York and Boston) decreased only about 14 per cent from June to October. In the following year, 1951, they decreased 19 per cent; in 1952, about 5 per cent; in 1953, about 18

MONTHLY SHRIMP LANDINGS AS PERCENT OF ANNUAL CATCH,
SELECTED SOURCES AND YEARS

Percent of
Total Annual
Catch



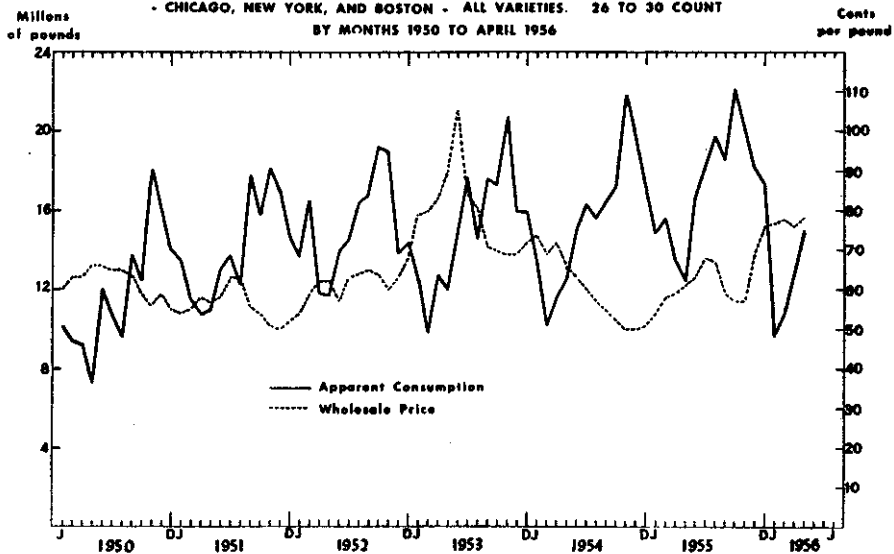
per cent; in 1954, about 17 per cent; and, in 1955, about 16 per cent.

The comparatively small seasonal variations of prices is caused by the influx of shrimp from the cold storage inventories. If inventories had not entered the market during January-June, the June prices would have been much higher. That these inventories have much to do with the price movement can be seen in 1953. When no great inventories were on hand to enter the markets, prices went very high.

Before discussing the actual theme of this paper it will be useful to mention one other characteristic of the shrimp market, the apparent consumption, which is explained in detail on Figure 3. Apparent consumption is the consumption for a certain period of landings, plus imports, plus inventories at the beginning of the given period, minus inventories at the end of the same period, and minus exports. As can be seen from Figure 3, apparent consumption moves with nearly the same variations each year—about 11 million pounds between highs and lows. In 1950 the apparent consumption moved between seven million pounds in April to 18 million pounds in October; while in 1955 the lowest point was 12 million pounds in March, as against 22 million pounds in October. In 1954, the month of lowest consumption was 10 million pounds in February,

as compared to 21 million pounds in October. Apparent consumption by no means is identical with actual consumption; it can be said rather that there is a large variation between apparent consumption and actual consumption. The higher apparent consumption in the month of October is influenced by the great landings which do not necessarily go in the inventories reported by the Fish and Wildlife Service. Many restaurants and retail establishments store, during the months of October-November of each year, great quantities of shrimp which are not reflected in the inventory figures of the Fish and Wildlife Service. Average inventories of shrimp in restaurants are estimated as 3.9 million pounds. Retail stores hold about eight million pounds. Housewives have about 2.2 million pounds canned shrimp on their shelves. It is estimated that about 18 million pounds are held in storage outside the public and private cold storage warehouses reporting regularly to the Fish and Wildlife Service.

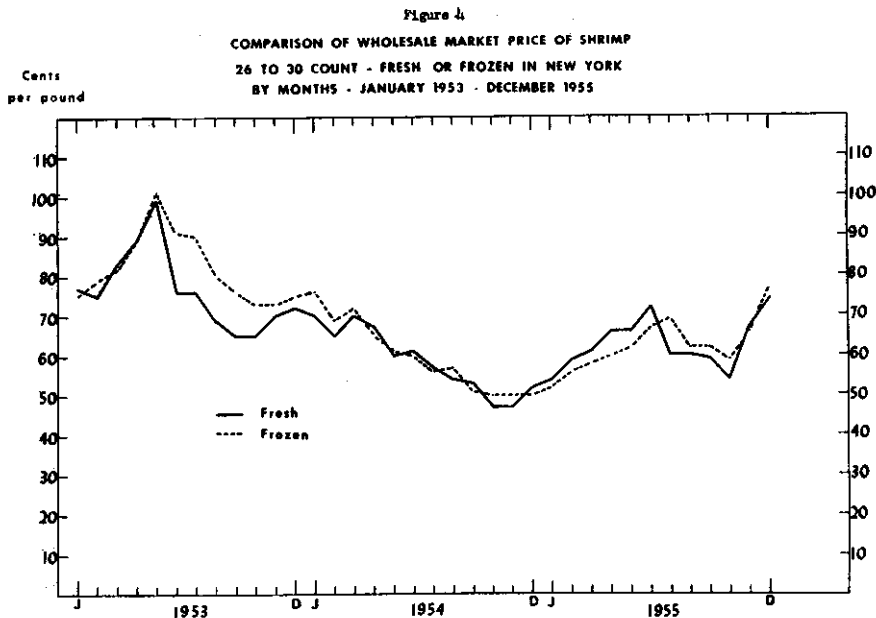
Figure 3
 APPARENT CONSUMPTION OF SHRIMP AND AVERAGE WHOLESALE MARKET PRICE OF SHRIMP -
 CHICAGO, NEW YORK, AND BOSTON - ALL VARIETIES. 26 TO 30 COUNT
 BY MONTHS 1950 TO APRIL 1956



An interesting variation of prices of fresh shrimp and prices of frozen shrimp can be observed in the New York market. As Figure 4 shows, in the beginning of the year fresh shrimp prices are on about an even level, sometimes at a higher level, as compared with frozen shrimp prices. About July and August frozen shrimp prices increase over the level of fresh shrimp prices and remain there nearly to the end of the year. This recurring relationship of prices between fresh and frozen shrimp is due to the fact that frozen shrimp are more readily available for distribution and are welcome for the summer vacation trade. Fresh shrimp gain in their price relationship to frozen shrimp in December, January and February when climate and temperature make easy transportation for fresh shrimp possible and when, at the same time, the

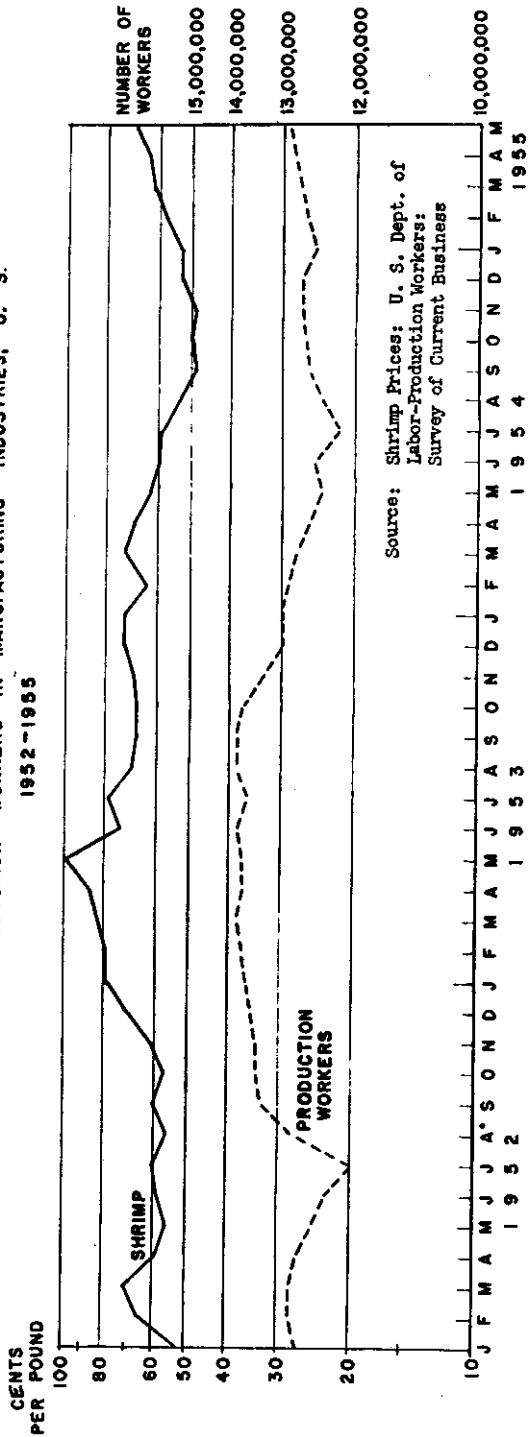
remainders of last year's frozen shrimp are cleaned out to make room for the new crop of frozen shrimp.

Coming to the problem proper, namely, ways and means of stabilizing the shrimp market, we have to consider that the market is mainly based on the three factors which are shown in Figure 1, namely, seasonal variation of supplies, cold storage holdings, and prices. These three factors must be considered in every one of the following sub-titles, namely, (a) Stabilization of the Shrimp Market by General Economic Measures; (b) Stabilizing the Shrimp Market by Specific Measures Adapted for the Shrimp Industry; and (c) Stabilization of the Shrimp Market by Voluntary Self-Help of the Shrimp Industry.



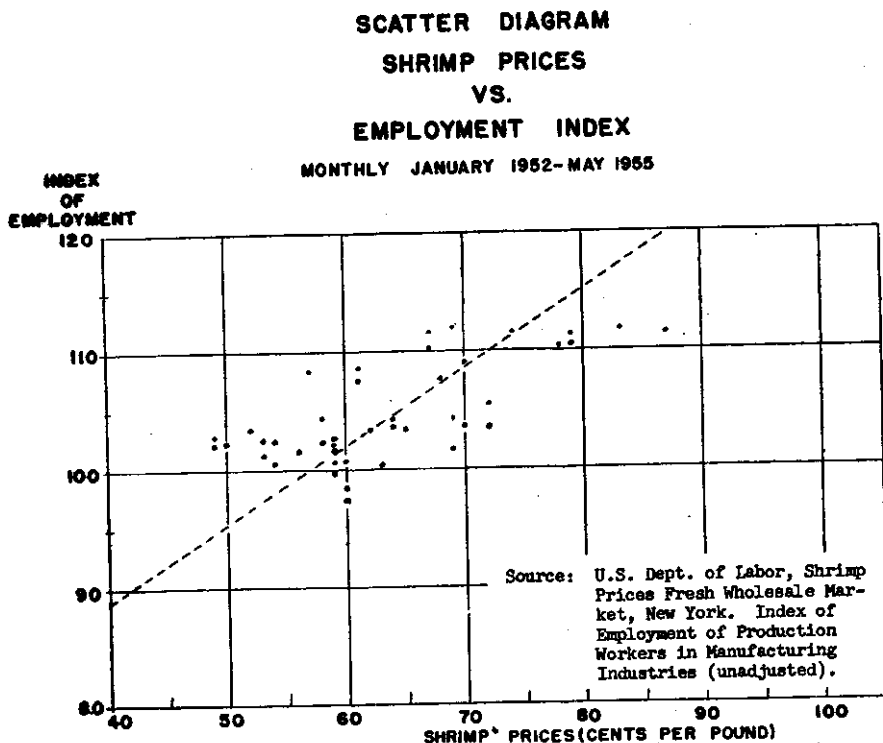
Points (a) and (b) may be treated perfunctorily. General economic measures which could be applied are maintenance of employment stability and maintenance of the price level generally, but especially the maintenance of agriculture prices. In this connection reference is made to two charts, one (Figure 5) showing an inter-relation of shrimp prices and the employment of production workers. The two curves on this chart were actually plotted by Dr. Reinhold Wolff of the University of Miami. Figure 6 shows a scatter diagram indicating for each month, January 1952 to May 1955, the prices of fresh shrimp in New York, and the index of employment of production workers in manufacturing industries. It shows that higher employment is followed, or at least accompanied, by higher shrimp prices. Other factors based on specific measures by Government could be limitation of shrimp production by allotment of area of vessels or by Government assistance in the discovery of new shrimp grounds. Government assistance also could be given by the establishment of public cold storage warehouses.

MONTHLY WHOLESALE SHRIMP PRICES, FRESH 26-30 COUNT, ALL VARIETIES, NEW YORK
 vs.
 TOTAL NUMBER OF PRODUCTION WORKERS IN MANUFACTURING INDUSTRIES, U. S.
 1952-1955



Source: Shrimp Prices: U. S. Dept. of Labor-Production Workers: Survey of Current Business

Figure 6



Of the international measures which could be applied to stabilize the shrimp market, tariffs and quotas are well known and need not be discussed in this connection. International agencies such as the United Nations recommend against instability—Buffer Stocks and Contracyclical Lending. The possible governmental measures are mentioned only by name without going into details because in countries where the free enterprise system prevails governmental measures of any kind are considered of only a subsidiary character.

The following discussion will deal in greater detail with stabilization of the shrimp market by voluntary self-help of the shrimp industry.

What can the shrimp industry do itself to stabilize the market?

On the negative side, the industry has, from time to time, had to face factors over which it has no control. Such factors are natural contingencies, such as storms, which hardly can be overcome by human interference. Deficiencies in production in agriculture caused by natural adversities are sometimes balanced by crop insurance and this is a successful device in this industry. It will be possible to extend to the fishery industries, including the shrimp industry, a type of catch insurance only when more experience is gained by observing greater time periods of production and prices. We have had only about eleven years of constant observation of shrimp prices and such a period is not enough on which to base an insurance system.

Apart from natural factors, stabilization of the market depends on production increasing proportionately with increasing population or with constant costs of production. If domestic production cannot fill the needs of increasing domestic consumption, imports from foreign countries, either on American vessels or on foreign vessels, may be necessary. Domestically sponsored exploratory fishing may assist to keep the supply on an even level; such exploratory fishing can be undertaken by private firms, by corporations or by associations, as well as by the Government.

Influx from cold storage warehouses is periodically necessary, as we have seen in Figure 1, to bring production plus imports to levels that balance the increasing demand. If there should occur a decrease of consumption by unexpected shifts in taste or income or change in the birth rate, promotional campaigns may do much to stabilize sales and prices. A recent study undertaken by the A. C. Nielson Company of Chicago, on the basis of a Saltonstall-Kennedy contract, shows that more complete stocking of shrimp products and package sizes in retail stores had as a consequence an increase of about 60 per cent in bi-weekly sales. Point of sales advertising in addition was responsible for another increase of 14 per cent.

Fishermen often make a mistake in continuing to produce through "thick and thin." That means, regardless of a market drop or a drop in the price level the fishermen continue to produce only the product in which they specialize. Fishermen will be able to cope better with depressions when they have multi-purpose vessels and varied production.

It is also observed that, during a decline of prices, fishermen often fail to cut the variable costs of production, which are mainly composed of oil, gasoline, ice, wages and repairs. Price margins between producers, wholesalers and retailers are, to a large degree, inflexible. A decrease in the retail price will consequently have the greatest effect on the price of the producer. The fisherman must then reduce his cost, until such time arrives when there is a greater demand and a higher price.

Economists agree on one point important to the shrimp industry. Consumers have become less sensitive to changes of relative prices of foods since they have more proprietary funds to change over from one product to another. With the development of technology all nations are becoming wealthier, and therefore a relatively good price for shrimp can be expected even if competing foods show greater changes in their price behavior.

The last item of how the industry can help to stabilize the shrimp market is future trading. The characteristic of future trading is to shift the risks from one's own enterprise to others. Such future trading is common in a number of staple commodities whose prices fluctuate greatly.

A future contract may be defined as an agreement on the part of the seller to deliver, and of the buyer to receive and pay a certain price for a certain kind and quality of the commodity at some specified future time, under conditions prescribed by an exchange or understood by the trade. Dealing in futures is necessarily connected with established commodity exchanges. Trading on the commodity exchanges is usually made up of two classes of transactions—spot or cash transactions. Cash sales are mostly based on samples, while future contracts are mostly based on grades which are determined in advance.

It is generally recognized that some prerequisites are necessary for a commodity to qualify for future trading on an exchange. One is homogeneity. This

means, the product must be so standardized that the various units are conveniently interchangeable. It is essential for future trading that commodities be graded. Up to now, standards and grades for shrimp products have not been established, but some work is being done to establish grades for breaded shrimp and it is hoped more progress will be made. Standards and grades for breaded shrimp should be followed by standards for frozen headless shrimp and eventually for frozen cooked and peeled shrimp.

Second, the commodity must have a minimum degree of perishability to permit storage for future delivery without appreciable deterioration. Third, there must be an adequate amount of the actual commodity available from year to year at the point where the future market is established.

Finally, a large volume of trading is desirable. Naturally, in the case of shrimp we do not have as great quantities available as in the case of grain, rubber or potatoes. However, there are exchanges existing on products which are available in smaller quantities than shrimp, for example, certain metals or certain agricultural products, as tea and pepper. Some canned vegetables also are handled in commodity markets.

The main advantage of the future markets for general market stabilization lies in hedging. Hedging may be defined as the practice of entering simultaneously into two contracts of an opposite nature, one the spot market, one in the future market. One contract involves a purchase, the other a sale. The only common factor is the amount of the merchandise.

Federal legislation regulates commodity markets on agricultural products. It mentions the dangers of future trading if such trade is used for speculation, manipulation or undue control by persons handling the commodities. The legislation provides for an inspection of the dealings of commodity exchanges, for a certain limitation of hedging transactions, and the prohibition of fraudulent acts. It establishes the right for the Secretary of Agriculture to exclude from the commodity exchanges persons of doubtful character. Futures commission merchants have to be registered by the Department of Agriculture and registration can be revoked or suspended.

Since shrimp (or any other fishery products) are not mentioned among the commodities which are regulated under the commodity exchange act such fishery commodities can be introduced in exchanges which are based on mere State legislation. If the industry feels that the time has come to extend futures contracts to fishery products, State legislation may serve that purpose, for example, for shrimp in Texas or Florida or for fish fillets in Massachusetts. Possibly the Department of the Interior can assist the industry in this connection.

But, even if the industry develops futures contracts on shrimp and a commodity exchange to handle such contracts, the basis of the commodity exchange activities will always be the following factors: (a) statistics; (b) economic forecasts; (c) Governmental policies. These three can be brought together by information. A good information system on statistics, on forecasts and on policies is important in any futures trade. The Fish and Wildlife Service attempts to give information by statistical reports, outlook reports and market news services. Improving these reports and willingness of the trade to use these reports are the real basis of the stabilization of the shrimp market.

In summary, there is no absolute panacea for stability of the shrimp market.

The medicine which the industry may apply to stabilize the market is composed of many ingredients. Some of the ingredients have to be obtained from the outside and some of the ingredients can be developed within the industry. From the outside come (a) constant employment; (b) balanced price level and (c) even flow of credit; from the inside come (a) balanced production; (b) loans on inventories; (c) maintenance of quality; (d) adjustments of costs to business variations including costs of advertising; (e) multi-purpose fishing and (f) futures trading. In former years the meetings of the Gulf and Caribbean Fisheries Institute gave opportunity to discuss many of the ingredients in greater details. Only one is newly mentioned to date. It is the introduction of shrimp into commodity markets and the establishment of futures trades on shrimp.

A Summary of Studies on the Marketing of Florida Fish

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ABSTRACT

Segments of Florida's fin fisheries have suffered depression since 1952, when there was a decrease in the demand for mullet, the principal food fish produced.

Factors contributing to the decrease in demand for mullet are: (1) increased competition from other seafoods, meat and other protein items; and (2) changes in food marketing techniques as exemplified by the growth of the super market and the increase in packaged frozen fishery products.

Restrictive legislation and the failure of the Florida industry to take advantage of recent developments made in the fishing industry are contributing factors to the decline in the demand for mullet and other Florida fishery products.

It is recommended:

1. That problems of competition from imported fishery products on the marketing of southern species be examined.
2. The impact of transportation rates on sales of southern species be investigated.
3. That a rigorous and continuous public relations campaign be conducted to improve the public sentiment toward commercial fishing.
4. That strong emphasis be applied to improving the quality of fishery products. Experience has shown that, left to itself, the industry has been slow in improving quality. Therefore, some enforceable regulations may be necessary to improve sanitary laws applying to fish houses, and quality standards applying to the product.
5. That efforts be made to develop new products, to take advantage of the trends in marketing fish. Possible new products include: smoked mullet, headed and gutted mullet, mullet fillets, canned mullet and fish sticks.
6. That a vigorous and continuous advertising and promotion campaign be conducted to increase sales of southern sea foods.