SECTION 3

Place, Time, Form, and Ownership Aspects of Marketing

There are two essential features of marketing: production and exchange.

The process of hog production does not end when hogs leave the farm. The hogs must be transported and slaughtered; the carcass must be cut up and parts of it cured and stored; and the meat must be distributed. These are a part of the process of production, just as much as is the feeding of hogs on a farm in Iowa.

Parallel to this process of production is the process of exchange. At the beginning of the process a farmer owns a hog; at the end of the process a hundred different consumers own the pork made from the hog; and between the farmer and the consumer there are many changes of ownership.

Not all economists agree upon including all of these activities as part of marketing. Some insist that the production activities are the concern of the production economists — that the field of the marketing economist is properly limited to exchange activities alone. Others compromise the issue, including within marketing those activities — transportation and storage — productive of place *and* time *utilities, but excluding processing and related activities productive of* form *utility. Still others reverse the approach and classify exchange itself as a part of production. They speak of* ownership, *or* possession, *utility as a concept ranking by the side of place, time, and form utilities.*—EDITOR

3.5.7 Beveridge, E. A. "How To Hedge Commodities."
3.5.8 Mehl, J. M. "Hedging in Grain Futures."
3.5.9 United States Department of Agriculture. *Trading in Commodity Futures.*
3.5.10 Howell, L. D. "Analysis of Hedging and Other Operations in Grain Futures."
3.5.11 Working, Holbrook. "Theory of the Inverse Carrying Charge in Future Markets."
3.5.12 Huebner, S. S. "The Insurance Service of Commodity Exchanges."
3.5.13 Consumers' Union. "What's Wrong With Speculation?"
3.5.14 Blau, Gerda. "Some Aspects of the Theory of Futures Trading."
3.5.15 Emery, Henry Crosby. "Speculation on the Stock and Produce Exchanges of the United States."
3.5.16 Schultz, Theodore W. "Spot and Future Prices as Production Guides."
3.5.17 Irwin, H. S. "Seasonal Cycles in Aggregates of Wheat-Futures Contracts."
3.5.18 Stewart, Blair. "An Analysis of Speculative Trading in Grain Futures."
3.5.19 Irwin, H. S. "Middlemen's Accumulations and Expectations in Marketing Farm Products."

3.1 The Four (or Three) Kinds of Utility

Many fine-spun arguments have been written regarding the kinds of utility. We shall not repeat them here. Rather, we include only a single, well-tempered presentation of this conceptual framework for the classification of marketing activities.—*Ed.*

3.1.1 Dummeier, Edwin F. and Heflebower, Richard B. *Economics With Applications to Agriculture.* McGraw-Hill, New York, 1934. Pp. 74–76. Reprinted by permission.

The Nature of Production. — Human effort or ingenuity cannot create matter. Production of tangible goods is not creation in the sense that something new is made out of nothing but is the process of so changing or controlling goods and services that they will have increased power to satisfy human wants. Production is the creation of utility. From the statement that utility is created, it should not be inferred that utility arises from the productive effort, for utility must come ultimately from human desire. But production is the process of so changing or controlling goods or services that they will better fit the desires of consumers, and therefore the utility of the goods is increased. The producer does not know whether his efforts have resulted in increased power to satisfy wants until he has sold his goods, as purchase by

the consumer in general reflects the consumer's approval of the productive process.

In 1848 John Stuart Mill pointed out that, in general, man's part in the production of commodities merely consisted in moving things about. More recent writers have attempted to distinguish the creations of four different kinds of utility, viz., *form utility, time utility, place utility,* and *possession utility.* When the farmer sows wheat and produces a crop, he has produced nothing new but only brought together seed, soil, moisture, plant food, and climate and supervised the change of form of these various factors so that wheat results. The miller takes the wheat and so changes its form that flour results. All activities which change the physical form of goods so that they have increased power to satisfy human wants are said to have created form utility. Most of the farmer's effort is spent in producing *form utility.*

The transportation company moves the flour from the mill to the baker, wholesale grocer, or chain-store warehouse. The flour now has increased capacity to satisfy human wants because it is nearer where consumers want it. The delivery truck which delivers processed farm products to the city consumer's door completes the work of producing place utility. All transportation agencies are said to produce *place utility.*

The warehouse operator and the merchant store the flour until it is to be made into bread or sold to the housewife. The flour is stored until the time that the consumer wants it, which gives the flour increased capacity to satisfy human wants. Consumers are willing to pay a higher price for canned peaches in April than in October. Many consumers are willing to pay higher prices for goods to merchants who carry a wide variety of goods and hence have a particular good at the time the consumer wants it. Those who provide storage services create *time utility.*

Possession utility is a fourth type of utility recognized by some writers, though not by all who recognize the other three kinds. Possession utility is said to result from an increase in capacity of goods to satisfy wants from a mere change in ownership. Since production is defined as the *creation of utility,* the real estate broker who brings into contact with each other the owner of a house and the prospective buyer to whom this house has greater utility than it had to the previous owner is said to create possession utility and thus performs a productive function, even though he changes neither the form, place, nor time of the goods; in fact, he may never see or handle them physically.

This classification of kinds of utility is helpful in understanding the nature of production but should not be carried too far. The retailer, for example, has been said to create possession utility by placing goods in the hands of consumers. In fact, he creates utilities of all the four kinds named. He changes the form of some commodities, he creates utilities resulting from changes in the place of commodities, and also creates utilities from changes in time and in possession. Furthermore, it is often difficult to classify under any of these four classes certain services which unquestionably create utilities. The important thing is that productive effort creates or adds to utility for the consumer.

Actually, the production and exchange aspects of marketing are closely related. Most marketing firms are concerned at one time or another with distribution of commodities in various forms, to different places, and at different times. The same firms are almost always concerned with buying, selling, and pricing. Price patterns established in the process of exchange are major influences upon the pattern of distribution.

Nevertheless, the four kinds of utility mentioned above do give a convenient classification of marketing activities. We shall use it as a framework for the present chapter.

Distribution through space, time, and form and the exchange activities through which this distribution is facilitated may be approached from various standpoints. First, we may study the principles that determine the "normal" pattern of distribution in a freely competitive economy and the deviations from this pattern that result from institutional arrangements and the limitations to competition imposed by custom, law, or technology. Second, we may inquire what pattern of distribution would be most profitable to the farmer, processor, or distributor. This will commonly be quite different from the "normal" pattern under pure and perfect competition. The competitive distribution in space, time, and form would return the seller the same *net price* for each unit sold in different areas at different times and in different forms. The most profitable distribution would equalize the *marginal net return* for each unit. Only in very special cases would these distribution patterns be the same.

Both these approaches will be illustrated in the selections that follow. A third approach would be to inquire what distribution would be of greatest benefit to the public as a whole. It is often argued that the competitive pattern best meets this criterion. This question will be discussed at various places in this book, especially in subsection 4.5. *—Ed.*

3.2 Location as a Factor in Agricultural Marketing

We first consider the economics of location as a factor in agricultural marketing.

In a primitive, localized economy, the physical distribution of products is of minor importance. In our own highly organized and highly specialized society it is very important indeed. Farm products commonly must be assembled at country points, shipped to central points, distributed to many centers of consumption, delivered to individual retailers, and then delivered to the doorsteps of individual families.

Thus the adequacy and cost of transportation have profound effects. They influence the boundaries of markets of specialized production areas and the boundaries of supply areas for large consuming centers. They exert a powerful influence on the movement of farm products and upon the methods of processing and distribution. The structure of freight rates may encourage or discourage processing at country points; it may favor areas near the market or far away; it may encourage centralized or decentralized marketing.—*Ed.*

3.2.1 Cummings, Richard Osborn. *The American and His Food.* Univ. of Chicago, Chicago, 1940. Pp. 53–54.

Most New Yorkers in 1840 had to drink swill milk which came from cows fed with distillery mash and stabled within the city limits. The situation was changed by the construction of the Erie Railroad, which during the year 1842–43 carried more than three million quarts of milk to the city. Three years later it carried more than twice this amount, and in 1848–49 more than nine million quarts were delivered.

Swill-milk dealers who found their business threatened by the flood of country milk charged that the milk could not have been brought from the country unless some harmful chemical had been added to keep it fresh. The Orange County dairymen explained to the press that nothing had been added to the milk but that refrigeration had been used. Before the cans were loaded on the train their contents had been stirred by a tin tube filled with ice. The milk was again refrigerated when it arrived at a city depot maintained by the Orange County Milk Association. This association, a stock company formed by the dairymen, also ran a delivery service in the city.

The price of milk dropped and consumption increased markedly following the building of the Erie and other roads. It was estimated in 1845 that the annual saving to each New York family using a quart of milk a day was equivalent to "more

than the interest" on a share of stock of the Erie Railroad. A writer in 1851 set the annual per capita consumption of milk in the city at 204 quarts, almost four times the figure of ten years earlier. . . .

Extension of steam lines into the great natural hothouse of the South enabled city dwellers to enjoy fresh fruits and vegetables for weeks to months longer. In the forties and fifties New York drew heavily on Norfolk and a great truck-gardening industry grew up in its vicinity. Farther southward the growers of the Carolinas and Georgia responded to urban demands, and early fruit shipments were begun from points in the interior by railroad to the seaports, whence steamboat lines ran to the north.

A National Workshop on Marketing Research stated three conditions necessary to the movement of goods in a competitive situation.—*Ed.*

3.2.2 United States Agricultural Research Administration. *Marketing Research Notes From National Workshop,* Sept., 1949. P. 110.

Three conditions are essential to movements of goods and services between areas:

1. Price at one point must differ from price at another by at least as much as the transfer cost between the two points.

2. There must be some system for reciprocal demand between trading areas — some basis for paying for goods and services received.

3. Actual transfer must be physically and politically possible and feasible, although this condition may be subsumed under the above two items.

Fetter outlines a theory of the effect of transportation rates upon the boundaries of market areas.—*Ed.*

3.2.3 Fetter, Frank A. "The Economic Law of Market Areas," *Quar. Jour. Econ.,* Vol. XXXVIII, No. 3, May, 1924. Pp. 524–25, 528.

Obviously the location of a point of indifference in delivered costs to any buyer between two markets is determined by the combination of base prices and freight rates. This has been shown to be true of the point on a direct line between the two markets, and the same reasoning applies to any other point on the plane on either side of the axis formed by this direct line. For the freight rate from one market may exceed that from the other to any location only by the amount of the difference in base prices at the two markets. The location is on the boundary, or point of indifference, in respect to two markets when the sum of base prices and freights is exactly equal. On either side of

such a point, in the direction of the two markets respectively, as the freight rates are higher or lower, the delivered cost from one market must be greater or smaller than that from the other. This is a numerical relationship of just the same kind as that in the formula of a hyperbolic curve, which is such that the difference of the distances from any point of it to two fixed points, called *foci,* is the same. Railroad freights are paid to overcome distance and vary more or less proportionally to distance. A succession of such points of indifference in delivered cost would take graphically the form of a hyperbolic curve in just the measure that freight rates did vary in exact proportion to distance, and that goods could be shipped on a perfectly straight route from each market to every point in the territories considered, assuming likewise that the two base prices were alike to all buyers at the same time, as they would be under full competitive demand and supply conditions. On these conditions we get the following formulation of the general law of market areas:

The boundary line between the territories tributary to two geographically competing markets for like goods is a hyperbolic curve. At each point on this line the difference between freights from the two markets is just equal to the difference between the market prices, whereas on either side of this line the freight difference and the price difference are unequal. The relation of prices in the two markets determines the location of the boundary line: the lower the relative price the larger the tributary area.

* * *

The assumptions made and the abstract nature of the formula must not be forgotten or misunderstood. It is merely in the nature of a first approximation to the solution of the various practical problems that may arise. If freight rates are not plain mileage rates, but are tapering by any fixed rule, the limiting curves between markets may still be symmetrical, tho differing in location from those resulting from rates on the mileage principle. Inasmuch as the actual structure of freight rates departs from the principle of strict proportionality to distance, the boundary lines will be shifted; likewise, according to other irregularities in freight, whatever be the cause, such as water transportation or topographical obstacles, making longer routes necessary. In peculiar cases geographical relations may be quite inverted.

European economists have given more attention to location theory than have American economists. The pioneer

in this important field was von Thünen. The following excerpt, taken from the first few pages of von Thünen, still is a good statement of fundamental principles. Students can find much interesting material in other German writings; especially those of Weber, Lösch, and Palander.—*Ed.*

3.2.4 Von Thünen, Johann Heinrich, *Der isolierte Staat*, Verlag von Wiegandt, Hempel & Parey, Berlin, 1875. Pp. 1, 2.*

Man denke sich eine sehr grosse Stadt in der Mitte einer fruchtbaren Ebene gelegen, die von keinem schiffbaren Flusse oder Kanale durchströmt wird. Die Ebene selbst bestehe aus einem durchaus gleichen Boden, der überall der Kultur fähig ist. In grosser Entfernung von der Stadt endige sich die Ebene in eine unkultivierte Wildniss, wodurch dieser Staat von der übrigen Welt gänzlich getrennt wird.

* * *

Es entsteht nun die Frage: wie wird sich unter diesen Verhältnissen der Ackerbau gestalten, und wie wird die grössere oder geringere Entfernung von der Stadt auf den Landbau einwirken, wenn dieser mit der höchsten Konsequenz betrieben wird.

Es ist im Allgemeinen klar, dass in der Nähe der Stadt solche Produkte gebaut werden müssen, die im Verhältniss zu ihrem Wert ein grosses Gewicht haben, oder einen grossen Raum einnehmen, und deren Transportkosten nach der Stadt so bedeutend sind, dass sie aus entfernten Gegenden nicht mehr geliefert werden können; so wie auch solche Produkte, die dem Verderben leicht unterworfen sind und frisch verbraucht werden müssen. Mit der grössern Entfernung von der Stadt wird aber das Land immer mehr und mehr auf die Erzeugung derjenigen Produkte verwiesen, die in Verhältniss zu ihren Wert mindere Transportkosten erfordren.

Aus diesem Grunde allein werden sich um die Stadt ziemlich scharf geschiedene konzentrische Kreise bilden, in welche diese oder jene Gewächse das Hauptzeugniss ausmachen.

Mit dem Anbau eines andern Gewächses, als Hauptzweck betrachtet, ändert sich aber die ganze Form der Wirtschaft, und wir werden in den verschiedenen Kreisen ganz verschiedene Wirtschaftssysteme erblicken.

Cassels discusses the economic forces which determine the boundaries between competing production or supply areas — in this case for fluid milk, cream, and butter.—*Ed.*

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* Ed. To facilitate reading, the spelling in this selection has been modernized.

3.2.5 Cassels, John M. *A Study of Fluid Milk Prices.* Harvard Economic Studies, Vol. LIV, Harvard Univ., Cambridge, Mass., 1937. Pp. 20–23, 31–32, 38–40.

The cost of shipping a given quantity of milk in fluid form being greater than the cost of shipping its equivalent in the form of cream, it will naturally be shipped from points nearer to the market than those from which cream is shipped. Similarly, since the cost of shipping cream is greater than the cost of shipping its equivalent in the form of butter (or some other manufactured product), it will tend to come from a zone nearer the market than that from which the butter comes. Suppose that the cost per mile of shipping 100 pounds of milk is one cent and the cost of shipping its equivalent in the form of cream is 1/10 of a cent and its equivalent in the form of butter is 1/40 of a cent. Then as distances from the market increased the prices which producers could get for milk to be shipped in fluid form would decrease at the rate of one cent per mile while the prices for milk to be shipped as cream would decrease only at the rate of 1/10 of a cent, and the prices for milk to be shipped as butter only at the rate of 1/40 of a cent. The actual prices obtainable for milk for these different purposes at various distances from the market would depend on the f.o.b. prices prevailing there for milk, cream, and butter. In order to facilitate a direct comparison of their magnitudes, the prices will be stated here as returns obtainable from 100 pounds of whole milk sold in these different forms, and in order to simplify the following analysis it will be assumed that all the other advantages and disadvantages to the farmers of the different methods of disposal exactly offset each other. If the prices for the three commodities (in this sense) f.o.b. city were the same, then at all points in the surrounding territory the farmers would obtain their best returns from milk used in the manufacture of butter and none would be available for shipment as either fluid milk or cream. In order that cream may be obtained, its city price must be higher than that being paid for butter, and in order that fluid milk may be obtained, its price must be higher than the price being paid for cream. The differences in the transportation rates will determine the distances from the market at which it will become more profitable to ship cream than milk and at which it will become more profitable to ship butter than cream. The dividing line between the milk and cream zones in this case will be at that distance where the freight charges on milk

are equal to 10/9 of the difference between their prices (freight on cream being equal to 1/9 of the difference), and the dividing line between the cream and butter zones will be at that distance where the freight charges on cream amount to 4/3 of the difference between their prices (freight on butter being equal to ⅓ of the difference). For example, if the city price of milk were $3.00 and the price of cream $2.10 the dividing line would be 100 miles from the market, i.e., 10/9 of (300 – 210). At this distance the price payable to the farmers for either milk or cream would be $2.00. At any point less than 100 miles from the market the price of milk would be higher than the price of cream and at any point farther from the market it would be lower. If at the same time the city price of butter were $1.98 the dividing line between the cream and butter zones would be 160 miles from the market, i.e., 10 (4/3 of [210 – 198]). The outside limit of the butter zone will depend in a somewhat similar way on the competition of other enterprises for the use of the land, labor, and capital of the farmers. The responses concerned in this case would be production responses.

The relation of price to distance from the market under these conditions could be represented graphically as in the diagram below (Fig. 3).

The city prices themselves depend, of course, on the conditions of supply and demand for each of the commodities; and the conditions of supply, in their turn, depend in part on the boundaries that are established for these different zones. We are concerned here with a complicated system of equilibrium relations in which many of the factors mutually govern one another. The city price of butter must be such that, when proper deductions have been made for transportation costs, it will be just worth while to produce butter on the outside rim of the area, just worth while to produce butter rather than cream at the inside edge of the zone, and just worth while for all the farmers within the zone to produce the particular quantity required to balance the demand in the city at that price. The city price of cream must be such as to make it just worth while to produce cream rather than butter at the outside edge of the zone and cream rather than milk at the inside edge, and just worth while for all those within the zone to produce the total quantity necessary to satisfy the demand for cream at that price. And the city price of milk must be such as to make it just worth while to

produce milk rather than cream at the outside edge of the zone and just worth while to produce within the zone the exact equilibrium amount.

A change in any one of the factors concerned in the establishment of this equilibrium would result in a readjustment of all the others and the establishment of a new set of equilibrium conditions. Suppose, for example, that the demand for fluid milk

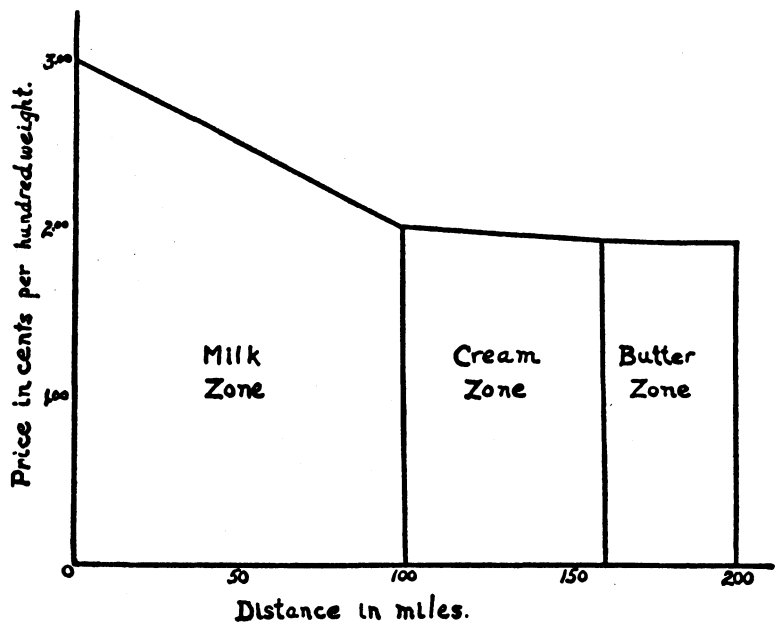

Fig. 3. The relation of the price of milk to distance from market in different product zones.

increased as a result of a change in the dietary habits of the consumers. This would result in a rise in the city price which would make it worth while to ship milk from the inner edge of the cream zone and would also call forth a greater output from the producers in the original milk zone. The diversion of cream supplies into the fluid milk channels by reducing the amount put on the market while the demand remained unchanged would tend to raise the city price of cream, which, in turn, would result in the shipment of cream from marginal points in the butter zone and in an increase of production in the cream zone itself. The diversion of butter supplies would have a similar effect on prices, production, and territorial expansion in the butter zone.

In the end, when all the balancing adjustments had been made, the equilibrium city prices for all the commodities would be higher than before; the differences between them would be greater; the boundaries of the different zones would all be farther out than before; and production in all zones would be somewhat more intensive.

* * *

In the first case it is assumed that the markets are 200 miles apart and that the prices for milk, cream, and butter at A are \$4.00, \$2.20 and \$1.99 respectively, while at B they are \$3.00, \$2.10 and \$1.965. The boundary lines of the zones around A

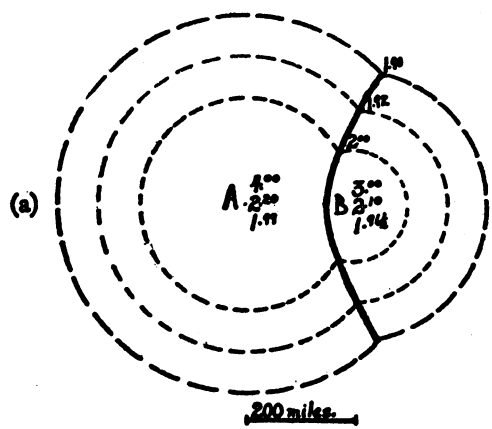

Fig. 5(a). Theoretical product zones and market divides for two adjacent markets when city prices are not the same in both.

would be at distances of 200 miles, 280 miles, and 360 miles, while around B the distances would be 100 miles, 180 miles, and 260 miles. It is evident, since the price of milk at A is \$1.00 higher than it is at B and the freight rate on milk is one cent per mile, that along the direct line between the two markets A will be able to draw milk from a point which is 100 miles nearer to B than to itself, i.e., from a point 150 miles from A and 50 miles from B. Wherever the two markets are competing for milk A will be able to reach 100 miles farther than B can. Under such conditions, as F. A. Fetter has pointed out, the dividing line would be a hyperbolic curve concave towards B. In this case, described geometrically in units representing miles, it is the locus of a point P which moves so that PA = PB + 100. It

happens that this curve would pass through the point where the outside boundaries of the milk zones of A and B intersect at a distance of 200 miles from A and 100 miles from B. Beyond this point the markets are competing for cream and not for milk and the character of the dividing line between the markets will depend on a different set of factors. In the present instance, since the price of cream at A is 10 cents higher than at B and the freight rate on cream is 1/10 of a cent per mile, A will again be able to reach 100 miles farther than B and a continuation of the same hyperbola will separate the cream territories of the two markets. It happens here also that this curve passes through the point where the outer boundaries of the cream zones intersect, at a distance of 280 miles from A and 180 miles from B. Beyond this point the markets are competing for butter, but with the particular prices here assumed the dividing line would still be a continuation of the same hyperbola. The results in this case are comparatively simple, because the cream zones of the two markets are the same in width and so also are the butter zones. In the following cases this exceptional correspondence of the outer zones will not be assumed to exist.

* * *

In drawing this part of our analysis to a conclusion, we must recognize that the assumptions made with respect to the ease and accuracy with which economic arrangements could be adjusted are hardly in accord with the known facts of everyday business experience. It is obvious, of course, that the land surface of the United States is not a perfect plane over which goods can move directly to their destinations. The geometric illustrations used above must be modified in practice to take account of the distances of farms from shipping points, the nature of the roads over which their milk must be hauled, the railroad mileages to the different markets, the train schedules, the refrigeration facilities available, trucking routes, competitive rates, and other conditions affecting the actual transportation of the various types of dairy products. It is also evident that economic adjustments are often very slowly made and that disparities may consequently persist for considerable periods of time before they are corrected.

A book by Hoover presents a detailed analysis of the economics of location. Many parts of the book would be of interest to students of agricultural marketing. We have selected a few passages which discuss market areas, with particular attention to factors causing an overlapping of

areas. Hoover's discussion of price discrimination and basing-point pricing is of especial interest.—*Ed.*

3.2.6 Hoover, Edgar M. *The Location of Economic Activity*. McGraw-Hill, New York, 1948. Pp. 54–55, 57, 58–61. Reprinted by permission.

Overlap of Market Areas: Anyone attempting to trace out actual market-area boundaries will be struck by the fact that such boundaries are usually blurred. Instead of a sharp line, one finds a zone of transition or indifference, in which part of the trade goes to sellers at one location and part to sellers at another location. *The overlapping of market areas implies an "absorption" of distribution cost by one of three parties: the transfer agency, the seller, or the buyer.* There are thus three distinct bases for overlap.

Transfer agencies absorb the added distribution cost when they engage in the universal practice of bracketing their rates by "mileage blocks." As noted in Section 2.7, this gives transfer-cost gradients a steplike rather than a continuous rise with increased distance. Where rates are bracketed, there may be a considerable zone in which the distribution costs from two or more different production points are equal.

Further overlapping of market areas is involved in sellers' absorption of freight costs. Still a third basis of overlap is the imperfect interchangeability of the goods of rival production centers. These last two causes are somewhat complex and will be examined in greater detail in the sections that follow.

Geographical Price Discrimination and Market-area Overlap: It was noted in Section 3.1 that the extra costs of longer distance distribution are not always reflected in the price of the commodity at its destination. Just as a transfer agency may find it desirable to charge rates that fail to progress regularly with distance, so the seller of a commodity in separated markets may profit by geographical price discrimination, i.e., by taking control of the delivered prices of his product and arranging these in a pattern not in accord with that of transfer rates. The guiding principle in such cases is naturally that of shading the delivered price downward at markets where intense competition makes the demand for the seller's individual product particularly elastic and shading the delivered price upward at markets where competition is relatively less intense and the demand is particularly inelastic.

Geographical price discrimination may show a spotty and fluctuating pattern in some lines where market conditions are

very unstable and competition is "cutthroat," but commonly there is some evidence of a systematic discrimination against either the more remote or the nearer buyers. Discrimination against the nearer buyers (known as "freight absorption") is by far the more usual, and the reason is not far to seek. Evidently it will frequently happen that a seller has more intense competition in some remote market than he does at home, for he will have to compete in the remote market not only with the other producers in his own location — who can ship there just as well as he can — but also with other producers in locations closer to the market in question. Thus freight absorption is common and occasionally is carried as far as the quoting of a lower delivered price in the remote market than in the home market.

* * *

An important reason for the establishment and persistence of uniform, zoned, or basing-point price systems is that they provide a simple and easily policed price structure. The interest of the sellers as a group is in curbing price competition, while the individual seller might feel tempted (especially when trade is slack) to grab a larger share of the business by quietly making price concessions. The simpler the price formula the more conspicuous and difficult do such deviations become.

* * *

"Crosshauling" represents a special case of market-area overlap in which the same kind of goods travels in both directions over the same route. This, too, is common under discriminatory pricing. Where the goods are really interchangeable, it makes distinctly less sense than the simple sharing of markets. Even crosshauling, however, can be explained and justified in some industries on the basis of geographical instability of demand. Producers of building materials, for example, may find a dearth of business in their vicinity at some times, while at other times, when several large construction projects happen to be under way there at the same time, they may be unable to supply the demand and their competitors elsewhere may have capacity to spare. Under these conditions it would be absurd to expect each seller to confine himself to the fluctuating demand of a fixed market territory, and crosshauling appears not only natural but desirable.

Variations in Consumer Preference and Market-area Overlap:

Another basic cause of market-area overlap is the fact that two production centers sometimes cater to the same want by supplying different though substitutable products. Thus, coal of various kinds competes with oil, wood, or natural gas as a fuel; brick and stone compete with wood as a building material; fresh meat and vegetables compete with the preserved forms; and last but not least, different styles or brands of the "same" product compete with each other.

If all the customers agreed on the relative merits of the alternatives, there would be no special reason here for overlap of market areas — an inferior product would simply find its market area restricted. But in actual fact, the customers are not agreed on how large a price premium they should pay on fresh tomatoes as against canned tomatoes or Milwaukee beer as against hometown beer. This produces an overlap of market areas; in the case of some high-value branded goods, where distribution costs are small and price differentials small or nil, the market areas of different production points may overlap to the point of coinciding.

Coalescence of Market Areas: The Special Case of "Shopping Goods": Ordinarily we think of a seller as avoiding a location where there are many competitors. In some market situations, however, the reverse is more nearly true.

A woman intending to buy a hat engages first in an arduous and complex operation known as "shopping," in the course of which she may inspect and compare a vast number of different styles. The various kinds of hats displayed before her are certainly in market competition, since if she buys one, she is less likely to buy some other. Yet each different style contributes to the variety of the offering that led her to seek out that market in which to make the selection. Marketing specialists apply the term "shopping goods" to products of this character, in which the customer likes to look at several different varieties before making his selection.

The locational effect is a concentration of marketing outlets. In the final retail stage the buyers are unwilling to come very far to make their comparisons and purchases because these are on a small scale; so the concentration is local. Shopping goods are sold in the centers of towns and particularly in larger shopping centers to a greater extent than other consumers' commodities. Rival shops cluster in the same small district or even

side by side on the same street. Thus there are in most cities particular neighborhoods devoted to the selling of specific kinds of shopping goods.

At the earlier stages of production and distribution, there is room for concentration on a grander scale, since more money is involved in any one transaction. Thus the buyers of millinery at wholesale find it worth their while to make long trips, if necessary, to a center where a particularly varied offering is on display; consequently the wholesale "market" tends to concentrate in one or at most a few leading cities. This bottleneck through which most of the goods pass then becomes a point of attraction for both buyers and producers. Each additional producer sending his goods to such a shopping market increases the attractiveness of the market to the buyers and thus indirectly increases its attraction for other sellers.

The problem of market boundaries encounters additional complications when we introduce problems of seasonal variation in supply, as in the case of fluid milk. The following excerpt by Dr. Black discusses this problem and the difficulties it imposes for operating an administered price structure within the market.—*Ed.*

3.2.7 Black, John D. *The Dairy Industry and the AAA.* Brookings Institution, Washington, D. C., 1935. Pp. 212–16, 219, 221.

. . . the nearby dairymen were generally able to sell all their milk at fluid milk prices the year round even though their production was somewhat irregular, and the dealers went outside only for the extra milk which they needed when the nearby supply was running low. Thus there tended to be a group of nearby producers in Zone I-a in the diagram on page 127 who sold all their milk at all seasons at fluid milk prices; and another group farther out, in Zone I-b in the diagram, who sold their milk at fluid milk prices only part of the year. The nearer to markets these latter lived, the more of the time they shipped fluid milk to the city. Dealers did not buy in Zone I-b except when necessary because of the higher cost of transporting milk from a greater distance. . . . Under the conditions described, the boundaries of milksheds tended to expand and contract in much this way. They still do in a considerable measure in many markets, especially in the smaller ones. In some rather large markets west of the Alleghanies, certain processing plants still supply fluid milk for nearby cities only part of the year.

The imposition of additional sanitation requirements, mak-

ing it necessary for producers in Zone I-b as well as Zone I-a to meet inspection requirements, affects this situation fundamentally only in one way; namely, that it makes the dealers pay enough more for the milk bought in Zone I-b to compensate these producers for maintaining herds and equipment that meet inspection. This changes somewhat the differentials between the two zones since producers in both must meet the same inspection, and since the fixed costs involved are distributed over a shorter period in Zone I-b. In effect, it brings within Zone I-a a fringe of producers from just outside, these being the producers who can lower their sanitation costs per hundred weight by shipping twelve months instead of less, by more than enough to offset the transportation costs. In practice, however, many of the producers in I-b who have equipped their farms to meet

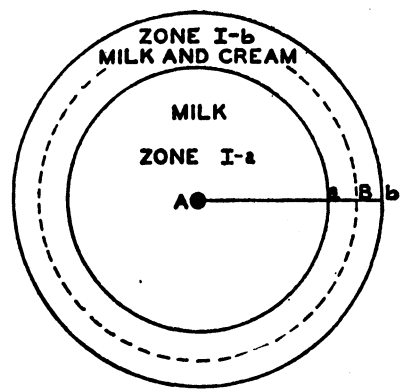

Fig. 1. Milk supply zones as affected by seasonal variations in milk flow.

inspection and have learned the habit of producing good milk, have wanted to ship milk the year round and have been inclined to ignore the special day-to-day costs involved, and the dealers have been always ready to take advantage of such opportunities. As a result the imposition of sanitation requirements has in effect furnished an additional incentive to the nearby producers to organize a co-operative.

The co-operative which is set up in such a situation needs merely as a matter of good management to work out a plan of payment for milk that restores, in large measure if not altogether, the price relationships that existed before the dealers began using outside milk as a temporary club to beat down prices of nearby milk. . . .

In allocating returns to producers in a milkshed, it now appears that three principles of differentiation are involved which must in some way be reconciled in application. One is the zoning or distance principle just discussed, which gives first position in the fluid milk market to the nearby producers, and position to others in proportion to distance and according to the varying needs of the market for their milk. The second is the seasonal differential principle discussed in the last chapter, which gives higher average returns to the producer with the more regular milk supply, since he is furnishing a higher proportion of his milk in the seasons when prices are normally higher. The third principle recognizes the fixed nature of part of the costs involved in producing acceptable fluid milk, and the need for compensating a producer for this factor, even though his milk may not be needed at all seasons.

The base-rating plan can be made to fit all three of these principles. An extreme form of meeting the first principle would consist of leaving the producers in Zone I-a out of the rating plan, accepting all their milk at Class I prices except that needed for daily reserves, and giving bases in Zone I-b in the form of percentages of average production declining outward from the market. This would, however, fail to recognize adequately that seasonal regularity has economic value in the market within I-a as well as within I-b. Some compromise of this fact with the seasonal principle therefore seems necessary and is surely feasible. This may take the form of decreasing the percentages of the base period production outward beginning at the market, or perhaps 10 or 15 miles out, in determining the individual producer ratings. At the outer boundary of I-b these percentages need to be just high enough to induce a sufficient number of producers to meet the sanitation standards — in a period of expanding consumption to bring them into the market; in a stationary period, to keep them in but to attract no new ones.

* * *

Obviously a price policy which underpays the near-in producer and overpays the outlying producer has the effect of thinning out production near the market and hence of spreading out the milkshed, when concentration of production near the market is highly to be desired from all points of view. Accordingly, a shift toward more equitable ratings is certain to be followed by

expansion of near-in production, which in turn will call for further enlargement of the bases in this territory.

* * *

Transportation Problems: The evil effects of the system of pooling transportation costs followed in many smaller milksheds should now be apparent. Nothing could be devised better calculated to draw additional milk from outlying producers, to increase the excess over Class I sales, and to lower the blended price to producers. The same general effect is achieved in many larger markets by a system of hauling charges that favors the outlying producers. If private operators do the trucking, they are interested in getting a full load without traveling too far for it. They tend in general to contract additional milk from farther out at about the same rates as milk near to the market. To any one of them, it is a matter of indifference whether he travels 60 miles radially outward from a market and back, or the same distance circumferentially in large measure. Thus producers 30 miles out may get as good rates as those 15 miles out. When the trucking is done by the distributors, or controlled by them, the system of charges tends to approximate the same re-results. . . .

> While the geographic price structure in fluid milk markets appears complicated, it is no more so than for most agricultural products. The wide diversity of production patterns and distribution channels for many farm products as well as of institutional arrangements leads to highly complicated and variable geographic price structures. This diversity and the factors contributing to it are brought out in the discussion that follows.—*Ed.*

3.2.8 Nelson, Saul and Keim, Walter G. *Price Behavior and Business Policy, Temporary National Economic Committee, Monograph No. 1*, U. S. Government Printing Office, Washington, D. C., 1940. Pp. 287–88, 293–94.

Agricultural Commodities: The geographic price structures of agricultural commodities are rarely as well defined as those for the products of industry. The reasons for this are obvious. The number of sellers in any market is usually so great that no one of them can exert any appreciable influence upon the prices which he receives for his crops. Since the price itself is largely beyond his control, there is little opportunity for the development of any rigid conventional practices regarding collateral terms of sale, such as the payment of freight charges. At the same time there are many different kinds of buyers in the market,

purchasing under different conditions and for different ultimate uses and destinations.

Nevertheless there are certain broad price relationships and certain customs with regard to the payment of freight costs which have displayed a degree of persistence and which apply to substantial sectors of the market.

In contrast with the geographic price structures which prevail for manufactured commodities, however, these relationships usually represent inevitable adjustments to characteristics inherent in the market, rather than business policy decisions, although the influence of the latter may be revealed in some minor details.

In general, the pattern of geographic variation of the prices received by producers of agricultural commodities is governed in the first instance by the location of major terminal markets. In some cases, as for fresh fruits and vegetables, such markets exist at most important centers of consumption, which also serve as points of distribution for the surrounding territory. For staple commodities, and particularly those traded in organized exchanges or in futures markets, these terminal markets are more narrowly concentrated and represent primarily points at which the product is collected for distribution throughout the United States.

In surplus producing areas, that is in those sections which raise more of the product than can be used locally, the price received by growers tends to be determined by the price prevailing at the terminal market, less the cost of transportation to that market. In deficit areas which raise less than they consume, the reverse relationship will be encountered and growers may receive a price limited by the terminal market price, plus the cost of transportation. For export commodities, such as wheat, the controlling element will be not only the domestic requirements of any area but also export demand.

In both surplus and deficit areas the price relationships just described are limiting relationships which may not actually conform with the existing pattern of variation at any time. Thus in a surplus area the prices are not likely to fall below the terminal market price less freight and in deficit areas they will not rise above terminal market price plus freight, because in either event it would become profitable to ship to or from the terminal market. However, there may be many conditions which would cause variation within these limits, such as the availability of

advantageous freight rates for direct shipment from a surplus to a deficit area without passing through recognized terminal markets. For some commodities, such as wheat, there may also be "milling-in-transit" freight rates which combine the cost of shipping the wheat to the flour mill and the flour to its ultimate destination into a single charge, thereby permitting a further narrowing of the differential between the terminal market price of wheat and the amount received by the grower. A somewhat similar situation applies through "storage-in-transit" rates for such products as potatoes which make it possible to store the product en route from farm to market without any equivalent increase in the cost of shipping.

* * *

The geographic price structures of food products reflect a very wide diversity in market characteristics such as perishability, degree of processing, extent of standardization, importance of trade-marks and brand names, relative importance of freight as an item in cost, etc. Accordingly they exhibit almost every recognized pattern of variation including basing-point systems, zone systems, f.o.b. plant pricing, freight equalization, and uniform delivered prices, as well as completely unsystematic price variation between markets. In general, there is some relationship between the degree of processing and the character of the geographic price structure; slightly processed commodities, such as meats, tend to vary in as irregular a fashion as agricultural products, while foods which have undergone a greater degree of fabrication and particularly those which are branded or trademarked commonly display the more conventional types of structure usually associated with the products of industry. There are often differences in the geographic price structure for a single product, depending upon whether it is sold under a national brand, under a distributor's brand, or in bulk; advertised brands are more commonly sold on a delivered or freight allowed basis than are private brands or bulk products.

We have commented upon the interrelations between patterns of movement to markets and patterns of prices. Shepherd has examined some of the existing geographical price differentials for farm products.—*Ed.*

3.2.9 Shepherd, Geoffrey S. *Agricultural Price Analysis.* 3rd ed. The Iowa State College Press, Ames, Iowa, 1950. Pp. 194–97, 200, 202.

Examination of the price data by crop reporting districts (about ten counties per district) shows the nature of the price

surface in some detail. Figure 53 shows the average farm prices of corn over the 16 years from 1924 to 1939 (the data go back only to 1924) by crop-reporting districts over the commercial corn area. "Iso-price" lines, connecting approximately equal prices, like contour lines on a topographical map, help to bring out the character of the "price surface" over the area.

Figure 53 shows that the corn-price surface is not flat like the

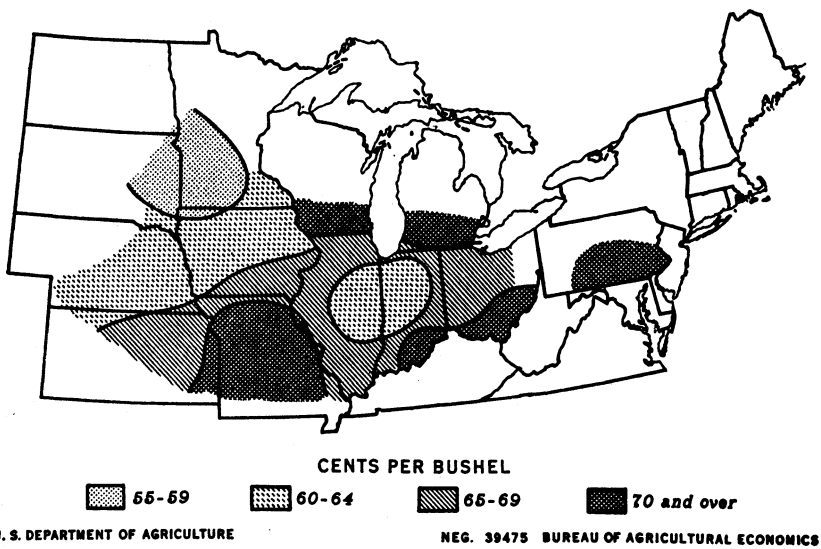

Fig. 53. The price surface for corn has a general slope upward from west to east, except for a depression in eastern Illinois and western Indiana, where large quantities of corn in excess of local needs are produced. The lowest prices are found in the northwest corner of the Corn Belt. (Average farm price, by crop-reporting districts in the commercial corn area.)

ocean, nor is it uniformly sloped in any single direction. The rough general tendency is for the price surface to slope downward from the east to the west, and from the south to the north; but the slope is not uniform. Valleys and ridges, plateaus and even basins, occur in the price surface. In central and eastern Illinois and western and central Indiana there is a basin of 63-cent prices surrounded by rings of higher prices on all sides. Going west from that area, prices at first do not decline; they rise. It is necessary to surmount a ridge of 64- and 65-cent prices in western Illinois and southeastern Iowa before reaching the low-price valley that runs northwest from central Iowa, deepening as it goes.

The actual differences in prices shown in Figure 53 are in most cases less than the transportation costs between the different points. It is evident from these price relations, as well as from data regarding corn shipments and destinations, that the corn produced in the surplus-producing areas does not move from the western and central part of the Corn Belt clear over to the eastern states, unless it be in a few exceptional years, and in comparatively small quantities. Corn from western and central Iowa ordinarily goes to eastern Iowa and as far east as Chicago but very little of it seems to go east of Illinois. Less is known about shipments from eastern central Illinois, but it appears from the price charts that corn does not move regularly, year after year, from Illinois to Indiana and Ohio, for prices in Indiana average about the same as in Illinois, and in Ohio they average only 4 or 5 cents higher.

Apparently, what happens is this: The price surface changes greatly from year to year, and in any one year the differentials from certain areas to certain others may be great enough to cover transportation costs between these areas. In another year these price differentials change, perhaps even reverse, and corn flows differently. The average figures show very small average-price differentials, but in any one year the price differentials may be large. Investigation of the years separately is required.

* * *

The price surface varies greatly from month to month, as well as from year to year. . . .

The chief reason for the variations in corn price differentials from year to year among the different states apparently is variations in corn production. . . .

The references cited in Footnote 1 of the present chapter show that a considerable amount of variability exists among hog prices at different markets. The same thing is true of wholesale meat prices. . . .

If these were daily price data, the relative price variations could be explained as the result of relative gluts and scarcities at New York that lasted until smaller and larger shipments could be made from Chicago to wipe them out. It takes a day or two to get pork from Chicago to New York. But these are weekly average price data. It is not easy to explain why packers at Chicago would continue to ship fresh pork loins to New York for a week or two at a time to sell for $2.00 to $3.00 per 100 pounds less than they would bring in Chicago, or why they would

let substantial differentials in excess of the freight rate persist for several weeks at a time. The same sort of situation exists for other wholesale cuts of pork and of beef as well. There must be good reasons for it. A study of the causes and effects of this situation would constitute a good marketing research project.

> Transportation facilities, freight rates, and especially transit privileges not only affect the geography of marketing; they often may affect marketing methods. A case in point is the development of direct methods for the marketing of many farm products and the resulting decline in the importance of central markets as price-making institutions. —*Ed.*

3.2.10 United States Department of Agriculture. "The Direct Marketing of Hogs," *Miscellaneous Publication 222*, Washington, D. C., March, 1935. Pp. 5–7.

Reasons for Increased Direct Marketing in Recent Years: The principal reasons for the rapid increase in direct marketing of hogs in recent years may be found in the competitive situation as between local or interior packers on the one hand and public-market packers on the other, associated with the expansion of corn and hog production in the western Corn Belt. The chief reasons for this competitive situation are found in the transportation developments, both rail and motor truck, as they affect convenience and costs of moving livestock direct and through public markets and of transporting live animals as compared with livestock products; in comparative labor costs among packers in different areas; in differences between direct and public-market channels with respect to costs of marketing including shrinkage, commission charges, yardage fees, and other marketing costs; and in producer preferences, which play a part in the farmer's choice of market outlet.

* * *

Transportation and Direct Marketing: Direct marketing has been facilitated by certain conditions in the transportation situation, especially with respect to truck transportation, railroad concentration privileges, and comparative freight charges on hogs and hog products.

Truck transportation. — The development of motor-truck transportation has contributed to the growth of direct marketing by making interior packing plants and concentration yards conveniently available to a much larger number of producers than would be the case if hogs were transported by rail. Truck transportation appears to be best adapted to comparatively short hauls, and this is relatively more advantageous to concentration

yards and local packing plants, which are usually nearer the source of supply than to the public markets and public-market packers. The information at hand indicates that in recent years more than 50 per cent of the hogs received at interior packing plants and concentration yards were moved by truck. Since trucks are more economical and convenient for short distances than for longer hauls, their increased use has encouraged the development of concentration points and stimulated movement of hogs direct from farms to concentration yards and interior packing plants, most of which are located closer to producers than are the public markets.

Railroad concentration privileges. Transit privileges, especially concentration privileges, have enabled public-market packers to buy hogs at local points for shipment direct to their plants at public-market points more advantageously than if these transit privileges were not available. Under existing market practices, this tends to aid public-market packers in their competition with interior packers through direct purchases of hogs. These privileges are likewise available to persons operating through the public markets, but thus far apparently they have not been in a position to make much use of these concentration privileges.

* * *

Comparative freight charges on hogs and hog products. The relationship of freight rates among regions and between hogs and hog products has become an important factor in the growth of direct marketing in that the relationship has been and is relatively favorable for packers whose plants are in the western Corn Belt. Interior packers in this area usually purchase most of their hogs direct. In the entire period since 1910, freight charges on shipments from the western Corn Belt eastward have been greater for a given weight of live hogs than for the products derived therefrom. Also the margin between the freight charge on hogs and that on hog products widened somewhat after the pre-war period. For example, in the years from 1925 to 1929, the freight charge on 100 pounds of live hog from Des Moines to New York was about 25 cents greater than the freight charge on the hog products obtained from 100 pounds of hog, whereas in the years from 1910 to 1914 it was about 19 cents higher.

Partly because freight rates in this country generally do not increase proportionately with distance, and partly because of

relatively low rates on hog products from the northwestern Corn Belt, particularly interior Iowa points, to the Mississippi River, the freight charge per ton-mile on eastern movements of hog products from the western Corn Belt is lower than the freight charge per ton-mile on similar movements from the region east of the Mississippi River. As a result of these lower freight charges per ton-mile and the proximity of the packers in the western Corn Belt to the surplus hog supply, these packers have certain competitive advantages in supplying eastern markets with hog products, as compared with packers who are located in the east or intermediate between the western Corn Belt and the east and who buy hogs from the western surplus areas. Such advantages contributed to the increase in hog slaughter in certain areas west of the Mississippi River.

* * *

Freight charges, however, are only one of the cost factors involved in the processing and distribution of hogs and hog products. Several factors in addition to transportation charges, such as the growth of hog production in the western Corn Belt, which itself may have been influenced in part by the freight-rate structure, have been favorable for the expansion of the packing industry in that area.

The final three readings on geographic distribution are concerned with efforts to prevent the economic adjustments which would occur under perfect competition. In the period between World War I and World War II, many states and cities adopted various forms of trade barriers applying to domestic farm products. Such barriers make it difficult or expensive for distant producers to compete in local markets. The present extent of interstate trade barriers is not known. —*Ed.*

3.2.11 Melder, Frederick Eugene. "State and Local Barriers to Interstate Commerce in the United States," *The Maine Bull.*, Vol. XL, No. 4, Nov., 1937. Pp. 166–67, 168, 169–71.

From the evidence reviewed, however, the conclusion is inevitable that, despite the Constitution and the zealous care of the Supreme Court, the internal market of the United States is not "free" whether we interpret the term "free trade" either narrowly or broadly. Several state taxes, for example, have been shown to bear remarkable similarities to protective tariffs, both in form and spirit. Such taxes include the excise and license taxes levied by dairy states on all oleomargarine sold within their borders, similar taxes levied by many of the cotton, beef,

and peanut producing states on margarine containing cocoanut oil, and the state and municipal graduated taxes directed against the chain store. The states and their political subdivisions, moreover, employ not only their taxing powers to retard the growth of certain forms of marketing organization and the free movement of commodities across political boundaries, but they also make liberal use of their police and corporate powers to achieve the same ends. Examples of such utilization of the police powers are state border quarantines against the agricultural products of sister states, municipal and state limitations of city milk sheds by inspection practices and discriminatory sanitary rules, state restrictions on the free movement of laborers across political boundaries, conflicting regulations on highway motor carriers passing between states, and embargoes on the interstate transmission of hydro-electric energy. The state corporate powers have been used further to protect home economic groups through the preferential expenditure of public funds. Indeed, if all tax laws which discriminate in any way against goods and services crossing internal political boundaries were removed, the more serious burdens on such commerce would still exist. Persons and concerns having transactions in several communities or states must obey the police and corporate regulations of each political unit, and the mere trouble of avoiding transgression of these regulations is a burden on the free movement of economic values.

* * *

From the evidence presented in the previous chapters, however, "scarcity consciousness" seems to be a dominant motivating force for every social and economic group in a world of shrinking economic opportunities such as that of the past six or seven years. There has been evident a rapidly rising tide of sentiment favoring the preservation of the opportunities in the home town or state for local merchants, manufacturers, farmers, and laborers.

* * *

Probably a more important effect of trade barrier legislation is the increased sectionalism it inspires. Of course such laws are the expression of the wants of the protected economic groups. Yet many times the excluded persons and concerns have sufficient influence to initiate campaigns of reprisal and retaliation. The propaganda which emanates from both sides in the ensuing controversies undoubtedly increases the spirit of localism within the

country. Such influences, being intangible, are not susceptible to measurement, but it is probably true that the ill will thus engendered has had and will have considerable sociological and political significance in retarding reforms in government structure long since overdue.

3.2.12 Taylor, George R., Burtis, Edgar L., and Waugh, Frederick V. *Barriers to Internal Trade in Farm Products.* U. S. Dept. Agr., Washington, D. C., March, 1939. Pp. 5–6, 7, 19–20, 42, 79, 91.

In a number of Eastern States (including Massachusettes, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Virginia, and Florida) all fluid milk (and in some cases cream) must come from farms that are licensed or inspected by the officials of the State into which the milk is shipped. All of these States produce milk and cream, but they also bring in a part of their supply from outside their own boundaries. It is obvious, therefore, that should any of them wish to use their health- and sanitary-inspection requirements for the purpose of retaining a larger part of the State market for State producers, they could do so through limiting outside inspection and thus protecting home producers. Only a very thorough investigation would show the extent to which this has been either the purpose or the result of such legislation. The survey of the situation attempted here shows some of the existing tendencies toward market restriction.

* * *

Market restriction through inspection requirements is promoted by cities and towns as well as by States. In fact, the regulations of certain large cities have been of equal importance with those of the States. Since 1906, New York City has maintained farm inspection of its sources of milk and cream supply, and since 1926 has definitely limited this inspection area. Thus it is practically impossible to ship fluid milk or cream to the New York City markets from points west of the New York or Pennsylvania State lines. So far as fluid milk is concerned the restriction is not very important at present, for probably very little milk would move into New York City from beyond the inspected areas in any case. But cream, which as compared with milk combines greater value with less bulk, can be shipped for long distances. The effect, therefore, of the New York inspection requirements is to bar western cream and to raise the price of cream in the New York City market.

Although elimination of fraud was undoubtedly an impor-

tant basis for much of the early margarine legislation, this is obviously not the object of the recent movement for high margarine sales taxes and license fees. The practice of passing off margarine as butter has practically disappeared in recent years.

Generally those favoring margarine legislation have been frank to say that their object is to "protect" the dairy industry. When the Washington tax of 15 cents per pound was carried to the Supreme Court the sponsors of the act candidly stated that their purpose was to help the butter industry and they made their arguments on that basis. . . .

The recent wave of margarine excise laws exempting from taxation margarine made from "domestic" ingredients illustrates a new development of the protective principle in State margarine legislation. Until the close of the World War oleo oil, a beef product, was the chief constituent of margarine. Gradually, however, the use of vegetable oils was perfected and cottonseed oil in particular became increasingly important as a margarine constituent. By 1915, cottonseed oil made up 30 per cent of the fats and oils used in the manufacture of margarine in this country. About that time the use of coconut oil began to increase rapidly, and, by 1933, 75 per cent of all fats and oils used in the manufacture of margarine came from this source.

The results of this technological change were reflected before long in Federal and State legislation. Not only did the Federal Government (1934) place an excise tax of 3 cents per pound on coconut oil from the Philippines or other United States possessions, but a curious new form of State margarine legislation flowered, especially in the cotton- and cattle-producing States. In the 3 years 1933–35, 14 States passed legislation providing in effect for an excise of from 10 to 15 cents per pound on margarine containing certain foreign ingredients. Typical of these laws is that of Texas which provides for a 10-cents tax on margarine containing any fat or oil other than oleo oil, oleo stock, oleo stearine, neutral lard, corn oil, cottonseed oil, peanut oil, soybean oil, or milk fat.

More restrictive are the laws of certain important cattle-producing States outside the Cotton Belt. Thus, Minnesota, Nebraska, and Wyoming penalize cottonseed along with coconut and other foreign oils by providing for an excise tax on all margarine not containing a substantial percentage of animal fats.

* * *

For various purposes, but primarily to promote safety on the

highways and to prevent damage to roads and bridges, State legislatures have been extremely active in passing laws and authorizing administrative regulations having to do with the weight, size, equipment, and insurance of motor vehicles. The nonuniformity of these laws has constituted an appreciable hindrance to interstate commerce. Moreover, the limits set, as for example those on the size and weight of motor vehicles, may be so low as to prevent such long-distance hauling.

* * *

Choice of labeling requirements. — North Carolina, South Carolina, and Florida all require eggs brought in the State to be labeled "Shipped" (unless they are cold-storage eggs, in which case they must be so labeled). Questions have been raised about the fairness of this requirement. For instance, eggs produced in southern Georgia or southern Alabama and sold in the markets of western Florida may not have been shipped as far as competing eggs from the heavy-producing sections of Florida, which are around Jacksonville and Orlando.

* * *

Quarantines are sometimes enforced against areas that never were infested or diseased or which have become free of the pest or disease since the quarantine was promulgated.

This book will not deal in any detail with problems of international trade. Obviously tariffs, quotas, currency restrictions, and many other regulations distort world trade from the "natural" pattern which we would expect on purely economic grounds. The most thorough import controls are those applying to sugar. The following excerpt states one point of view concerning import quotas. Whether this view be right or wrong, it is clear that the pattern of sugar production and consumption is affected.—*Ed.*

3.2.13 Pendleton, William C. "American Sugar — 1948 Version," *Jour. Farm Econ.*, Vol. XXX, No. 2, May, 1948. Pp. 228–29, 232, 233.

The Sugar Act of 1948: The present legislation, which is to run for five years, marks a return to the policy of 1934–42, differing only technically from the program of those years. . . .

The Secretary is to determine at the end of each year the consumption requirements of the continental United States for the next year. Of this total, approximately four and a quarter million tons is to be apportioned among the five domestic producing areas, U. S. beet, U. S. cane, Hawaii, Puerto Rico, and the Virgin Islands, on the basis of fixed tonnage allotments; such

allotments in each case being in the neighborhood of maximum pre-war production. Nearly a million tons is allotted to the Philippine Islands, and of the remainder, Cuba is assigned 98.6 per cent, and other foreign countries are permitted to supply 1.4 per cent. This procedure is a departure from the earlier Acts which prorated total consumption requirements entirely on a percentage basis. The final restriction on imports is a tonnage limitation on the amount of direct consumption sugar that can be included in the quotas of the offshore areas.

The quota provisions are buttressed by subsidy payments for the domestic producers . . .

Relation to Stated Objectives: . . . The sugar tariff while not an integral part of the Act is still in effect, and the rate of one-half of a cent on imports from Cuba causes a direct price increase. The tariff, however, is much less important as a price determinant than the overall consumption quota set by the Secretary. Quotas, theoretically at least, could be determined in the best interests of consumers, but past experience and the technique of quota determination prescribed in the Act indicate that a "fair" price for producers is considered more important than an equilibrium price for consumers.

A possible second interpretation of the consumer welfare objective is providing an adequate supply of sugar during future national emergencies. Disregarding the political implications of this view, experience during both world wars indicates that it is highly questionable. Labor and supplies were diverted from sugar to other lines of production during World War II, nearly halving domestic beet output, and imports from Cuba were greatly expanded. . . .

. . . Economically it represents a striving for self-sufficiency which can only be achieved at the expense of efficiency. It is generally recognized that Cuba can produce and deliver sugar to the United States more cheaply than any of the five major domestic areas. The trade policy partially set forth in the quotations above dictates continued expansion of imports from Cuba and a downward adjustment of domestic production. That Cuba has the capacity to supply a much greater share of American consumption is evidenced by the 6½ million ton crop in 1947. Yet the Sugar Act encourages expansion of production at home while leaving purchases from Cuba at the mercy of the Secretary's quota determination.

* * *

The policy conflict with announced international trade objectives is immediately apparent. "The restrictive sugar bill was one more evidence that the United States was all in favor of freeing world trade — as long as it did not disturb any Congressman's constituents." It points up a fundamental inconsistency which must be faced and solved if basic trade objectives are to be achieved.

3.3 The Timing of Marketing

Marketing distributes goods over time as well as over space. The farmer asks, "When should I sell?" as well as, "Where should I sell?" Potato dealers and cooperative associations determine how many carloads of Maine potatoes are shipped in the fall and how many are held over for sale in the spring months. Dealers and government agencies determine how many bales of cotton are held over from one crop year to another. The timing of marketing often has a decisive effect upon the incomes received by farmers, the profits of processors, distributors, and speculators, and upon the welfare of the general public.

There is a distinct parallel between the economics of location and the economics of timing. Effective marketing helps to concentrate production in those locations which have a comparative advantage. It also helps to concentrate production in time periods which have a comparative advantage. For example, wheat is consumed the year around but its production is concentrated in the favorable season of the year. The annual supply becomes available in a relatively short harvest period, and marketing spreads the supply through the year. Even the output of such continuously produced foods as milk, eggs, and meat is ordinarily concentrated at certain favorable periods of the year, resulting in surpluses at seasons of heavy production. The management of such surpluses is an important aspect of marketing.

But the parallel carries further. A product can be moved from one place to another by transportation; it can be shifted from one time to another through storage. Storage, as well as transportation, is a kind of production. If done according to sound economic principles, it can contribute substantially to the general welfare.

In discussing storage, it is well to recognize that a large part of the stocks carried are primarily working inventories at the various stages in trade channels.—*Ed.*

3.3.1 Larson, Adlowe L. *Agricultural Marketing.* Prentice-Hall, New York, 1951. Pp. 132–33. Reprinted by permission.

Working Stocks: The needs for storage may be classified into

three general types. The first of these is to care for working stocks. Even though production and consumption are carried on at a uniform rate with respect to time, there must be some working stocks, unless the consumption of the good occurs at the identical time the good is produced. It is necessary, for example, for working stocks of millions of bushels of wheat [to] exist, so the operations of elevators, millers, bakers, and selling agencies can continue. The retailer of a loaf of bread cannot expect to get that loaf of bread from the bakery the moment he sells it to a consumer. Working stocks are relatively uniform from time to time except as changes in production or consumption patterns occur. They vary in size with the degree of roundabout production and marketing resulting from specialization. Working stocks for the individual housewife who grinds flour and bakes it into bread are probably not so large on a per capita basis as for the grain, milling, and baking industries.

Irwin has indicated that business operating considerations, rather than speculation, are also the primary motive in much seasonal storage.—*Ed.*

3.3.2 Irwin, H. S. "Middlemen's Accumulations and Expectations in Marketing Farm Products," *Jour. Farm Econ.*, Vol. XXIX, No. 4, Pt. 1, Nov., 1947. Pp. 848–49, 851–52.

By middlemen's accumulations of farm products is meant the amounts of each commodity (including products and by-products) purchased by middlemen following harvest or during periods of seasonally heavy production in excess of immediate merchandising or processing needs. An example of such stocks is the quantities of butter withdrawn from consumption during the period of flush production and placed under refrigeration. Ordinarily the accumulations are built up to seasonal peaks during the periods of heavy farm marketings and then are drawn down to zero or to low levels by the end of the respective seasons. Frequently there is no definite separation between the accumulations of a commodity and the administrative stocks required in its processing or merchandising, but the administrative stocks are characterized by much smaller fluctuations in volume.

The marketing problems posed by middlemen's accumulations of farm products are complicated to a considerable extent by the tendency toward concentration. Commonly a large proportion of the accumulation of each commodity is held by a comparatively small number of concerns, usually at the wholesale level, and indications are that frequently the amount is so burdensome as to

require relief. Such problems are peculiar to large-scale accumulations, but are very real to the middlemen involved. The advantages of the concentration, however, appear to have overbalanced the difficulties.

Analysis of the accumulations reveals that the following elements of marketing are involved in them:

1. Influencing market prices, especially during accumulation.
2. Making a market when farm offerings are large.
3. Equalizing the flow of commodities to consumers.
4. Regulating, in part, the seasonal pattern of consumption.
5. Storing the stocks accumulated.
6. Financing the accumulation.
7. Assuming the risks of ownership (principally price changes).

* * *

Accumulations are Governed Mainly by Business Considerations: Contrary to popular notions, the reservoirs of farm products built up by middlemen appear to be influenced principally by the business positions of the concerns involved. Commonly the amounts accumulated by many concerns are much larger than those which the concerns would desire solely in the hope of an advance in prices, as witness the extent of hedging in those commodities in which hedging is available.

The business considerations which result in increased accumulations take a variety of forms, all intended to improve the business positions of the respective concerns. A common form is the desire to retain suppliers and customers as well as to obtain new ones. During the period of heavy farm marketings of a given commodity, a concern which accumulates stocks will desire to purchase all the offerings of its regular suppliers lest they develop other outlets and, if practicable, to increase its volume by accepting offers from other suppliers. During the period of seasonal scarcity a concern desires to control a stock adequate to provide its regular customers with their full requirements and also to be able to offer supplies as inducements to potential new customers.

Another form is the desire on the part of processors to assure an adequate supply of seasonally scarce commodities or of certain qualities of a given commodity. For example, a flour mill located in an area of high protein wheat and specializing in flour of high gluten content may find it desirable to accumulate a relatively large supply of high protein wheat following harvest lest such wheat should be difficult to obtain later in the season.

It is recognized that middlemen's accumulations are speculative in the sense that they are subject to the uncertainties of future price behavior. Thus they may result in unusual profits or in severe losses. Certainly the accumulations and the prices at which they are acquired are influenced by the expectations of seasonal price advances in most years, even though it is generally recognized that any year may vary widely from the usual and may even be negative. Doubtless, also, there are some middlemen whose principal motive in accumulating a supply is to obtain a profit from the hoped-for advance in prices but it appears that as a commodity market becomes relatively mature the business considerations increase in importance and become the dominant factor governing the accumulations. It appears also that the competition of the concerns which accumulate stocks for business reasons tends to reduce seasonal spreads and render speculation relatively unprofitable.

Irwin mentions hedging as one of the devices by which marketing firms seek to avoid the risks of holding inventories. This and other aspects of futures trading are discussed in Subsection 3.5.

Some farmers also engage in hedging, but the discussions of how farmers may protect themselves from seasonal price fluctuations more often turn around the phrase *orderly marketing*. We present first a short definition of this term by Clark and Weld, followed by an analysis showing profits to farmers from storing their soybeans instead of dumping them on the market at harvest time.—*Ed.*

3.3.3 Clark, Fred E. and Weld, L. D. H. *Marketing Agricultural Products in The United States.* Macmillan, New York, 1932. P. 562.

A third activity is the attempt to control the seasonal flow of a product to all markets. It is this which is commonly called "orderly marketing." Some products are used with a considerable degree of uniformity throughout the year and the aim of these efforts is to put on the market each day, week, or month, just the amount which the market will absorb — with a view to obtaining the largest possible, and presumably a fairly uniform price throughout the year. . . .

3.3.4 Rollefson, A. M., Agnew, D. B., and Keirstead, C. H. "Improving Soybean Marketing Through Farm Storage," U. S. Dept. Agr., Production and Marketing Admin., *Agr. Inf. Bull. No. 57,* June, 1951. Pp. 3, 6.

. . . Prices of soybeans and soybean products swing through a wide seasonal cycle nearly every year, and a major part of the soybeans are marketed by farmers near the low point of the season. About two-thirds of the crop is marketed in October and

November. This heavy volume of harvesttime selling contributes to a high seasonal demand for freight cars and results in congestion at country elevators, terminal markets, and processing plants every autumn.

In marketing, soybeans move typically from farms to country elevators and on to processing plants; but as storage space at these locations is filled, large quantities are shipped to terminal elevators. For many months, commercial marketing facilities are used for storage of a rather large part of the soybean crop. The rates of soybean crushing and of soybean product consumption are much more nearly uniform from month to month than the rate of farm marketings of soybeans.

* * *

Depressed soybean prices at harvesttime reflect the excess of soybeans offered for sale relative to amounts buyers wish to purchase; this involves both crushers' inventory risk, and, by midharvest, the inability of country elevators to ship or to store the soybeans as rapidly as they are delivered from farms. As products of soybeans and cottonseed compete for many uses, soybean prices reflect also seasonally low prices for cottonseed; the same factors are involved. Farmers can avoid both price-depressing influences by storing their soybeans rather than selling at harvest. . . .

Farmers' direct interest in more orderly soybean marketing lies in the varying net profits obtainable from different marketing schedules. Because changes in the pattern of their sales depend on storage, analysis of the costs and returns of storage is important. . . .

Soybean storage paid well in 3 of the 4 postwar years, 1946–47 to 1949–50 (Figure 2). In 1948–49, despite falling general prices, soybean prices covered storage costs for 1 and 2 months, and were at profitable levels 10 months, after harvest. During the 11-year prewar period (1930–31 to 1940–41) storage was profitable each crop year except depression or recession years (1930, 1931, and 1937 crops). Although storage cost ordinarily remains fairly stable from year to year, both the level and the seasonal movement of soybean prices varied greatly from one year to another. During these years, the seasonal price pattern, the month of peak price, and the spread between low and high prices all varied considerably. Seasonal peak prices averaged about 40 per cent higher than harvest prices for the prewar 10-

year period and 20 per cent higher than at harvest time for the postwar 4-year period. Soybean storage was of doubtful profitability or resulted in a loss only in those years when the general price level declined.

Of the farmers who stored 1500 bushels in each crop year 1946–47 through 1949–50, those who sold the beans at the average December-January price earned $1800 more than they would have at harvest time; those who sold at the average March-April-May-June price earned $2300 extra; and those who anticipated the market well enough to sell within 25 cents a bushel of the seasonal peak price earned $3000 or more. These figures are net profit for holding soybeans in each of the 4 years, after paying storage costs. . . .

Although a uniform rate of soybean sales by farmers could be expected to reduce seasonal price fluctuation, it is unlikely that the variation would be eliminated entirely. Soybean prices reflect the value of their oil and meal equivalents less processing costs, and are influenced by fluctuations in prices of competing products. Soybeans and some of their important competing products probably will continue to be marketed seasonally. Even though the marketing rates for soybeans eventually were to become uniform throughout the year — which is unlikely — soybean prices could still be expected to rise enough seasonally to cover storage costs in most years.

Orderly marketing is usually taken to mean seasonal shipments that are so regulated that the same net price (i.e., price less carrying charges) can be obtained throughout the year. In general, this is not the most profitable program of shipments.

In reviewing the shipments of California plums under a marketing agreement, Jerry Foytik reached some interesting conclusions concerning policies to maximize grower incomes.—*Ed.*

3.3.5 Foytik, Jerry. "Characteristics of Demand for California Plums," *Hilgardia*, Vol. 20, No. 20, Univ. of Calif., April, 1951. Pp. 443, 479, 487, 471, 473, 476.

. . . intraseasonal shifts, if they exist, are of importance to all shippers. They assume particular significance when centralized direction over marketings is undertaken in an endeavor to increase total returns by modifying directly or indirectly, the temporal distribution of sales . . .

* * *

. . . the analyses establish the existence of an interrelation of temporal markets but do not definitely indicate just how that

relation changes from week to week. It appears that on the average: (1) sales of early plums are positively related with prices of midseason varieties, (2) sales of midseason varieties are negatively related with prices of late varieties, and (3) weekly sales are negatively related . . . with prices for the following week . . .

* * *

It has been shown that demands in the various temporal markets are interdependent and that the level of demand generally shifts downward in a parallel fashion as the season advances. If these results approximate the actual situation, any action which postpones a portion of the total supply for sale during later weeks of the season will reduce growers' returns since the marginal returns foregone during early weeks exceed the increase in returns for subsequent weeks. . . . It is well to bear in mind, at the same time, that the marketing of plums cannot actually be hastened appreciably in comparison to the rate of movement that would naturally result when plums are sold as soon as possible after harvest. Thus attempts at regulating the rate of weekly shipments, imposing picking and shipping holidays, and establishing surplus control and reserve pools are not effective means of improving grower returns. In fact, during most seasons such controls are likely to decrease net returns for the season as a whole.

To maximize net returns from the sale of a given quantity distributed among temporally interdependent markets, the appropriate allocation of supplies must be determined. . . .

* * *

The optimum allocation of supplies among related temporal markets appears to be affected to only a limited extent by changes, of even substantial magnitude, in the values of the net regressions of price on current and lagged sales . . . On the other hand, the configuration of this optimum sales pattern changes considerably as the income level varies. . . .

. . . there is a substantial discrepancy between the actual weekly distribution of sales and that required to maximize total net returns. . . .

This relation between the temporal distribution of sales and total net returns is of considerable practical consequence to the industry. Effort should be directed toward increasing the proportion of the total supply marketed early in the season. Sales

immediately thereafter . . . should be curtailed rather than expanded. Maintenance of a uniform rate of sales appears desirable only when the level of consumer purchasing power is low. However, a constant price throughout the season is not indicated even in this case. The results suggest a lower price at the beginning of the season and a more gradual decline during subsequent weeks than is the case with the present temporal distribution of sales.

* * *

A control program designed to regulate weekly shipments could increase net returns substantially. . . . Every effort should be made to insure that the restrictions do not cause a less favorable sales pattern than would prevail without any controls — since a movement in this direction, even when of not too great magnitude, may decrease total net returns appreciably.

Staple commodities like grain and cotton are stored from year to year as well as seasonally within the crop year. For many such commodities the demand is inelastic so that prices fluctuate considerably from year to year and farmers get a smaller return from a bumper crop than from a short crop.

To deal with this problem Henry A. Wallace, as Secretary of Agriculture, proposed an "Ever-normal Granary." Similar programs have been proposed from time to time for international operation under the name of *buffer stocks.*

Shepherd in the excerpt below reviews some of the stated objectives of the ever-normal granary.—*Ed.*

3.3.6 Shepherd, Geoffrey. "Objectives, Effects, and Costs of Feed Grain Storage," *Jour. Farm Econ.*, Vol. XXXI, No. 4, Nov., 1949. Pp. 998–99, 1001–2, 1004.

Objectives of Feed Grain Storage: The original objectives of the CCC storage program were set forth in a brief statement by Henry A. Wallace, then Secretary of Agriculture, in 1936. In his view, the chief purpose of the "ever-normal granary" was to stabilize supplies against variations in production due to good and bad weather. The first Annual Report of the CCC, published in 1940, took in more territory. It listed "three fundamental functions of the Corporation's loan program: Namely, to protect and increase farm prices, to stabilize farm prices, and to assure adequate supplies of farm products."

Were these valid objectives for a storage program?

A storage program can't raise long-time price levels. It is obvious that the first objective is not valid. A storage program clearly cannot "increase farm prices" over a period of years.

What goes into storage must eventually come out; and when it comes out, it will depress prices about as much as it raised them when it went in (if the demand curve is a straight line on arithmetic paper). A program to reduce production, or to destroy some of the production, can raise the level of prices over a period of years, but a storage program cannot.

A storage program shouldn't stabilize prices against variations in demand. It is not an appropriate means for evening out the effects of variations in general demand. These variations in general demand, due to wars, depressions, booms, etc., do not last merely for a year at a time, to be followed by a new situation the next year, like variations in production. They may persist through most of a decade, like the depression of the 1930's or they may be very brief. It is difficult to forecast when they will come and how long they will last. Nobody can tell in advance, therefore, how much to store nor how long to store it.

Furthermore, a storage program to stabilize prices against variations in general demand would have bad effects on low income and unemployed groups during a depression. It would accentuate the paradox of want in the midst of plenty. The government would be withholding food and raising food prices, against the interests of its consumers, many of whom would not be getting enough to eat.

A storage program however can stabilize prices against variations in supply. It can stabilize the farm prices of durable products against unpredictable variations in production due to weather. It can do this by putting the excess over average production into storage in big crop years, and taking it out in small crop years. That is the proper function of a storage program.

The question is whether we need a storage program of this sort for feed grains.

* * *

Effects of Stabilizing Feed Grain Supplies: The objective of a feed grain storage program should be to smooth out the variations in feeds production by storage operations, and thus smooth out the variations in livestock production.

This smoothing out would have two effects. It would affect the income of feed grain and hog producers, and it would affect the cost of producing hogs.

The demand curve for corn is a straight line on arithmetic paper, with an average elasticity of about —0.65. Simple arithme-

tic shows that a storage program for corn, in effect converting large and small crops to average crops, would increase growers' incomes between two and three per cent. (Details omitted here.)

Most of the corn crop, of course, is fed to livestock, not sold as cash grain. The demand curve for hogs, which are the principal consumers of corn, happens to have about the same elasticity and curvature as the demand for corn. A corn storage program that stabilized hog production would increase hog producers' incomes in the same way that it would increase corn producers' incomes if they sold their corn as cash grain.

A feed grain storage program would also affect hog production, processing, and distribution costs. Hog and pork production varies fully as much as corn production. Variations in production increase production and distribution costs. Equipment adequate to handle the peak load stands partly idle when production is low, and idle equipment increases per unit costs.

A full quantitative study of how much the variations in hog production raise costs is a farm management and distribution problem beyond the space limits of this paper. But earlier studies indicate that stabilization, especially stabilization that was assured in advance, would reduce hog production costs perhaps two or three per cent. It would also reduce the costs of distribution.

* * *

We saw in the preceding sections that a feed grain stabilization program would increase corn producers' incomes from two to three per cent, and reduce hog production costs by a less exactly determinable amount, perhaps also two or three per cent. These amounts would add up to about five per cent. The storage program would cost about two per cent of the value of the corn crop. The total value of hog production in the United States averages about two-thirds of the total value of the corn crop. Some reductions also would be made in distribution costs. Ignoring several other qualifications and complications, we can conclude that a feed grain storage program would be worth (to producers in the short run, and to consumers in the long run) several times as much as it would cost.

Several years before an ever-normal granary was proposed, Ezekiel presented an interesting analysis of the expected profits or losses from year-to-year storage operations. His analysis showed that such operations would stabilize prices but that they probably would have very little effect on the average level of prices and incomes.—*Ed.*

3.3.7 Ezekiel, Mordecai. "A Statistical Examination of the Problem of Handling Annual Surpluses of Non-Perishable Farm Products," *Jour. Farm Econ.*, Vol. XI, No. 2, Pt. 1, April, 1929. Pp. 198–200, 207, 210, 203, 205–7.

Storing Wheat: The possible results of storing wheat from one crop year to another will be considered first. In estimating the effect of withdrawing part of the supply from the market, two assumptions were made: (1) that the resulting increase in price would reduce our consumption and export of wheat just as much as would a corresponding increase in price due to a short supply; and (2) that the action of the agency in storing wheat would cause those who buy wheat for storing until another year to reduce their purchases to the minimum amount needed for mill operation and usual reserves.

The point should be emphasized that there can be no "psychological effect" of storing on prices unless someone is induced to buy the supply that is left for sale at the price that is established. The consumer is certainly likely to continue to respond to price as he has done previously, and the storer-for-a-profit is more likely to be intimidated than encouraged by the fact that the agency is also storing.

. . . let us take a single operation and follow it all the way through.

In 1906, for example, the price of wheat averaged 71 cents. This was considerably below the trend of prices in previous years, so that it might have seemed reasonable to expect higher prices for the subsequent crop. Let us assume that at the start of the season the storing agency had decided to go into the market and buy enough wheat to hold the domestic price for the 1906 crop ten cents higher, at 81 cents. The higher price would tend to reduce consumption. Our studies indicate that with the price increase from 71 cents to 81 cents, domestic consumption of wheat as flour and feed, and exports of wheat and flour from the United States, would be reduced by about 55 million bushels. In addition, we may assume that because of the action of the agency in storing, speculative storing would be reduced from 95 to 75 million bushels, further reducing the demand by 20 millions. Adding the reduction in storage takings to the reduction in consumption and exports gives 75 million bushels as the estimated quantity the agency would have had to purchase and store in 1906, to advance the price by 10 cents per bushel. (As our knowledge of the relation of wheat supplies to prices is not exact, this quantity is only a rough estimate. It is possible that

it would have been necessary to store as much as 140 million bushels in order to raise prices 10 cents.)

The next year (1907) the price was 91½ cents. With no special storage operations in 1906, the carry-over in this country at the beginning of the 1907 season would have been 95 million bushels. But, with the agency storing, carry-over in the hands of others would be reduced to the minimum requirements, 75 million bushels. The agency itself would also have 75 million bushels to be sold. The carry-over into the 1907 season would then be 150 million bushels, 55 million bushels more than the 95 which would otherwise have been stored. Such an increase in supply would probably have reduced the average price for the 1907 crop from the 91½ cents which actually prevailed to 82⅛ cents. The stored wheat would have been bought at 81 cents in 1906 and sold at 82 cents in 1907. After deducting the costs of storing, the stored grain would not sell for quite what it had cost. Instead there would be a loss of about 6 million dollars.

Turning to the farmers' end of the transaction: As a result of the storage operations, they would have sold the 1906 crop at 10 cents more per bushel than they actually did, and the 1907 crop at 9.3 cents less. The 1906 crop was 757 million bushels; its value would have been increased from 537 million dollars to 613 millions. The 1907 crop was 730 million bushels; the reduction in price in 1907 would have reduced its value from 584 millions to 524 millions. . . . The storage operation would thus have increased the value of the 1906 crop by 76 million dollars, but reduced the value of the 1907 crop by 60 million dollars, leaving farmers a net gain of 16 million dollars. If the 6 million dollars lost by the storing agency were deducted from this, there would still be a net gain of 10 million dollars on the transaction.

The result of the storage operations in the other years when prices were low has been figured out in exactly the same way, except that in one case it has been assumed that wheat would be purchased and stored in two consecutive years, in 1912 and 1913, and then sold the third year, in 1914. I will not go into the other operations in similar detail, but will present the conclusions instead.

* * *

Combining the changes in the values of the crop with the

gains or losses on the stored grain for each operation, and deducting 4 per cent interest on the funds employed in storing, the average value of the two crops would be increased by 0.6 cents per bushel in 1906 and 1907, and by 0.2 cents in 1923 and 1924; but the average value of the three crops of 1912, 1913, and 1914 would be reduced by 1.8 cents per bushel. These estimates indicate that there is sometimes a gain to be made by storing wheat for one year, but that there is likely to be a loss if storage operations are attempted for two years in succession.

* * *

Storing, with effects on subsequent production: So far we have been considering the possible gains from storing, assuming that the changes in price to farmers did not affect subsequent production. In the case of some crops, noticeably cotton, it is well known that prices do affect subsequent acreages, so this relation can not logically be ignored. Taking cotton, one of the most extreme cases, as our example, we may therefore ask how storage operations would work out, if we included in our estimates the probable effects of storage operations on subsequent acreages as well. . . .

* * *

. . . prices would have been less variable over the period examined, varying between 15 cents and 26 cents, instead of between 14 cents and 31 cents. Production would also have been more stable, rising less rapidly in the period 1923 to 1925, and declining less in 1927. Farmers' income from cotton would have been more stable, not falling so low in 1921 and 1926, and not rising so high in 1922, 1923, and 1924. This greater stability may be a desirable end in itself; if so, the storage operations would have been satisfactory. But if total income or average price during the entire period be taken as a criterion, the operations would not have been so successful. For the period as a whole, while total income remained about the same, production with storing would have been slightly larger; the weighted average price of cotton to farmers would have been 4/10 of a cent lower per pound with the storage operations; and if the losses on the stored cotton were deducted, prices would have been 5/10 of a cent per pound below the actual average. If smaller amounts had been stored, so that losses on stored cotton were not incurred, or if storage operations had been begun in 1921,

with only one year's operation, the estimated net results might have been more satisfactory.

* * *

Storing hog products: There are but two sources of advan-

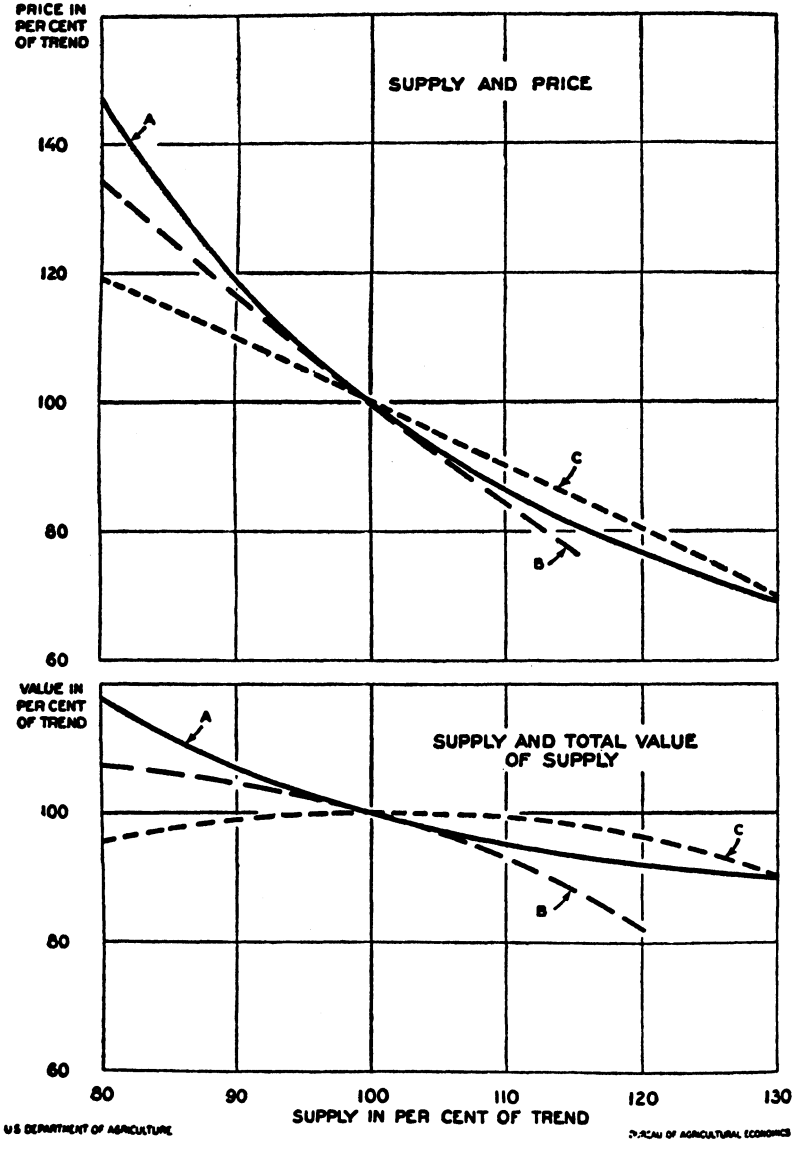

Fig. 4. Three types of supply-price curves.

tage in storing. If the product stored can be sold for more than it cost, and if that profit is secured by the storing agency instead of by others who were previously in the field, then profits may be secured without consumers paying more than they otherwise would have. But there is a second possibility of profit, if the demand by consumers is such that they will pay more for two average crops than they will pay for one large crop and one small one. In that case it is not necessary to displace previous storers in order for the new storage operations to pay profits, as the increased average price would be paid by the consumers.

* * *

The point as to the effect of the shape of the supply-and-total-value curve on the profits from storing has a significant bearing on the accuracy of statistical estimates as to probable gains or losses. Figure 4 shows three hypothetical supply-and-price curves in the upper portion, and three corresponding supply-and-total-value curves in the lower portion. Considering these latter curves first, it is evident that curve A is concave; and hence it would not pay to store that commodity; curve B is somewhat convex, so there might be some profit from storing; while curve C is so convex that a medium supply is worth more than either a large supply or a small supply, and hence storing might pay handsomely. Yet when we turn to the corresponding curves on the upper chart, we see that there is so little difference between A and B that ordinarily we would expect both to give equivalent results; while even curve C is quite similar through its central portions. Not unless our data and technique are sufficiently exact so that we can tell definitely whether or not the relation of supply to price for the commodity with which we are working is similar to curve A on the one hand, or to B and C on the other, can we be confident that our estimates as to profits or losses from storing are correct. The probable error of our curves in many cases is greater than the differences between curves A and B. It is for that reason that I am trying to be so modest in claiming veracity for the estimates presented in this paper; until more complete and reliable basic facts are available, the accuracy of other estimates will be equally limited.

Wartime food supply programs presented special problems of planning storage against future needs. The excerpt that follows gives some simple and useful techniques that can be used in the analysis of such problems.—*Ed.*

3.3.8 Southworth, Herman M. "Determining Goals for Production, Procurement, and Reserves of Food," Unpublished report, U. S. Food Distribution Admin., 1943. Pp. 4–5.

A program to meet alternative possibilities. In summary, if the war should end by the close of this year, even what we have called the maximum possible output of soya flour would be wholly inadequate for meeting relief feeding requirements. Such an early victory in Europe, while generally regarded as over-optimistic, is certainly not beyond the realm of possibility. This is strong justification for going ahead to expand production capacity as rapidly as possible.

If we were to undertake such a program, and if the war did not end so soon, would this mean later back-tracking to avoid producing more soya flour than could be put to good use? Chart IV is an attempt to analyze this problem, and also to illustrate how this method of analysis can be applied in following through a flexible program. It takes account of the wide range of uncertainty in our expectations.

The left-hand diagram represents the situation as it faces us today. What are called maximum and minimum requirements curves are the estimated requirements under assumptions A and C in the previous charts. (All curves in Chart IV are cumulated.) Since even the maximum possible output, as previously described, would not suffice to meet the maximum requirements that may be anticipated, it is proposed that this be adopted at once as the production plan in order that we may be as well prepared as we can for the heavy requirements that we may face. If the maximum requirements materialize, we would expect to accumulate and use up reserves as indicated by the cross-hatched area, running short about March of next year.

If, instead, actual requirements follow the minimum requirements curve, much greater reserves would, of course, be accumulated, and the question arises whether they would not exceed the quantity that could be safely stored without deterioration. Assuming that soya flour and its products can be stored for as long as 12 months, this limit can be indicated simply by shifting the requirements curve ahead 12 months. This gives curve R; so long as output does not rise above this curve reserves that are accumulated can be turned over within the 12 months' period of storability. Since the output curve does not cross above R until the end of January 1944, we may say that this is a "safe" program up to somewhere near that date. The program will need to be reexamined

far enough in advance of that date to permit planning readjustments if necessary.

The center diagram on Chart IV represents such a re-appraisal of the program, on August 1, 1943. It assumes that requirements

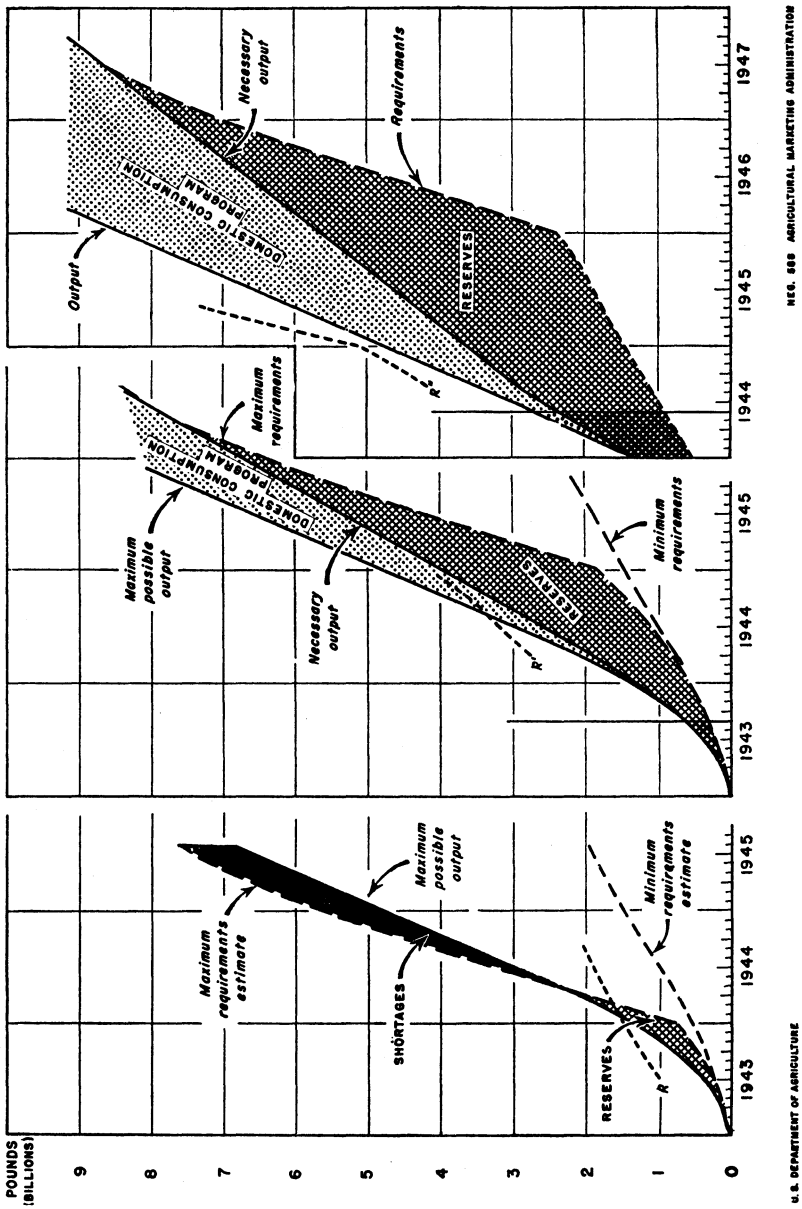

Chart IV. Soya flour — successive stages of program.

up to that time have stayed at the lower level, so that reserves have accumulated as indicated by the heavily cross-hatched area and there is some danger of over-expansion. New maximum and minimum requirements estimates are drawn, and for illustration we have used the figures for assumptions B and C on the preceding charts. (Actually, of course, our increased knowledge by that time should enable us to make new estimates that would improve on these curves.) The program of output now exceeds even the maximum estimate of requirements. A production curve like that labeled "necessary output," drawn tangent to the maximum-estimate-of-requirements curve, would suffice to meet these needs.

This sets the limits within which the program must be revised. Output expansion may be held down to this level (2.75 billion pounds per year) or a domestic consumption program may be initiated to use up some or all of the excess supplies of 850 million pounds per year that would be produced under the original plan. For purposes of simplicity in presenting this illustration, it is assumed that a full-scale domestic consumption program is decided upon. The new plan as illustrated by the diagram then becomes as follows: Production to continue along the maximum output curve, that portion of supplies indicated by the dotted area to be moved into domestic consumption, and that portion indicated by the cross-hatched area to go into reserves.

The question again arises whether this involves storage stocks greater than can be turned over within limits of storability in case requirements should again develop only at the minimum level. To test this a new curve, R′, is drawn representing the combined domestic and overseas requirements moved ahead 12 months. This shows that the new program can be considered "safe" up to about July 1944.

The right-hand diagram on Chart IV indicates a second reappraisal of the program on, say, May 1, 1944. It assumes that requirements again have continued at the minimum level and that military developments justify giving up any hopes that the war will be over by the end of that year. . . .

3.4 Changes in Form

We turn now to the third kind of utility provided in marketing.—*Ed.*

3.4.1 Thomsen, Frederick Lundy. *Agricultural Marketing.* McGraw-Hill, 1951. Pp. 70–71, 75–76. Reprinted by permission.

The processor of agricultural raw materials, such as cotton, wheat, milk, and hogs, transforms the materials into finished

products: cloth, bread, cheese, and meat. In doing so, he adds *form utility*. Although the addition of form utility frequently involves a radical change in the appearance and other characteristics of the product, it may consist merely in subtracting a part of the original product, as when celery is trimmed. Such operations as washing a vegetable, pasteurizing (heating) milk to kill the bacteria in it, or aging beef in the cooler may be considered as processing which adds form utility.

* * *

Processing. Very few agricultural products are ready for final consumption when they leave the farm. The marketing system must convert them into suitable form before they can be disposed of to consumers. Livestock must be converted into meat, cotton into cloth, wheat into flour and bread, flaxseed into oil and paint, and so on. At least 90 per cent of all farm goods produced in the United States, on a farm value basis, require some form of processing after leaving the farm.

Processing is essential before some commodities, such as wheat and livestock, can be used at all. For others, such as fruits and vegetables, it helps to conserve the surplus production of one season for use in another and to prevent the waste of low-grade, overripe products unfit for shipping or consumption in the raw state.

Some of the processing operations seem far removed from farming and of little interest to farmers. For example, there are several layers of cotton-goods processors, including mills which produce yarn and some types of fabrics, weavers, converters, finishers, dyers, clothing manufacturers, etc. One marketing economist recently said, "One can hardly think of this shirt I have on as being an agricultural product, any more than an automobile can be considered as a product of coal, although much coal is used in making the steel consumed in fabricating an automobile and cotton is used as raw material for the shirt."

Yet whether or not men prefer a cotton shirt to a nylon shirt is extremely important to cotton farmers, and this depends in no small measure on what happens in the processing plants which contribute to the shirt's production. . . .

> Most discussions of processing assume that its primary purpose is to adapt products to different end-uses of consumers. Actually, a great many changes in form of farm products are partly an adjunct of other marketing operations, such as transportation or storage. Canning, freezing,

and other methods of preserving perishables make storage of them possible. Evaporation and dehydration of milk not only make storage possible but also greatly reduce transportation costs. Conversely, the availability of transportation or storage facilities may greatly affect the form in which a commodity is marketed. This was a major factor in a spectacular event in the early history of the American republic.—*Ed.*

3.4.2 Beard, Charles A. and Beard, Mary R. *The Rise of American Civilization.* Macmillan, New York, 1934. Pp. 357–58.

. . . To aid in meeting the increased charges caused by the assumption of state debts, Congress in 1791 after a savage debate passed an excise law laying, among other things, a tax on spirits distilled from grain — an act especially irritating to farmers in the interior already marshaling under opposition banners. Largely owing to the bad roads, which made it hard for them to carry bulky crops to markets, they had adopted the practice of turning their corn and rye into whiskey — a concentrated product that could be taken to town on horseback over the worst trails and through the deepest mud. So extensive was the practice in the western regions of Pennsylvania, Virginia, and North Carolina, that nearly every farmer was manufacturing liquor on a small scale; the first of these states alone according to the reckoning had five thousand distilleries. The excise law, therefore, provided in effect that government officers should enter private homes, measure the produce of the stills, and take taxes for it directly from the pockets of the farmers.

As soon as the news of this excise bill reached the interior, an uprising followed — an outbreak of such proportions that Congress, frightened by the extent of popular dissatisfaction, removed the tax from the smallest stills and quieted the farmers of Virginia and North Carolina. In Pennsylvania, however, the resistance stiffened. Some of the distillers in that state positively refused to pay the tax; while rioters sacked and burned the houses of the collectors just as Revolutionists thirty years earlier had vented their wrath upon King George's agents for trying to sell stamps. When at length a United States marshal attempted to arrest certain offenders in the summer of 1794, a revolt known as the Whiskey Rebellion flared up, resulting in wounds and death.

Packaging is another marketing operation that, while it does not change the physical or chemical constituency of the product itself, nevertheless changes the form in which it passes through marketing channels or reaches the con-

sumer. Packaging, like processing, is for most products a necessary adjunct of transportation or storage.

"Prepackaging" or packing in consumer-size containers has been a subject of great interest in recent years. Much of the discussion has centered on packaging for sales-promotion—a subject discussed in Section 8. Prepackaging is a necessary counterpart of self-service retailing through super-markets. The best methods and materials for consumer packaging of green groceries is still a very active research problem.—*Ed.*

3.4.3 "Association Survey Discloses Food, Labor, and Transportation Savings Made by Prepackaging Industry," *Pre-Pack-Age*, Feb., 1951. P. 11.

Nature of the Industry: (a) Conception of Prepackaging; Produce prepackaging is a direct outgrowth of the trend toward self-service retailing, and self-service is an outgrowth of the demand by retailers for cheaper, better methods of merchandising. This reason for the original conception of prepackaging often obscures the economic reasons for its existence today as an organized industry.

Produce prepackaging would not exist today in any recognizable industry form if it were not true that the costs of packaging are more than made up through the savings effected in waste, labor and transportation. Unitizing of produce prior to retail sale is justified solely on these grounds. And as a result of the savings achieved through prepackaging it is possible for consumers to get better, fresher produce at no increase in price, and for the country to enjoy a more complete utilization of its food production facilities with savings in critical manpower, food and transportation.

To appreciate the function of prepackaging it is necessary clearly to understand that the prepackager employs the efficient use of labor to perform essential services that would otherwise have to be performed inefficiently at the retail store; and that in the performance of these services, which save labor, he also makes vastly important savings in waste and in transportation.

(b) *What Prepackaging Does*: Prepackaging makes fresh perishables less perishable; retains fresh quality for a longer period of time; and performs a servicing job for grower, retailer and consumer that effects a saving in waste, labor and transportation. Prepackaging is not a processing operation like freezing and canning, but accomplishes an extension of shelf life through the act of packaging itself. In many cases prepackaging effects a more complete utilization of farm products—notably in the cases of salad mixes, mixed vegetables, celery hearts, etc. Farm

products are utilized here which would not normally get into the channels of distribution, but which are high in quality and freshness.

Prepackaging Protects: What prepackaging does varies according to the farm product involved. In the case of soft fruits its function is principally protective — to protect against damage in transportation from farm to market; and from excessive handling and damage in distribution and retail sale. In the case of some vegetables, such as sweet corn, carrots, cauliflower, broccoli, etc., prepackaging at the source makes great savings in transportation. In the case of practically all vegetable products prepackaging helps prevent excessive retail wastes through elimination of retail handling and extension of shelf life.

Grading, especially as it involves sorting and culling or other standardizing operations, also affects the form utility of commodities. The whole subject of grades, grade standards, and inspection is discussed in Section 6.

Before World War II we had surpluses of many farm products. Some were dumped on the market, some were destroyed, and some were "diverted." Diversion operations included many things: for example, export subsidies, the food stamp program, and the cotton mattress plan.

When a product goes into different uses, the price it will bring in a competitive market is determined by the lowest priced use that is made of it. In seasons of large supply, wheat sells at feed-grain prices, potatoes at the price paid by starch factories that normally buy only culls. If a basis can be found for price discrimination between different forms or uses, returns to farmers can often be greatly increased. This is an objective of the class pricing of milk discussed in an earlier section.

In such a case an important economic decision is how much to sell in each form. To maximize producers' income, the amounts sold in the various forms should be so adjusted as to equalize marginal net returns to the farmers. Hoos and Seltzer made a very interesting statistical analysis to determine what proportion of the California lemon crop would be sold in fresh form, and what proportion processed, in order to return the greatest possible income to lemon growers.—*Ed.*

3.4.4 Hoos, Sidney and Seltzer, R. E. "Lemons and Lemon Products: Changing Economic Relationships, 1951–52," *Univ. of Calif. Bull. 729.* Pp. 54, 55, 56, 58, 59.

Allocation of the Crop to Fresh Market and to Processing. The preceding analyses of supply allocation have been oriented to and pertain directly to the distribution of fresh shipments be-

tween the winter and summer season. Allocation to processed lemon products outlets was considered only indirectly, and only in the sense that the supply not shipped to the fresh markets would be available for processed utilization. There appears to be the suggestion, in the available evidence, that in most years the marketing of the lemon crop has followed such a pattern. There does exist, however, a question concerning the "optimum" allocation of the lemon crop between the fresh and processed markets. Yet, such a question is not very meaningful unless the "optimum" is specified in reasonably precise terms.

* * *

Rather than viewing price-equalization or returns-equalization as the objective of allocating a given lemon crop between the fresh and processed markets, another objective may be selected which from many viewpoints may be considered as more rational. This third allocation policy may be termed as revenue maximization; it involves distributing the crop among the two outlets in such a manner that the money revenue derived from both outlets together sums to the largest amount possible or a larger amount than could be obtained by using any other allocation.[1]

There may be practical or administrative reasons why an allocation policy yielding maximum revenue cannot or should not be followed, but from the view of objective standards or alternative policies to be considered, it is of considerable significance.

* * *

From the view of maximizing on-tree total returns, the evidence so far suggests — but does not show conclusively — that the industry has tended somewhat to overship to the fresh market and channel correspondingly lower quantities to the processed market outlets.

* * *

Therefore, rather than insisting that the optimum percentage allocation of the lemon crop between the fresh and processed outlets for the next several years is about 55 per cent for the fresh and about 45 per cent for the processed, a less firm projection is

[1] The revenue-maximizing distribution may be indicated as follows, where: $p_1 = a_1 - b_1q_1 + c_1q_2$, and $p_2 = a_2 - b_2q_2 + c_2q_1$ are demand functions; p and q are price and quantity, respectively; subscripts 1 and 2 are fresh and processed, respectively; and $q_1 + q_2 = Q$, a given value such as the total crop to be distributed. The revenue-maximizing distribution is such that

$$q_1 = \frac{a_1 - a_2 + (2b_2 + c_1 + c_2)\,Q}{2(b_1 + b_2 + c_1 + c_2)}, \text{ and } q_2 = Q - q_1$$

advisable. It might be expressed as follows: During the next several years, consideration might well be given to gradually decreasing the percentage of the crop allocated to the fresh outlet and correspondingly increasing the percentage of the crop going to the processed outlet. Such a change in crop allocation, though, merits consideration only if industry policy and objective are oriented in the direction of increasing the industry's total returns, on-tree basis, from the lemon crop.

3.5 Transfer of Ownership

Since the days of Adam Smith, economists have generally recognized that exchange was necessary to specialization and, thus, to high productivity. Wherever trade is difficult, risky, or expensive, standards of living are low. Anything which makes trading easier, safer, or cheaper, helps to make specialization possible — permitting greater benefits in place, time, and form utility.

This is not to say that we can be prosperous by taking in one another's washing. Trade is not necessarily beneficial in all cases. If I trade my dollar for your dollar, we have carried out a "zero-sum activity" from which neither of us benefits. In a sense, the same could be said if I pay you a dollar for a dollar's worth of beans. Neither of us has added to the national income.

In the United States, where modern marketing operations are highly specialized, farm products are usually bought and sold many times before they are finally consumed. Some say they are "turned over seven times" (i.e., bought and sold seven times), and conclude that each dollar of farm income becomes seven dollars of national income. The editor does not subscribe to this view. He believes that most trade is useful primarily because it makes specialization possible.

We do not want to be dogmatic about this view. In a sense, at least, exchange often is not a "zero-sum activity" but an activity which benefits both the buyer and seller. Black and Houston state the case in our next reading.—*Ed.*

3.5.1 Black, John D. and Houston, Neil T. "Resource-Use Efficiency in the Marketing of Farm Products," *Harvard Studies in Marketing Farm Products*, No. 1-H, Cambridge, Mass., June, 1950. P. 3.

. . . The can of peas that finally reaches a consumer in Philadelphia may be the identical can that left a canning factory in Wisconsin six months earlier. But it has been transported, stored, labelled and wrapped in a paper cover, and finally placed in the hands of a person really ready to consume it. Commonly a certain amount of sorting, processing and packaging accompanies the foregoing. The most pertinent of all the operations have been the

buying and selling. It is these that have taken the goods out of the hands of those who produced them only to sell them and distribute them among those who have the largest use for them. A large fraction of the utility created in the distribution process is pure possession utility — often more than half of it; and it is this part of it that is peculiar to marketing and especially to be analyzed in marketing research.

There are no reasons to expect, of course, that these buying and selling and other distributive services are the same per unit for all farm products, nor proportional to value, cost of inputs, or any other similar common denominator. Any strictly accurate determination of output must measure the utility added to each separate lot of goods moving through the channels of trade, possession utility along with place, time, and form utility.

Whether or not we accept Black and Houston's view of pure possession utility, changes of ownership are important in agricultural marketing simply because they are numerous and expensive.

One of the motives of vertical integration has been to eliminate some of the transfers of ownership which would otherwise be necessary. All of us are familiar with the old slogan "Kalamazoo — direct to you" typifying the claim of price reductions based on such savings. A similar motive is one of the forces behind direct marketing of farm products, previously discussed in the case of livestock, and exemplified also in the publicly operated farmers' markets in many cities and the rise of roadside stands along rural highways. That non-integrated marketing channels continue a healthy existence in competition with direct selling indicates, however, that they provide services for which many farmers and consumers are willing to pay, or achieve efficiencies in operation that offset the costs of added transfers of ownership. Actually, the trend in our increasingly specialized economy has been in the opposite direction — toward more and more complex transfers of ownership in the marketing process. This has been facilitated by the growth of the legal instrument of contract, through which ownership is divorced from the actual physical transfer and possession of goods. The evolution of contract law in modern history is described by Commons.—*Ed.*

3.5.2 Commons, John R. *Institutional Economics.* Macmillan, New York, 1934. Pp. 391–93.

Prior to the Sixteenth Century there was comparatively little buying and selling. It was limited to fairs and commercial boroughs. Only landlords and wealthy people could make contracts which the common-law courts would enforce. These people

were distinguished above all others in that each had a seal which he could stamp in the wax on a lengthy document, as evidence of his promise to pay. It was named a "specialty." The transaction required time and solemn formality. It remains today in the sale and mortgage of real estate, though, under the Torrens system originating in Australia, even these formalities are done away with by a simple system of registration similar to the registration of ownership of automobiles.

But the merchants, who bought and sold commodities, did not have leisure, wealth, or political power. Their "parol" contracts could not always be enforced in court. But during the Sixteenth Century they became necessary and influential. The courts must now devise a way to enforce their hundreds and thousands of contracts. After several years of experiment the ingenuity of lawyers invented a simple assumption, which they read into the minds of the parties to a transaction. It was the assumption that merchants did not intend to rob, or steal, or misrepresent, but they intended to do what was right. This meant that if a merchant physically delivered a commodity to another person with the intention of making him the owner of it, then the other person intended to pay for it. Even if the price was not mentioned he intended to pay what was right. He assumed the duty to pay.

This is the "parol" contract, or rather, the behavior contract. Since the Statute of Frauds it is limited to contracts of small amounts. Yet it remains in the rules of the stock exchange where millions of dollars' worth of property is transferred in a few minutes by mere signs between frenzied brokers, the contracts to be enforced by the Stock Exchange itself, although they do not become enforceable in court until written. When a foreman accepts the product of a laborer, or the materials from a supplier, the corporation intends to pay for it. We take this intent for granted *now,* as a law of nature; but it was the invention of lawyers four hundred years ago. Mere acceptance of commodities creates a lawful debt, even though, psychologically, there may have been no intention to pay.

But this was not enough for the merchants. They needed also the legal power to buy and sell debts. It required the entire Seventeenth Century for lawyers to complete the invention of the negotiability of debts. What the merchants wanted was to convert their debts into money . . .

* * *

. . . Here another difficulty stood in the way. A promise had

been considered a duty to fulfill the promise only to the person to whom the promise was made. It was a personal matter. A promise to work,[1] a promise to marry, cannot even yet be sold to a third party. It would be slavery, peonage, or concubinage, under the guise of freedom of contract. But why should not a promise to pay legal tender money, in specified amounts at specified dates, be sold to third parties in exchange for goods, even though the money is not yet in existence? It required not only the Seventeenth Century but all of the centuries following to invent ways of making this kind of promise negotiable. In the end, the law of "negotiable instruments" became a body of legal arrangements that converted the mere expectations of money into money itself.

> By contracting, a buyer in one part of the world can obtain ownership of a good in another part of the world that he will never see. Or he can buy certain rights of ownership without purchasing all, as in leasing a property for a limited period. Similarly, a seller can retain the right to employ a good for a particular use while disposing of all further ownership rights, as in the case of the miller who sells the flour to be made from wheat in his bin. Moreover, a seller can sell an item he does not have or which is not yet in existence by contracting a debt. Some examples of the role of contracting in agricultural marketing follow.—*Ed.*

3.5.3 Baer, J. B. and Saxon, O. G. *Commodity Exchanges and Futures Trading.* Harper, New York, 1949. Pp. 11, 127.

In many quarters it is customary to speak of exchange markets as the only organized markets. This practice ignores the specialized physical markets for particular staples and the slow, tedious, and evolutionary processes through which, over the years, operators in these physical markets gradually, by trial and error and by patient cooperative efforts of all elements in each trade, developed highly organized centers and efficient trading techniques before the idea of the exchange was conceived. In fact, the commodity exchange is merely the newest addition, the latest development in this evolutionary process.

* * *

. . . To call the exchange market the futures market (as is the common practice) is to imply that the physical market does not deal in contracts for forward delivery, when in fact the great

[1] Exception has been made in cases of *irreplaceable* labor, such as actors and baseball players.

majority of the contracts of the physical market call for delivery in future months. . . .

3.5.4 Weld, L. D. H. *The Marketing of Farm Products.* Macmillan, New York, 1924. Pp. 51–53.

Sales by Contract. Sale by contract means that the seller agrees to deliver goods in the future, often at a stipulated price, but sometimes merely as an assurance that he will turn over all or a certain part of his output to a dealer or commission man who agrees to market the goods to the best advantage. The actual terms of sale may therefore involve any of the methods described above, and, in fact, the contract is used in a great variety of ways. Canning factories and beet sugar factories often enter into contracts with growers in the neighborhood to take the product grown upon a certain number of acres. Large creameries enter into short-time contracts with dealers to deliver a certain number of pounds of butter per week during the storage season. The growers of cantaloupes in California in return for money advanced to grow crops enter into contracts with large distributing firms to turn over their output to them. Under similar circumstances Florida tomato growers enter into contracts with brokers or dealers to turn over their output to them to be marketed.

One of the commonest instances of selling under contract is practiced by wheat growers, who contract to deliver their wheat to local elevators at stipulated prices sometimes before the wheat is harvested. During the spring of 1915, for example, Kansas farmers were contracting to sell their crops to local elevators for one dollar per bushel. The difficulty with this method is that when the price rises to a point above the contract price, farmers are inclined to haul only a part of their wheat to the elevator with which they have contracted, and to haul the rest to some other shipping point to be sold at the current price. On the other hand, if the price falls below the contract price, the farmers always haul in every bushel — in fact it is intimated that they sometimes deliver grain belonging to neighbors who are not under contract. During 1914 many farmers in Kansas had contracted to deliver their wheat at sixty-five cents per bushel, not anticipating the phenomenal rise in price which occurred after the outbreak of the war in Europe, and the local elevators encountered considerable difficulty in securing the fulfillment of these contracts. Although there are advantages to both seller and buyer in the contract method, it is not certain that it is best for farmers to use it in the grain business.

3.5.5 Lyon, Leverett Samuel. *Hand-To-Mouth Buying.* The Brookings Institution, Washington, D. C., 1929. Pp. 16–17.

Agriculture furnishes a most striking case of a gigantic industry with comparatively small amount of order-placing in advance. The great bulk of the nation's crop of corn, wheat, livestock, and cotton are produced at the risk of the farmer without the hedge of advance orders, with, indeed, comparatively no commitments on the part of anyone to buy at a satisfactory price, or even to buy at all. Even in agriculture, however, the advance order is by no means unknown. Wool is bought "on the sheep's back" months before the sheep has grown it. At times calves are contracted for before they are born. Crops of vegetables for canners are frequently produced "under contract." Wheat and cotton are often bought before harvest.

3.5.6 United States Department of Agriculture Livestock Market News. *Range Sales Report.* Reports dated as indicated.

Feb. 24, 1951. West Texas. 400 yearlings $35.00–36.00 for June delivery, 600 yearlings $30.00–31.00, October delivery. 800 choice Angus steer and heifer calves $40.00 for November delivery. 560 two-year old steers at $32.50 for September delivery to average around 1,100 lbs. 700 mixed calves at $35.00 for October delivery. . . .

Feb. 24, 1951. San Francisco. Around 15,000 head of cattle are now under contract in the Oakdale, Ladino clover, region of California. . . .

The bands of California spring lambs, totaling 4,600 head, were contracted this week in the Northern San Joaquin Valley about half for late March delivery at $36.00 fat basis with the balance later at grower's option at $35.00. . . .

Mar. 31, 1951. Billings. . . . In the Jackson Area, 500 head of Choice yearling Hereford steers were contracted at $35.00 for January, 1952 delivery when it is estimated they will weigh around 825 lbs. . . .

Mar. 31, 1951. Spokane. . . . it was estimated that 85 per cent of the Oregon new crop lambs were under contract, but very few Washingtons or Idahos.

April 7, 1951. San Francisco. California Spring lambs are now moving to slaughter in substantial volume. Practically all of these were contracted early, but sizable numbers have been resold to packers. . . .

June 16, 1951. Denver. . . . One Colorado man sold two cars of yearling heifers in Texas at $34.00 which he had under earlier

contract at $39.00 and also disposed of two cars of yearling steers at $34.75 which he had under contract at $40.50. These cattle went to Colorado buyers for immediate delivery. . . .

July 28, 1951. San Francisco. . . . Among contracts on yearling steers for September, October and early November delivery were close to 1000 head in various sections of Western Wyoming at $32.50 and a string of around 400 head of high Choice at $33.50, while a few Medium and Good yearlings went at $31.25; around the Northern section of Utah a few hundred head of yearling steers went at $32.50 and a few loads of 2-year olds at $31.25; likewise, a few hundred head of yearling steers were contracted in Northwestern Nevada at $32.50 and a scattering in other sections of the state at the same price. In the Texas Panhandle several hundred head of Choice 2-year old steers attracted bids of $32.00, but asking prices were mostly around $33.00.

Deals on calves for October and November delivery to California included close to 300 head in Idaho at $36.75 on steers and $35.75 on heifers, close to 100 head of steer calves in Utah at $36.25 and a few hundred in Montana at $34.75 on heifers and $36.50 on steers. . . .

Clover pastured fat lambs were offered freely in California early in the week at $28.00, but buyers lacked any display of interest. Packers already have large numbers under contract which are ready for slaughter. . . .

July 28, 1951. Spokane. . . Two cars Northeastern Washington lambs averaging around 100 lbs., contracted in June at $30.00, were delivered this week to Western Washington packers. . . .

Sept. 1, 1951. San Francisco. . . . Demonstrating faith in the future, to say the least, were deals whereby Inter-Mountain yearlings not yet delivered into California, were put under contract for May to August 1952 delivery as fats off range grass or clover pasture at $34.00. These were cattle of "Good Brands" in the hands of experienced pasturers.

Sept. 29, 1951. San Francisco. Trade members indicate that the bulk of the cattle, calves and lambs in Utah, Idaho and Eastern Oregon are now held under contract. . . .

Oct. 6, 1951. San Francisco. Generally speaking, most of the large strings of cattle are held under contract with only small scattered lots still being offered. . . .

Oct. 20, 1951. Billings. Indications were this week that the majority of the livestock available for marketing this fall at country points in this region have been committed on contracts

closed earlier in the season, and a large proportion of them are being currently delivered. . . .

November 24, 1951. Spokane. . . . Bulk of the stocker and feeder cattle and calves are already under contract or delivered and those changing hands currently were mainly at market points.

The preceding three excerpts illustrate the varied uses made of contracts for future delivery of farm products. Yet none of the types of sales described was on the organized commodity exchanges. Such unorganized advance contracting has been given relatively little systematic attention by marketing economists.

"Futures trading" on the organized markets, by contrast, is the subject of a voluminous literature. The specialized types of contracts dealt in on these markets represent a further stage of evolution. As organized markets developed, they provided facilities and services for executing purchase and sales contracts, and established rules to govern trading. The terms of sale in many contracts for future delivery tended to become standardized, and for some commodities uniform types of contracts developed with standard settlement dates. These *futures* have come to be traded in large volume, with most of the buyers and sellers intending not the actual delivery of commodities in fulfillment of the contracts, but the settlement of them at maturity through offsetting one against another in a clearing-house operation. Very elaborate institutional arrangements have developed for dealing in these futures contracts on organized exchanges.

The large and continuous volume of trading on these markets, the ready availability of standardized price data from them, and the strongly controversial public attitudes that have developed regarding futures trading have both attracted the economist's attention and furnished him data for analysis. In the economics literature, particular attention has been given to the use of futures contracts for *hedging,* through which business firms dealing in commodities offset their operating positions by taking an opposite position in futures. This practice is treated chiefly as a means for shifting the risk of adverse price change to those who retain open positions in futures. Such parties are known as *speculators,* frequently defined as specialists in risk bearing. The effects of speculation, especially its influence upon prices and price stability, have furnished subjects for much controversy.

Most of the remaining excerpts in this subsection are concerned with this aspect of futures trading. First we present four statements on the general nature and purpose of futures trading in farm products.—*Ed.*

3.5.7 Beveridge, E. A. "How To Hedge Commodities," *Commodity Year Book, 1949.* Commodity Research Bur., New York, 1949. P. 16.

At the outset it is well to note there are two types of commodity markets, (1) those that have rules covering transactions in "spot" or "cash" commodities, sometimes conveniently referred to as "actuals" or commodities on the spot, i.e. immediately available, including specific lots at times and (2) those that have rules covering transactions for the delivery of a commodity during a stated month in the future, generally known as "futures." The nomenclature used to distinguish the two is not very scientific for under the first classification it is also possible to have transactions for deferred delivery which would tend to place them in the second classification. Moreover, it will be seen that a "futures" contract itself involves the delivery of the spot or actual commodity and is therefore merely a special form of spot contract.

The real distinction between the two, i.e. between so-called spots and so-called futures, is that the spot transaction is between the buyer and the seller for the sale and delivery of goods, now or later, under terms specifically agreed to by the two, with each looking to the other and to no one else for the due fulfillment of the agreement. On the other hand, a futures contract is one between a buyer and a seller for the delivery of the spot commodity under standardized terms, with the right of transfer of the rights and obligations of the contract to another party by either of them, through the instrumentability of the Exchange's affiliate, the Clearing House. In other words, in futures trading there must be a standardized contract and a clearing system. In spot trading, there is privity of contract.

One thing to be noted is that most exchanges, in grain for example, are of the "spot" or "cash" variety, where actual grain is bought and sold, such as the Omaha Grain Exchange, whereas futures markets in grain are few in number. . . .

3.5.8 Mehl, J. M. "Hedging in Grain Futures," *U. S. Dept. Agr. Cir. No. 151,* Washington, D. C., June, 1931. P. 5.

Much misunderstanding will be avoided if one bears constantly in mind that a sale of May wheat is not really a sale of wheat, but is the establishment merely of certain contract rights that involve wheat. Unless superseded by other agreements in the meantime, these contract rights normally culminate in an actual sale of wheat. Until completed by the delivery of wheat, however, they exist only as contract rights. It is through the

convenient means provided for making and passing from one person to another these contract rights that future trading on a large scale is made possible in an organized and orderly manner.

Considered from the viewpoint of the hedger, the futures market would be of little value if agreements to buy and agreements to sell could not be transferred quickly and freely from one owner to another and settlements made on the basis of existing price differences. Generally speaking, the hedger is not interested either in making delivery or in taking delivery but wants merely to hold temporarily certain contract rights in order to be protected against possible adverse changes in price. Unless he can rely upon an instantly available opportunity to either buy or sell futures in amounts to balance his cash-grain risks the futures market ceases to be for him a practical medium of protection.

3.5.9 United States Department of Agriculture. "Trading in Commodity Futures," Commodity Exchange Admin. No. 14, Washington, D. C., 1938. Pp. 2, 29.

. . . Nevertheless since they [futures contracts] can be converted into the actual commodity this possibility holds their prices in continual alignment with spot prices. It is for this reason that futures trading and futures prices assume public importance. The trade in futures contracts is of sufficient magnitude to exercise at all times a directing influence upon spot prices in central as well as local markets. This price-directing function of futures trading is regarded by many as the principal function of organized commodity exchanges.

A second important function of these markets is that of hedging or price insurance. The futures trading system is utilized by merchants, processors, and distributors, as a means of eliminating the risks of price fluctuations. They are interested only in their expected profits from processing, handling, or distributing the actual physical commodity. Through the use of futures transactions they transfer the risk of price change to the shoulders of speculators who desire to asume such risks in the hope of securing a profit from price changes.

These services are performed through the operation of commodity exchanges which furnish broad and continuous markets upon which contracts for future delivery are executed. Through their elaborate quotation and news facilities they also serve as clearing centers of trade information. And because the quota-

tions and news are followed and acted upon by many traders, both buyers and sellers, these exchanges produce a highly competitive as well as highly sensitive price structure.

* * *

If traders accurately weigh the fundamental factors which determine prices, the prices will truly reflect basic conditions, but if trading judgment is incompetent or untimely, prices will not accurately reflect fundamental conditions. It is equally important that a futures market should be free of manipulation or arbitrary influences if it is to serve as a barometer or indicator of the prevailing world prices of a commodity.

3.5.10 Howell, L. D. "Analysis of Hedging and Other Operations in Grain Futures," *U. S. Dept. Agr. Tech. Bull. No. 971*, Washington, D. C., Aug., 1948. Pp. 61, 13, 62.

The usefulness of futures contracts as hedges depends mostly upon the extent to which changes in cash prices are associated with similar changes in prices of futures contracts. Data for recent years show that the large swings in cash prices of wheat, corn, and oats usually are associated with more or less similar changes in prices of futures contracts, particularly those maturing before the new crop is available in the market. But cash prices and prices of futures contracts do not always change to the same extent or in the same direction, and the spread between prices of the cash commodity and those for futures contracts varies considerably.

* * *

A supply of grain, made available in a market, that is abnormally large in relation to the demand for it, when relatively smaller supplies are anticipated, may depress cash prices in relation to prices of futures contracts, particularly those for the more distant months. But the extent to which prices of futures contracts may remain above cash prices at delivery points under such conditions would appear to be limited fairly definitely to an amount equal to the costs of carrying grain to the date of maturity of the futures contracts plus the costs of making delivery on futures contracts.

A relative shortage of grain immediately available in the market along with the anticipation of relatively larger supplies tends to raise cash prices of grain in relation to prices of futures contracts for the more distant months. But the extent to which

prices of futures contracts may go below cash prices of grain cannot be so definitely indicated as that for the reverse relationship.

* * *

Risks from changes in the spread between cash prices and prices of futures contracts, usually referred to as changes in basis, are not offset by the normal hedging procedure; and they may be responsible for substantial losses on the part of elevators, shippers, exporters, and millers, who may hedge invariably, but who fail to anticipate correctly the changes in basis. Then in evaluating the usefulness of futures contracts as hedges against losses from changes in cash prices, it is important to learn how the risks from changes in cash prices compare with the risks from changes in basis.

* * *

Data for the 17 years 1924–25 to 1940–41, show that changes in cash prices at Chicago over 8-week periods averaged 8.8 cents per bushel for wheat, 7.3 cents for corn, and 3.9 cents for oats, whereas the corresponding changes in basis calculated from near-month Chicago futures contracts averaged 3.2, 4.1, and 2.0 cents per bushel, respectively. Changes in basis averaged about 36 per cent for wheat, 56 per cent for corn, and 51 per cent for oats, of the corresponding changes in cash prices.

> One might expect prices of grain and other storables to be lowest at harvesttime and to rise enough during the following year to cover storage costs. Futures prices might be expected to exceed spot prices by a corresponding amount, but actually the reverse situation, an *inverted market,* is quite common. Several British writers have proposed theories to explain this phenomenon. Holbrook Working has brought forward an interesting theory.—*Ed.*

3.5.11 Working, Holbrook. "Theory of the Inverse Carrying Charge in Future Markets," *Jour. Farm Econ.*, Vol. XXX, No. 1, Feb., 1948. Pp. 8, 19–21.

Keynes' explanation of "normal" inverse carrying charges, commonly referred to as his "theory of normal backwardation," ran as follows:

If supply and demand are balanced, the spot price must exceed the forward price by the amount which the producer is ready to sacrifice in order to "hedge" himself, i.e. to avoid the risk of price fluctuations during his production period. Thus in normal conditions the spot price exceeds the forward price, i.e. there is backwardation. In other words, the normal supply

price on the spot includes remuneration for the risk of price fluctuation during the period of production, whilst the forward price excludes this. The statistics of organized markets show that 10 per cent per annum is a modest estimate of the amount of this backwardation in the case of seasonal crops which have a production period approaching a year in length and are exposed to all the chances of the weather. In less organized markets the cost is much higher. . . .

* * *

There is nothing obvious in the behavior of market carrying charges to indicate that they take on a different character when they shift from positive to negative or from negative to positive. Market transactions that are directly related to the carrying charge — purchase and storage of the commodity against sales in the futures markets — tend to be on a large scale when the carrying charge is positive and large, and on a smaller scale when the carrying charge is negative and large, but the transition between these extremes is a continuous one; no sharp change in hedging practice occurs when the carrying charge changes sign.

Carrying charges behave like prices of storage as regards their relation to the quantity of stocks held in storage. Graphically represented, the relation should be that of a supply curve, showing small amounts of storage service rendered when the price of storage is low, and increasing amounts as the price of storage advances. The general form of the curves seems to be like that in Chart 2.

Statistical analysis, treating carrying charge as a price, has shown such relationships to exist, and to be capable in some instances of fairly precise statistical determination. Correlations between stocks and carrying charge tend to be highest for relationships involving carrying charges that often take on large negative values, like that for wheat between May and July in the Chicago market. Clearly, therefore, the supply-curve relationship between amount of storage and price of storage does not break down when the "price" becomes negative.

The statistical results indicate also that the market carrying charge, viewed as a price of storage, is broadly representative. The correlations with the carrying charge in the Chicago market are higher for statistics of all stocks of wheat in the United States than for statistics covering only stocks likely to be hedged, or covering only stocks likely to be hedged in the Chicago

market. Carrying charges recorded in the Liverpool wheat market show similar evidence of representativeness.

The treatment of inverse carrying charges as prices of storage raises some problems of theory. First is a difficulty arising from the logical presumption that no substantial volume of stocks will be carried without assurance or expectation of at least a small return for carrying it. The presumption is not open to question, but it does not necessarily require that the price of storage be positive. For example, people "store" rented works of art in their homes, paying for the privilege. Storage of goods

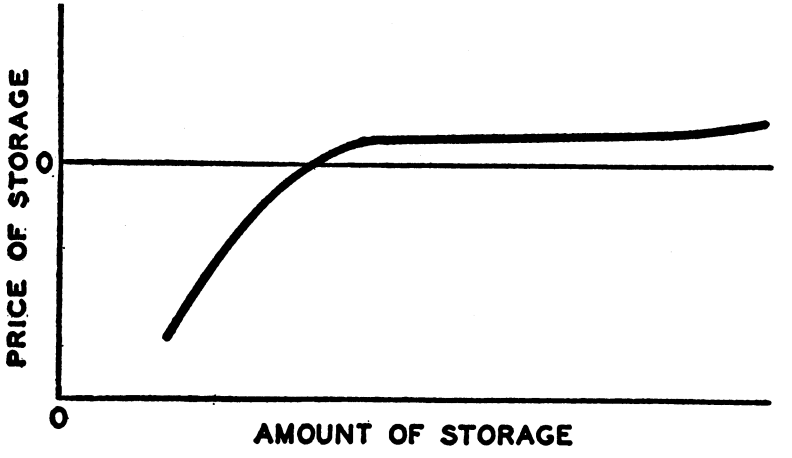

Chart 2. Typical storage supply curve.

without direct remuneration and without expectation of price appreciation is to be observed in every retail store. A merchant might adopt the practice of buying today only what he could be sure of selling before tomorrow, or before the next delivery day, but if he did so he would be unlikely to remain long in business; he must carry stocks beyond known immediate needs and take his return in general customer satisfaction. Merchants who deal in goods that are subject to whims of fashion, or to sudden obsolescence for other reasons, must lay in stocks and carry them in expectation that some part of the stocks will have to be sold at a heavy loss.

These observations illustrate a fact which Nicholas Kaldor has expressed in general terms by saying that "stocks of all goods possess a yield . . . and this yield which is a compensation to the

holder of stocks, must be deducted from carrying costs proper in calculating net carrying cost. The latter can, therefore, be negative or positive."

There have been many arguments about the effect of futures trading upon the prices received by farmers and the prices paid by consumers. This is a difficult subject at best. It is easy to express opinions, to theorize in either direction, or to generalize from extreme examples. But it is not easy to prove conclusively that futures trading either raises or lowers the price of cotton or wheat significantly.

The excerpts that follow express some extreme and some intermediate points of view on both sides of the issue.— *Ed.*

3.5.12 Huebner, S. S. "The Insurance Service of Commodity Exchanges," *Annals, Am. Acad. of Pol. and Soc. Sci.*, Vol. 155, May, 1931. Pp. 1–2, 3–4, 5, 6.

Availability of a Continuous Market: Because of the presence of a large group of speculators, many of them always ready to buy or sell at any particular time, our leading commodity exchanges furnish a continuous market to producers, distributors, creditors, and ultimate buyers. Such a market may be defined as one which enables buyers or sellers to obtain or to dispose of the commodity, even in large quantities, at any time during business hours, and at a price varying but slightly from the last previous quotation. Under normal conditions (and panic conditions are comparatively rare), the daily price range on commodity exchanges is surprisingly small, and all interests in the market may count upon either obtaining or disposing of the commodity at a very small sacrifice as compared with the last recorded quotation.

Because of the existence of such a continuous market, the commodity is given the quality of liquidity. . . .

Moreover, because of the two-sided nature of all organized exchange markets — the "bull" or "long" and the "bear" or "short" sides — there is assurance of a much greater degree of stabilization of prices than would be the case if these two contending speculative forces were absent. . . .

* * *

. . . the owner of $50,000 worth of cotton goes to the speculative exchange market (the insurance institution which is made possible through the existence of four necessary factors: namely, a large body of speculators, a continuous market, a future contract, and short selling) to hedge that value against loss through

a price decline, with a short sale for the same amount. Thereafter he is financially secure, just like the owner of a life value or of a building, since any shrinkage in the value of the cotton is offset by the gain derived from the short sale, which serves the same purpose as an insurance policy.

* * *

Being reasonably assured of their regular trade profit, middlemen are in position to operate on the basis of a smaller margin of profit per unit of commodity than would be possible in the absence of insurance against speculative loss, with the result that the difference between the price received by the producer and that paid by the consumer is materially reduced.

* * *

Prompt and Efficient Financing: Because of the existence of a continuous market and the practice of hedging, our commodity exchanges afford the service of insurance for creditors. Enormous amounts of credit are necessary to the movement of the nation's basic commodities through the various stages from producer to consumer. Bankers are willing to enlarge greatly the volume of credit on commodities dealt in on exchanges (i.e., they are willing to accept a much smaller margin as between market value and size of loan), since they know that the collateral can be sold on a moment's notice in a continuous market which fluctuates but slightly in the course of an hour or a day.

. . . They can afford to be much more liberal by way of volume of credit and interest rates charged with firms who are known to insure their holdings regularly against price declines. . . .

* * *

. . . Uninformed buyers, or those in the trade unable to acquire information regularly from the widely scattered sources, are therefore protected in their purchases or sales of future contracts by a large group of experts whose interpretation of news into current prices furnishes a degree of accuracy much greater than would be the case under a nonexchange system.

* * *

Continuous Price Registration: Without organized exchanges, the individual purchaser or manufacturer would be unable to ascertain the fair price of the commodity. . . .

The Arbitraging Service: With respect to distribution and price, commodity markets are vitally concerned with the just determination of differentials between localities, monthly de-

livery periods, different grades of the commodity, and in some instances (as for example various kinds of grain) different kinds of products of an analogous nature so far as substitution for similar consumption purposes is concerned. . . .

* * *

. . . One of the outstanding services of exchanges is the maintenance of just and equitable principles of trade. . . .

Exchanges represent the organized competitive system as contrasted with the monopolistic. Open cutthroat competition is impossible in large markets, and we must choose between organized competition and monopoly. It would be well for critics of exchanges to understand this. Put an end to our grain, cotton, and other organized exchange markets, and it would inevitably follow that the marketing of the commodity under consideration would soon be under the auspices of some monopolistic system. The risk element would be the principal motivating force, since capital is always unwilling to assume avoidable risk. Monopolies have their method of protecting capital against the hazard of price fluctuations, just as competitive exchange markets have theirs. It is necessary to choose between "risk bearing" and "risk elimination" under a system of centralized ownership of the machinery of marketing, and risk bearing and risk elimination under an organized competitive system which controls the problem for its component competing interests through the various practices discussed in this paper.

3.5.13 Consumers' Union. "What's Wrong With Speculation?" *Consumer Reports*, Vol. 13, No. 3, March, 1948. Pp. 128–31.

Even to consumers inured to unstable prices in an unstable world, the variations in the prices of foodstuffs and textile fibers traded on the major futures exchanges come as a shock. Here are some examples:

Commodity	*1932 Low*	*1947 High*	*Range* (Percentage)
Wheat, per bushel	$0.44	$3.38	767
Corn, per bushel	0.22	2.88	1309
Oats, per bushel	0.15	1.48	986
Rye, per bushel	0.30	4.08	1360
Cotton, per pound	0.05	0.40	800

If other prices had varied since 1932 with the price of corn and rye futures, we would be paying today some $8000 for a *Ford,* and 66 cents for a nickel *Hershey* bar.

* * *

. . . Futures speculation exaggerates price swings. . . .

In addition, futures speculation makes possible price "rigging" in a variety of forms. . . .

1. *Price Toboggans.* . . . Can it be that such disastrous plummetings of price are the result of natural causes? CEA investigations indicate that such is not the case. For example, the official report on the decline of grain prices in the summer of 1933, "the most sensational collapse in futures prices in the history of the Chicago Board of Trade," states: "It was found that the debacle resulted largely from the activities of not more than ten traders, who controlled 15 large speculative accounts . . ."

* * *

It is true that exchange regulations now limit the amount by which prices may fluctuate in a single day; but this merely means that a catastrophic fall in prices will take a few days longer. It is also true that federal regulations now limit the amount of futures which can be held by any one speculator. But speculators can get around this regulation either by placing the accounts in various names, or by acquiring actual commodities as well as futures. Moreover, the same effects achieved in 1933 by eleven large speculators can now be accomplished by the large number of small speculators attracted to the commodity markets since World War II.

2. *Price Inflations*: Equally significant is the liability of futures markets to fantastic price increases.

Traditionally, these extreme increases have been associated with the activities of very large speculators. Thus the July 1931 corner in corn, which drove prices up substantially, was found to have been the work of one speculator, Thomas M. Howell. Howell purchased Chicago corn and corn futures in such quantity that by the end of July he held 85% of all the July corn futures contracts, and in addition owned 100% of all the actual corn deliverable on those contracts. Similarly in 1937, the corner in September corn was found to have been engineered by one grain firm, the world's largest, Cargill, Inc., which purchased some nine million bushels of corn futures as well as all the available cash corn which might otherwise have been used by "shorts" in settlement of their futures contracts. . . .

The 1947 rise in commodity prices, so far as is known, did not result from similar activities on the part of one or a few tremendous speculators. Rather, it was a very large number of comparatively small traders — some of whose names have been

featured in the newspapers — whose speculative purchases, added to the high domestic demand and large exports, helped to force most commodity prices to all-time record levels.

* * *

Attracted in part by word-of-mouth stories of "killings" made overnight by other commodity speculators, in part by low margin requirements as compared with high stock market margins, and in part by the promotion of brokerage firms seeking to make up in commodity commissions the volume of business lost through the decline in stock market trading, commodity futures were bought by small traders who had never done so before. Their speculative purchases, piled on top of a booming domestic demand and government purchases for export, zoomed commodity prices to all-time highs.

* * *

In the light of the actual record of futures price fluctuations, from day to day, from year to year, and from boom to depression, the frequent claim that speculation "smooths out prices" or "stabilizes the market" seems obviously unfounded. It is unreasonable to believe that without speculation rye would have fallen even lower than 30 cents a bushel in 1932 or have risen even higher than $4.08 in 1947. The most that can be said is that futures speculation *may* relieve the market somewhat of seasonal fluctuations, but at the price of making non-seasonal fluctuations even more severe.

Nor can much weight be given the other major defense offered for futures speculation, that it enables merchants to hedge their inventories against price changes. A much sounder way to prevent inventory losses would be to stabilize prices. Short shrift would be given an incendiary who alleged in defense of his arson that he also sold fire insurance; and a system which encourages price fluctuations should not be licensed on the ground that it protects some middlemen against the effects of those fluctuations.

3.5.14 Blau, Gerda. "Some Aspects of the Theory of Futures Trading," *Review of Econ. Studies*, Vol. XII (1) No. 31, 1944–45. Pp. 23, 24, 25–26.

IV. *Has Futures Trading a Stabilising Effect on Prices?*

The advantages of futures trading for different sections of an industry and for the economic system as a whole depend largely on the answers to the following two main questions:

(A) Does futures trading tend to diminish price fluctuations?

(B) Is futures trading an effective instrument for diminishing risks given the price fluctuations?

Clearly, the answer to question B will be the more relevant, the less positive the answer to question A; for, if speculative activity in the futures market were to succeed in minimising risks due to price fluctuations, the importance of getting rid of such risks by hedging would be greatly diminished. . . .

The traditional theory of speculation maintains that professional speculation tends to even out price fluctuations by making "prices advance (or decline) now in anticipation of a later change checking (or stimulating) current consumption with the result that prices later would not need to rise (or fall) to the extent they otherwise would."

It has been pointed out by Keynes, however, that the price steadying effect of speculation cannot be assumed if the market organisation is such as to induce professional speculators to use their superior judgment for forecasting the reactions of other speculators rather than the trend of non-speculative forces in the market. In discussing these possibilities of de-stabilising speculation in the "General Theory," Keynes says, "We have reached the third degree (in the share market) where we devote our intelligence to anticipating what average opinion expects average opinion to be."

* * *

Given an efficient Exchange organisation which can minimise the dangers of corners, squeezes and various other forms of manipulation away from the non-speculative trend, there is reason to assume that the high degree of perfection and market transparence developed by a properly functioning produce exchange will bring forward a certain amount of sound speculation which, to a limited degree, will exercise the steadying influence attributed to it by the classical theory; i.e., due to the discounting of future price changes, the extreme high and low points will be narrowed and reached by easier stages even though the frequency of minor oscillations may be increased.

At the same time, the assumption of a very strong price-stabilising effect of speculation in the futures market is not only not confirmed by statistical evidence but even theoretically impossible; for if this effect were so strong as to lead to a considerable evening out of fluctuations, the inducement to speculate

by transacting in the futures market would be diminished and the falling off in the volume of trading would again diminish the steadying influence on prices. Comparisons of variations in the volume of trading and of the degree of price variability in futures markets reveal a distinct correlation between these two factors. Nor is it surprising that this should be so because expectations of strong price fluctuations are the very motive of all futures trading. Hence there can at best be an "Equilibrium Degree of Price Variability" which induces an amount of speculation the stabilising effect of which is not so marked as to lead to a falling off in the volume of transactions.

The conclusion that the price steadying influence of futures trading is necessarily limited, enhances the importance of the other function of futures trading — i.e. the offering of facilities for getting rid of risks given the price fluctuations.

3.5.15 Emery, Henry Crosby. "Speculation on the Stock and Produce Exchanges of the United States," *Studies in History, Economics, and Public Law*, Vol. VII, No. 2, Columbia Univ., New York, 1896. Pp. 176, 190–91.

It may be said that, if big manipulations are seldom successful, there is a countless succession of small movements up or down due solely to speculative conditions. This is true enough. In a sense all speculation is manipulation. There is always more or less effort to affect prices by purchases or sales, but the equilibrium of all these forces registers the opinion of the market as a whole.

* * *

More than this, the speculation of the big operators depends upon the speculation of the public. Those hopes for reform are chimerical which look to a system in which only large speculators, of wide experience and knowledge, shall carefully investigate all price-determining factors, and fight out the battle of prices among themselves, while the public refrains from speculation altogether. Such a condition of things is highly desirable, but the big speculators are not prepared to maintain a market of this nature. If it be said that the price-making benefits of speculation come, not from the number of outsiders, but from the activity of those best qualified for speculation, it may be answered that the activity of this latter class depends upon the participation of the former. Furthermore, the opportunity of the trader and the manufacturer for advantageous hedging is greatly curtailed in a narrow market. Profitable trade depends largely upon active speculation. Indeed, the opinion is ex-

pressed among grain merchants that their difficulties in recent years have been partly due to the absence of the public from the market; that for their purposes, there has been not too much but too little speculation.

3.5.16 Schultz, Theodore W. "Spot and Future Prices as Production Guides," *Amer. Econ. Review*, Vol. XXXIX, No. 3, May, 1949. Pp. 146–49.

The facts appear to be that over the years the prices of the more perishable farm products in general fluctuated less than have the prices of the more durable farm products. There is a strong presumption in favor of the view that the storability of a product in many instances has been a major source of price variability and of the resulting price uncertainty under discussion. The second observation pertains to the meaningfulness of a future price compared to a spot price to farmers in making their forward production plans. Purely as an indicator, the future price would not differ from the spot price except when there were insufficient stocks to maintain the usual linkage between spot and future prices.

We turn now to a second type of situation in examining the price effects of stocks. If the underlying conditions with respect to the distant future were essentially inconsistent with stability, it can be demonstrated that stocks will increase rather than reduce the fluctuations of farm prices. When circumstances are such that those who deal in farm products are motivated into becoming sellers as a consequence of falling prices and conversely as a result of rising prices, the storability of a product acts as a cause contributing to price variations. Again, for purposes of illustration, let us take a perishable and a durable farm product with the same elasticities against price and income and with the same production and (normal) consumption variations. Let us suppose that rising prices have induced dealers to become predominately buyers. In the case of a perishable product, like fluid milk, it is not possible to withhold stocks from the market by accumulating them; and accordingly, the supply variations inherent in the technical conditions of producing milk continue to determine the supply of milk made available. It cannot be disturbed by the actions of individuals and firms who want to increase their long position in commodities. Therefore only the variations in demands for current consumption can be altered. Compare these price effects of stocks with those of a durable product like cotton. The supply of cotton is easily dis-

turbed because buyers can readily accumulate stocks and thus withhold a part of the crop from cotton mills and from consumers.

This set of conditions and the consequences that they indicate in terms of price variations would support our guiding hypothesis. Given these conditions, it follows that markets for the more durable farm products are subject to more price variation than are the less durable products. Since future price contracts are available only for the more durable products, we would expect to find these products to be among those showing the larger variations and thus transmitting more price uncertainty to farmers as a result. Here, too, several observations may be made.

First, there are convincing reasons for believing that the reoccurring circumstances that give rise to the kind of price motivations that characterize the second of these two types of situations are very comprehensive and general in their scope. They pervade the economic climate of the whole economy; they are not specific to agriculture or to any other major sector of the economy. They obviously are not more specific to some farm products than to others. What we observe is simply that the durable farm products are much more vulnerable to this over-all shifting of positions than are the perishable products.

A second remark pertains to the fact that, as our economy has developed, the opportunities open to individuals and firms for going long or short, with a view of "hedging" on short notice against a marked change in the value of money, have been progressively reduced. As this has occurred, it seems reasonable to suppose that those markets which still afford this opportunity have been put under additional strain. This is an aspect of the oft-repeated observation that inflexibility at one point forces more variations at those points where flexibility continues to exist. The inference is that the commodity exchanges may well have become burdened by some of this additional buying and selling motivated by conditions far removed from the specific supply and demand circumstances of the product per se.

It may be useful in closing to compare the position of the future price to that of the spot price to farmers. These inferences may be drawn from the argument advanced in this paper.

The spot price dominates the pricing of farm products. The future price is of minor importance, simply because it does not

exist for most farm products. The output of agriculture in the United States consists predominantly of perishable products, and these do not have future price quotations.

For those farm products for which future prices are available the spot price is fully as reliable as a guide for production as is the future price because the future price and the spot price are not independent of each other; instead, they are highly integrated and therefore reflect the same market forces, with the one exception when current stocks are insufficient to provide the linkage that normally exists between spot and future transactions.

In the case of the exception noted above, the future price could be a better guide than the spot price for farmers in making their production plans. This suggests that if future transactions were developed for perishable farm products covering a time span sufficiently long to preclude the carrying forward of stocks, the future price under these circumstances would of necessity be essentially independent from the spot price. A development of farm product markets in this direction, it appears, could make the future price decidedly more meaningful to farmers in making production plans.

There remains, however, the disturbances that affect farm prices adversely that originate out of the instability of the economy as a whole. These disturbances can and do express themselves more fully in markets with future prices than in markets with spot prices.

Big operators may often follow policies quite different from those of the little fellow. These differences in trading policies may have important effects on the market as indicated in the two excerpts which follow.—*Ed.*

3.5.17 Irwin, H. S. "Seasonal Cycles in Aggregates of Wheat-Futures Contracts," *Jour. Pol. Econ.*, Vol. LXIII, No. 1, Feb., 1935. P. 49.

All the indications of the data, however, are definitely opposed to the notion, which has been entertained in many quarters, that the large professional operators commonly take the other side of the hedges and furnish support to the price level at the time of the heaviest marketings of wheat. On the contrary, it is apparent that it is mainly the small traders from the country districts who support the market at this time and who help to carry the commercial stocks of wheat forward from the time of harvest until they are required by consumers. A substantial proportion of this support is furnished by farmers.

In this connection it should be borne in mind that the support afforded to prices by farmers through the futures market is in addition to the substantial degree of influence which is exerted upon wheat prices by farmers through the proportion of the surplus which is not marketed immediately after harvest and through the rate at which the remaining surplus is released during the remainder of the crop year. Approximately half of the wheat marketed is still in farmers' hands at the end of September on the average, according to the figures on monthly marketings compiled by the United States Department of Agriculture, and about 30 per cent remains to be marketed after the visible supply of wheat begins to decrease. Obviously both the surplus which is withheld from market for a time and the rate at which it is marketed have a considerable bearing upon the extent of the services which market intermediaries render in the movement of the wheat to the consumer.

Now it is apparent that farmers, perhaps largely those who sell their surplus at once, also furnish support to the level of wheat prices through the futures market during the period of heavy marketings. The question of how wisely this support is handled is outside the scope of the present paper; but it is evident that farmers have assumed a greater responsibility in this matter than has been generally recognized.

3.5.18 Stewart, Blair. "An Analysis of Speculative Trading in Grain Futures," *U. S. Dept. Agr. Tech. Bull. No. 1001*, Oct., 1949. Pp. 129–31.

This study is concerned primarily with the trading behavior of small speculators in grain futures, and the results of their trading. Statistics were analyzed on the futures operations of nearly 9,000 traders, extending over a 9-year period (1924-32) and involving more than 400,000 individual futures transactions. . . .

The first obvious conclusion from the analysis is that the great majority of small speculators lost money in the grain futures market. There were 6,598 speculators in the sample with net losses, compared with 2,184 with net profits, or three times as many loss traders as profit traders. Net losses of speculators were approximately six times net profits, or nearly $12,000,000 of losses, compared with about $2,000,000 of profits. Speculative traders in the sample lost money in each of the four grains traded — wheat, corn, oats, and rye.

Primarily responsible for the high ratio of losses was the small speculator's characteristic hesitation in closing out loss positions.

An often-quoted maxim for speculative trading is "Cut your losses and let your profits run." Contrary to this advice, speculators in the sample showed a clear tendency to cut their profits and let their losses run. . . .

* * *

The study confirms the commonly held impression that the amateur speculator is more likely to be long than short in the futures market. About half of the speculators in wheat and corn had positions only on one side of the market, and of this group, those on the long side only greatly exceeded the number with short positions only. However, the one-side-only traders did only a minor proportion of the total trading. . . .

Analysis of the data shows that a great majority of speculators in the sample had relatively small profits and losses. The profits of 84 per cent of the profit traders were less than $1,000 each, and the profits of 39 per cent less than $100 each. The losses of 68 per cent of the loss traders were less than $1,000 each, and 16 per cent had losses of less than $100 each. Obviously, a very large percentage of the traders in the sample operated on a small scale, and many of them discontinued trading before realizing large profits or suffering large losses.

* * *

The representation of large-scale traders in the sample was not broad enough to warrant positive conclusions as to the success of large speculators in grain futures, as compared with the profits and losses of small traders. There was no evidence, however, that the largest size classes included a higher proportion of successful traders than the groups with smaller average positions. Generally speaking, the large and small traders alike were unsuccessful in their trading.

Among all the major occupational groups losses from speculative trading in grain futures greatly exceeded profits. Among managers of business concerns, for example, there were 840 profit traders, compared with 2,563 loss traders. The aggregate profits of this occupational group amounted to $1,076,300, against losses of $6,210,200. Persons with occupations "unknown" had the greatest proportion of profit traders — 32.3 per cent. Farmers had the lowest proportion of profit traders — 21.2 per cent. "Retired" persons made up the only group having a better-than-average proportion of profit traders in each of the four grains covered by the survey.

From the standpoint of aggregate profits and losses for occupational groups, managers in the grain business were somewhat more successful in speculative trading than other groups. But even with this class aggregate profits in dollars were only 28 per cent of aggregate losses. Semiprofessional workers showed the lowest profit ratio in aggregate dollar amount — 11 per cent. The profit ratio for farmers on this basis was 13 per cent. In general, the chances for success in grain futures trading did not differ greatly from one occupation to another. Special knowledge of the commodity traded seemed to have little effect on the outcome of speculative trading during the period studied.

* * *

The tendency of longs to buy on price declines and for shorts to sell on price rises indicates that traders in the sample were predominantly price-level traders. Longs tended to buy when prices fell below levels which they considered proper, and shorts sold when prices advanced above levels which they believed justified. The inclination to trade according to predetermined price opinions apparently was not disturbed by the long period of declining prices from 1929 to 1932. However perverse it may seem, this period of declining prices stimulated speculative buying by small speculators, although the activity of short sellers was dampened slightly.

It has not been possible in this study to explore all the aspects of speculative trading on grain futures markets, nor to answer all the questions which have been raised. A final comment should be made involving a most important question. As already indicated, the losses of traders in the sample were much greater than their profits. If these results are representative of trading by small speculators generally, there must be other groups — large speculators, scalpers, spreaders, or hedgers — which make very large profits.

There is no known empirical study, however, which reveals other groups of traders with net profits sufficient to balance such large losses as those suffered by small speculators in the sample. Yet the nature of futures trading is such that all losses are balanced by profits. This raises the most important question left unanswered by this study. Was the sample in this respect not typical of small speculative traders? There is no apparent reason for pronounced bias in the direction of losses. If the sample is representative, is there another group of traders who consistently

make profits large enough to balance the losses of small speculators? There is no convincing evidence that such large profits are made by any class of traders. These are questions which can be answered only by further studies of the results of futures trading.

The reader should by now have become impressed with the complexity of the subject of futures trading and with the failure, despite the availability of data and the variety of analyses that have been made, to settle the main controversies. The arguments have remained arguments, convincing to their proponents but not strongly enough founded to overwhelm the opposition.

Such a situation suggests the need for a broader approach to the problem. Perhaps the attempt to explain futures trading as a device for shifting specific risks between hedgers and speculators, and the concentration upon details of specific price movements and interrelationships, have made us lose sight of the broader role of contracts for future delivery as an integral part of the whole network of transactions through which present-day specialized business is carried on. For example, futures trading and, in fact, the very existence of the highly liquid markets for such trading have important implications for the financing of working-capital requirements of marketing enterprises. The whole subject of finance in agricultural marketing seems to have been largely taken for granted by economists without adequate analysis of the types of financing arrangements commonly used and their comparative advantages and disadvantages for marketing operations. No work has been done in this field that compares with the intensive study of problems of farm finance.

The literature that we have examined does not develop the broader approach that seems to be needed for an adequate understanding of futures trading. In closing this subsection, however, we reproduce some paragraphs from a paper by H. S. Irwin that suggest some aspects of the subject that might well be explored. He proposes the study of "middlemen's accumulations," through which supplies from the period of seasonally heavy production are carried forward through the year. His comments point to the role of futures trading in connection with the financing of large-volume holdings, and to the alternative roles of futures trading and vertical integration as means of relieving the burden of concentration of such holdings. They lead our discussion back both to the general role of ownership discussed at the beginning of this subsection and to the discussion of timing of marketing in Subsection 3.3.—*Ed.*

3.5.19 Irwin, H. S. "Middlemen's Accumulations and Expectations in Marketing Farm Products," *Jour. Farm Econ.*, Vol. XXIX, No. 4, Pt. 1, Nov., 1947. Pp. 854, 856, 857, 858, 864.

Further, the capital required in the accumulation of farm

products competes sharply with that engaged in the current handling of those products. That required in current operations commonly reaches its peak during the period of heavy farm marketings which is also the time when accumulations are undertaken. A concern having only sufficient capital for the peak of current operations is not in a position to accumulate stocks.

* * *

Time contracts were employed extensively in grain marketing at Chicago and in cotton marketing in New York as early as the 1850's. They had been employed in the purchase of hogs in the vicinity of Cincinnati before 1850. In grain at Chicago the first instances found resulted from the tremendous increase in the accumulations of corn by corn dealers along the Illinois and Michigan Canal and the Illinois River which followed the opening of that canal. Much ear corn was hauled to dealers' cribs in the winter when the roads were not bottomless at least, but for fear of damage in shipment much of it had to be held until the late spring or summer before shelling and shipment. Evidently the resources of the dealers were strained to the utmost in providing additional facilities and in holding the rapidly increasing amounts of corn. Time contracts provided one means of relief from the concentration of accumulations. Such contracts also came to be employed in wheat, in part because the wheat which accumulated there after the close of lake navigation in the fall had to be held until the spring.

* * *

. . . The development of hedging permits a material increase in the concentration of commercial speculation in the commodities hedged. At the same time it favors increased competition in carrying stocks forward because it reduces the importance of large financial resources in this function and thus allows efficient merchandisers to compete more vigorously.[1]

Vertical integration also relieves the concentration of middlemen's accumulations although in a different way. It commonly combines functions featured by a high degree of accumulations with other functions having smaller accumulations and, in effect, spreads the risks of the accumulations proportionately over all the functions included in the corporation. Tobacco is conspicu-

[1] The attempted explanation of the advantages of hedging on the basis of "transfer of risks to specialists" which are contained in a number of texts on marketing and economics are shown to be invalid by the studies of the Commodity Exchange Administration. On the whole, the other side of the hedges is taken by numerous small traders drawn from a wide variety of occupations. . . .

ous among the farm products marketed principally through vertically integrated concerns; livestock products, cheese, and canned milk are prominent among the other products.

Obviously, the relief afforded from burdensome concentration of accumulations by vertical integration depends upon the extent to which low concentration functions are combined with those featured by a high degree of concentration. In cigarettes nearly all the marketing functions are performed by the vertically integrated concerns, from the purchase of the tobacco from the farmers at auctions to the sale of cartons of cigarettes to retailers through wholesalers whose activities are supervised. In livestock products the marketing services rendered by the leading meat packers extend from the purchase of animals at stockyards or even at country concentration points to the sale and delivery of meat to retailers.

* * *

One or the other of the ways of dealing with the concentration of middlemen's accumulations — organized or unorganized futures trading or vertical integration — features the marketing of nearly all farm products. Both are found in some commodity markets. For example, in canned fruits and vegetables forward (futures) contracts are employed by independent canners while other portions of the canning field are occupied by vertically integrated concerns. In lard and provisions which are produced by vertically integrated concerns there was organized trading on a limited scale up to World War II. There is some reason to believe, however, that successful vertical integration tends to displace organized trading in commodity futures.

* * *

With respect to organized trading in commodity futures, the analysis of middlemen's accumulations opens the way to positive as well as negative methods of improvement. Formerly the study of this trading has looked mainly to improvement through bringing undesirable practices under control; further research should strive also to ascertain how the forces of this trading may be geared most effectively to efficient marketing of the products traded.