FUTURES MARKETS - AN ALTERNATIVE MARKETING PROGRAM FOR THE TART CHERRY INDUSTRY

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ABSTRACT

FUTURES MARKETS - AN ALTERNATIVE MARKETING PROGRAM FOR THE TART CHERRY INDUSTRY

By Douglas Darwin Hedley

The overall purpose of this study is to examine the feasibility of establishing a futures market in red tart cherries.

To achieve this end, some of the necessary conditions for the operation of a futures market were outlined, providing some of the criteria for judging a commodity acceptable to futures trading.

A contract was specified for trading in processed red tart cherries. The contract called for delivery of 30,000 pounds of U.S. Grade A or U.S. Fancy frozen red tart cherries in 30 pounds (net) tins in the months of September, December, March, and June, at Grand Rapids, Michigan, or alternatively at Rochester, New York, and Green Bay, Wisconsin, with price specified in 0.025 cents per pound of product.

On the assumption that the suggested market would be viable, the effects of futures trading in processed red tart cherries on the industry were considered.

The reduction of risk within the market is created as

a result of the increase in certainty concerning prices, stock movements, crop estimates and the like. Further, this reduction uncertainty stems from the processors', growers', and merchandisers' ability to shift at least part of the risk to those willing to assume it. The result of reducing risk of adverse price movements leads to narrower price spreads from pack time to successive months as the additional return to risk would no longer be required.

Demand and long run supply response at the farm level were estimated to ascertain the effect of a one cent reduction in marketing margins. Based on the regressions, a one cent reduction in marketing margins results in a 0.6 cent rise in grower prices, and 0.4 cent decline in processed prices. This 0.6 cent increase in grower price is probably an upper limit on the increase in farm price, since processors will probably absorb some of this 0.6 cents to offset losses in packing tart cherries.

Even though hedging is not a perfect method of escaping loss from price fluctuations, it does provide some mechanism by which producers, processors, and merchandisers may offset, at least in part, some of the risk of price fluctuations.

As futures markets provide information few other parts of the marketing system can provide, and a method of hedging,

it is possible that more economic units are willing to trade in a commodity unless assured of a uniform supply of quality product. In this manner, demand for processed red tart cherries may increase.

The cost of transactions to users of the market would probably range from $36.00 to $42.00 for a round-turn commission to nonmembers.

The cost of providing trading pits and contingent services will be borne by the exchange and the payment of commissions will be in return for these services provided. The cost to the industry will be the time and effort expended to sell the idea of a futures market to the industry.

The feasibility conclusions have been categorized into two groups--economic and attitudinal feasibility. Those economic factors found to be a hindrance to establishing a futures market are:

(1) insufficient demand for the contract by the industry,

(2) insufficient potential long hedging in the market, possibly resulting in an easily cornered market,

(3) grower disinterest in hedging.

Attitudinally, it is felt that the market is sufficiently feasible to permit trading in processed red tart

cherries on an exchange, provided enough education of growers, processors, and merchandisers is carried out to interest these groups in the economics of hedging.

Some recommendations to the industry were suggested, the prime one being that the industry leaders should get together to decide the road the industry should take in the years ahead.

FUTURES MARKETS - AN ALTERNATIVE MARKETING PROGRAM FOR THE TART CHERRY INDUSTRY

By

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Douglas D. Hedley

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The Problem Setting

Efforts must continually be made to organize, to develop, and to improve the institutions established to deal with the production and distribution of goods.

The evolution of the marketing place has gone on over man's entire lifetime. This organization and development can be divided into "five distinct stages:

(1) systems of gift giving

(2) barter

(3) spot markets

(4) contract markets (for specific delivery)

(5) futures markets."[1]

The first two stages began simultaneously with the growth of interdependence of man with others in the society. The first was a distributional device, while the second was the beginning of a market place, with goods being exchanged or paid for in kind. Spot markets grew hand in hand with acceptable currencies, as this stage is dependent upon the

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[1]H. H. Bakken, Futures Trading Seminar, Volume I, Mimir Publishers Inc., Madison, Wisconsin, 1960, p. 4.

use of currency in the economy. Although beginning early in history, man has tried to organize, to centralize, and to systematize spot markets toward more efficient and workable institutions. The medieval fairs, customs unions, national trade alliances based on economic necessity or colonization, and presently free trade areas including several nations, demonstrate the growth in development and organization of the production and distribution machinery.

However, as these markets became centralized and the distance between production areas and market centers grew, merchants found themselves subjected to the possibility of adverse price fluctuations while their goods were in shipment. Similarly, producers found that prices could move adversely for them during the production period for their goods. The spot markets then, failed to provide the appeal to merchants or producers to take on the risks incurred by being forced to sell products in a spot market removed from them in time and distance.

Out of this problem arose the contract markets which dealt in commodities for future purchase or sale at a specific time, place, and price, and usually between only two parties. Hence, the two parties entered a binding contract for a cash transaction at some time in the future to gain the advantage of risk avoidance.

Concomitant with risk avoidance is the necessity of risk capital which must be injected into the marketing system for the existence of this stage. However, with each merchant lay the task of securing his own risk capital from someone willing to accept the uncertainties in the market place. No market for risk capital existed where the merchant, producer, or processor, could acquire the quantities of funds required for their business pursuits.

This contract market became a transitional stage between the spot markets and the present futures exchanges even though this transition took a great many years. In fact, the development of stage five came as a result of the willingness of government, or in the more usual case, lack of government intervention, to allow merchants to sell 'short' in the market place during their period of production or shipment. Ability to sell short enabled merchants to enter the market selling a contract for future delivery of a commodity to whoever wished to buy, but placed no obligation upon either party to hold the contract until maturity. The merchant could buy back his contract to deliver before the delivery period and close out his interest in the market place.

This 'right of substitution' gave either party

> the right to close out the deal to a third party. The right of substitution was a feature of convenience and necessity to uninterrupted trade. . . .Should either party find it expedient to change his mind and settle the difference by a cash settlement after a contract has been properly formed it will not invalidate the agreement. . . . As time went on it became more and more evident that dealings in futures contracts were primarily settled not by delivery of the physical product, but by cash differences as in the case where two hedgers' contracts either by design or accident offset each other.[1]

Further, this provided greater depth and latitude and continuity to the market as well as a central market for risk capital, while enabling producers and distributors to carry out their activities more freely than before.

Futures markets rose to prominence in the late 19th century in the United States, particularly in those commodities most subject to price fluctuation during a production or delivery period, and most readily adaptable to 'short' selling. Since that time futures exchanges have been improved and developed with vigor. Commodities less obviously adaptable than grains and metals have become a part of this market with, of course, varying degrees of success.

The commodities traded earlier on futures exchanges usually had some seasonal or yearly production cycle because

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[1] Ibid., p. 22.

of the nature of the production process, or were produced at a very great distance from central markets in the nation or the world. Agricultural commodities, to a great extent fit this description. The major agricultural crops are harvested over a few weeks of the year while supplies enter the market over the entire year.

The Cherry Industry

At present the tart cherry industry lies within two stages of marketing--the spot market and the contract market, on the assumption that bargaining associations can be considered a form of the latter stage.

Oldenstadt[1] has discussed the problem areas within the industry and they have remained essentially unchanged since his research was completed in 1964. Due to the unpredictable nature of the environment influencing tart cherry production, the very real problem exists of unintentional fluctuations in supply entering the market place each year. Concomitant with this is the variability of prices, farmers' net incomes, and the low level of demand in both domestic and international markets. This low level of demand stems from the hesitancy on the part of some

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[1]D. L. Oldenstadt, An Analysis of Alternative Marketing Programs for the Red Tart Cherry Industry, Unpublished Ph.D. thesis, Michigan State University, 1964, pages 1-10.

demand sectors to enter the market because of supply fluctuations. The uneven supply also accounts for the lack of interest in new cherry product development and processing technology research.[1]

Upon examination of alternative marketing programs, consideration must be given first to those programs within the existing marketing institutions. Oldenstadt[2] has examined several of these. In casting about for other alternatives, farther removed from the present marketing structure, the possibility of a futures market must be considered. If the tart cherry industry instituted a futures market what are the advantages it might enjoy and the limitations to which it might succumb?

The advantages claimed by the proponents of futures markets are the following.

(1) Futures markets are a risk shifting device for producers, processors, storage operators and merchandisers, circumventing some of the risk of vertical price fluctuation.

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[1]For more discussion of this, see R. Feltner et al., Great Lakes Tart Cherry Industry Users and Distributors, Ag. Econ. Report 59, October 1966, Department of Agricultural Economics, Michigan State University.

[2]Ibid., Chapters IV, V and VI.

(2) Hedging may result in lower marketing margins with possibly lower consumer prices, or higher farm prices, or both.

(3) More stability in prices over the season.[1]

(4) Hedged inventory could command more capital for stock carrying as credit institutions may lend more on hedged than on unhedged inventory.

(5) The supply of market information may be improved by having a central market with a publicly established price.

The opponents of a futures market in tart cherries claim the following disadvantages.

(1) Insufficient volume of trading may plague the market, leading to a thin and easily cornered market.

(2) The characteristics of the commodity may not be compatible with the traditionally held requirements for an acceptable commodity.

(3) Storage costs of the product may be too great to institute a carry over program which is believed to be required for the exchange to function.

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[1]For example see H. Working, "Price Effects of Futures Trading," Food Research Institute Studies, Vol. II, February 1961, pages 3-31.

(4) The contract may be too large to be of use to other than a few of the large national pie makers.

This study is an attempt to analyse futures markets as an alternative marketing program for the tart cherry industry. This entails providing the information, and an evaluation of this information concerning the economic and attitudinal feasibility of establishing a futures market in the red tart cherry industry.

Objectives

(1) To describe some of the major concepts of a futures market of interest to this study in an attempt to draw up some of the necessary conditions for a viable exchange.

(2) To suggest possible economic consequences upon cherry growers' net incomes, price and supply stability, and marketing margins that a futures market in red tart cherries may have.

(3) To analyse existing attitudes and opinions toward establishing a red tart cherry futures market at the producer, processor, and futures trader levels.

(4) To present an integration of the ideas brought forward in the study of both economic and

attitudinal aspects in an attempt to ultimately determine the feasibility of establishing a tart cherry futures market. This will take the form of conditions which must be met before inception of such a marketing plan, the extent to which they are presently met, and the possibilities of meeting the remainder in the future.

Procedure

The major concepts of futures markets described are the purposes of the exchange, the traders and their functions on the exchange, commodity acceptability, the spot-futures price relationships and the information supply provided by the exchange. Out of this will come some of the necessary conditions for a viable exchange which will be applied as criteria to the feasibility of a red tart cherry futures market.

A futures market in red tart cherries will be postulated using a contract specified on the assumption that it will be a viable futures market. Taking this proposed market as given, the advantages and limitations are discussed. The question then centers upon the validity of the assumption of an active and tractable exchange. Resolution of this question provides the answer to economic feasibility

of the proposed exchange.

To determine the attitudinal feasibility, data were drawn from three opinion surveys. Surveys of tart cherry growers and processors were conducted by the Department of Agricultural Economics, Michigan State University during the spring of 1966. Questions concerning attitude toward futures markets were a part of a much larger and more comprehensive survey. A survey of opinions of the Chicago Mercantile Exchange floor traders was conducted jointly by this author and another researcher in the Department of Agricultural Economics, Michigan State University. These surveys provide the data for the analysis of attitudinal feasibility of this marketing plan for tart cherries.

In summary, the over-all feasibility of a futures market for an alternative marketing program for tart cherries at the present time is presented. Conditions will be set up which must be met prior to inception of a futures market in tart cherries. The extent to which the tart cherry industry fulfills the conditions and the possibility of fulfilling the remainder in the future is discussed. The final section will be the implications of pursuing the road toward a future market, i.e. meeting the unfulfilled conditions and a recommendation on the course of action the industry should take.

CHAPTER II

The Concept of a Futures Market

To investigate futures markets as an alternative marketing program for a commodity, it would seem desirable to discuss some of the concepts fundamental to the operation of this marketing institution. The purpose of futures markets, what they hope to achieve, the traders and their effects on the exchange, the characteristics which a commodity should exhibit to be acceptable to futures trading, spot-futures price relationships, and finally the supply of information provided by the exchange, are the issues presented. Throughout this chapter an attempt is made to determine some of the necessary conditions, where it is appropriate, for the operation of a futures market.

Purpose of Futures Markets

In the preamble to the rules and regulations of the Board of Trade, City of Chicago, the objects of the organization of traders and brokers are explicitly stated.

> To maintain a commercial exchange; to promote uniformity in the customs and usages of merchants; to

> inculcate principles of justice and equity in trade; to acquire and disseminate valuable commercial and economic information; and generally to secure to its members the benefits of cooperation in the furtherance of their legitimate pursuits.[1]

Many academicians feel that the purpose of futures markets is best described as risk shifting. It allows the production and distribution parts of the marketing process to partially insulate themselves from vertical price fluctuations while inventories are stored or transported to terminal markets, or inventories used during the production period.

The Board of Trade defines what the exchange hopes to achieve, but fails to provide the purposes for which traders on the exchange participate in this type of market. The academicians, on the other hand, emphasize the risk shifting ability of the exchange while disregarding other activities facilitated by the exchange.

The speculators' purpose is to find a market in which to invest their capital for anticipated gain. Holbrook Working defines speculation as. . . ."the holding of a net

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[1]As reported in J. A. Schonberg's book The Grain Trade--How It Works, New York, Exposition Press, 1956, page 23.

long or net short position, for gain, and not as a normal incident to operating a producing, merchandising or processing business."[1]

This points out the difference then, between the hedger or risk-shifter and the speculator. The hedger holds a long position in the spot market and an equally short position in the futures market (or the reverse) relying upon corresponding movement of prices in the two markets to ensure no great loss or gain from vertical price fluctuations. The hedger then maintains a 'net zero' position in the cash and futures market together, while the speculator assumes a net long or net short position in the futures market depending upon anticipated price change for profit.

In addition to risk shifting, the market provides a central market place for buyers and sellers. Price determination, then, is a product of the exchange activities. The price determined by the futures market is the price per unit of the commodity expected to prevail at some time in the future under conditions specified by the standardized commodity contract as to location of delivery, grade, payment procedure and the like. However, a spot price is

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[1]H. Working, "Speculation on Hedging Markets," Food Research Institute Studies, 1960, page 187. Note, as Working does, that this excludes arbitrage.

determined also, usually quoted as over or under the futures price in some delivery month.

To obtain forehand knowledge of events likely to influence prices, the speculators, spreaders, and hedgers maintain information gathering and information evaluation machinery. Thus, this information flow provided by the exchange operations is another product of a futures market. The information brought to bear on the cash market for a commodity in which there is no futures trading usually is less than the supply of information influencing prices of a commodity which is traded on a futures market.

Traders on the Futures Exchange

Let us look more closely at the users of the commodity exchanges and why they use it, the benefits they receive from this course of action, and in turn, the additions the exchange receives from their use of it.

Hedgers

Hedgers are the traders who receive most attention from academicians and teachers are those termed 'hedgers.' A definition of them is difficult because it has been recognized that their purpose is not one entirely of risk avoidance. Traditionally hedgers have been thought of as those who hold a zero position in the market, offsetting

one risk incident to production, processing, and merchandising, with another risk. Empirical research dismembered this definition as being too narrow - as not including several kinds of hedgers. In recognition of this, H. Working has attempted to categorize hedgers into one of five groups.[1]

(1) Carrying Charge Hedging: This operation is "one that seeks profit from anticipated changes in price relations" between spot market and some future month's prices. This is not done in connection with normal business of production, processing, or merchandising but rather as a business itself of storing for profit.

(2) Operational Hedging: "entails the placing and lifting of hedges in such quick succession that expectable changes in the spot-future price relation over the interval can be largely ignored; and it is this fact which chiefly distinguishes operational hedging from carrying charge hedging . . .it leads to economies through simplifying business decisions and allowing operations to proceed more steadily than otherwise."

(3) "Selective Hedging is the hedging of commodity stocks under practice of hedging or not hedging according to price expectations." Usually occurring in the smaller markets, the operator hedges incompletely, that is, he maintains a speculative long position in the spot market after sufficient appraisal of the market to determine with some assuredness favorable price movement. Working suggests it may occur because of a lack of sufficient speculation in the market to support routine or operational hedging, or because of the fact that potential hedgers prefer to rely on judgement of price movement for gain rather than on complete hedging.

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[1]H. Working, "Speculation on Hedging Markets," Food Research Institute Studies, 1960, page 187.

(4) "Anticipatory Hedging: It takes either of two principal forms, (a) purchase contracts in futures acquired by processors (or manufacturers) to cover raw material "requirements," (b) sales contracts in futures by producers made in advance of the completion of production." There is no matching of stocks or commitments with contracts, but rather the contracts serve as substitutes for anticipated stock requirements.

(5) "Pure risk-avoidance hedging, though unimportant or virtually nonexistent in modern business practice, may have played a significant part in the early history of futures markets." This definition relies on purpose of hedging activity rather than action to distinguish it from selective and operational hedging. It is rather difficult to separate hedging to reduce risk and hedging to avoid loss through price decline.

The necessity of hedging in maintaining a well balanced and operational exchange has been a subject of controversy. H. S. Irwin, as early as 1915 recognized that "volume of open contracts varied seasonally in accordance with seasonal changes in the volume of commercial stocks subject to hedging."[1] From this study and later ones, Irwin and Hoffman[2] concluded that speculation entered and fled from the market directly as the amount of hedging changed. Later Working came to the conclusion "that futures markets ought not to be regarded as primarily speculative but as primarily heding markets."[3]

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[1]H. S. Irwin, Evolution of Futures Trading, Madison, Wisconsin, 1954.

[2]G. W. Hoffman, Grain Prices and the Futures Market, U.S.D.A. Technical Bulletin No. 747, January, 1941.

[3]H. Working, op.cit., pp. 431-459.

H. H. Bakken of Wisconsin has taken a somewhat opposing stand stating that "In my research thus far I have not found proof supporting this hypothesis [that futures markets depend for their existence primarily on hedging]."[1] For support of his stand he cites two examples. The first is found in the fact that hedging was not developed on The Board of Trade, Chicago until "late 1870's or early 1880's,"[2] although trading began on the exchange in 1867. Although hedging as it is known today was not carried on by the Chicago Board of Trade, it must be pointed out that it did grow out of a hedging operation. During the late 1870's and early 1880's grain traders would immediately sell futures contracts as they bought grain from farmers. These contracts were "to arrive" sales, carried out by grain traders to avoid risk. Not until the 'right of substitution' was legalized did hedging appear as it does today.

Bakken's second example is drawn from the Japanese futures trading in rice from 1676-1867 during which time "no physical delivery of grain against outstanding contracts was permissible."[3]

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[1]H. H. Bakken, "Futures Trading - Origin, Development and Present Economic Status," in E. A. Gaumnitz ed., Futures Trading Seminar, Volume III, Mimir Publishers, Madison, Wisconsin, 1966, page 14.

[2]Ibid., page 15.

[3]Ibid., page 11.

According to Bakken's reasoning, if no physical delivery were possible, then no hedging could occur. From here it is a short logical step to say that, hence futures markets existed almost two centuries without hedging in Japan.

Bakken, however, has traversed one fallacious step. The impossibility of physical delivery does not in any way impair the ability to hedge. It is to be noted that this does not mean that hedging did occur, but it does destroy Bakken's argument for the absence of hedging.

Theoretically hedging is not a necessity for the existence of futures markets. Suppose there exists a futures market on which hedging per se is forbidden. The exchange functions as a price determining institution and a source of market information.

Two problems arise with this theoretical approach. One of the prime reasons, if not the prime reason for existence of the exchange is taken away--hedging. The exchange becomes purely a speculative market providing no method of risk avoidance for producers, processors, and merchandisers. Further, the credit offered to producers, processors, and merchandisers facilitated by hedged inventory will be sharply curtailed. These reasons imply that there is an upper limit of speculative interest which any

given amount of hedging can support. The term overspeculation commonly used in the market applies then to the situation where the level of speculative interest exceeds the amount which could be supported adequately by the hedging present in the market, giving rise to somewhat volatile prices.

The necessity of hedging in markets is not based on providing a tie between the spot and contract markets--an easy trap in which to fall. The tie between the two markets is dependent upon the possibility of delivery as the markets are presently set up. This is by no means the only way of linking the prices in the two markets, although it is one of the most nonartificial and convenient methods. It is entirely possible to prohibit delivery and decree that spot and futures price become synomymous the first trading of the delivery month.

The second problem, derived from the first, is that speculation does not flourish in a market which lacks hedging. In 1953, because of the low price and high volume of soft wheat compared to hard wheat, soft wheat was delivered on the Kansas City Exchange[1] wheat contract which

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[1]The Kansas City and the Minneapolis exchanges are primarily hedging markets; in fact much of the liquidity of the market is provided by hedging.

until that time had allowed delivery of either hard or soft wheat. Prior to this time hard wheat had been the deliverable commodity as it was more economical for delivery than soft wheat. The hedgers in this market, particularly the long hedgers had depended upon hard wheat deliveries for their businesses. The exchange at first refused to alter the contract which left the hedgers no alternative but to abandon the Kansas City market and go "either to Minneapolis where the hedge was in a hard wheat contract, or to Chicago, where hedges, though no more reliable than at Kansas City, could be placed and removed more economically."[1] As the hedgers left the Kansas City market, they were followed closely by the speculators, and hence the market tended to dry up. With this ultimatum the exchange changed the contract to hard wheat delivery only, and both hedging and speculative interests returned to the market.

Examples, as the one described above, are almost nonexistent, and hence, the conclusion that the level of speculation is dependent upon the level of hedging interest may lead to a post hoc, ergo propter hoc fallacy. However, H. S. Irwin[2] noted as early as 1935 that open interest

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[1]H. Working, "Speculation on Hedging Markets," Food Research Institute Studies, Vol. I, No. 2, May 1960, page 189.

[2]H. S. Irwin noted this as early as 1935, followed by a multitude of others; Hoffman, Working, etc.

followed the level of hedging very closely. Following this evidence and later studies, the conclusion that hedging is of prime importance, a prime necessity, and the prime instigating force for a futures market seems to be valid, even though it is opposed to Bakken's reasoning.

Speculators

Speculation has been defined earlier as "the holding of a net long or net short position for gain and not as a normal incident to operating a producing, merchandising or processing business."[1]

To those who have little knowledge of the operation of an exchange, the term speculation takes on a somewhat derogatory meaning in the course of business, resembling to them wagering on future price activity. This plagued early inception of futures markets, but with the realization of speculation as an exigible part of futures markets the legality of speculation became reality.

The futures exchange provides a central market for risk capital or investment capital very similar to stock exchanges. It involves to a great extent the gathering of as much information as possible concerning crop expectations

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[1]H. Working, "Speculation on Hedging Markets," Food Research Institute Studies, 1960, p. 187.

during the growing season and the expectation of demand in the future, and then buying or selling contracts with the anticipation of price rise or decline, respectively, in the future.

The fact that each buy of a contract must be offset with a sell, implies that two persons have interpreted expected price change differently.[1]

Great effort has been made, and probably will be made, to infer that speculators can force price one direction or the other according to their desires. The preceding paragraph points to the fallacy in this position as well as the fact that collusion for price manipulation (or any other purpose) among speculators is rigidly policed by the Commodity Exchange Authority, although not in all commodities. Anticipation of future price movement is the crux of the position taken by speculators.

The supply of money provided by speculators injects the risk capital into the process of marketing in a systematic and centralized manner. This risk capital assumes the risk of vertical price fluctuation in hopes of gain. It should be noted that this risk capital entering the market as a

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[1] I am speaking here of two speculators in the market place. It is entirely conceivable that one of the parties is a hedger, not a speculator.

margin for purchases and sales of speculators is not the capital and credit facilitated by hedging. The latter's source is banks and other credit institutions loaned to the business sector on hedged inventories.

Technically the capital and credit facilitated by hedging does not enter either the cash or futures markets per se, as does risk capital of speculators.

Thus, the speculator provides the liquidity and depth to the market, greatly increasing the interest in the market, by providing more readily available offsetting transactions to hedgers. Without speculation, the market maintains little liquidity and depth, making it nearly impossible to have a smoothly operating and efficient market.

Theoretically again, it is possible to have a futures exchange entirely devoid of speculation. This implies that short hedgers' sales are offset by long hedgers' purchases. By the nature of hedging, this concept of nonspeculative markets breaks down in reality since few if any of the futures exchanges could provide sufficient liquidity from hedging alone to maintain an unbiased and broad market. Furthermore, a futures market without speculation suggests that short hedging interest is equal in size to long hedging interest. Typically, this is not the case; short hedging interest usually exceeds long hedging interest, sometimes

by a great margin.

Realistically then, speculation is a necessary condition for a futures market providing the capital which assumes risk of vertical price fluctuation and providing the liquidity and depth to the market.

Arbitrageurs and Spreaders

> A 'spread' trade is selling futures in one market against purchasing in another market, or selling in one delivery in any given market against an opposite transaction in another delivery in that market, or different grains commodities in the same market. It is done in anticipation of taking advantage of a temporary disparity in prices. The difference between two delivery months in the same or different markets or the sale of the one against a simultaneous purchase of the other, is a spread.[1]

Spreading is defined here to include arbitrage, straddling and switching. Arbitrage is specifically offsetting transactions in the same commodity and delivery in two different markets. Straddling includes arbitrage as well as offsetting transactions in two different commodities which are usually in close correspondence to one another. Switching is offsetting transactions in the same commodity and market but in two different delivery months.[2]

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[1]L. W. Schruben, Grain Market Reports, Agricultural Experiment Station, Kansas State College, Manhattan, Kansas, Bulletin 353, December 1952, p. 51.

[2]The definition of spreading comes from Understanding the Commodity Futures Markets. Commodity Research Publication Corporation, New York, New York, 1965, pp. 35 and 40.

From the definitions it is noted that spreaders hold net zero positions with hope for gain from temporal or locational disparities in prices, and not incident to normal business operations. For example, if the Minneapolis price in a specific grade of wheat is unusually higher than the Chicago price for the same delivery, the spreaders buy in Chicago bidding the price up and sell in Minneapolis driving the price down until the prices are once more in their proper relationship. Oddly enough, such pressure will not occur unless some disparity in times or places exists, as no relative price change can be anticipated by the spreader.

Thus spreading and arbitrage are stabilizing influences on the market because they always tend to move prices toward their proper temporal, locational, and inter-commodity relationships, and cannot perversely influence the market.

Spreading and arbitrage then becomes the third necessity to the smooth operation of commodity exchanges.

In conclusion, we find hedging a requirement to provide the base of interest to support speculation, speculation a requirement to maintain a broad and liquid market through introduction of risk capital to the market, and finally spreading and arbitrage a requirement to maintain locational, temporal, and intercommodity relationships.

Commodity Acceptability

Traditionally, economists and businessmen have set down long lists of prohibitions and restrictions on the possible commodities for exchange trading. These lists have tended to become shorter and shorter over the years with the realization that many restrictions were traditional. As more and more commodities were traded in contracts, somehow the restrictions were circumvented.

Text books of marketing generally give the following as requirements for successful trading:[1]

(1) The commodity must be homogeneous and susceptible to standardization of grades.

(2) The commodity must not be perishable, i.e. it must be capable of storage without loss of grade or product deterioration.

(3) Supply and demand must be large, uncertain, and supplies moving to the market unrestricted.

Since these have been written, parts of them have been further sheared away. The introduction to trading of live beef futures in November 1964 certainly sweeps away the

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[1]These are taken from Commodity Exchanges and Futures Trading by J. B. Baer and O. B. Saxon, Harper Bros., New York, 1949, pp. 110-125. R. Kohls uses a similar grouping in Marketing of Agricultural Products, Macmillan Co., New York, 1955, pp. 210-211.

homogeneity restriction and the nonperishability restriction. By defining the grades acceptable for contract delivery quite rigorously and setting up a tractable set of price differentials for the various grades, the homogeneity restriction can be effectively superceded.

Bakken has suggested quite pointedly that there are no restrictions whatsoever as to the commodities traded and further that our society is headed toward a " . . . universal contract based on index numbers."[1]

> Futures contracts have been tailored for more than 40 different commodities representing all degrees of perishability, homogeneity, variability in demand and in price, etc. and the end is not yet.
>
> A close examination of this question leads me to the conclusion that most of the limitations are more imaginery than real and the fictional ones were based on too few observations of a technique not yet fully evolved. These writers gave too much attention to the physical attributes of the commodity when their attention should have been reveted on the techniques of trading.[2]

Iconoclastic as it may seem to some, Bakken makes a very valid point on the excessive attention given to the physical attributes of commodities. In selecting commodities

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[1]H. H. Bakken, "Futures Trading - Origin, Development and Present Economic Status," in E. A. Gaumnitz, ed., Futures Trading Seminar, Volume III, Mimir Publishers, Madison, Wisconsin 1966, page 21.

[2]H. H. Bakken, et al., Futures Trading Seminar, Volume I, Mimir Publishers, Madison, Wisconsin, 1960, pp. 25-26.

for futures trading, attention should be given to specification of a contract to fit a particular commodity, rather than attempting to fit the commodity to a stereotyped contract. Imagination and sagacity are needed for specifying contracts for commodities which may be traded on futures market in the future.

The only prohibition or restriction on the commodity this author is inclined to give is that there exist a long-run demand for the product, not subject to sudden virtual disappearance from or sudden reappearance on the market. This is a necessary condition for an operable market.

This conclusion is not so very much different from the conclusion of Bakken. Bakken suggests that in time all commodities will be traded on futures exchanges using a universal contract for all commodities based on index numbers to specify the commodity grade, time, etc.[1] This author quite agrees that a universal contract for commodities based on index numbers is a possibility, but declines to believe that it can be extended to those commodities which do not have a long-run demand, i.e. strongly influenced by fad or fashion, e.g. hula-hoops.

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[1] H. H. Bakken, "Futures Trading," in E. A. Gaumnitz, ed., Futures Trading Seminar, Volume III, Mimir Publishers, Madison, Wisconsin, 1966, page 20.

Spot-Futures Price Relationships

At the outset some clarification is necessary as to what a spot price and a futures price really is.

In principle, the spot price refers to the present price for immediate transfer of ownership of the commodity. Quite often, however, the delivery of goods is scheduled for some time in the future, i.e. two or three weeks following the consummation of the transaction. It is synonymous with "cash price," and within the exchanges is thought of more as a "nonfutures" price than a price denoting immediate transfer of ownership.

A "futures price" is the present price for forward delivery of a commodity, well specified as to time, place, grade, and payment procedures. It can be defined also as an approximation of cash price at some future date given the other specifications of time, place, etc.

The relationship between cash and futures prices have been a source of controversy in the past decade, causing economists to take a longer look at what they have taken for granted for several years.

Price Variation

The prohibition of trading in onion contracts by Congressional order (P.L. 85-839) came as a result of a belief

by some that futures trading had caused unwarranted and erratic price fluctuations. The lack of sufficient empirical work to negate these allegations against all futures trading has provided the stimulus for further research on this topic. Oddly enough, economists by theoretical analysis had assumed the reverse to be true but had made few empirical attempts to confirm their beliefs--probably because it is a most difficult case to prove empirically. H. Working[1] has attempted to show a reduced variation in onion prices with a futures market and concludes that the futures exchange significantly reduced price variation in the postwar period.[2]

To eliminate price variation would spell death for any organized exchange. Elimination of price variation suggests a constant price over time. If such were the case the need for hedging would disappear as hedging is a means of avoiding repercussions from price fluctuation. Further, with a constant price, there would be no incentive for speculators to

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[1]H. Working, "Price Effects of Futures Trading," Food Research Institute Studies, Volume I, 1960, pp. 1-31.

[2]Note that the reverse conclusion prompted Public Law 85-839. Congress was comparing prewar and postwar price fluctuations; Working dealt only with postwar prices comparing Michigan onion price variation with average U.S. price variation on the presumption that Michigan stocks were hedged more fully than average U.S. stocks.

enter the market, as they rely on price variation, expected and unexpected for their livelihood. However, it is the unwarranted and erratic price movements which tend to be curbed by futures markets. Sufficient uncertainty remains to permit a viable institution, which reflects more accurately the pressures of supply and demand.

The Basis

Empirical studies have shown that the difference between futures and spot prices--the basis, was highly correlated with commercially held stocks. Working proceeded to interpret this as a storage supply curve.[1] Hitherto the price spreads had been regarded as consequences of expected future developments on prices. The fact that the basis could be negative and fairly large arithmetically, caused some concern for the old theorizations. Working's theory of the price of storage suggests that "inverse carrying charges are reliable indications of current shortage" and not "a measure of expected consequences of future developments."[2] Similarly, positive carrying charges imply

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[1]H. Working, "Inverse Carrying Charge in Futures Markets," Journal of Farm Economics, Volume 30, 1948, pp. 1-28. Also his article, "The Theory of Price of Storage." A.E.R., Volume 39, December, 1949, pp. 1254-1262.

[2]H. Working, "Inverse Carrying Charges in Futures Markets," Journal of Farm Economics, Volume 30, 1948, pp. 1-17.

current surplus of commercial stocks. When current stocks loom large, spot prices tend to be depressed relative to futures price, creating a larger basis and calling more storage facilities to store grain for gain. Conversely with a short crop, stocks tend to be depleted, creating an upward pressure on cash prices, narrowing the basis, making it less profitable to store grain, thus moving more grain into commercial processing channels.

Working's observations come from wheat futures price spreads and from this point, he generalizes to include all commodities traded. R. W. Gray[1] on the other hand, has recently concluded that this observed behavior is typical only of commodities with year end carryover and commercial stocks, and not a replication of behavior for all commodities. On the contrary, a lower carrying charge, i.e. basis, tends to reflect current surplus during the storage season in potatoes and higher positive basis occurs during shortage conditions during storage.[2]

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[2]It is to be noted that in the potato futures market, the basis becomes smaller but not necessarily negative during current surplus and larger during current shortage. To interpret this as a supply curve as Working does for wheat, it has a negative slope, an extraordinary accomplishment for a superior good or service (storage facilities) in terms of an orthodox supply curve sloping upward to the right.

Gray explains this partly as a lack of large commercially owned profit maximizing storage facilities. That is, present local storage is unresponsive to price spreads, indicating unutilized hedging capacity in the market by storage operators.

To be responsive to price spreads, storage operators would tend to store and hedge more inventory for profit during periods of a large positive basis than during periods of a smaller basis. However, in the potato market with not fully used hedging capacity, the basis tends to be small during periods of ample supply, resulting in inability to effectively hedge for gain. If potato storage operators had been responsive to price, they would recognize that the spot price is high relative to the futures, and consequently would sell on the cash market and buy on the futures market until the basis became larger.

No year end carryover exists for potatoes, because by quality and consumer preference, the year old stocks cannot effectively compete with the newly harvested or processed crop. When old inventory must be moved before the new crop enters the market, as in potatoes (not grains), prices must adjust in late year to accommodate this. If stocks are large, then late year futures prices tend to be depressed to allow clearance of the old crop, resulting in

a smaller basis. Similarly during short crop years, stocks must be stretched to last the entire season, thus raising futures price relative to cash price.

The above explanations are only a partial answer to the reasons for deviations from theory of price of storage. Other pressures can also cause variations from this theory, notably government action, whether it be floor prices, ceilings on prices, restricted movement of commodities, or intervention in storage facilities other than supervision.

From the above discussion, we conclude that pressures within the market which are unresponsive to price tend to create disturbances away from the price spread relationship suggested by the storage supply curve.

At present, some frozen cherries are carried over into the new crop year, the amount depending upon the size of the pack the previous crop year. Carryover of frozen cherries is limited by the cost of storing frozen cherries for a year or longer and the price discount on cherries packed longer than one crop year. Tart cherries are unlike potatoes which cannot be carried over, and also unlike wheat which can be carried over very economically and almost indefinitely with little spoilage or price discount because of age. One would expect then, that following large crop years, the basis would tend to increase with crop size as

in the case of wheat. Following short crop years with low year-end supplies, the basis would react more like that for potatoes.

Bias in Futures Markets

Effort has been made in the past few years to ascertain whether trading in some commodity on a futures exchange is biased toward the seller of a contract or the buyer of a contract. Gray[1] has attempted to measure whether a bias exists by taking a long position in the market on paper, then closing this position out on the first delivery day of the month and buying an identical amount in the nearest future. By successive application of this method over a period of years, he finds whether or not he has lost money. If a statistically significant gain is reported, the market is biased in favor of the buyer of futures, and similarly a loss is associated with a bias toward the seller of contracts. He finds this phenomenon in several of the thinner futures markets. By contract specification or re-specification, bias can be virtually eliminated from the commodity markets. The existence of bias however does not preclude the usefulness of a commodity exchange, but it may be one of the causes for

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[1]R. W. Gray, "Characteristic Bias in Some Thin Futures Markets," Food Research Institute Studies, Volume I, 1960, pp. 297-312.

the decline of an active market.

The Tie Between Cash and Futures Markets

The two markets, spot and futures, are inextricably tied together by the right to deliver on a futures contract. The first delivery day of a futures month has been heralded as the time when spot price and futures price are synonymous.

Suppose delivery on a futures contract was prohibited, and no other formal ties existed between spot and futures prices. A flurry of activity on either side of the futures market could force futures price to move in one direction. Without threat of delivery, there would be no stimulant to influence cash prices. Hence the futures price need not bear any stable relationship with the spot price. The speculator with a particular information source may have entirely different expectations than processors, producers or merchandisers, and with no tie between the two markets, the basis would become unstable.

The above discussion does not mean to imply that right to deliver is a necessary part of the exchange. The exchange theoretically could operate without possibility of delivery on a contract provided some other relation was established to maintain the tie between the markets.

The right of delivery on futures contracts has been

maintained for two reasons. It provides a relatively simple and remarkably efficient way to join the two markets. The second, and primary reason, comes from the history of futures exchanges. From early history many legislators and courts felt that if a man wanted to take or make delivery, then he should have every right to do so as this was the nature and spirit in which the contract was made. Had exchanges preferred to desist from right of delivery, futures trading would probably have met severe opposition on legal grounds both by governments and by courts of law.[1]

Futures Markets as an Information Source

Futures markets may achieve their highest distinction, yet little realized, in the flow of information that they provide to the public. Price and quantity quotations are available daily; all transactions are by open outcry on the trading floors. This is opposed to the forward contracting market where usually prices and quantities are privately negotiated.

A tremendous amount of labor is organized to anticipate future prices or the consequences upon future prices of some action. This information is transformed into bids

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[1]See also the discussion of the right of substitution which met opposition in the courts of law for some time after the beginning of futures trading in the 1870's. Chapter II, page 17.

to buy and offers to sell in the market place, thus making the expectations public. Although not perfect knowledge, it does help coordinate all of the possible information influencing prices.

In Conclusion

Thus far some of the necessary conditions for a viable exchange have been laid down. They are:

(1) The presence of hedging, speculation, and spreading in some form in the market place.

(2) The commodity must entertain a long-run demand, not subject to sudden disappearance from or reappearance to the market.

(3) A minimum of pressures unresponsive to price.

(3) An evenly balanced contract, favoring neither the buyer or the seller in the market.

This study is not designed to make a complete set of necessary conditions, but rather to establish those of major interest, and those particularly applicable to an exchange in a commodity such as processed red tart cherries.

What else is required?

Taking the cue from the onion and potato futures, a favorable climate of opinion toward the exchange would seem a prerequisite. A commodity exchange seems to function best

when those using the market and those affected by it have a favorable disposition toward it, or at least not particularly indisposed toward it.

This theme shall be expanded later in the analysis of opinion study of farmers, processors, and traders. But first specifications for a contract for futures trading in tart cherries will be suggested, followed by a discussion of the effects of futures trading in tart cherries and the economic feasibility of such a move.

CHAPTER III

POSTULATED TART CHERRY FUTURES MARKET

Suppose we postulate futures trading in processed red tart cherries. What would be the nature of the contract? How would the market likely react to such trading? Would this market serve any useful purpose? Would the market be viable? The purpose of this chapter is to hypothesize a tractable futures exchange in processed red tart cherries.

The Contract

The contract shall specify frozen processed red tart cherries in 30 pound pails composed of five parts cherries and one part sugar by weight, as the deliverable commodity. The basis grade will be "U.S. Grade A" or "U.S. Fancy" as designated by the United States Standards for Grades of Frozen Red Sour (Tart) Pitted Cherries, CFR, Section 52.242. The contract size will be 1,000 tins at 30 pounds net per tin. The delivery months shall be September, December, March, and June, with deliveries at government authorized storage warehouses in Grand Rapids, Michigan, with alternate delivery in Rochester, New York, and Green Bay, Wisconsin.

Minimum price fluctuations shall be 0.025 cents per pound of the commodity.

In choosing the contract as specified, it was necessary to consider the alternatives to each part of the contract. The remainder of this chapter will present these alternatives and the reasons for the choices made.

Deliverable Form

Four alternatives were considered in choosing the deliverable form:

(1) Frozen processed red tart cherries packed in 30 pound (net) tins with 25 pounds of raw pitted cherries and 5 pounds of sugar per tin.

(2) #303 cans containing 16 ounces of pitted hot water pack cherries (consumer size).

(3) #10 cans containing 108 ounces of pitted hot water pack cherries (institutional size).

(4) Pie filling in consumer size tins, usually #2 (20 oz.) or #303 tins.

The first of the four alternatives was chosen because primarily it is a graded but unbranded product. Branded products have little acceptance on a future's market because, for example, one company would probably not wish to take delivery of, or have a possibility of having delivery made carrying another brand label. Both the #303 can and #10 cans of hot pack are usually branded at pack time.

About 90% of the frozen pack of tart cherries is packed in 30 pound tins. The remainder is packaged in barrels or a few consumer sizes. The frozen pack represents 45% to 55% of the total annual pack. The #303 tins of water pack cherries usually average 12% to 15%, and the #10 tins of water pack cherries comprise 20% to 30% of the annual pack. Pie filling has been gaining an increased share of the annual pack over the last decade, representing at present 10% to 20% of the pack. Hence, the deliverable form suggested, is the largest part of the pack in a uniform size of container.

Under normal storage conditions,[1] the frozen form can be kept without serious loss of quality up to five years from pack time. These containers are not hermetically sealed, but rely on temperature and the sugar-juice covering to maintain their quality. This possibility of carryover, price permitting, reduces the possibility of corners or squeezes in the market.

The maximum storage life of #303 cans and #10 cans is eighteen months. This limitation manifests itself not in general loss of quality of the product so much as an acid within the product reacting within the can, subsequently

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[1]I obtained this storage life from discussions with Dr. Bedford, Professor of Food Science, Michigan State University.

giving rise to perforated cans.

The frozen form serves both the institutional and consumer markets. The 30 pound tin is used directly by the institutional trade. Some frozen cherries, however, are unfrozen in winter and repacked as pie filling in consumer size containers. The #303 can is sold to the consumer trade, while the #10 can is restricted to the institutional trade.

Pie filling is mainly a consumer rather than institutional product, with the same storage life as #303 or #10 tins. No uniform container size is used for this product, varying between #2 (20 ounces) and the #303 tins.

Contract Size

The contract size chosen was 1,000 tins at 30 pounds net per tin, representing 30,000 pounds of frozen pitted cherries in sugar or a raw product equivalent of 33,300 pounds.[1] This seems to be the usual size of unit traded by processors, representing one refrigerated tractor trailer load which is usually the minimum volume of cherries transported. To a farmer, the contract represents about six to seven acres in a normal crop year. This contract size is quite large for many of the small pie manufacturers and may

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[1] Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products, Published by U.S.D.A., ERS, Statistical Bulletin No. 362, June 1965, p. 65.

prove unusable for them. A contract of half this size, i.e. 500 tins at 30 pounds net per tin, may be more useful to them.

As contract size diminishes, the cost of the round-turn commission for a transaction per pound of frozen product will increase and could become prohibitive, as this is generally a fixed cost, not varying as the contract size varies. More usually, commissions vary with volume in the market, increasing as the volume in the market declines. For instance, round-turn commissions on grains; wheat, corn, soybeans, oats which have quite active markets are $18.00 to $24.00 while commissions in the less active markets range as high as $50.00 to $80.00. If the commission were $40.00 for trading a contract of frozen tart cherries, it would represent about 1 percent[1] of the value of the contract. A contract of 15,000 pounds in size, would give a commission of about 2 percent of value of the unit traded. This is out of line with most commissions as percentages of value of the contract, since most are under 1 percent.

Grade Specification

The grade specified for delivery was "U.S. Grade A"

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[1]This commission is exactly 1 percent when cherries are valued at 13 1/3 cents per pound frozen. As the price increases, the commission is less than 1 percent and greater than 1 percent for prices lower than 13 1/3 cents per pound.

or "U.S. Fancy" as designated by the "United States Standards for Grades of Frozen Red Sour (Tart) Pitted Cherries, CFR, Section 52.242."

Although the percentage of the frozen pack designated as "Grade A or Fancy" fluctuates a great deal, it can be as high as 90 percent in some years and as low as 50 percent in years of adverse weather. The amount of wind whipping and brusing of the cherries as they are ripening has a great influence on the grades of the processed cherries.

It may be necessary to allow delivery in a lower grade of frozen cherries in years when weather damage has been severe. This can be built into the contract by having alternate delivery in "U.S. Grade C" or "U.S. Standard" grade with a discount in price from the higher grade. The discount should be larger than the normal difference in price so that the lower grade will become an effective delivery grade only in years of very short or no supply of top quality cherries.

Delivery Months

For delivery months, two alternatives present themselves:

(1) September, December, March, June

(2) September, February, June

Both alternatives begin with September. It was chosen

as the first month for delivery since it is the first full month after the cherries are packed and put in storage. The packing season may extend well into August so that deliveries in August would have had to occur late in the month, leaving little time for prices to adjust fully to the new pack. October was more distant from pack time, making it less desirable for those processors not wishing to store cherries until fall or winter and also less desirable for buyers who want to take delivery soon after pack. Although it is not a necessity that deliveries or transactions take place on the futures contract, the market may be more useful if it does provide that alternative where possible.

Similarly, both alternatives end with June. The beginning of the pack season is usually late July so that delivery of new cherries would be possible on a July contract. This is not the purpose of the last delivery month of the year, but rather the purpose is to take or make delivery before the new crop enters the market.

May is at least six to seven weeks removed from the beginning of the pack season with little knowledge during May of the exact size of the crop. Late year prices then could not adjust fully to the new crop size predictions. The official USDA crop size prediction is usually issued the first week of June giving the entire month for readjustment

of prices to the incoming crop.

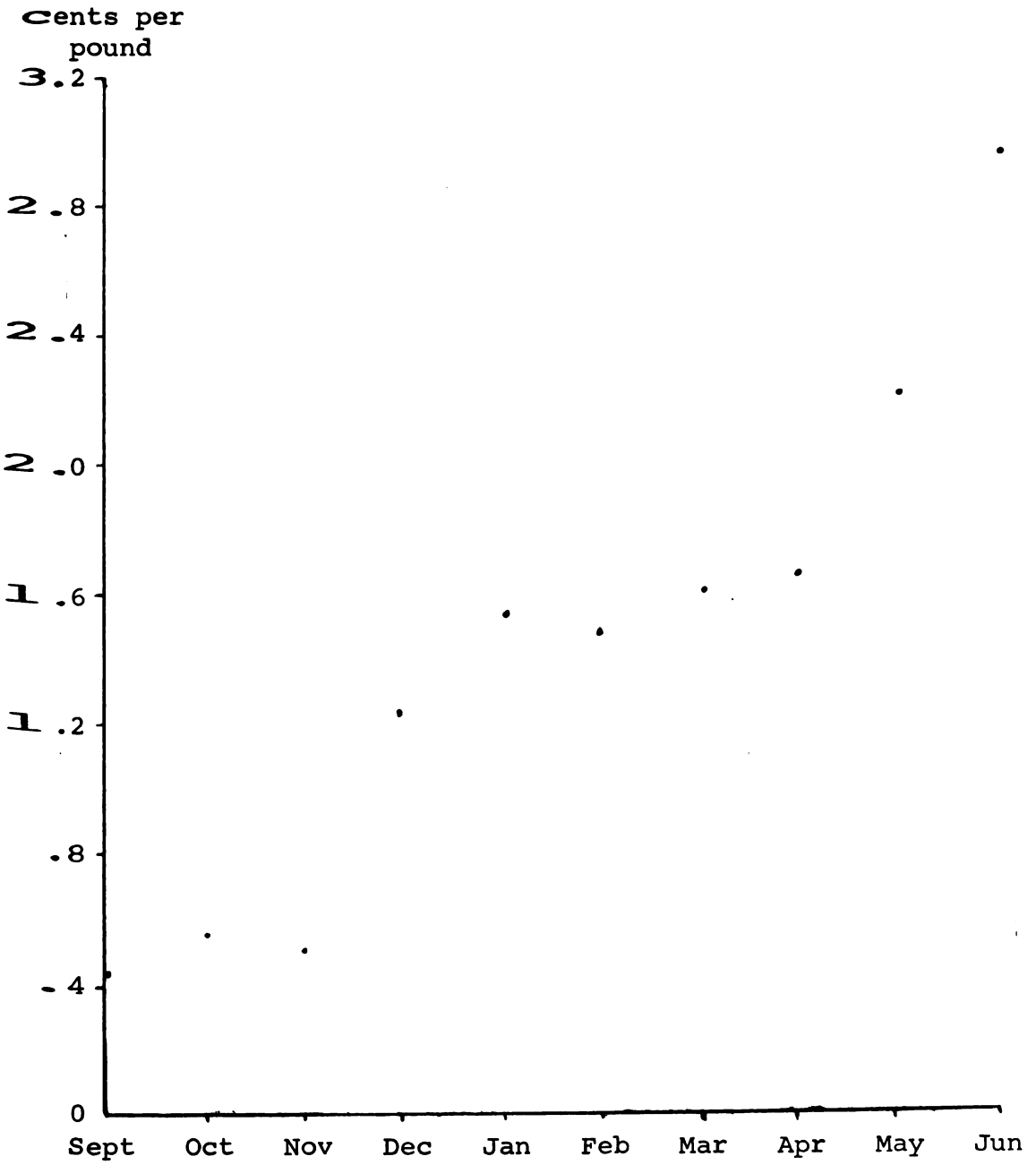
The choice of midwinter delivery months presents more of a problem. November and December are low volume months in terms of movement out of storage, while January, February and March are the higher volume or stock movement months. The August to December price spread of frozen cherries is usually much higher than the August to November price spread, indicating that cherries held until December require a higher price to call them from storage. Apples begin to compete for storage in the fall and must be in storage by December. Another reason for this higher price could be that storage operators require a higher return to carry inventory into the new year.

The high stock movement months, January, February, and March are first, the anticipation of, and finally the result of, the promotion month of February, featuring George Washington's birthday.

The August to successive months price spread appears to have two plateaus (see Figure I.). The first from September until November, the second from December until April. Having two delivery months, December and March may follow this price spread more closely than a single midwinter delivery month. This in turn may present more flexibility for hedging interests to follow the price

FIGURE I

PRICE SPREAD FROM AUGUST TO SUCCESSIVE MONTHS
IN CENTS/LB. OF FROZEN R.S.P. CHERRIES
(Eleven year average)



movement more closely.

A disadvantage of the two winter delivery months is that the market may be too thin in its beginning years to support four delivery months. This disadvantage becomes the advantage of the September, February, June alternative. February does not reflect the turning points in price or stock movement as closely as December and March deliveries, but it may be more realistic in terms of market capacity and viability.

Delivery Points

The central delivery point should have adequate storage facilities, easily accessible financing opportunity and be located not too distant from production areas. The latter restriction breaks down for many commodities which are easily stored and inexpensively transported, such as grains. However, frozen tart cherries are relatively expensive to store and transport as they must be stored or transported in a refrigerated environment. For this reason, alternative delivery points are considered in areas other than Michigan with a significant amount of production.

Two alternatives for central delivery were Benton Harbor and Grand Rapids, Michigan. The former is located in South-Western Michigan, the area through which the cherries

exported to continental United States usually pass. Grand Rapids, on the other hand exceeds Benton Harbor in financing availability and storage facility. Further, it is nearer Muskegon, the port of export for tart cherries to other countries. Although Grand Rapids is chosen for specifying the contract, Benton Harbor may be considered as a substitute for Grand Rapids if it could command sufficient financing opportunity from distant cities of Detroit or Chicago.

Alternate delivery points suggested are Rochester, New York and Green Bay, Wisconsin, cities located near the areas of production in the states. Discounts from the central market's price could be set up to ensure a centralized market.

If the fixed discount between the central market and alternative market prices is equal to transportation cost between the markets, then virtually all cherries packed in deliverable form will be shipped to the central market. This economic waste can be overcome by making the price discount at the alternative market sufficiently less than cost of transportation between the markets so that most cherries packed in deliverable form near the alternative delivery point, remain there for possible delivery. The purpose of alternative delivery points is to reduce the possibility of a corner or squeeze in late year at the

central market. If insufficient cherries in deliverable form remain near the central market in late year to meet the outstanding contracts for delivery held by long hedgers, then deliverable cherries must be transported to that central market for delivery to be made. Alternate delivery points and discounts from the central market price provide then the route around this uneconomical movement of cherries.

Minimum Price Fluctuations

The minimum price fluctuation is the smallest price change allowed per unit of the commodity. Large minimum price fluctuations lead to rigidity of prices, possibly resulting in stagnation of the market, while small minimum price fluctuations lead to excessive price variability or volatility of prices.

Most of the commonly traded commodities: grains, wool (grease and tops) beef cattle, hides, cotton, pork bellies, eggs (frozen and shell) range between $5.00 and $7.50 minimum fluctuations per contract. Using this as the criteria for choosing a minimum price fluctuation, 0.025 cents per pound gives a fluctuation per contract of $7.50. The alternatives open are 0.01 cents per pound or .05 cents per pound giving $3.00 and $15.00 minimum fluctuations per contract respectively. The usual price quotes in

future's trading are generally one of the three cited above. Since only the 0.025 cents per pound gives a fluctuation per contract within the desired range, it appeared to be the likely choice.

The usual price quotes presently practiced by the industry for frozen cherries are seldom if ever smaller than 1/3 ¢. However, some nonprice bargaining on payment of brokerage fees, transportation and storage occurs which does indicate some need for a smaller fluctuation than 1/4 ¢ per pound. With a contract market, no nonprice bargaining is possible since the contract specifies exactly the brokerage fees, time, place and grade, etc. Thus a smaller minimum price fluctuation than is now used in the cherry trade seems quite justified.

Exchange Regulation

Because of the potential size of this market, this author feels that if trading in tart cherries is established on a commodity exchange, such trading should be covered by the Commodity Exchange Act. This automatically polices the market with respect to corners, squeezes, volume of open interest, and may lend a great deal more trust to potential users of the market in its initial years. Volume of open interest is controlled by the Commodity Exchange

Authority in commodities falling under the Act, but is seldom regulated by the exchange itself. By controlling maximum open interest, corners and squeezes can be more easily policed and controlled. This is the prime reason for the suggestion of Commodity Exchange Authority regulation.

CHAPTER IV

ADVANTAGES AND LIMITATIONS OF THE PROPOSED FUTURES MARKET

Given the hypothetical futures exchange in frozen tart cherries, it is now possible to consider costs incurred and benefits derived from this institution. This is a difficult process in that a large share of these costs and benefits cannot be quantified; indeed to quantify would be adding a degree of precision which in fact, does not exist.

This chapter involves a discussion of the advantages and limitations of the proposed exchange based upon the assumption that the futures market in red tart cherries is viable.

Risk Reduction

It is a widely held belief that futures markets exert stabilizing influence on prices of the commodity traded both intraseasonally and interseasonally. This stability is created as a result of the reduction in uncertainty concerning prices, stock movement, crop quotations, etc. within the market place which in turn results from the information added to the market by the exchange. Further, this reduction

of uncertainty stems from the processors' and merchandisers' ability to shift at least part of the risk to those willing to assume risk. It is the ability to hedge and the supply of information then, which exerts a stabilizing influence on prices.

Some measure of risk within the market place can be given by a statistical variance of price spreads from August to each successive month. In Figure I, average price spreads of frozen tart cherries from August to each successive month for years 1955-56 to 1965-66 are plotted.[1] In Figure II, the variance associated with each price spread over the years 1955-56 to 1965-66, two distinct plateaus are noted, one from September through November, the other from December through April. Following April the variance rises through May and June. The variance for the August to July price spread was not calculated in this group as it would portray interyear variation and not intraseasonal variation as the others do.

If it is assumed that variance of the price spreads from August to successive months is a valid measure of the risk and uncertainty present in the intraseasonal prices, then it can be said that risk and uncertainty does rise as

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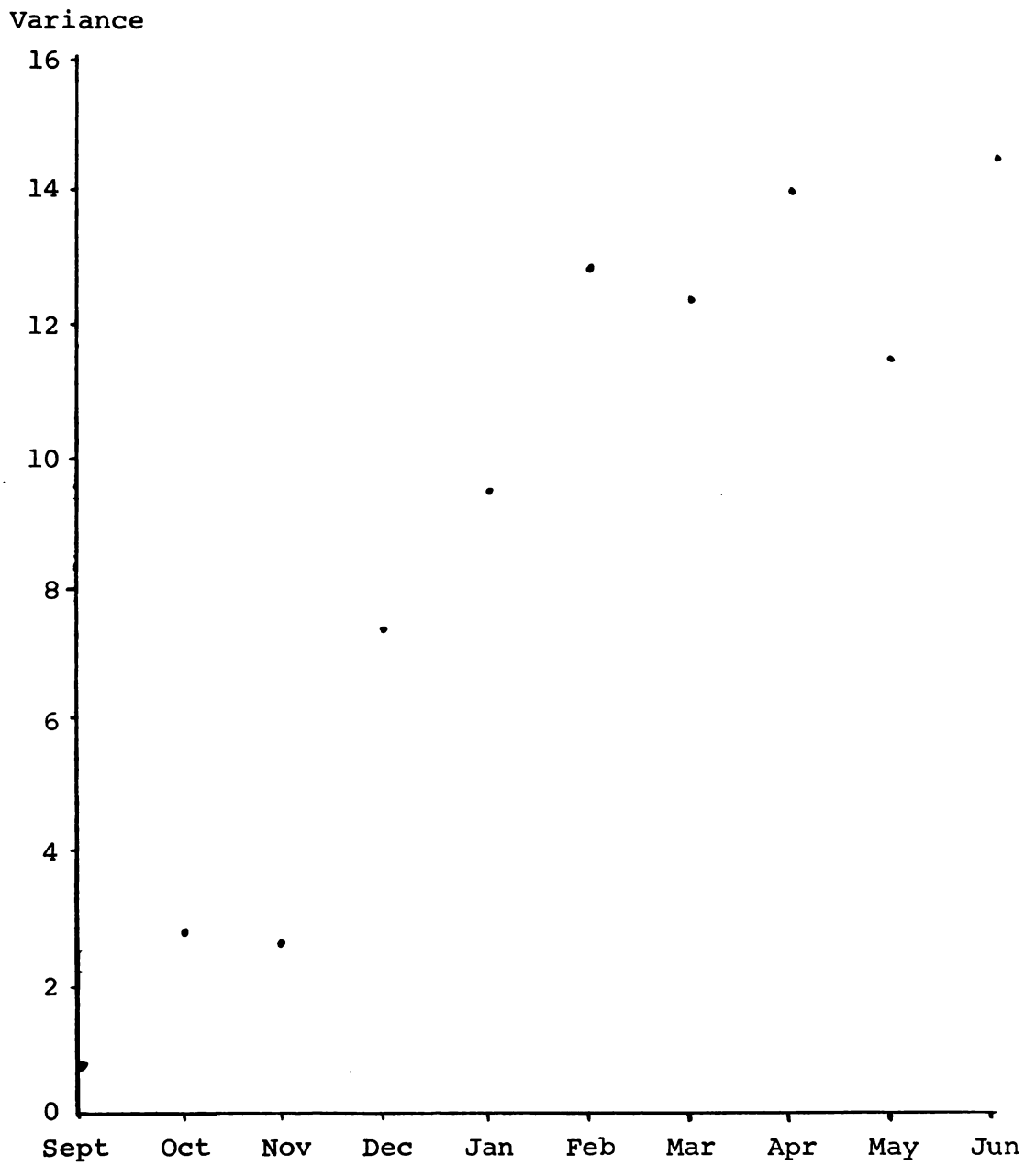
[1]These price spreads are given in Table I Appendix A.

FIGURE II

VARIANCE OF PRICE SPREADS FROM AUGUST TO SUCCESSIVE MONTHS, FOR FROZEN R.S.P. CHERRIES (1955-56 to 1965-66)



longer time intervals are considered. On the assumption that futures do reduce risk, then this variance would be reduced.

Some attempt was made to establish a statistical relationship between the price spreads and variance, time and some quantity variables. From here the object was to measure the effects on price spreads of reducing the variance variable by certain percentages. Because of high simple correlations between time, variance, time squared, and time multiplied by variance, the problem of multicollinearity reared its head and no statistically significant relationships could be found.

By graphical analysis, it would seem entirely realistic to suggest that with a reduction in variance of the inter-month price spreads, the price spreads themselves would be reduced. This conclusion is consistent also with economics. The price spreads represent costs of storage from pack time forward, as well as some return to risk to the storage operators. A reduction in risk of adverse price movements would tend to narrow their price spreads as the additional return to risk would no longer be required by storage operators or merchandisers.

The price spreads represent some measure of the marketing margin between processor and the cherry merchandiser.

At present the processor margin[1] is about 6 1/4¢. The amount of return to risk in this margin is unknown, and it is dubious that an accurate measure of it could be found.

If the processor margin could be reduced what is the effect upon farm and processor prices, and supply?

The demand for frozen red tart cherries can be expressed by the regression[2]

$$Y_1 = 23.463 - 6.0268X_1 \qquad \text{- - - - (1)}$$

$$(.85)\ **^{3}$$

$$r^2 = .89$$

for Y_1 = price in cents per pound of frozen tart cherries in 30 pound tins (f.o.b. Midwestern processing plants) deflated by the Consumer Price Index.

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[1]Processor margin refers to the difference between price per pound of raw product at the farm gate and the price per pound of raw product as it leaves the processing plant.

[2]D. J. Ricks Economic Relationships in Red Tart Cherry Marketing 1947-1965, Ag. Econ. Report 43, Department of Agricultural Economics, Michigan State University, June 1966, Appendix A, Equation 1, page 15.

[3]The number in parenthesis immediately below the regression is the standard error of the estimated coefficient of X_1. If one asterisk appears following the standard error, the estimate coefficient of X_1 is significantly different from zero at the 0.05 level of significance. If two asterisks appear, the coefficient estimated is significantly different from zero at the 0.01 level of significance.

X_1 = per capita total U.S. supply of processed tart cherries in terms of raw product weight.

The data are based on the years 1955 through 1965.

The demand for fresh tart cherries for processing into frozen form, at the farm level can be calculated by the regression of farm prices of tart cherries on quantities processed per capita. It can also be found by deducting the regression of price spreads (farm price to processed price differences) on the quantities processed per capita, from the regression of price of frozen processed tart cherries on quantities of processed tart cherries per capita.

The regression of these price spreads on quantities of process tart cherries per capita is

$$Y_2 = 11.063 - 2.6584X_1 \qquad \text{- - - - (2)}$$

$$(.274)\ **$$

for Y_2 = price in cents per pound of processed tart cherries (raw product equivalent; f.o.b. Midwestern processing plants) minus price in cents per pound of tart cherries paid to growers. This difference is then deflated by the Consumer Price Index.[1]

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[1]This price spread is computed from data taken from Table 19, Appendix D, page 53, 54 of D. J. Ricks Economic Relationships in Red Tart Cherry Marketing 1947-1965, Department of Agricultural Economics, Michigan State University, June 1966.

X_1 = as above, per capita total U.S. supply of processed tart cherries in terms of raw product weight. The data are also based on the years 1955 through 1965.

This regression then represents the demand for processing services for red tart cherries to frozen form.

By deduction, the demand for tart cherries at the grower level is

$$Y_3 = 12.400 - 3.3684X_1 \qquad - - - - (3)$$

where X_1 is the same as above and Y_3 is the price in cents per pound of fresh tart cherries at the grower level, deflated by the Consumer Price Index. This is equation 1 minus equation 2.

The standard error of the coefficient of X_1 cannot be computed directly since this equation is the difference of two other demand equations. The general forms of the three equations are

$$Y_1 = a_1 + b_1X_1 \qquad - - - (1)$$

$$Y_2 = a_2 + b_2X_1 \qquad - - - (2)$$

$$Y_3 = a_3 + b_3X_1 \qquad - - - (3)$$

where $a_1 - a_2 = a_3$ and $b_1 - b_2 = b_3$. The variance of b_3 then can be computed from

$$\text{VAR } (b_1 - b_2) = \text{VAR } (b_3)$$

$$= \text{VAR } (b_1) + \text{VAR } (b_2) - 2 \text{ Cov } (b_1, b_2)$$

However, an estimate of the covariance of b_1 and b_2 cannot be computed. It would be expected that this covariance of b_1 and b_2 is positive. Hence VAR (b_1) + VAR(b_2) provides a maximum for VAR (b_3) under the assumption that this covariance between b_1 and b_2 is positive.

$$\text{VAR } (b_3) = .7976$$

$$S_{b_3} = .893$$

Hence, b_3 is still significantly different from zero at the .01 significance level.

For estimating the supply of fresh tart cherries in the long run, the 1961-1965 average per capita supply was adjusted by the potential five year acreage adjustments for each farm price in cents per pound.[1] The five year average per capita supply in U.S. for tart cherries is 1.824 pounds per capita.

The supply response was computed then by the regression of farm price (Col. 1) on the potential long run supply (Col. 3).

$$Y_4 = -2.605 + 4.762X_2 \qquad - - - - \ (4)$$

$$(.345)\ **$$

where Y_4 = farm price in cents per pound of fresh tart cherries

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[1]M. Hayenga et al., Great Lakes Tart Cherry Industry Grower Survey, Ag. Econ. Report 57, Department of Ag. Econ., Michigan State University, October 1966. Table III-1, page 20.

TABLE I

ADJUSTMENT OF 1961-65 AVERAGE PER CAPITA SUPPLY OF FROZEN PROCESSED TART CHERRIES BY PERCENTAGE ACREAGE ADJUSTMENTS[a]

(1) Farm Price (cents per pound)	(2) Percentage change in acreage from 1965	(3) Per capita supply in U.S. adjusted by potential acreage changes from 1965[b]
4	-25.6	1.357
5	-10.9	1.625
6	0.3	1.829
7	11.2	2.028
8	20.4	2.196

[a] Columns taken from Table III-1, page 20, of Hayenga et al., Ag. Econ. Report 57.

[b] The five year (1961-65) average per capita supply in U.S. was 1.824 pounds per capita. Column 3 is obtained by adjusting 1.824 by the percentage indicated in Column 2.

X_2 = potential U.S. per capita supply over a five year period of fresh tart cherries.

Equilibrium price and quantity at the farm level given by this model are: 1.846 pounds per capita

6.18 cents per pound (deflated by the Consumer Price Index)

Farm elasticity of demand at equilibrium $E_f = -1.006$

Farm elasticity of supply at equilibrium $N_f = 1.422$.

Equilibrium price in cents per pound of frozen tart cherries is 12.34 cents per pound of frozen cherries (raw

product equivalent weight).

Elasticity of demand at processor level = -.902.

If marketing margins could be reduced by one cent then the grower demand equation (equation 3) would be

$$Y_3' = 13.400 - 3.3684X_1$$

where Y_3' = price in cents per pound of fresh tart cherries at the grower level, deflated by the Consumer Price Index when marketing margins have decreased by one cent. The new equilibrium farm price is 6.77 cents per pound and equilibrium supply becomes 1.97 pounds per capita. Farm price moves up 6/10 cents per pound for a one cent change in marketing margin. Accordingly the processed price declines 4/10 cents per pound.

The estimates of elasticities of demand compare very closely to the estimates of elasticities of demand computed by Oldenstadt.[1]

In actual practice farmers may not receive 6/10 cents per pound more for each one cent reduction in marketing margins. Processors claim that they are not covering all of their costs involved in processing tart cherries. The loss of tart cherries is borne by other fruits that they process.

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[1] D. L. Oldenstadt, An Analysis of Alternative Marketing Programs for the Tart Cherry Industry, unpublished Ph.D. Thesis, Department of Agricultural Economics, Michigan State University, 1964, pages 34-44.

However, the loss incurred is less than loss which would result if they were to cease processing tart cherries. They are able to keep their processing plant operating a longer period each year by processing tart cherries, i.e. spreading overhead, and also they are able to maintain a constant labor use over the operating season.

Hence, the 6/10 cents per pound is probably an upper limit on the estimate of increase in farm price for a one cent decrease in marketing margin.

Changes in Demand

In the past twenty years, demand for tart cherries has undergone decline and then leveling off at new lower levels. Oldenstadt[1] points out that,

> after taking into account the effects of total supply on price over the period 1947-61, prices declined indicating a decline in demand. The tendency was much more pronounced during the period 1947-55. Since 1955 prices have leveled off indicating that the decline in demand has been at least partially arrested. Part of this favorable situation since 1955 has undoubtedly been due to the development and acceptance of a new product, cherry pie filling, and the increased demand for frozen institutional packed tart cherries.

One might well ask: Can the institution of a futures market change the level of demand for red tart cherries?

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[1] Ibid., page 3.

With some assuredness, it is possible for a futures market to increase the level of demand for red tart cherries.

In the perfectly competitive model of transactions, the assumption is made of perfect knowledge. Why is this assumption added? If people in the market place are unaware of the prices at which transactions are taking place, then they will be hesitant to offer to sell too low or to buy too high. That is, the 'no action' range of prices in the market place is considerably wider. As we introduce more and more information into the market, the hesitancy to bid or to offer is displaced. Thus, this information has the effect of easing the flow of resources, permitting more confidence in the market place, made possible by the more accurate and faster response to any stimulus entering this system. As futures markets provide information few other parts of the marketing system can provide, it is possible that more economic units are willing to enter the market place as demanders.[1]

In the tart cherry industry, this is a feasible hypothesis. D. L. Oldenstadt discusses export demand in these terms:

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[1]This position is taken by R. L. Raclin, "The Role of Futures Markets in Determining the Flow of Commodities in Domestic and International Trade," in E. A. Gaumnitz, ed.; Futures Trading Seminar, Volume III, Mimir Publishers, Madison, Wisconsin, 1966, page 195-205.

> Fluctuations in production have also made it difficult to expand the farm market for tart cherries. A foreign customer is reluctant to attempt a marketing program or introduce a product line involving tart cherries unless he is assured of a stable supply of high quality raw product. In years when the production is up in the United States, a foreign customer will have little trouble obtaining tart cherries, but this is not true in years of short supply. Hence, as it has turned out, the foreign market must be partially redeveloped every other year when there is a need on the part of the United States' processors and producers to sell larger quantities of cherries than the domestic market can absorb.[1]

If a futures exchange were available in processed red tart cherries, exporters could buy contracts early in the year to meet their commitments in the country of export. Simultaneously, they could buy dollars forward and sell the importing countries currencies short to stabilize the exchange rate in the time between the commitment and post-harvest delivery. After harvest or in the delivery month, he could take delivery of the cherries, or liquidate his hedge export, obtain his funds to pay the vendor of the cherries and thus meet his commitment in his own country with a greatly reduced risk of vertical price fluctuation.

Suppose for example, that an English importer wished to open a market in the United Kingdom for processed red

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[1] D. L. Oldenstadt, op.cit., page 2.

tart cherries. By obtaining forward contracts for delivery in England to food processors and pie bakeries to coincide with shipping seasons, he simultaneously buys contracts for delivery on December and March futures. Suppose the date of these transactions is April or early May prior to the setting of the crop. It can be pointed out that December and March are quite applicable as delivery months as they are the last months before winter and the first months after winter in which shipping is possible on the St. Lawrence Seaway. When these offsetting commitments are made, he can arrange immediately for refrigerated cargo space for the frozen cherries, insurance and the like. In the fall following harvest, he can begin to ship the cherries for his December delivery in the United Kingdom. By lifting his hedge and buying simultaneously in the spot market, he does not need to wait for December futures contract delivery. At this time he will take delivery of dollars bought forward to pay the U.S. broker, for which dollars he paid in Sterling, sold short earlier. Upon arriving in the United Kingdom, he is paid for the tart cherries.

The advantages of this method are first of all that the exporter is assured of the delivery of cherries at a price in the United States favorable to his import delivery price prior to pack season. This allows him plenty of time

for freight arrangements. Further, he is assured of a market in a country of import. Finally, by use of the money market he fixes the price of currency exchange, rather than speculating on exchange rates.

The futures market may then provide the tool by which the demand for tart cherries is extended to export markets. Indeed, it is entirely possible that some domestic interests are hesitant to enter the market for the very same reasons of uncertainty of supply and gyrating prices between years. With assurance of supply at a forward price, some of this export and domestic potential demand may be tapped.

This change in demand could elicit a change in supply of tart cherries. As demand increases farmers, recognizing this, will attempt to increase production in the long run by increasing plantings.

The increase in demand is a long run phenomenon, increasing as certainty is added to the market. Thus, the increase in quantity supplied to meet this increased demand is also a long run phenomenon. Further, supply response in tart cherries is slowed by the lag in production, usually taking at least five years for new plantings to reach bearing age. As shown earlier[1] the producer supply response is

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[1]See Chapter 4, Marketing Margins, Equation 4, page 47.

positively sloping, hence some increase in equilibrium producer price should be forthcoming.[1]

Hedging

One of the prime advantages of futures markets is availability to hedging. Almost every level of the production and distribution process of tart cherries can use the hedge in some form. For this reason only two cases will be cited in detail, a short hedge and a long hedge. Many variations of heding, both short and long occur, as discussed previously in Chapter II, on Hedging. These variations occur more specifically with the level of production and distribution in the market depending upon whether hedging to the firm is an operation collateral to processing and merchandising, or a program within the firm to avoid risk.

The farmer hedge, a short hedge, can be termed a 'production hedge.' The farmer sells a contract for forward delivery to cover his approximate crop production, whenever he wishes in the spring. If he wishes to sell directly to a processor at harvest, he can simultaneously sell cash cherries and repurchase his contract. Alternatively he can have his cherries custom packed as frozen product in 30 pound

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[1]This assumes a constant per capita supply disappearance in the previously existing demand for cherries.

pails and make delivery on his contract when it falls due.

By fixing some price forward, early in the production year, the farmer is aided in making production decisions concerning the extent of field practices and intensity of care of the crop.

The within year price variations against which farmers may hedge, do change the cultivation practices from year to year. Hence farmers may find a futures market an excellent indicator for planning decisions. On the other hand, the interyear fluctuations which are very difficult to offset by hedging cause no great concern to on-farm production decisions as indicated by the grower survey.

> Only 8.5 percent of the producers would change their adjustments if the price fluctuations were reduced from normal variation to only a 1 cent difference between prices in large crop years and small crop years. Thus a reduction in the annual price fluctuations would not have a major impact upon the production planning decisions of the tart cherry industry according to their responses to the survey.[1]

Hence, hedging by growers can assist them in production decisions on a seasonal basis, but not on an interyear basis. However the interyear price fluctuations do not significantly affect planning decisions. A futures

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[1]M. Hayenga, R. Feltner, D. Ricks, J. Shaffer, S. Greig, Great Lakes Tart Cherry Industry Grower Survey, Agricultural Economics Report No. 57, October 1966, Michigan State University, page 20-21.

market then, does aid farmers with the necessary production decisions.

Pie bakeries and other users of cherries in food products would be the major long hedgers. A pie baker could buy cherries for forward delivery to offset coinciding commitments of finished products containing cherries. The security of supply at forward prices allows the baker to adjust production and pricing decisions well in advance of cash price movements.

The market would provide an insurance to processor, wholesaler, and storage operator against losses by cash price changes. However, concomitant with insurance against losses by cash price change is the loss of speculative profits. Thus, it would function as an insurance mechanism to normal profits of processors and merchandisers. Further, banks and other credit sources are usually more willing to lend money on hedged inventory than on an open or unhedged inventory. The interest rates may not be significantly affected, but the percentage of value of the inventory against which money may be borrowed will be considerably higher.

The limitation of hedging is that it is by no means a perfect method of escaping loss from price fluctuation. The fact that the basis is not predictable over time, results

in the imperfect hedge. The perfect hedge implies a basis that is completely predictable for the entire length of the hedging period.

> Basis itself is the difference between the cash price and the futures price--it may be a difference due to time, location or qualtiy--or it may be a combination of these factors. . .Veteran hedgers are familiar with patterns of basis movements and claim that these are more predictable than price level.[1]

Thus, even though hedging is not perfect insurance against loss from price fluctuation, hedging will continue to exist and be profitable. If the variance of the basis is greater than or approaches the extent of the fluctuations in cash price, the market will probably be abandoned by hedgers, who will return to the cash market.

Information Supply

The increase in collection and dissemination of market information under a futures market has previously been discussed. Also an example of the result of this increase in information on prices, supply, and demand, has been given earlier in this chapter, with the conclusion being that it could result in tapping some demand which hesitates to enter the market because of the uncertainty of price.

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[1] Hedging Symposium for Country Grain Elevator Operators, The Chicago Board of Trade, December 11-12, 1963, page 37.

Under present conditions, the Great Lakes Cherry Growers Marketing Cooperative negotiates a price with processors which the association feels reflects the supply, carry over, and demand conditions. A futures market could accurately reflect these conditions and as well give farmers the knowledge of this price during the production period. The market power of either the buyer or seller is minimized as the futures price is established by public outcry in the trading pits.

Cost of Transactions

The cost of a transaction, be it a hedging or a speculative endeavor, can be estimated with reasonable precision.

Each exchange specifies minimum round-turn commissions which the member brokers must levy upon domestic nonmembers transacting business through them. By round-turn is meant that the commission fee is payable only after the transaction has been completed either by delivery or liquidation of the open position in the futures market.

These commissions vary with the exchange and the commodity traded. The volume of trade characteristic of each commodity has considerable influence on the fixing of these commissions.

The commissions set by the Chicago Board of Trade tend

to be the lowest set of exchange rates of the several commodity exchanges. They range from $18 for oats, to $22 for wheat, and corn, $24 for soybeans, and $30 for soybean oil and soybean meal. The only comparable exchange commissions are charged for transactions in barley, rye and oats on the Winnipeg Grain Exchange where all round-turn commissions are $20 (Canadian), except flax seed which is $5.

The grain exchanges, however, are notably the high trading volume markets, a prime reason for the size of the commission.

The Chicago Mercantile Exchange allows trading in more diversified groups of commodities with characteristically lower trading volumes than grains. The major commodities traded are live beef cattle, shell eggs, frozen eggs, and frozen pork bellies, with commissions ranging from $20 for live beef cattle contracts to $36 for the other commodity contracts. Commissions for metals trading on the Commodity Exchange, Inc., range from $35 to $50, depending upon the commodity.

The only exchanges levying commissions based on market price are the New York Coffee and Sugar Exchange, New York Cocoa Exchange, and the New York Cotton Exchange.

From this, we could expect a round-turn commission in tart cherry futures to be in the range of $36 to $42;

in terms of cost per pound, this is .12¢ to .14¢ per pound of frozen tart cherries. The present brokerage fees charged by commodity brokers is 3 percent of the value of the transaction, a cost which will still exist, unless the transactions and deliveries occur entirely within the futures exchange--a highly improbable occurrence.

Few, if any markets have failed because costs of transactions were greater than the monetary advantages offered to either speculators or hedgers. Although the commission suggested of about 1/8¢ per pound of tart cherries seems high, no comparison can be made between the benefits to risk avoidance, the contingent reduced marketing margins, and the cost of a transaction. However, a comparison can be made to commissions per pound of other commodities. Commissions on wheat are .074 cents per pound and 2.5% of value of a pound of wheat @ $1.80 per bushel. Pork bellies have a commission of .12 cents per pound and .33% of value of a pound of pork bellies @ 36.00 per cwt. Cherry commissions would be 1/8¢ per pound and .9% of value of a pount of processed tart cherries valued at 13¢ per pound. In this light the probable commission is within the bounds on other commodities presently traded.

Cost of Conversion to a Futures Market

Quantification of cost of conversion is at best very

difficult. It may be useful, however, to categorize these costs into fixed and variable.

The fixed costs in setting up a futures exchange for a commodity will be the cost of providing a pit on the exchange. To add a cherry contract to the structure already in existence for handling contracts at the exchange and commodity broker level, the cost would be the marginal cost of adding one more commodity to those already traded. This will be a cost to the exchange to be amortized over some length of time. The commissions must contribute to the fixed cost of providing the pit on the exchange. The services provided within the pit, the personnel to staff it and the services of the array of brokerage houses across the country, are also supported by the brokerage or commission fees. Thus at the exchange level the fixed costs of staffing the pit and providing contingent services will be met by the commissions.

The real cost, also fixed, and quite indefinitive, will be the time and effort required to "sell" the idea of a futures market in tart cherries to the cherry industry. This will involve persuading all levels of the market to accept this type of marketing institution, and teaching the industry how to operate and employ the futures market to their best advantage. This is no mean task, nor is it a

task accomplished easily and quickly. Nor can it be accomplished by having a researcher pronounce such a market economically and politically feasible.

Academicians and extension educators will have the task of providing facts and information to the industry to enable the industry to evaluate the proposed futures market. Within the industry itself will come the ultimate decision on the feasibility of establishing a tart cherry futures market. The industry itself will bear the cost of making this decision, and in no way will the cost of obtaining this decision be levied upon the resultant exchange.

The cost of conversion of the industry will then be the price of the growth of an idea which must be considered at every step for it to proceed to maturity, and which will be borne by the industry before the proposed institution takes its place in the market structure.

CHAPTER V

FEASIBILITY OF THE MARKET

Feasibility of the market is discussed under two major topics. The first is the economic feasibility dealing with demand for the contract and volume traded in the market. The second topic is the attitudinal feasibility concerning grower, processor, and floor trader acceptance of the proposed futures market.

Economic Feasibility

We must now retrace our steps and look at the assumptions underlying the previous analysis of the proposed futures market, its costs and benefits, its advantages and limitations. The assumption of the foregoing material, explicitly stated at the outset, was that the frozen tart cherry futures market would be active and viable. This assumption will be discussed with reference to demand for the contract, potential hedging interest both short and long, and usefulness of the contract to the industry. A later section will enlarge upon this topic with respect to political and attitudinal feasibility.

Demand for the Contract[1]

To date no strong desire has been expressed by the industry for this type of marketing institution to complement and to supplement the existing structure. It is the opinion of the author that such a desire must be expressed by the industry itself before instituting this type of marketing organization, or any other form of organization for that matter.

The initiation of trading in live beef futures contracts provides an interesting example.[2] The industry expressed an emphatic desire for futures contracting in live beef cattle, but not for other suggested forms--boneless beef, carcass beef, stockers and feeders. This desire must be built up within the tart cherry industry before a viable exchange could be instituted. Without this felt need, the futures contract will be neglected and lapse in disuse. If a need can be shown and a desire created within the industry the biggest single step toward a futures market will have been taken.

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[1]See also Attitudinal Feasibility for further discussion of this demand for the contract, page .

[2]Feasibility of Cattle Futures, A study conducted for the Chicago Mercantile Exchange by The Andersen-Clifton Company, Wilmette, Illinois, April 9, 1964.

Volume in the Market

Possible volume of trading on a futures market prior to setting it up is very difficult, if not impossible to judge. Some indication of potential volume may be derived from comparison of total potential short hedging contracts in various commodities presently traded with potential short hedging in frozen tart cherries.

From Table II we see that the monthly storage stocks of frozen pork bellies and frozen tart cherries are very similar in magnitude and if any difference is to be cited, frozen tart cherry stocks are the larger of the two. Both exhibit periods of increasing, then declining stocks, indicating cyclical or seasonal production with carry-over to other parts of the year.

The contract size in frozen pork bellies is 30,000 pounds, identical in size to the tart cherry contract suggested earlier. Hence, comparison of frozen storage stocks of the commodities seems to be valid. The conclusion reached then is that potential short hedging is very similar in both commodities.

If this is a reasonable comparison, then the potential volume of trade in frozen tart cherries would be sufficient to support an active market. This comparison of potential short hedging assumes a similarity in the structures

TABLE II

U.S. FROZEN PORK BELLY STORAGE STOCKS
(in 1,000,000 lbs., as of 1st of month)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1962	39.4	44.5	61.0	85.0	99.4	109.5	91.4	61.6	34.5	12.5	15.9	35.1
1963	57.8	64.2	73.3	103.4	119.9	112.4	94.8	65.9	36.8	22.1	23.1	38.5
1964	60.8	84.2	113.7	139.5	156.6	154.8	133.2	86.3	46.5	22.2	33.6	54.2
1965(1)	74.6	84.9	97.9	113.8	120.9	103.1	73.5	40.9	21.6	8.8	9.0	16.2
1966(1)	25.3	31.0	38.5	43.5								

(1) preliminary

Source: Commodity Year Book 1966, published by Commodity Research Bureau, Inc., New York, 1966.

TABLE III

FROZEN CHERRIES END OF MONTH STOCKS[a], U.S.A.
(in 1,000,000 lbs.)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1961	45.9	37.4	28.5	20.1	14.5	8.8	66.7	139.1	135.6	124.0	118.2	110.7
1962	100.1	88.3	79.0	69.6	58.5	50.5	121.6	143.6	135.5	125.4	118.4	112.2
1963	100.9	87.4	77.2	61.5	49.4	40.8	80.4	90.6	85.4	78.2	72.0	66.4
1964	57.8	46.9	36.7	26.7	17.9	12.1	124.1	170.1	161.1	152.2	140.7	133.8
1965	122.0	108.0	92.7	82.6	73.6	66.1	132.7	162.2	149.7	134.0	124.5	112.6
1966	104.4	89.8	78.7	67.1								

[a] Includes sweet cherries, although the amount is believed to be small.

Source: D. J. Ricks, Economic Relationships in Red Tart Cherry Marketing, 1947-1965, Agricultural Economics Report No. 43, Department of Agricultural Economics, Michigan State University, June 1966. Table 10, App. D. This table was compiled from monthly reports of Agricultural Estimates Division, AMS, USDA, by Fruit Branch, AMS.

of the two industries.

Having looked at short hedging potential, potential long hedging shall be discussed. Long hedging is more difficult to look at in this regard as we cannot compare potentially hedged stocks as in the short hedging. Regard then must be given to industry structure.

There exists a possibility that the market may lack long hedgers in sufficient volume to support the market. The potential long hedgers are pie bakeries and food processors selling tart cherry products both frozen and fresh to both the consumer and institutional markets.

Some pie bakeries may be too small to use the futures market as a hedging device. Although it was shown earlier that potential stocks hedged short were certainly large enough to maintain a market, this conclusion was reached on the assumption that the structure of the industry using tart cherries is similar to the structure of the industry using frozen pork bellies.

Although the potential may be present, the size distribution of possible long hedgers may indicate differently. During spring and summer of 1966, the Department of Agricultural Economics, Michigan State University, attempted to contact the major users of tart cherries. These included bakeries, bakery suppliers and food processors. The group

contacted represented four bakery suppliers, five fresh pie bakers, seven frozen pie makers, and sixteen bakeries. No accurate estimate can be made of the total numbers in each of the above groups in the U.S., but it was felt that those surveyed represented the majority of the major users of tart cherries. Indications from this survey also were that the small local pie bakeries were using more and more brand name pies, and consequently baking less themselves. This results in a move to concentrate the pie making industry into larger regional or national companies.

No accurate estimates could be obtained from the interviews as to the quantities used by these companies in relation to annual production, as many felt it was classified information within the firm. However, indications were that 7 of the major pie makers provide 50 percent of the cherry pie supply.[1]

The smaller tart cherry users in the nation will be excluded from using the futures market for anticipatory, or operational hedging because of the size of the contract relative to their annual use. The pie bakeries and suppliers moving only a few thousand pounds per month will be very

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[1]Feltner et al., Great Lakes Tart Cherry Industry Survey of Users and Distributors, Ag. Econ. Report 59, October 1966, Department of Agricultural Economics, Michigan State University.

limited in their ability to long hedge. It is felt by this author that 100,000 pounds per year is minimum movement for a company to be considered a potential long hedger, unless that movement is unevenly distributed throughout the year. Further, and more damaging evidence to the potential of long hedging is the fact that the pie bakers do not at present contract forward for the distribution of their pies. The retail supermarkets are loath to accept contracts for forward delivery of commodities as they feel that it is the pie makers who should assume the risk and advertising of their product. The supermarkets provide only the shelf space and purchase directly from bakeries no longer than a few weeks in advance, with the condition that the bakeries provide their own advertising. Since the pie bakeries do not forward contract for distribution of their product, and are not likely to be able to convince supermarket retailers that they should, long hedging is impossible for pie bakeries.

An alternative does arise, however. Pie bakeries may fix some price forward for their cash sales of pies and buy processed tart cherries for forward delivery based on expected sales of pies at the fixed price. However, this is not a long hedge, but may prove of use to the baker.

Exporters may also be long hedgers. But, exports of tart cherries have neither been large nor uniform in past

years.

There is the distinct possibility that farmers may be unwilling to use the futures market as a hedging device, for two reasons. Farmers must hedge their crop of fresh tart cherries in a market dealing only in frozen processed tart cherries. Secondly, if the Great Lakes Cherry Growers Marketing Cooperative continues to negotiate a price for them, the farmers would have a known price for their crop, although this price is set too late in the season for many of the critical production decisions to be made.

Farmer disinterest in hedging is chronic in most commodities where futures markets are in existence. With the bargaining association ready to negotiate a price each year, it is to be expected that farmer hedging will be minimal. However, this lack of farmer hedging need not lead to a thinness in short hedging in the market, as many other exchanges exist without farmer hedging.

Summary

Our assumption of viability of the exchange has met three criticisms. Demand for the contract at present is not strong within the industry. One of the reasons for this is founded upon attitudes toward the exchange and shall be discussed in the ensuing section. Time may change the demand

for the contract, and it must be changed before any viable exchange can be set up.

Inadequacy of potential long hedgers is a structural deficiency. With the present trend to even fewer long hedgers, hopes of overcoming this pitfall are certainly quite dim. Although a contract market could exist with a thinness in long hedgers, the possibility of corners, or squeezes remains as well as a fairly narrow base of hedging upon which to found speculative interests.

Farmer disinterest in hedging is chronic in futures markets and represents no serious menace to viability of an exchange. Although farmers may be disinterested in hedging, their trust and favorable opinion toward the futures markets is necessary. It is precisely this discussion of opinion which shall be taken up in the following section.

Attitudinal Feasibility

Although the decision to establish a futures market in processed tart cherries probably is economically feasible, unless the industry is willing to accept this marketing institution, such a decision cannot be made. It follows then, that a feasibility study of a futures market for processed tart cherries should be concerned with the acceptability of this plan by those it will directly influence.

To ascertain the attitudinal feasibility of a tart cherry futures market, two parts of the industry will be discussed--the producers and the processors, and finally the attitudes of the floor traders of the Chicago Mercantile Exchange will be presented.

Producer Attitudes

During February and March of 1966, a survey of tart cherry producers was undertaken in four states, Michigan, New York, Wisconsin, and Pennsylvania. The surveys were personal interviews, conducted by trained interviewers from the Department of Agricultural Economics, Michigan State University with assistance in Pennsylvania from the Pennsylvania State University Agricultural Extension Service. The purposes of the survey were to determine:

"(1) economic characteristics of the producer sector of the tart cherry industry,

(2) producers' conceptions of the major problems in their industry,

(3) producers' attitudes and opinions about various programs to alleviate these problems which either have been tried or might be considered."

The sample consisted of approximately 11.4 percent of all tart cherry growers in the four states who either:

(1) sold at least 10,000 pounds of tart cherries in 1964, according to available figures, or

(2) had sufficient bearing acreage in 1964 to have

produced at least 10,000 pounds of tart cherries (if the yield per acre of the individual grower was the average yield reported for his state in 1964).[1]

Of this 11.4 percent, 83 percent of the sample completed useable questionnaires. Hence, the effective sample size was 9.45 percent of all tart cherry growers meeting the above requirements.

The grower survey included questions concerning knowledge of and opinions toward futures markets. The questions and their responses are:

a) Are you familiar with the operations of a future market?

1) Yes 12 percent 2) No 88 percent

b) If a futures market were available which would allow you to sell your cherries at a known price even before they were produced, do you think you would be able to use it to your advantage?

1) Yes 39 percent 2) Maybe 10 percent 3) No 51 percent

c) If a processed red tart cherry futures market were established, would you consider this helpful, harmful or of no help or harm to the cherry industry?

1) Helpful 32 percent 2) No help or harm 11 percent 3) Harmful 6 percent 4) Undecided 51 percent

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[1]Marvin Hayenga, Richard Feltner, Donald Ricks, James Shaffer, W. Smith Greig, Great Lakes Tart Cherry Industry Growers Survey, Ag. Econ. Report 57, October 1966, Department of Agricultural Economics, Michigan State University, page 1.

About the most convincing conclusion that is readily drawn from the questions is that cherry producers are unaware of the operation of a futures market, but are aware of the advantages to be gained, if they could hedge in some manner. The latter part of this conclusion is drawn from the open end replies given to questions a) and b). In addition to question b), the rejoinder was: If yes, what purpose might it be used for? Table IV shows the grouping of the replies given.

TABLE IV

GROUPING OF OPEN-END REPLIES TO QUESTION b)

Group	Frequency
1) Aid in production decisions	85
2) Stabilize prices; provide pricing mechanism	20
3) Hedging device	5
4) Quality control	4

Once the services rendered by futures markets are suggested to producers, they seem to have little difficulty in coming up with reasonable uses for these services. It is significant that the majority mention some interest in their planning and production decisions.

To question c) there also was an open-end rejoinder, "How might it be helpful or harmful, whatever the case may be."

The replies to 'how it might be helpful', are very similar to those given to the open-end question in question b). The replies to 'how might it be harmful' dealt with three or four topics: 1) stimulation of overproduction, 2) overspeculation, 3) quality control problem, 4) price set competitively at subcost levels. The first two were the most common.

Before trading in onions was terminated in 1958 by Congressional order, there was considerable protest at the producer level of the futures exchange in onions, to a great extent this protest was the initiating force for the Congressional inquiry. This suggests that it is necessary for all groups of potential users to have a generally favorable attitude toward the futures exchange, or at least no discontent with it. The survey results indicate no intense dislike of this type of marketing structure by producers.

It was thought that the size of operation of the producer might be related to the survey results. Behind this is the reasoning that as the size of the operation increases, the managerial skills increase as well. As the managerial skills increase, the chance that the producer would be

familiar with futures markets and that the producer is better able to recognize wherein lay the advantages, would be increased.

Using contingency table analysis, the hypothesis that responses to question b) were independent of 1965 gross farm income was tested against the alternate hypothesis that they were not independent. The computed chi-square for the contingency table analysis was 14.91 which is not significant at the chosen .05 level of significance, hence the hypothesis of independence of responses to the survey and gross farm income was accepted.

Similarly, the hypothesis that responses to question c) were independent of 1965 gross farm income was tested against the alternate hypothesis that they were not independent. Again the computed chi-square for the contingency table analysis of 14.21 was not significant at the chosen .05 level of significance. The hypothesis of independence was accepted. Gross farm income, it was concluded, had no significant influence on the opinions or attitudes portrayed in questions b) and c).

Processor Attitudes

In March and April of 1966, a survey of processors of tart cherries was undertaken in Michigan, Pennsylvania,

Wisconsin, New York and Virginia. As in the producer survey, it was a personal interview questionnaire conducted by the Department of Agricultural Economics, Michigan State University.[1] The objectives of the survey closely allied those of the grower survey. The objectives were to determine:

(1) economic characteristics of the processor sector of the tart cherry industry,

(2) processors' conceptions of the major problems in the tart cherry industry,

(3) processors' attitudes and opinions about various programs to alleviate these problems which have either been tried or might be considered.

There are about 60 processors of red tart cherries in the Great Lakes States. Forty-four of these were selected for the survey. These 44 represent over 95 percent of the packed volume of tart cherries. All of the 44 schedules were completed to each processor's best ability and to the extent of the information the processor was willing to release.

The questions concerning attitudes of and opinions toward futures markets were the same as those included in the grower survey. The questions and their results are:

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[1]This survey of processors was directed by the same personnel who directed the grower survey: Marvin Hayenga, Richard Feltner, Donald Ricks, James Shaffer, and W. Smith Greig. Ag. Econ. Report 58, Great Lakes Tart Cherry Industry Processor Survey, October 1966.

a) Are you familiar with the operation of a futures market?

	1) Yes	2) No
Frequency of response	41 percent	59 percent
Response weighted by volume	55 percent	45 percent

b) If a futures market were available which would allow you to sell your cherries at a known price even before they were produced, do you think you would be able to use it to your advantage?

	1) Yes	2) Maybe	3) No
Frequency of response	22 percent	22 percent	56 percent
Response weighted by volume	28 percent	12 percent	60 percent

c) If a processed red tart cherry futures were established, would you consider this helpful, harmful or of no help or harm to the cherry industry?

	1) Helpful	2) No help or harm	3) Harmful	4) Undecided
Frequency of response	18 percent	18 percent	29 percent	34 percent
Response weighted by volume	28 percent	20 percent	33 percent	19 percent

The first question suggests one fact that is evident throughout the processor survey--that the frequency of response does not closely correspond to the volume of tart cherries processed by those respondents. The cause of this is that a handful of processors are very large, i.e., several million pounds of tart cherries packed per year; the largest

group of processors range in volume packed per year from a few hundred thousand pounds to a few million pounds. This gives reason to present responses to the questions in both frequency of response and volume represented by the respondents.[1]

Considerably more processors than growers, both by frequency of response and volume, asserted a knowledge of futures markets. However, upon explaining a possible advantage of futures markets to processors in question b), they do not feel as strongly as growers about being able to use it to their advantage.

About one third of the processors, by either standard, felt that a futures market would be harmful to the industry. It is interesting to note that 80 percent of those who replied 'harmful' to question c) could not find a means of using the market to their advantage in question b). It is this group of processors, who foresee no advantage to futures markets and also feel that an exchange would be harmful to the tart cherry industry, who are potential dissenters to inception of a futures market. This group represents 24 percent of those replying to both questions and 21 percent--

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[1]Since not all processors were willing to indicate their normal volume, this percentage of total volume for each response represents only that part of the respondents who indicated both answers to questions and their normal volume.

26 percent of the volume packed per year. The fact that the percentage of respondents in this case and their proportion of total pack are very similar implies that all sizes of processing firms could be among this potential group of dissenters. In fact, the range of production by this group is 1.3 million to 16 million pounds.

In addition to question b) a follow-up question was asked, 'How might it be useful?' The replies were very similar to those given by growers when asked the same question. Also, following question c), the question was asked, 'How might it be helpful or harmful.' The most common reply to the latter was one of distrust toward futures markets and their possible effects on the tart cherry industry. The replies to the farmer were again very similar to those given by growers to the same question.

In total then, more potential dissention is found among processors of tart cherries than among growers, although potential dissention represents less than one third of the industry. This dissenting group represent nearly all sizes of processors, hence, any educational programs to promote a futures exchange must be aimed at the entire processing industry. Certainly not enough opinion against futures markets exists for the industry to refrain from considering seriously a futures market as an alternative marketing

program for tart cherries.

Opinions of the Floor Traders of the Chicago Mercantile Exchange

During September of 1966, a mailed survey of opinions and attitudes of floor traders of the Chicago Mercantile was undertaken. It was conducted by this author and another researcher[1] in the Department of Agricultural Economics, Michigan State University. The objectives of the survey were to determine:

(1) Their attitude toward establishing a processed red tart cherry contract for trading on the exchange,

(2) What floor traders consider as the factors which influence prices,

(3) Their preferences regarding attributes of a contract.

The sample consisted of every second name on the Chicago Mercantile Exchange Membership List, whose office was based in Chicago. The sample was drawn in this way to eliminate those members who were not active floor traders. One hundred and thirty-seven schedules were mailed with 28 schedules, or about 20 percent returned.

The question of import to this study was 'If futures trading were offered in processed red tart cherries, would

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[1]Howard Bodenhamer, Ph.D. candidate, Department of Agricultural Economics, Michigan State University.

you trade in this commodity?' Of the 28 schedules, 22 completed the question. The traders were evenly divided on the issue--11 positive and 11 negative replies. For a positive answer the only reason given was that if sufficient price variation existed, and it appeared profitable to speculate, they would try it. The reasons given for a negative reply were primarily that the uses for the product were too limited, and that little or no outside interest could be developed resulting in an easily cornered market. Of those who declined to answer, many claimed that they did not know the commodity well enough to give an answer.

Of interest also to this study was the question immediately preceding the above question, 'If futures trading were offered in Florida oranges or frozen orange juice concentrate, would you trade in this commodity?' Again the replies were evenly divided and reasons given were identical to the above. In fact, no trader replied positively to one question and negatively to the other. Trading in frozen concentrated orange juice futures began October 26, 1966 on the New York Cotton Exchange. Although some seemingly unwarranted fluctuations in prices developed in the first few weeks, indications were that as confidence in the market grew, the market would outgrow this initial problem. Further, some uncertainty in the market arose from the poor weather

conditions during November, influencing the oncoming crop.

If this is an indication of the acceptance of other perishable fruits on the futures exchanges, then processed red tart cherries would seem to have some chance of success.

In summary, although 50 percent of the traders vetoed trading in processed red tart cherries, the other 50 percent indicated willingness to trade in anything so long as there were price fluctuations. This author feels that sufficient interest exists for trading in this commodity to make a start, particularly in view of the fact that trading has begun in frozen concentrated orange juice, a commodity which 50 percent of the traders similarly rejected.

Summary

Growers seem to be unaware of the operation of a futures market but more important, they do not express dislike or distrust of such an institution. The unawareness of growers was to be expected as they have had little opportunity for contact with a futures exchange in other commodities grown in the cherry producing areas of the Great Lakes States. The lack of demand for the contract previously mentioned stems primarily from this. That they express no adverse attitude toward such an institution is of considerable importance if the industry decides to sell the idea of

a futures exchange to growers.

Processors, like growers, express lack of adequate knowledge about futures markets but again no distrust is displayed.

Half of the traders surveyed indicate a willingness to trade in processed red tart cherries. Of more importance, however, is the fact that the same amount of willingness was expressed to trade in frozen concentrated orange juice, which has since began trading on the Cotton Exchange in New York.

In total, then, the idea of establishing a futures market to trade in processed red tart cherries does seem to be attitudinally feasible. No group comes out strongly against the institution.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The major conclusions of this study have been summarized at the end of each chapter from which they were drawn. In an effort to link the conclusions of each chapter together in a meaningful fashion, the conclusions will be restated in the first part of this chapter. Arising from the conclusions of this research recommendations to the tart cherry industry can be made. The recommendations to the industry form the final section of this study.

The overall purpose of this study has been to examine the feasibility of establishing a futures market in red tart cherries. To achieve this end, some of the necessary conditions for the operation of a futures exchange were outlined. Although by no means a complete list, those found were:

(1) The presence of hedging, speculation, and spreading in some form in the market place,

(2) The commodity must entertain a long-run demand not subject to sudden disappearance from or reappearance to the market,

(3) A minimum of pressures unresponsive to price,

(4) An evenly balanced contract favoring neither the buyer nor the seller in the market.

These conditions provided some of the criteria for judging a commodity acceptable to futures trading.

A contract was specified for trading in processed red tart cherries, after considering various alternatives. The contract called for delivery of 30,000 pounds of U.S. Grade A or U.S. Fancy frozen red tart cherries in 30 pounds (net) tins in the months of September, December, March, and June, at Grand Rapids, Michigan, or alternatively at Rochester, New York, and Green Bay, Wisconsin, with price specified in 0.025 cents per pound of product.

On the assumption that the suggested market would be viable, the effects of futures trading in processed red tart cherries on the industry were considered.

The reduction of risk within the market is created as a result of the increase in certainty concerning prices, stock movements, crop estimates and the like. Further, this reduction of uncertainty stems from the processors', growers', and merchandisers' ability to shift at least part of the risk to those willing to assume it. The result of reducing risk of adverse price movements leads to narrower price spreads from pack time to successive months as the additional return to risk would no longer be required.

By estimating demand at the farm level for tart cherries to be packed as frozen processed product using processor demand estimates and farm to processed price spreads, and estimating a long-run supply response based on the cherry grower survey results, the effect of a one cent reduction in marketing margins was suggested. Based on the regressions, a one cent reduction in marketing margins would result in a 0.6 cent rise in grower price and 0.4 cent decline in processed price. This should be tempered by the fact that processors, at present, claim losses from processing tart cherries. It is expected then that processors will absorb some of this 0.6 cents. The 0.6 cents probably represents an upper limit on the estimate of increase in farm price for a one cent decrease in marketing margins.

Even though hedging is not a perfect method of escaping loss from price fluctuations, it does provide some mechanism by which producers, processors, and merchandisers may offset, at least in part, some of the risk of price fluctuations.

As futures markets provide information few other parts of the marketing system can provide, and a method of hedging, it is possible that more economic units are willing to trade in a commodity unless assured of a uniform supply of quality

product. In this manner, demand for processed red tart cherries may increase.

The cost of transactions to users of the market would probably range from $36.00 to $42.00 for a round-turn commission to nonmembers. This is quite comparable to commissions for other commodities with similar volume characteristics.

The cost of providing trading pits and contingent services will be borne by the exchange and the payment of commissions will be in return for these services provided. The cost to the industry will be the time and effort expended to sell the idea of a futures market to the industry. This cost will in no way be levied upon the resulting institutions, but will be borne by the industry even before trading actually begins.

The feasibility conclusions have been categorized into two groups--economic and attitudinal feasibility. Those economic factors found to be a hindrance to establishing a futures market are:

(1) insufficient demand for the contract by the industry,

(2) insufficient potential long hedging in the market, possibly resulting in an easily cornered market,

(3) grower disinterest in hedging.

The first can be changed over time, and must be changed before the inception of futures trading in tart cherries can take place. The second is a structural characteristic of the industry and would be very difficult to change. The last is chronic in futures markets and does not significantly affect the viability of the exchange, as long as this disinterest does not become distrust.

Three groups were surveyed to obtain their attitude toward setting up a futures market in processed red tart cherries. The most obvious conclusion from the surveys of growers and processors was that they were unaware of the operation of a futures market. However, more significant was the fact that they had no preconceived distrust or dislike of futures markets. The survey of floor traders on The Chicago Mercantile Exchange indicated that they would trade in processed red tart cherries or any other commodity provided that sufficient price variation existed and speculation looked profitable.

Attitudinally, then, it is felt that the market is sufficiently acceptable to permit trading in processed red tart cherries on an exchange, provided enough education of growers, processors, and merchandisers has been carried out to interest these groups in the economics of hedging.

Recommendations for the Industry

Various alternative marketing programs are available to the tart cherry industry. The advantages and disadvantages of each must be compared by industry leaders and members in light of their knowledge of the problems afflicting their industry. These industry leaders include the decision makers of the state grower associations, the Great Lakes Cherry Growers Marketing Cooperative, National Red Cherry Institute, processor organizations, and merchandising and pie bakery associations. In fact, the prime recommendation from this author is that this group of decision makers from the entire industry meet to consider problems within the industry, various alternative marketing programs, and the attributes of plan they would like to see implemented.

In comparing various alternatives, the feasibility of each program must be evaluated in addition to comparing advantages and disadvantages of each. Further, the industry must decide upon the extent of control over the marketing program they wish to have.

These are the primary decisions which the industry must make. The entire industry must be in accord with the decisions, as the history of the onion industry has so adeptly pointed out. The information and evaluation of each of the alternatives could be provided by universities

and Agricultural Extension programs. The tart cherry industry should encourage universities and Agricultural Extension in research and education of industry members on alternatives of particular interest to the industry.

If a futures market is chosen as an alternative marketing program for the tart cherry industry, then serious consideration should be given to the contract specifications suggested in this study.

If a futures market is chosen for the tart cherry industry, then the proponents have the difficult task of selling this plan to all levels of the industry. For the proponents to gain more understanding of a futures market and the role it will play within the industry, contact should be made with the Citrus Associates of the New York Cotton Exchange Inc., as this association has recently established trading of frozen concentrated orange juice on the Cotton Exchange. A watchful eye on the newly established frozen concentrated orange juice futures may prove helpful in the months ahead when making the decision regarding a futures markets within the tart cherry industry.

Contact also should be made with the Florida citrus growers and processors' organizations to gain better knowledge of the problems related to a processed frozen fruit crop. Many of the problems encountered by the citrus

industry are similar to those found by this study in the tart cherry industry.

Relations should be established particularly with the Chicago Mercantile, the New York Cotton Exchange, and other exchanges, in an effort to locate trading in that exchange most willing to cooperate with the tart cherry industry and that exchange offering the most economically traded contract. The recent "commission war" between The Chicago Board of Trade and the Chicago Mercantile Exchange on the live beef contract indicates a desire of the exchanges to obtain and to maintain their interests in this recently established contract, by offering a more economically traded unit.

Whatever the decision of the industry leaders, the concept of a futures market as an alternative marketing program for red tart cherries is economically and attitudinally feasible at present with few restraints, and should be given serious consideration. It is entirely left to the industry decision makers, then, drawing upon information of and evaluation of alternatives provided by researchers in universities and Agricultural Extension to decide if the attributes of this alternative are sufficiently attractive to warrant adoption.

APPENDIX A

TABLE I

AVERAGES AND VARIANCES OF PRICE SPREADS FROM AUGUST TO SUCCESSIVE MONTHS FOR YEARS 1955-56 TO 1965-66 (cents per pound of frozen product)

Months	Average Price Spread	Variance of Price Spreads
Aug. to Sept.	0.4315	o.7651
Aug. to Oct.	0.5565	2.7337
Aug. to Nov.	0.5286	2.5094
Aug. to Dec.	1.2527	7.3082
Aug. to Jan.	1.5286	9.3813
Aug. to Feb.	1.5059	12.7201
Aug. to Mar.	1.6314	12.2831
Aug. to Apr.	1.6815	13.7176
Aug. to May	2.2786	11.3813
Aug. to Jun.	2.9690	14.2729

Source: Compiled from Table 18, Appendix D, of D. J. Ricks, Economic Relationships in Red Tart Cherry Marketing, 1947-1965, Agricultural Economics Report 43, Department of Agricultural Economics, Michigan State University, June, 1966.

BIBLIOGRAPHY

Baer, J. B., and O. B. Saxon, Commodity Exchanges and Futures Trading, Harper Bros., New York, 1949.

Bakken, H. H., R. W. Gray, T. A. Hieronymous, and A. B. Paul, Futures Trading Seminar - History and Development, Volume I, Mimir Publishers Inc., Madison, Wisconsin.

Commodity Year Book 1966, published by Commodity Research Bureau, Inc., New York, 1966.

Conversion Factors and Weights and Measurements for Agricultural Commodities and Their Products, Published by USDA, ERS, Statistical Bulletin No. 362, June 1965.

Feasibility of Cattle Futures, A study conducted for The Chicago Mercantile Exchange, by the Andersen-Clifton Company, Willmette, Illinois, April 9, 1964.

Feltner, R., D. Cole, W. S. Greig, M. Hayenga, D. J. Ricks, J. Shaffer, Great Lakes Tart Cherry Survey Users and Distributors, Agricultural Economics Report 59, October 1966, Department of Agricultural Economics, Michigan State University.

Gaumnitz, E. A. ed., Futures Trading Seminar - A Commodity Market Forum for College Teachers of Economics, Volume III, Mimir Publishers, Madison, Wisconsin, 1966.

Gray, R. W., "Characteristic Bias in Some Thin Futures Markets," Food Research Institute Studies, Volume I, 1960.

Hayenga, M., D. J. Ricks, R. Feltner, J. Shaffer, and W. S. Greig, Great Lakes Tart Cherry Industry Processor Survey, Agricultural Economics Report 58, Department of Agricultural Economics, Michigan State University, October 1966.

_____, Great Lakes Tart Cherry Industry Grower Survey, Agricultural Economics Report 57, Department of Agricultural Economics, Michigan State University, October 1966.

Hedging Symposium for Country Grain Elevator Operators, The Chicago Board of Trade, December 11-12, 1963.

Hoffman, G. W., Grain Prices and the Futures Market, USDA Technical Bulletin No. 747, January, 1941.

Irwin, H. S., Evolution of Futures Trading, Madison, Wisconsin, 1954.

Kohls, R., Marketing of Agricultural Products, Macmillan Co., New York, 1955.

Oldenstadt, D. L., An Analysis of Alternative Marketing Programs for the Red Tart Cherry Industry, Unpublished Ph.D. Thesis, Michigan State University, 1964.

Ricks, D. J., Economic Relations in Red Tart Cherry Marketing, 1947-1965, Agricultural Economics Report 43, Department of Agricultural Economics, Michigan State University, June, 1966.

Schonberg, J. A., The Grain Trade - How It Works, Exposition Press, New York, 1956.

Schruben, L. W., Grain Market Reports, Agricultural Experiment Station, Kansas State College, Manhattan, Kansas, Bulletin 353, December, 1953.

Working, H., "Inverse Carrying Charges in Futures Markets," Journal of Farm Economics, Volume 30, 1948.

_____, "Price Effect of Futures Trading," Food Research Institute Studies, Volume I, 1960.

_____, "Speculation on Hedging Markets," Food Research Institute Studies, Volume I, 1960.

_____, "The Theory of Price of Storage," American Economic Review, Volume 39, December, 1949.

Understanding the Commodity Futures Market, Commodity Research Publication Corporation, New York, New York, 1965.