ABSTRACT

EXPECTED PRICES FOR U.S.
AGRICULTURAL COMMODITIES, 1917-62

by Milburn L. Lerohl

There are two general objectives of this study. They are, first, to calculate series of expected prices for several horizons for each of thirteen agricultural commodities, for use individually and for aggregation into indices of prices expected by farmers. The second is to make a preliminary evaluation of these expected prices and indices. The series and indices of expected prices are designed to be estimates of the prices actually anticipated by reasonably well-informed farmers.

The method used is a two-stage process. First, a regression equation is fitted, providing mechanical estimates of expected price as a function of actual prices in previous years. Second, the mechanical estimates are adjusted to ensure that they are consistent with outlook information. The result is a series of ex ante expected prices which rely heavily on and are compatible with the available outlook data.

The thirteen commodities for which series of expected prices are presented are apples, beef, chicken meat, corn, cotton, eggs, hogs, manufactured milk, oranges, potatoes, soybeans, tobacco and wheat. Three expected price series are presented for each commodity; expectations for one year, five years and ten years into the future. The information

from the thirteen commodity indices for each horizon is incorporated into three aggregate indices of expected price, representing the price expected for agricultural output for the following year, the following five years and the following ten years.

Several means of evaluating the expected prices are employed. The first of these involves comparison of the expected prices of this study with those developed by U.S.D.A. personnel for Glenn L. Johnson's study for the Committee on Economic Development. The Johnson series and those of this study are compared for a post-war period (the Johnson series are not available prior to 1946) for several commodities, and for both the one-year and five-year expected price series. Their similarity supports the hypothesis that, despite the difficulty of recording expected prices, different investigators are capable of arriving at similar conclusions regarding the direction of shifts of expected price relative to actual price.

An evaluation of the ten-year expected prices is conducted by comparing changes in each of three expected price series with changes in farm real estate values per acre. The evidence suggests that the expected prices of this study are more closely related to changes in farmers' price expectations (as measured by changes in farm real estate values per acre) than are either current-year expected prices or mechanically derived expected prices.

Further evidence suggests that the expected prices of this study are also superior to the other two models when an attempt is made to remove the influences of general inflation or deflation.

Letters were sent to thirty prominent agricultural economists to determine their beliefs regarding the relative position of actual versus expected price for several commodities, several time horizons and for the aggregate indices. However, the data from several respondents, including all data relating to the one-year expectations, were found to be somewhat unsatisfactory because of mechanical expectation models employed by these respondents. These data were not used. Nevertheless, the data employed indicate substantial agreement between the relative position indicated in the returned questionnaires and that indicated in this study with respect to longer-term expected prices.

An important way of testing expected price series is by their incorporation as exogenous variables in econometric models. Several such studies by fellow graduate students are underway, and one is complete. Michel Petit used earlier versions of several of these expected price series in his study of the feed-grain livestock economy. Petit was reasonably satisfied with the performance of the expected price series in his models.

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CHAPTER 1

INTRODUCTION

This study is one of several which have been and currently are being carried out under the auspices of a grant from Resources for the Future, Inc. The overall objective is to evaluate certain U.S. agricultural policies and programs, 1917-1962. The larger study is particularly concerned with the impact of government policy on resource flows into and out of agriculture. Product price expectations are important ingredients of expected marginal value products for resources. Various of the contributing studies use expected marginal value products in studying the allocative impacts of government policies and programs, 1917 to 1962.

Accordingly, this study reports on a project in which the ex ante price anticipations of farmers are estimated. Expected price estimates are developed and presented for thirteen agricultural commodities important in the U.S. For each commodity, three series of expected prices are included, indicating, for each year 1917-62, the average price anticipated for that year, the average price anticipated for that and the following four years and the average price anticipated for that and the following nine years. The commodity expected prices are combined into three indices, reflecting the price levels anticipated for aggregate agricultural output for each of these three periods into the future.

The method selected for determining these expected prices involves fitting regression equations to provide mechanical estimates of expected price as a function of actual prices in previous years. The mechanical estimates are then examined to see if they are consistent with outlook information, and modified where necessary to reflect such information.

The reasons for presenting these expected prices, and for using a method such as the above, are several. First, it is argued that expected price is the relevant price variable in farm planning, and that valid estimates are needed for use in empirical studies. Second, it is argued that expected price is not likely to be a simple function of present and/or past prices, although information about the present and past is likely to be one of the influences on expected price. Third, it is argued that useful and interpersonally comparable estimates of the prices expected by farmers can be obtained, and that these estimates must give considerable weight to outlook information and other data relevant to farmers' anticipations of the future.

Several tests of these expected price series are reported, the objective being a preliminary evaluation of whether or not these expected prices and indices are accurate reflections of the anticipations held by farmers. The series presented are not, however, to be interpreted as a test of the accuracy of prediction of the expectation model

used. The expected prices are designed to represent the prices actually anticipated by reasonably well-informed farmers. The only relevant test lies, therefore, in ascertaining whether the expected prices presented here are in fact similar to the ex ante beliefs of farmers regarding product prices.

CHAPTER 2

PRICE EXPECTATIONS AND ECONOMICS

Expectations have long been recognized by economists. The strategic position of price expectations has drawn the attention of such eminent individuals as Marshall, Keynes and Hicks:

> The immediate effect of the expectation of a high price is to cause people to bring into active work all their appliances of production, and to work them full time and perhaps overtime ... . The immediate effect of the expectation of a low price is to throw many appliances for production out of work ... .[1]

> All production is for the purpose of ultimately satisfying a consumer. Time usually elapses, however - and sometimes much time - between the incurring of the costs by the producers ... and the purchase of the output by the ultimate consumer. Meanwhile the entrepreneur ... has to form the best expectations he can as to what the consumers will be prepared to pay when he is ready to supply them (directly or indirectly) after the elapse of what may be a lengthy period; and he has no choice but to be guided by these expectations, if he is to produce at all by processes which occupy time.[2]

> It is only in the stationary state that actual prices do not need to be distinguished from expected prices ... . Further ... the actual state of any economy is in fact never stationary ... .[3]

As these examples illustrate, the importance of price expectations is that of a variable in business

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1/ Alfred Marshall, Principles of Economics (8th ed.; London: Macmillan, 1949), p. 311. This is p. 374 in the earlier type setting of the 8th edition.

2/ J. M. Keynes, The General Theory of Employment, Interest and Money (London: Macmillan, 1936), p. 46.

3/ J. R. Hicks, Value and Capital (2nd ed.; Oxford: Clarendon Press, 1946), p. 119.

planning. But when markets are in static equilibrium, the optimum plan can justifiably be phrased in terms of a production function and of given prices (or, in imperfect competition, schedules of prices) for inputs and outputs. It is only when change over time is permitted that expectations become important.

Single-Valued Expectations and Business Plans

A single-valued expectation occurs when the entrepreneur has no doubt of the accuracy of his prediction. This does not imply that the expectation is in fact an accurate one, only that the expectation is subjectively certain. The relevant business plan is conventionally considered to be the one which maximizes the present value of the expected net receipts. "Given the entrepreneur's anticipations, his optimum plan is that which offers the maximum present discounted value (as of the date of planning ...) of anticipated net receipts ... ."[1/] As Hart points out, however, this need not imply that the operations of the firm are in equilibrium in the sense that a constant rate of flow of output is planned.[2/]

Because the single-value expectation is held with subjective certainty, the problem of alternative bases for choice may not enter. Jensen and Halter note that, in the case of perfect knowledge, bases for choice which do not

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1/ A. G. Hart, "Anticipations, Business Planning and the Cycle" Quarterly Journal of Economics, Vol. 51 (1936-37), p. 278.

2/ Ibid., p. 279.

involve the maximization of the discounted value of expected net returns have no advantage over such maximization.[1] Nevertheless, the entrepreneur formulates expectations with respect to several variables, price being only one of these. When the anticipations for any of these variables are other than single-valued, the possibility of employing strategies other than the maximization of the discounted value of expected net returns must be considered.[2]

In the received static theory,[3] the equilibrium of the firm can be stated in terms of marginal equivalences. Subject to certain non-marginal conditions, the equilibrium with single-valued expectations occurs when the "discounted marginal-cost-of-input equals discounted marginal-revenue-of-input equals marginal productivity multiplied by discounted marginal-revenue-of-output."[4]

Uncertainty and Business Plans

As with single-valued expectations, the optimum business plan may be obtained by equating the marginal discounted present value of receipts and costs. The development of the plan is more complex, however, since the

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1/ Harald Jensen and Albert Halter, "Making of Decisions," in Glenn L. Johnson, et al., A Study of Managerial Processes of Midwestern Farmers (Ames: Iowa State University Press, 1961), p. 124.

2/ For a summary of appropriate bases for choice other than the maximization of discounted expected net receipts, see ibid., pp. 124-125.

3/ For example, Hicks, op. cit., Chapter 6.

4/ Hart, op. cit., p. 280.

entrepreneur now considers that a range of future prices is possible. For example, he may, as some empirical evidence suggests, have a concept of a most likely price, and also of the possible range above and below this value through which actual price may vary. Some authors, going back to Irving Fisher in 1906,[1] have attempted to deal with problems such as price expectations by using a probability distribution. Thus, an entrepreneur may anticipate that there is a 50 per cent chance of a price of X dollars, a 20 per cent chance of a price of Y dollars, and a 30 per cent chance of a price of Z dollars. Boulding suggests, with reservations, that "as a first approximation"[2] the expected value of this distribution may be calculated, and used as a certainty equivalent.[3]

Although the use of a certainty equivalent may be of value in certain theoretical or emprical problems, nevertheless the concept of a known probability distribution of future prices is not cogent. This is so because such a probability distribution cannot be said to represent price uncertainty. Hart's definition of risk, which is consistent with Knight's, is relevant. He defines risk as "the

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1/ Cited by Kenneth E. Boulding, "The Theory of the Firm in the Last Ten Years," American Economic Review, Vol. 32 (December 1942), p. 794.

2/ Ibid.

3/ A certainty equivalent, for the purpose at hand, is a value of a variable which, though its occurrence is considered as less than certain, is treated in the analysis as likely to occur with probability one.

holding of anticipations about the future which are not 'single valued' but constitute a probability distribution having known parameters."[1] A probability distribution of prices, having known parameters, is thus a risk and not an uncertainty. "It is the position of this paper that 'risk' has comparatively little importance in economic analysis ... ."[2] If the difficulty which the entrepreneur must surmount is only that of known probabilities of different prices, then an insurance scheme can solve this problem of price risk.[3]

The uncertainty of price is not, however, the only problem introduced by relaxing the assumption of single-valued expectations. The way in which the individual views uncertainty is also an influence on the business plan. Risk averters react to uncertainty in a way different from that of risk preferrers.

But there are still further sources of uncertainty for the business plan. Uncertainty may also arise with respect to output response, new technology, the actions

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1/ "Risk, Uncertainty and the Unprofitability of Compounding Probabilities," in William Fellner and Bernard F. Haley (eds.), Readings in the Theory of Income Distribution (Philadelphia: Blakiston, 1951), p. 547.

2/ Ibid., pp. 547-548.

3/ See Frank H. Knight, Risk, Uncertainty and Profit (New York: Kelley and Millman, 1957), pp. 231-232.

> "As we have repeatedly pointed out, an uncertainty which can by any method be reduced to an objective, quantitatively determinate probability, can be reduced to complete certainty by grouping cases."

and attitudes of people, institutions or input prices.[1] Neither these uncertainties, nor the relationships among the various kinds of uncertainty in the plan, are easily susceptible of handling.[2] Nevertheless, Hicks recommends, at least implicitly, the use of single-valued expectations. "Thus, we shall formally assume that people expect particular definite prices, that they have certain price expectations ... . By the device of definite expectations, we are enabled to use the same analysis as we used in statics to set out the equilibrium ... .[3]

The foregoing paragraphs illustrate that a certainty equivalent has merit as a useful abstraction. There are other circumstances in which the use of single-valued expectations need no apology:

1/ Earl J. Partenheimer and Robert D. Bell, "Managerial Behavior of Farmers in Formulating Expectations of Future Events," in Glenn L. Johnson et al. (eds.), A Study of Managerial Processes of Midwestern Farmers (Ames: Iowa State University Press, 1961), p. 86.

2/ Hicks, op. cit., p. 126.

3/ Ibid., pp. 126-127.
Oscar Lange, Price Flexibility and Employment (San Antonio: Principia Press, 1945), pp. 31-32, states:

> "Thus we can substitute for the most probable prices actually expected with uncertainty equivalent prices expected with certainty. Let us call them the effective expected prices. This is the most probable price minus the risk premium ... . By means of this device, uncertain price expectations can be reduced to certain ones."

Lange rejects the case of risk preference, believing it to be unusual. If the possibility is included, however, Lange and Hicks hold very similar views on the usefulness of a single-valued expectation.

> An entrepreneur who expected no information that would enable him to improve his estimates between t_0, the time of planning, and a later date t_1, assuming him to have no aversion to risk and no particular liking for it, would find it his best policy to lay out his plans as if his expectation-schedules of price were single-valued expectations. Similarly, an entrepreneur who was obliged to make all his decisions as to volume of operations in the present would be unable to use fuller information as it came in, and would have to act on what was available.1/

States of Knowledge

Knight's discussion of certainty, risk and uncertainty implies a sharp distinction among these three states of knowledge. For example, Knight states: "It will appear that a measureable uncertainty, or 'risk' proper ... is so far different from an unmeasureable one that it is not in effect an uncertainty at all."2/

The consistency between Knight's and Hart's definitions of risk has been mentioned. But Hart goes on to argue that there may not be a clear difference between risk and uncertainty. Uncertainty may, he says, be interpreted as a probability distribution of probability distributions; for example, there may be probability distributions of price, and "likelihoods" of these distributions occurring.3/ The probabilities and likelihoods could be integrated or summed, converting the uncertainty to risk. Hart asserts,

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1/ Hart, "Anticipations, Business Planning and the Cycle," op. cit., p. 286.

2/ Knight, op. cit., p. 20.

3/ Hart, "Risk, Uncertainty and the Unprofitability of Compounding Probabilities," op. cit., p. 549.

however, that such a summation conceals relevant information because it neglects "two economic considerations: (a) the anticipation of a change in anticipations and (b) the possibility of deferring decisions."[1] Thus, the division of subjective uncertainty into only two categories, risk and uncertainty, oversimplifies because it rejects the possibility that it might "be worth spending additional time learning and acquiring more information before making a decision."[2]

As a result of studies conducted at Kentucky with L. A. Bradford and, on other occasions, C. B. Haver, Glenn L. Johnson has defined five states of knowledge. As a result of work by the Interstate Managerial Survey (IMS), the number of knowledge situations has been expanded to six. These six states of knowledge are subjective certainty and five subjectively uncertain categories; risk action, voluntary learning, involuntary learning, inaction and forced action.[3] Risk action corresponds to the situation

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1/ Ibid., p. 550.

2/ Glenn L. Johnson and Curtis F. Lard, "Knowledge Situations," in Glenn L. Johnson, et al. (eds.), A Study of Managerial Processes of Midwestern Farmers (Ames: Iowa State University Press, 1961), p. 43.

3/ Diagrammatic illustrations of risk action, learning, inaction and forced action are presented in Curtis F. Lard, An Evaluation of the Interstate Managerial Study Classification of Knowledge Situations (Unpublished M.S. thesis, Michigan State University, 1959), pp. 27-28.

An additional knowledge situation, forced inaction, is suggested by Alan R. Bird and Curtis F. Lard, "Toward Effective Integration of Knowledge Situations in a Theory of Managerial Behavior," Journal of Farm Economics, Vol. 43 (February, 1961), pp. 137-141.

in sequential analysis where the specifications for a choice are fulfilled, and the cost of added knowledge is equal to its value. Voluntary learning is a situation in which the specifications for a decision have not yet been achieved, but the entrepreneur is attempting to achieve these specifications, since the cost of added information is less than its value. Involuntary learning, the new category added by the IMS, is one in which the cost of added information exceeds its value, but some outside force requires that the learning process continue. The inaction state exists when the cost of added knowledge exceeds its value and no further learning occurs. Finally, forced action occurs when the specifications for a decision are not yet fulfilled, but some outside force makes it necessary to take action.

Expectation Horizons

Aside from a belief that different decisions regarding the business plan, and perhaps also similar decisions regarding different product outputs, are carried out with different time periods in view, there is little known of expectation horizons that can guide an empirical study. For example, Tinbergen suggests that those expectations pertaining to the near future are more important than those relating to a further period.[1] This is by no means obvious. It is not difficult to illustrate situations in which, say, important resource commitments take place at

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1/ J. Tinbergen, "The Notions of Horizon and Expectancy in Dynamic Economics," Econometrica, Vol. 1 (1933), p. 247.

time t_0 in response to expectations for a very distant time t_1. Tinbergen does, however, make a suggestion which may be of value in empirical problems concerning expectations: "As a first approximation it might be supposed that only the expectances relating to a certain time period (the "horizon") are of importance, and all of the same importance."[1/]

Tinbergen goes on to suggest that the entrepreneur can be visualized as forming an expectation at a moment t for the period t to $t + \gamma$. After realizing part of this plan, an expectation is formulated at a later date $t + 1$ for the period $t + 1$ to $t + \gamma + 1$. If, as seems likely, different horizons are applicable to different types of entrepreneurial decisions, then a problem of empirical import will find it useful to deal with expectations for different periods in the future. This thesis attempts to derive expected price series which enable one to deal with horizons of different length. The manner in which these expected prices are developed is discussed in Chapter 4.

1/ Ibid. Italics added.

CHAPTER 3

PRICE EXPECTATIONS BY FARMERS

The concept of an expectation has long been recognized. "But the introduction of expectations only really begins to be important when they are not implicitly or explicitly all assumed to be perfectly correct or in the main approximately correct."[1] Nevertheless, it is only in relatively recent years that economists have become interested in the models which entrepreneurs use to form expectations, and the variables which enter into these models. The following discussion attempts to indicate some of the important characteristics of expectation models used by farmers.

Some Actual and Potential Expectation Models

An early empirical study of price expectations is that of Coase and Fowler.[2] In an earlier study,[3] they examined and rejected the assumption that farmers assume that present costs and prices will continue unchanged in the future. In their 1937 article, they report on a study which examined five different hypotheses regarding the relevant variables in the formation of expectations. The

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1/ T. W. Hutchison, A Review of Economic Doctrines 1870-1929 (Oxford: Clarendon Press, 1953), p. 81.

2/ R. H. Coase and R. F. Fowler, "The Pig-Cycle in Great Britain: An Explanation," Economica, Vol. 4 (1937), pp. 55-82.

3/ "Bacon Production and the Pig-Cycle in Great Britain," Economica, Vol. 2 (1935) cited by ibid., p. 55.

first four of these indicate several relatively simple relationships between future prices on the one hand and past or present prices on the other. The fifth assumption is that future prices and costs cannot "be determined in a simple form from existing or past prices and costs."[1] The conclusion at which they arrive is that the fifth assumption "seems to be the only view which, on the evidence available, can be held."[2]

A more recent study is that of Darcovich and Heady.[3] They report an investigation dealing with fourteen expectation models, of which eleven are possible means of developing price expectations. The latter are:

(1) Average Price Model. The mean of the series is projected into the next year as the expected price.

(2) Normal Price Model. This model is based on some past period. It implies that some constant price other than the mean is used as the estimate of expected price for the following year.

(3) Random Price Model. A value is selected at random from past observed prices and used as the estimate of expected price for the following year.

1/ Coase and Fowler, "The Pig-Cycle in Great Britain: An Explanation," op. cit., p. 58.

2/ Ibid., p. 73.

3/ William Darcovich and Earl O. Heady, Application of Expectation Models to Livestock and Crop Prices and Products, Ia. Agr. Exp. Sta. Res. Bul. 438, 1956, p. 738.

(4) Current-Year Price Model. The current price is projected ahead as the expected price for the following year.

(5) Moving-Average Price Model. A five-year moving average of the price series is projected ahead for the sixth year.

(6) Weighted-Moving Average Price Model. This model uses a five-year average which weights the most recent year with a weight of four and each of the four earlier years with a weight of one to provide an estimate of expected price for the sixth year.

(7) Trend Price Model. The linear trend between two consecutive years is added to the price of the second year to provide the expected price for the third year.

(8) Reverse-Trend Price Model. The linear trend between two consecutive years is subtracted from the price of the second year to provide the expected price for the third year.

(9) Parallel Price Model. The price expected in the following year is estimated from some past period of similar (parallel) circumstances.

(10) Futures Price Model. The futures market is used to provide as estimate of the price expected next year.

(11) Outlook Price Model. The expected price is estimated on the basis of available outlook information

issued by federal and/or state agencies.[1]

Darcovich and Heady carry out an empirical evaluation of models (1), (3), (4), (5), (6), (7), (8), (9), (11) on five selected livestock products - steers, hogs, lambs, eggs and butterfat. The conclusion is that, for these livestock products, the outlook model performs better than any of the others for all commodities but one, using data from the 1917-50 period.[2]

Using the absolute mean error criterion, Darcovich and Heady rank the nine models in the following order as price expectation models for livestock, from best to worst: (1) outlook, (2) current year, (3) parallel, (4) weighted moving average, (5) trend, (6) moving average, (7) reverse trend, (8) random, (9) average. They also test the models on two other criteria. One is the percentage of extreme errors (i.e., the percentage of years in which the price and the expectation differed by 35 per cent or more) and the other is the coefficient of the range. The latter is

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1/ Ibid., p. 739. Darcovich and Heady limit the outlook model to using information having as its source a governmental body. In the study undertaken here and reported below, the source of information is not so restricted, although federal government agencies are found to be the most important information source.

2/ Ibid., Table 7, p. 745. The outlook model shows a lower absolute mean error than any of the other eight models tested on the five commodities with the one exception that the absolute mean error for hogs is $2.19 for the current-year model and $2.24 for the outlook model. The range of absolute mean error for hogs is $2.19 to $5.00 for the nine models.

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"the range of the errors expressed as a percent of the mean of the series."[1/] On both of these criteria, the outlook model is again ranked first among the models tested. The models achieving the first four ranks are the same as those achieving the first four ranks on the absolute mean error criterion, although the relative position of models ranked 2, 3, and 4, is altered in the case of the coefficient of the range criterion.

The nine expectation models are also compared with respect to nine crops.[2/] The weighted-moving average model ranks first among the nine on all three criteria; absolute mean error, percentage of extreme errors and coefficient of the range. The outlook model ranks 2, 2, and 4.5 respectively on these three criteria. On the absolute mean error criterion, the outlook model is ranked 1 or 2 for all crops except soybeans, for which it is ranked 3. On the percentage of extreme errors criterion, the outlook model is ranked 2 or 3 for all commodities except cotton and tobacco, for which it is ranked 4. Finally, on the coefficient of the range criterion, the outlook model is ranked 2, 3, 5, 6, or 8 for the nine crops compared. The empirical evaluation of the crop models also uses data for the 1917-50 period.

1/ Ibid., p. 746.

2/ The crops used in the comparison are corn, oats, hay, wheat, potatoes, flax, cotton, soybeans and tobacco.

The authors comment on the "favorable showing"[1] of the outlook model in providing expectations for livestock products. To only a slightly lesser extent, the outlook model appears to be a relatively accurate mean of prediction also in the case of crop prices.

Futures Price Model

Despite the claim that "a 'futures price model' is tested on several series of crop prices,"[2] Heady and Darcovich report no empirical evaluation of price prediction for a futures price model. Nevertheless, there is evidence that the futures market does not provide a particularly efficient expectation model. Heady, for example, argues that futures prices may provide a basis for some farm production decisions, but only those of a short run nature:

> Futures provide the basis for short-run production decisions only. They are not available for prices extending over a period of several years ... . However, trading in futures transactions does not exist for a large number of farm commodities. Where futures quotations are available they are closely tied to spot (current) prices ... . Accordingly, spot prices becomes nearly as efficient as the futures prices in forming expectations for production in the year ahead.[3]

Working makes a similar point, using wheat futures as an example. He points out that the May and July futures

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1/ Darcovich and Heady, op. cit., p. 747.

2/ Ibid., p. 738.

3/ Earl O. Heady, Economics of Agricultural Production and Resource Use (Englewood Cliffs, N.J.: Prentice-Hall, 1952), p. 493.

are, respectively, an old-crop future and a new-crop future. The price of the former should be related to wheat available before harvest, and to conditions pertinent to the current crop-year. The price of the July future should be influenced by anticipations regarding the upcoming crop:

> The difference between these two futures should, on this view, depend largely on the expected size of the approaching harvest. The difference should change also from week to week or from month to month with changes in crop prospects.
>
> Such opinions with respect to the behavior of the relations between the prices of the May and the July futures are belied by the facts. Whether the approaching harvest is expected to be large or ... small makes no statistically measureable difference in the relations between the prices of the May and of the July future.[1]

Working goes on to state that it "is not true that futures prices afford forecasts of price changes in the sense in which one speaks of the price forecast of a market analyst."[2] He argues that conventional theory, which has assumed that futures prices provide a useful expectation, has erred in not realizing that spot prices are as much influenced by anticipations of the future as are futures prices.[3]

D. Gale Johnson makes several important points

1/ Holbrook Working, "Quotations on Commodity Futures as Price Forecasts," Econometrica, Vol. 10 (1942), p. 41.

2/ Ibid., p. 49.

3/ Ibid., p. 50.

regarding the use of the futures market to provide price expectations. Johnson states that, although some expectation information can be obtained from futures markets, "This procedure ... is not as fruitful as might be supposed."[1] The first reason is that quoted above, namely that in commodities where stocks are held in important volume, both the cash price and the price on the futures market are futures prices.[2]

Second, the usefulness of futures prices in forming expectations is further limited because "in many of the futures markets a futures is not active from planning time until harvest. The December corn futures is usually inactive until June, and the July wheat futures is usually not active until late October."[3]

A third factor limiting the applicability of futures prices to the formation of price expectations is that it "is difficult to imagine the functioning of a futures market for perishable crops or livestock."[4] Johnson states that the presence of the high degree of

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1/ D. Gale Johnson, Forward Prices for Agriculture (Chicago: University of Chicago Press, 1947), p. 82.

2/ Ibid.

3/ Ibid., p. 128.

4/ Ibid. Johnson recognizes, of course, the existence of futures markets for some livestock products. This third factor suggests, however, that the prices on such markets are not likely to be good approximations to farmers' expectations.

price uncertainty associated with these products would lead processors to be wary of operating in such a futures market to any extent, because of the danger of incurring large capital losses. This could perhaps be overcome by the existence of a risk discount in the futures market, but the discount would have to be so large that a reduction in farmer participation would occur.

A Study of Farm Expectations

The Interstate Managerial Survey (IMS), a seven-state survey which grew out of the activities of the North Central Farm Management Research Committee (now NCR-4), deals with the expectation models used by farmers to develop their anticipations of future product and input prices, and to develop expectations with respect to other important variables in the operation of their farm businesses. Pertinent data are reported by Partenheimer and by Partenheimer and Bell.[1/]

Partenheimer and Bell discuss their results regarding product price expectations in terms of "specific product expectations" and "general product expectations", the latter lacking reference to a particular commodity. They report that the most widely used expectation models can be classified as supply, government action or supply-demand models. The only other models as important as any

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1/ Earl J. Partenheimer, Some Expectation Models Used by Selected Groups of Midwestern Farmers (Unpublished Ph.D. thesis, Michigan State University, 1959) and Earl J. Partenheimer and Robert D. Bell, op. cit., pp. 85-104.

of these three occur in the general product expectations, in which business activity and war models are found to be approximately as important as a government action model.[1] For the specific product expectations, the supply, government action and supply-demand models are indicated, by the IMS, as being used by 67.5, 31.0 and 17.0 per cent of the respondents, respectively. For the general product expectations, the respective percentages are 55.7, 19.6 and 28.0. In addition, the war model and the business activity model are attributed to 20.9 and 20.3 per cent of the farmers, respectively.[2] This is supported in a study by Kaldor and Heady, who note: "It became apparent at an early stage in the field work that no single procedure [for forming expectations] was used by all farmers. Moreover, it was evident that the same farmer used more than one procedure ... ."[3]

Pretests for the IMS, using eight expectation models presented by Heady,[4] reveal that the majority of farmers studied do not use these simple types of models.[5]

1/ Partenheimer and Bell, op. cit., p. 89.

2/ Ibid. The percentages are over 100 in both cases since farmers tended to use more than one type of expectation model. No other expectation model was cited by as much as 10 per cent of the respondents.

3/ D. R. Kaldor and E. O. Heady, An Exploratory Study of Expectations, Uncertainty and Farm Plans in Southern Iowa Agriculture, Ia. Agr. Exp. Sta. Res. Bul. 408, 1954.

4/ Heady, op. cit., pp. 479f. Similar models are presented in Darcovich and Heady, op. cit., pp. 738-740, and are discussed above.

5/ Partenheimer and Bell, op. cit., p. 88.

Even the outlook model appears not to be used, if we interpret this model to mean the adoption of expectations which are developed by the land-grant colleges and other institutions using similar prediction techniques. "IMS results do not indicate that farmers blindly accept price predictions by these organizations as a basis for planning."[1/]

At the same time, however, the IMS does provide evidence of a considerable measure of economic literacy among farmers:

> It would appear that Heady has underemphasized the effect of the economic education that has been carried on through the extension service, government programs, farm magazines, non-governmental farm organizations, and other such sources. The IMS gives evidence that farmers are more sophisticated economically than he has presumed at the time he wrote his text on production economics ... .[2/]

Thus, farmers apparently make attempts to forecast the future, even though they may be unwilling to accept wholly the forecasts of the future prepared for them by academic or government organizations.

Expectations and Distributed Lags

In a number of publications, the earliest in 1956, Nerlove has been an exponent of the use of distributed lag models for various purposes, including the formation of price expectations. The use of distributed lags originated with Irving Fisher in 1925, and has since been

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1/ Partenheimer, op. cit., p. 26.

2/ Ibid.

adapted to a variety of problems.[1]

In discussing the causes of distributed lags, Koyck cites what he calls objective reasons, which include technological and institutional factors, and subjective reasons, such as habit.[2] The technological influences are associated with the durability of investment goods or consumer durable goods. The relationship of, say, investment to sales may not be a once-for-all increase in investment associated with an increase in sales. A sales increase may lead to a change in investment only after a period of operation at excess capacity, after the entrepreneur has become assured that the new sales level is permanent.

Institutional factors in distributed lags arise as a result of legal and customary barriers to immediate change, such as the fact that some prices may be incapable of reacting immediately to changed market conditions because of contractual limitations to an immediate change in price.

The factors most important in relating distributed lags to expected price are, however, influences of imperfect knowledge or psychological inertia. These subjective reasons arise because: "(1) Habit is a powerful source ...

1/ Marc Nerlove, "Distributed Lags and Estimation of Long-Run Supply and Demand Elasticities: Theoretical Considerations," Journal of Farm Economics, Vol. 40 (May 1958), p. 306.

2/ L. M. Koyck, Distributed Lags and Investment Analysis (Amsterdam: North-Holland Publishing Company, 1954), pp. 6-9.

[and] (2) Changes in economic variables may be considered only temporary."[1] In any empirical problem dealing with distributed lags, however, there may well be both of what Koyck refers to as objective and subjective factors. The examples above illustrate that the "objective" versus "subjective" factors, whatever heuristic value they may have, need not provide separate reasons for distributed lags.

The expected price model Nerlove proposes is as follows:[2]

$$P_t^* = P_{t-1}^* + \beta (P_{t-1} - P_{t-1}^*) \qquad 0 < \beta \leq 1 \qquad (1)$$

where

P_t^* = the price expected in period t [3]

1/ Marc Nerlove, Distributed Lags and Demand Analysis, U.S. Dept. of Agriculture Handbook No. 141 (Washington: U.S. Government Printing Office, 1958), p. 5. Nerlove lists the factors causing distributed lags as technological, institutional and psychological. Nevertheless, Koyck and Nerlove are consistent since Nerlove's psychological factors are equivalent to Koyck's imperfect knowledge and psychological factors.

2/ For example, see Nerlove, The Dynamics of Supply: Estimation of Farmers' Response to Price (Baltimore: Johns Hopkins, 1958) pp. 52-55.

3/ In "Time Series Analysis of the Supply of Agricultural Products" in E. O. Heady et al., (eds.), Agricultural Supply Functions - Estimating Techniques and Interpretation (Ames: Iowa State University Press, 1961), p. 46, Nerlove refers to P_t^* simply as "the price expected in period t." He consistently refers to it, in The Dynamics of Supply, as the expectation of "long-run" normal price. The interpretation as the price expected in period t is preferable, since "long-run" normal price carries the connotation that the expected price is more appropriate to long- than short-run output adjustments. In fact, Nerlove uses his model to predict annual acreage plantings for several crops.

P_t = actual price.

The formulation of equation (1) is readily amenable to statement in terms of "variables which can be observed."[1/] The following version relies only on observables:[2/]

$$P_t^* = \beta P_{t-1} + \beta(1-\beta)P_{t-2} + \beta(1-\beta)^2 P_{t-3} + \ldots \quad (2)$$

The reasons Nerlove chooses his formulation over a "general distributed lag"[3/] model of the form

$$P_t^* = \sum_{i=1}^{\infty} a_i P_{t-i} + u_t \quad (3)$$

are likely twofold. First, the model he uses is derived from and consistent with his assumption of entrepreneurial behavior regarding expectations. This assumption, illustrated by equation (1), states that in each period entrepreneurs revise their expectations of future price by a constant proportion, β, of the difference between last period's actual and last period's expected price. Thus, when $\beta = 0$, expected price is invariant with respect to actual price, and when $\beta = 1$, expected price is last period's actual price.

Second, the general form of the model may not be satisfactory if estimates of the coefficients of the successive P_{t-i} are desired, since intercorrelation among the P_{t-i} may decrease the reliability of the individual

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1/ Nerlove, The Dynamics of Supply: Estimation of Farmers' Response to Price, op. cit., p. 24.

2/ Ibid., pp. 54-55.

3/ L. R. Klein, "The Estimation of Distributed Lags," Econometrica, Vol. 26(1958), p. 55.

coefficients a_i. If, however, the estimation of the a_i in equation (3) is not a major concern, but the concern is with obtaining estimates of expected price, a general distributed lag of the form of (3) may provide adequate estimates of P_t^*, since "sums or other functions of the parameters may be estimated with a fair degree of precision even though individual components [the a_i] are quite unreliable ... ."[1/]

A more important criticism of the Nerlove approach relates to the suitability of a model such as (1) for approximating farmers' price anticipations. Johnson asks the question:

> Do we really believe that the next year's expected price is this year's expected price plus some proportion (constant from year to year) of the difference between last year's actual and last year's expected normal price regardless of wars, price-support activities, inflations, economic collapse, changing foreign demand, strikes, and institutional adjustments - all of which were important in the 1909-32 period studied by Nerlove?[2/]

Johnson goes on to state that "what is known and suspected about the formation of price expectations and production adjustments strongly indicates that Nerlove's β and γ [the coefficient of adjustment] are oversimplifications."[3/]

1/ Ibid.,

2/ Glenn L. Johnson, Book Review of The Dynamics of Supply by Marc Nerlove, Agricultural Economics Research, Volume 12 (January, 1960), p. 26.

3/ Ibid., p. 27.

Johnson points to information from the IMS[1] which indicates a "more complex adjustment than can be handled by a simple ... [coefficient] which is constant from year to year."[2] This receives support from Partenheimer, who notes that "the assumptions Nerlove makes still regard farmers to be quite naive."[3]

Models such as Nerlove's emphasize the importance of past and present events on expected price, and to this extent are not inconsistent with results from the IMS. However, the above evidence suggests that an important step in making available estimates of farmers' expectations involves consideration of more information than that used by Nerlove. It also suggests that information about the future is unlikely to be a simple function of present or past prices.

Empirical Expected Price Series

In a study which he prepared for the Committee on Economic Development, Glenn L. Johnson presents expected

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1/ Reported by D. H. Boyne and G. L. Johnson, "A Partial Evaluation of Static Theory from Results of the Interstate Managerial Survey," Journal of Farm Economics, Vol. 40 (May 1958), pp. 458-469.

2/ Johnson, Book Review of The Dynamics of Supply, op. cit. Another interesting source of support for this view is D. B. Williams, "Price Expectations and Reactions to Uncertainty by Farmers in Illinois," Journal of Farm Economics, Vol. 33 (1951), p. 22. Williams quotes from a farmer interview, the latter illustrating that past and future considerations about the weather, biological conditions and government programs entered into his price expectation for corn.

3/ Op. cit., p. 9.

price series for the U.S. for eleven commodities.[1] These expected price series were calculated for Johnson by U.S.D.A. personnel, and illustrate the prices they believed were expected by reasonably well-informed farmers for a post-war period, usually 1946-60. The eleven commodities are wheat, corn, cotton, potatoes, burley tobacco, dairy, hogs, beef, oranges, grapefruit and apples. These estimates of expected price "are really quantified opinions based on conferences with persons whose main business is to appraise the outlook and current situations for the commodities involved."[2]

These expected price series are important because, first, they postulate a considerable degree of economic literacy on the part of farmers, a literacy attested to by the IMS and, second, they recognize the apparent variety of factors which influence price expectations. Nevertheless, two major difficulties are associated with the use of these expected prices in empirical analyses. First, the period of time spanned by the series is relatively short, shorter than that which may be required by some researchers interested in using the series of expected prices. Second, there is no assurance that different individuals appraise the future sufficiently similarly to ensure interpersonal comparability of the estimates of expected price drawn up

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1/ Glenn L. Johnson, An Evaluation of U.S. Agricultural Policies and Programs, 1956 to 1960 (East Lansing: mimeo., 1961), Chapter 5.

2/ Ibid., p. 71.

by various persons. By independently developing other series of expected prices, a task undertaken in this thesis, the Johnson estimates of expected price can be used as a check on the series calculated in this study.

CHAPTER 4

METHOD OF OBTAINING EXPECTED PRICES

There are two main objectives of this thesis project. The first is to calculate expected prices for several future time spans for each of thirteen agricultural commodities, for use individually and for aggregation into indices of prices expected by farmers. The second objective is to make a preliminary evaluation of these expected prices and indices. The method employed under the first objective is discussed in this chapter, leaving until later a discussion of the tests. The chapter also draws together some of the background for the particular method of calculation chosen. Most of this is, however, implicit in the preceding chapter.

The chapter concludes with a number of suggestions for those who, at some later time, may wish to use, modify or up-date the expected price data.

Selection of the Method

Darcovich and Heady comment, with respect to the mechanical models which they discuss, that their models may depart from reality because they assume that farmers do not learn from experience.[1/] The work of Darcovich and Heady, of Heady, and the work in the IMS, reported above, suggest that it would be rational for farmers to use outlook information. Given information from the IMS which indicates a considerable degree of economic sophistication among

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1/ Darcovich and Heady, op. cit., p. 738.

farmers, it is likely that farmers incorporate outlook information and less formal guesses about the future in forming their production plans. The work of the IMS and others strongly indicates that farmers do in fact make estimates of future variables which relate to price. In addition, Nerlove and others provide evidence that the present and past are relied upon in planning for the future.

The objective of calculating the expected price series being to approximate the prices which farmers did in fact anticipate, rather than to indicate the expectation model which they should use (or should have used), it is important to incorporate all of the relevant information. First, the information about the future which evidence indicates is being used by farmers must be employed. Further evidence for the incorporation into expected prices of more price information and data about the future derives from the testimony, in the IMS, of considerable economic sophistication on the part of farmers. Economically literate farmers are less likely to reject any relevant information which is available. Second, the information above the past and present, which also appears to be used by farmers, must be incorporated into the estimates of expected price.

Expected Price Series For Commodities

The expectation models of farmers use the past as one of the guides to the future. An attempt to approximate

the expected prices of farmers must acknowledge, however, that such expectations are likely to be modified by anticipations about the future. One means of incorporating these types of information is to use a two-stage procedure: first, to develop mechanical estimates of expected price based on past and present prices;[1/] second, to be prepared to alter the mechanical estimates of expected price in order to ensure that they are consistent with outlook information and other estimates of relevant variables in the future. This is the method chosen in this thesis.

The model chosen provides mechanical estimates of the expected price in year t ($\hat{P}_t$), as a function of prices in the preceding years: $\hat{P}_t = a_0 + a_1 P_{t-1} + a_2 P_{t-2} + \ldots$ The variables P_{t-1}, P_{t-2}, ... indicate actual prices in the preceding years. This "general distributed lag" model, to use Klein's term, is different from the distributed lag model used by Nerlove and others. Since the interest here is in estimating a function of the independent variables, intercorrelation among the successive P_{t-i} may not seriously impair the reliability of the mechanical estimates of expected price ($\hat{P}_t$). Further, the above equation provides a very general form of the relationship between expected price and past years' actual prices.

1/ The term "mechanical" is used in this thesis to indicate expected prices relying solely on a constant term and on weighted previous year's prices of the commodity for which expectations are being estimated. The mechanical estimates might be described, more concisely but less briefly, as "weighted, previous year, own-price" estimates of expected price.

After developing the mechanical estimates of expected price ($\hat{P}_t$), these estimates $\hat{P}_t$ (t = 1917, ..., 1962) are modified, where appropriate, in the light of available outlook information, to indicate the ex ante expectations held by reasonably well-informed farmers (denoted EP_t). The expected price series are calculated for thirteen commodities: corn, wheat, potatoes, apples, oranges, cotton, tobacco, soybeans, beef, pork, manufactured milk, eggs and chicken meat. For each commodity, three series of expected prices are developed, representing, for each year 1917-62, (1) the price expected for that year,[1/] (2) the price expected for that year and the following four years, and (3) the price expected for that year and the following nine years.

The above method is chosen for several reasons. First, the method allows a ready comparison of the expected prices developed in this study with those developed under a general form of an own-price, mechanical model. Second, the method indicates that the expected prices of this study are not a sharp departure from previous work. Rather, they represent a logical progression from past investigations, in the direction of incorporating more information in the expected price estimates. Third, the method indicates a degree of suspicion regarding the use

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1/ In the case of hogs, the prices expected for both spring and fall pig crops are developed in lieu of a single price expectation for a one-year period.

of econometric models to approximate farmers' price expectations. In spite of the physical and intellectural resources available to it, the U.S.D.A. continues to subject all of its "econometric" estimates of expected price to judgment by its Outlook and Situation Board. Perhaps an important reason for this procedure is that, in expected price, a non-observable variable is being estimated. As one develops models more accurate in predicting actual prices, one may simultaneously be developing models less accurate in approximating farmers' anticipations. Also, there is the problem that some events, significant for expectations, are observed with very few degrees of freedom. The method of this study is at least as capable of dealing with such occurrences as is an econometric model for estimating expected prices.

One-Year Expected Price Series

The one-year series of expected prices, calculated for each of the thirteen commodities, indicate the price anticipated for each year t (t = 1917, ..., 1962) as follows:

(1) For livestock and livestock products except hogs, each expected price is the price anticipated for calendar year t at the beginning of calendar year t. For hogs, two expected price series for one year are derived, representing (a) the price expected for pigs farrowed December through May, as anticipated at the beginning of this period, and (b) the price expected for pigs farrowed June through November, as anticipated at the beginning of

this period.

(2) For field crops, each expected price is the price anticipated in the spring of year t for the crop year commencing in the summer or fall or year t.

(3) For tree fruits, each expected price is the price anticipated in the spring of year t for the crop year commencing at harvest in year t.

In order to develop the mechanical estimates of expected price, the following notation can be used:

P_t = actual price of a commodity in year t ($t = 1917, \ldots, 1962$).

$\hat{P}_t$ = mechanical estimate of expected price for year t ($t = 1917, \ldots, 1962$).

Five models are then fitted to the actual annual prices for each commodity:

(1) $P_t = \alpha_0 + \alpha_1 P_{t-1} + u_{t1}$

(2) $P_t = \alpha_0 + \alpha_1 P_{t-1} + \alpha_2 P_{t-2} + u_{t2}$

:

:

(5) $P_t = \alpha_0 + \alpha_1 P_{t-1} + \alpha_2 P_{t-2} + \ldots + \alpha_5 P_{t-5} + u_{t5}$

These result in five possible equations for obtaining the mechanical estimates of expected price:

(6) $\hat{P}_t = a_0 + a_1 P_{t-1}$

(7) $\hat{P}_t = a_0 + a_1 P_{t-1} + a_2 P_{t-2}$

:

:

(10) $\hat{P}_t = a_0 + a_1 P_{t-1} + a_2 P_{t-2} + \ldots + a_5 P_{t-5}$.

One of the equations (6), ..., (10) is selected as the means for obtaining the mechanical estimates of expected price. The bases for selection are as follows: First, consideration is given to the equation (among the five) which has the highest level of $\bar{R}^2$. Second, consideration is given to selecting an equation with a demonstrated ability to reflect changes which have occurred in the direction of the trend of price. Third, other things being equal, an equation in which all of the regression coefficients are significantly different from zero is chosen.

The equation selected is then used to provide ex ante mechanical estimates of expected price for each year 1917 through 1962. Given these mechanical estimates ($\hat{P}_t$), the appropriateness of each $\hat{P}_t$ is judged in the light of outlook information. If any value $\hat{P}_t$ is found to be inconsistent with outlook information, that value is changed to reflect such information. This procedure is employed for each of the thirteen commodities.

Specific examples of the outlook data and information used in this study are included in the bibliography to this thesis. Generally, the data and information are from publications by the United States Department of Agriculture, particularly the Situation reports for commodities, the Demand and Price Situation, and various bulletins pertaining to each of the commodities.

The outlook method used in this thesis is an attempt

to evaluate the outlook data and information in quantitative terms. The outlook reports frequently discuss probable price changes in terms such as slight, moderate, or large. In some such instances, the predicted price change, in dollars or in percentage terms, is understandable from the context. In others, this is not so, and it is necessary to infer quantitative amounts by referring to other instances in which it is possible to establish the numerical meaning of slight, moderate or large. For slight or for large changes, the U.S.D.A. outlook statements are quite consistent. A "slight" change usually indicates one of about 5 per cent or less. A "large" change usually indicates one of 20 per cent or more.[1/] The range of values between these extremes is, in this study, considered as follows: A moderate change is one of about 15 per cent, and a slight to moderate change is one of about 10 per cent.

Five-Year Expected Price Series

The five-year series of expected prices, calculated for each of the thirteen commodities, indicate the average price to producers anticipated for a five-year period t, t+1, ..., t+4 (t = 1917, ..., 1962) as follows:

(1) For livestock and livestock products, each expected price for the following five-year period is the

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1/ To this extent, these findings are consistent with usage by Darcovich and Heady, who report the following: slight - 5 per cent; fairly large - 15 per cent; large - 20 per cent or more. See Darcovich and Heady, op. cit., p. 739.

price anticipated, at the beginning of calendar year t, for the calendar years t, t+1, t+2, t+3 and t+4.

(2) For field crops, each expected price for the following five-year period is the average price anticipated at planting time in year t for the crop years t, t+1, t+2, t+3 and t+4, the crop year t commencing in the summer or autumn of calendar year t.

(3) For tree fruits, each expected price for the following five-year period is the average price anticipated in the spring of year t for the crop years t, t+1, t+2, t+3 and t+4, the crop year t similarly commencing in the summer or autumn of calendar year t.

In order to develop the mechanical estimates of expected price, the following notation is introduced:

$P_{5t} = \frac{P_t + P_{t+1} + P_{t+2} + P_{t+3} + P_{t+4}}{5}$ = an equally weighted average of undeflated prices to producers during a five-year period t, t+1, ..., t+4 (t = 1917, ..., 1958).

$\hat{P}_{5t}$ = mechanical estimate of P_{5t}.

Five equations are fitted to the actual price data for each commodity. These equations are similar to equations (6) through (10), the only difference being that the dependent variable here is P_{5t}. One of the five equations is selected to provide mechanical estimates of expected price ($\hat{P}_{5t}$). The values $\hat{P}_{5t}$ for each commodity are then altered, where appropriate, to ensure consistency with outlook information. The result is a series of five-year expected

prices (EP_{5t}) for each commodity.[1/]

Ten-Year Expected Price Series

The ten-year series of expected prices, calculated for each of the thirteen commodities, indicate the average price to producers anticipated for a ten-year period t, t+1, ..., t+9 (t = 1917, ..., 1962) as follows:

(1) For livestock and livestock products, each expected price for the following ten-year period is the price anticipated, at the beginning of the calendar year t, for the calendar years t, t+1, t+2, t+3, ..., t+8 and t+9.

(2) For field crops, each expected price for the following ten-year period is the average price anticipated at planting time in year t for the crop years t, t+1, t+2, ..., t+8, and t+9, the crop year t commencing in the summer or autumn of calendar year t.

(3) For tree fruits, each expected price for the following ten-year period is the average price anticipated in the spring of year t for the crop years t, t+1, t+2, ..., t+8 and t+9, the crop year t similarly commencing in the summer or autumn of calendar year t.

$$P_{10t} = \frac{P_t + P_{t+1} + P_{t+2} + \ldots + P_{t+8} + P_{t+9}}{10} = \text{an}$$

equally weighted average of undeflated prices to producers during a ten-year period t, t+1, ..., t+9, (t = 1917, ..., 1953).

1/ The procedure is similar to that used to develop the one-year expected prices for each commodity. See supra, pp. 37-39.

$\hat{P}_{10t}$ = mechanical estimate of P_{10t}.

As in the one-year and five-year expected price series, five equations are fitted to the actual price data for each commodity. These equations are similar to equations (6) through (10), the only difference being that the dependent variable is P_{10t}. One of the five equations is selected to provide mechanical estimates of expected price ($\hat{P}_{10t}$). The values $\hat{P}_{10t}$ are altered, where appropriate, to ensure consistency with outlook information. The result is a series of ten-year expected prices (EP_{10t}) for each commodity.1/

Aggregate Indices of Expected Prices

Three aggregate indices of expected prices are constructed, representing price expectations for the aggregate of agricultural output for that year, for that year and the following four years and for that year and the following nine years.

These one-year, five-year and ten-year aggregate indices rely on the thirteen commodity indices for the one-year, five-year and ten-year periods, respectively. Each of the three aggregate indices illustrates the influence of expected price on ten types of agricultural production. The thirteen commodity indices enter into the aggregate index in proportion to the value of the type classifications which they represent. The ten type

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1/ The procedure is similar to that used to develop the one-year expected prices (EP_t) for each commodity. See supra, pp. 37-39.

classifications and the commodity index or indices representing each are as follows:

	Type of Production	Commodity(-ies) Representing Type of Production
1.	Feed Grains	Corn
2.	Food Grains	Wheat
3.	Vegetables	Potatoes
4.	Fruits and Nuts	Apples, Oranges
5.	Cotton	Cotton
6.	Tobacco	Tobacco
7.	Oil-bearing Crops	Soybeans
8.	Meat Animals	Beef, Hogs
9.	Dairy Products	Manufactured Milk
10.	Poultry, Eggs	Eggs, Chicken Meat

The weights used for the prices expected in years 1917-40 (and for the five-year and ten-year periods commencing 1917-40) are the value of sales of each type classification in the 1935-39 period. Weights for the 1941-62 period are the value of each type classification in the 1947-49 period. These weights, and the way in which they are calculated, are indicated in Table 1. The linkage between the two series is made in the years 1941 and 1942. The expected price indices for each year 1917-40 are modified to reflect the relationship between the two series in the two linkage years.

Table 1: Average Annual Value of Agricultural Production by Commodity, 1935-39 and 1947-49

Commodity	1935-39				1947-49			
	Type of Product Included, Value[1]	Specific Product Included, Value[2]	Type of Product Excluded, Value[3]	Weights[4]	Type of Product Included, Value[1]	Specific Product Included, Value[2]	Type of Product Excluded, Value[3]	Weights[4]
Feed Grains	1,886.6				6,155.5			
Corn		1,430.9		.18740		4,591.4		.18440
Hay & Forage			750.6				2,277.4	
Food Grains	667.5				2,815.7			
Wheat		607.2		.06630		2,579.8		.08435
Vegetables	952.2				2,514.4			
Potatoes		299.4		.09458		711.6		.07532
Fruits & Nuts	432.2				1,059.1			
Apples		NA		.02147		211.8		.01676
Oranges		NA		.02146		189.0		.01497
Sugar			89.6				224.1	
Cotton	778.1	778.1		.07729	2,514.9	2,514.9		.07534
Tobacco	279.5	279.5		.02776	924.9	924.9		.02771
Oil-bearing Crops	111.8				1,037.7			
Soybeans		46.4		.01110		548.1		.03109
Seed Crops			38.8				143.7	
Miscellaneous Crops			17.0				71.5	
Meat Animals	2,161.5				8,162.7			
Beef		938.0		.09929		3,856.1		.11956
Hogs[5]		1,090.3		.11541		4,030.2		.12496
Dairy Products	1,735.9				4,753.9			
Wholesale Milk		727.5		.17243		3,090.6		.14238
Poultry & Eggs	1,062.2				3,443.9			
Eggs		662.6		.06606		2,116.4		.06845
Chicken Meat		371.8		.03945		1,073.4		.03471
Miscellaneous Livestock			93.9				159.5	
COLUMN TOTALS	10,067.5		989.9	1.00000	33,381.8		2,876.2	1.00000

1/ Average annual value of production in millions of dollars. These types of commodities are included in the aggregate index of expected price.

2/ Average annual value of production in millions of dollars. These commodities are those for which series of expected price have been calculated. Together they make up the aggregate index of expected price.

3/ Average annual value of production of commodities not included in the aggregate index of expected price.

4/ Weights used for each commodity in the aggregate index of expected price. The weight for corn, for example, is calculated as follows:

1935-39		1947-49	
$\frac{1,886.6}{10,067.5}$	= .18740	$\frac{6,155.5}{33,381.8}$	= .18440

5/ The weight for hogs in the one-year series is apportioned between the expected price series for spring-farrowed hogs and fall-farrowed hogs in proportion to the number of sows farrowing in spring and fall, 1940-50. The one-year weights for hogs thus become:

	1935-39	1947-49
Spring Hogs	.07103	.07690
Fall Hogs	.04438	.04806

Source: U.S. Department of Agriculture, Major Statistical Series of the U.S.D.A., Vol. 2, Agriculture Handbook No. 118, (Washington, U.S. Government Printing Office, 1957), pp. 28-30, 34. Note errors in Table 19, where headings 1935-39 and 1947-49 are interchanged. This is clarified in footnotes 2 and 3, p. 30.

Some Suggestions for the Future

After the elapse of several years, researchers concerned with incorporating expected price data in their models will likely wish the information brought up-to-date. Other individuals may wish to develop expected price indices for, say, the agricultural output of a state. This section makes several suggestions which may aid such researchers.

When the expected price series are extended to years beyond 1962, there seems no clear reason for fitting new equations to derive the mechanical estimates of expected price. An important reason is that the mechanical estimates are only used when consistent with outlook information. The greater amount of outlook information available in recent years ensures that reports by the U.S.D.A. and others are of high, and likely increasing, importance relative to the mechanical estimates.

Should an individual wish to fit new equations in order to develop expected prices for some commodity not included in this study, several rules of thumb may be useful in selecting an appropriate equation. It is evident, from an examination of the equations used in this study, that no single number of independent variables is used for all commodities and all horizons. Nevertheless, in all equations used in this study, the coefficient for the previous year's price (P_{t-1}) is positive. If as many as two or three independent variables are used, the coefficient for P_{t-2} or P_{t-3} is often negative. This suggests the

usefulness of selecting an equation with two or three independent variables when developing expected price series, since it is then possible that the mechanical estimates can identify a change in the trend of expected prices in the year in which that change occurs.

Nevertheless, it will not likely be possible to obtain meaningful equations with two or three independent variables for all lengths of horizon. In particular, it is likely that equations for the five-year and ten-year expected prices will have a smaller number of independent variables than the equations for the one-year expected prices. Thus, the mechanical estimates for the longer-term expected prices are less likely to be capable of indicating, in the correct year, a turning-point in the trend of expected price.

There are two further reasons why the longer-term equations tend to provide less useful mechanical estimates of expected price than do the one-year equations. The first involves serial correlation of the disturbances of all five-year and ten-year expected price equations, the dependent variables for these equations being moving averages. The second involves the low level of $\bar{R}^2$ found in a number of the equations for the longer-term expectations. Thus, outlook data are likely to be a relatively more important feature in the longer-term than in shorter-term expected prices. This fact should not, however, be considered surprising. The farther future is indeed less likely to

be closely related to the present and recent past than is the nearer future.

A related subject is that of the adequacy of coverage of commodities in the aggregate expected price indices. Notable omissions from the aggregate indices are expected prices for hay and forage. This omission has occurred because the writer judges that information presently available is inadequate to reconstruct expected prices for these products. The relevant data for these commodities may be expected MVP's on the farms where the hay and forage are grown. Such expected MVP series will likely need to be calculated for each of several areas of the U.S. Other commodities for which investigators may wish to calculate regional series of expected prices are truck crops and, possibly, fluid milk.

Another problem may arise for individuals studying a state or region, rather than the entire nation. Such persons are likely to desire expected prices for some commodity or commodities not included above but important to that particular area. However, a regional study is likely to deal with some of the commodities for which price expectations are here presented. In addition, the method employed in this study can readily be applied to other commodities in which an investigator is interested.

Nor is there likely to be any serious difficulty in establishing weights for commodities in a regional aggregate expected price index. The method used in this

study has been discussed above, and need not be repeated here. Nevertheless, there is likely to be a problem regarding weights for those who extend these expected prices, whether these persons deal with regions or with expected prices for the United States as a whole. Should new weights be calculated in, say, five years? And if so, where should a linkage be made? There can be no hard and fast rule. One can only suggest that weights be calculated periodically to examine the changes in relative importance of the commodities included in the index. By, say, 1970, one can speculate that changes in the commodity weights will include declines in the relative importance of grains, fruit, vegetables, cotton and tobacco. The relative importance of oil-bearing crops and some livestock products will likely increase.

The majority of the problems discussed in this section would not confront an investigator, however, if expected prices were regularly published by some organization such as U.S.D.A. There are at least two reasons why this might be done. First, this thesis suggests that expected price is a relevant variable. Second, it also suggests that valid and interpersonally comparable estimates of expected price can be calculated. Thus, the provision of such data is a useful and legitimate function for those concerned with the gathering and dissemination of agricultural data.

CHAPTER 5

TESTS OF THE SERIES OF EXPECTED PRICES

One means of evaluating the series of expected prices for the various commdities or the aggregate indices derived therefrom is to use these series or indices as exogenous variables in econometric models. A test of all the series in this way is, however, beyond the scope of this study. Nevertheless, the expected price series from this study have been and are being incorporated into econometric models. A study of the feed-grain livestock economy by Michel Petit, completed at Michigan State University in 1964, uses data from this study. Some of Petit's results are summarized in this chapter. Fellow graduate students Arne Larsen, Samuel G. Unger, Edward Rossmiller and C. Leroy Quance are currently engaged in studies which include or plan to include expected price data. Larsen is attempting, in his study, to explain changes to the real value of land. Unger is developing a simultaneous-equations model of the cattle-beef sector, Rossmiller is dealing with the marginal value product of land and Quance is attempting, as part of his study, to develop expected marginal value products for several capital inputs to agriculture.

Several other methods of testing the series are reported in this chapter. It must be stressed, however, that the criterion in testing the expected prices developed in this study is not that they should closely approximate

the prices which actually prevailed, except insofar as farmers may reasonably be expected to be using a technique of forming expected prices which provides them with scope for incorporating all of the pertinent information of which they are aware. The relevant criterion is that the expected price series should approximate the prices which were actually anticipated by farmers.

G. L. Johnson's Expected Price Series

Glenn L. Johnson's evaluation of recent agricultural policies, which presents expected price series for several commodities for a post-war period, has been discussed above.[1/] The expected price series in the Johnson study have not been developed by the same methodology as that used in this study, but the studies do have in common that information about the future is used. Johnson discusses the expected price series used in his study as follows:

> The data on expected prices are related to government price supports, stocks, previous price levels, inflationary and deflationary tendencies, international unrest, etc. Many analyses in the past have assumed that farmers expect to receive the previous year's price. Other analyses have assumed that farmers expect to receive the average of some number of preceding years' prices. Some more sophisticated analyses have been based on mathematical procedures for weighting previous years' prices together as predictors of the current year's price. All of these techniques have been rejected in this study in favor of a much more straightforward, realistic approach. The rejected techniques are backward looking without exception.

1/ Glenn L. Johnson, An Evaluation of U.S. Agricultural Policies and Programs, 1956 to 1960, op. cit. For a brief discussion, see supra, pp. 29-31.

> Both common sense and recent studies of how farmers form price expectations indicate that farmers (1) use many forward looking kinds of information and (2) employ rather advanced analytical procedures in making price predictions, thanks to the extended educational efforts of the extension services of our land-grant colleges and the farm press not to mention the many experiences farmers have had since 1933 with such price making forces as marketing quotas, market orders, acreage allotments, inflations and deflations, wars and widely fluctuating foreign demands.1/

The method of developing expected prices described by Johnson is similar to the second stage in this study (i.e., modification of the mechanically derived expected prices by using the available outlook information). Thus, comparing expected price series for the same commodities in the two studies is an important test of the expected prices of this study. The reasons are twofold: First, the comparison enables a test of whether different individuals can interpret, consistently with each other, the likely influence of outlook data on present price. Second, it simultaneously enables a test of whether the method of calculating expected prices in this study is compatible with that employed to develop Johnson's expected price series.

There are nine commodities in the Johnson study which have counterparts in this study. These are wheat, corn, cotton, potatoes, manufactured milk, hogs, beef, oranges and apples. All nine series are compared between

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1/ Ibid., pp. 70-71

Table 2: Comparison of Direction of Change of Expected Prices With Previous Year Actual Prices, Johnson Study and This Study, Various Commodities, Post-War.[1]

COMMODITY	LEVEL OF SIGNIFICANCE							
	ONE-YEAR EXPECTATION				FIVE-YEAR EXPECTATION			
	1%	5%	10%	15%	1%	5%	10%	15%
Apples	-	-	-	YES	2/	2/	2/	2/
Beef	-	-	-	YES	-	-	YES	YES
Corn	-	-	YES	YES	YES	YES	YES	YES
Cotton	-	-	YES	YES	YES	YES	YES	YES
Hogs-Spring	-	-	-	YES	2/	2/	2/	2/
Hogs-Fall	-	YES	YES	YES	2/	2/	2/	2/
Manufactured Milk	-	-	-	-	-	-	-	-
Oranges	-	-	YES	YES	2/	2/	2/	2/
Potatoes	YES	YES	YES	YES	YES	YES	YES	YES
Wheat	-	YES	YES	YES	YES	YES	YES	YES

1/ Johnson study indicates Glenn L. Johnson, An Evaluation of U.S. Agricultural Policies and Programs, 1956 to 1960 (East Lansing; mimeo., 1961). "YES" means direction of change of expected price relative to the previous year's actual price is similar. That is, the hypothesis of no similarity between the two series is rejected at the indicated significance level.

The test is a modified one-tail sign test, as indicated in the text.

2/ No equivalent series is available for comparison.

the two studies for the one-year expected prices.[1] For the five-year expected price series, both studies present expected prices for all of these nine commodities except hogs, oranges and apples. For these three commodities, the longer-term expectations presented in the Johnson study are not five-year expected price series as defined in this study. In addition, the Johnson study presents expected price data for two other commodities, grapefruit and burley tobacco, which do not have counterparts in this study.

The comparison between the expected price series developed in the Johnson study and in this study are presented in Table 2. The test is a modification of the sign test, in which the direction of change of the expected price for year t is compared with actual price in year t-1. Thus, when both the Johnson expected price and the expected price from this study move in the same direction relative to price in the previous year, the alternate hypothesis of similar shifts in the two expected price series tends to be confirmed.

The null hypothesis, H_0, is that a similar relationship does not exist between the movement of the two expected price series relative to actual price in the preceding year.

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[1] There are ten comparisons regarding short-term expected prices, because eight of the commodities are compared for one-year expectations and one commodity, hogs, is compared regarding two separate expected price series. These series, represented in both the Johnson study and in this study, illustrate expected prices for spring farrowed hogs and for hogs farrowed in fall.

The alternate hypothesis, H_A, is that there exists a similar relationship between the movement of the two expected price series relative to actual price in the preceding year. A "YES" in Table 2 indicates the alternate hypothesis (H_A) is accepted (i.e., H_0 is rejected at the indicated significance level). The test uses one tail of a binomial distribution. The number of observations for each commodity is thirteen, fourteen or fifteen, and the exact significance levels are:

Number of Observations	Significance levels for one-tail tests of 1%	5%	10%	15%
13	.0017	.0461	.0461	.1334
14	.0066	.0288	.0899	.0899
15	.0039	.0176	.0593	.1509

Table 2 shows the extent to which the direction of change of expected price in year t relative to actual price in year t-1 is similar in the Johnson study and in this study. For the one-year expected price series, H_0 is rejected (i.e., the expected prices of the two series are found to be similar with respect to this criterion) at the following significance levels for the following commodities: potatoes - 1 per cent; fall hogs, wheat - 5 per cent; corn, cotton, oranges - 10 per cent; apples, beef, spring hogs - 15 per cent. For manufactured milk, H_0 cannot be rejected at any of these significance levels.

For the five-year expected price series, H_0 is

rejected at the following significance levels for the following commodities: corn, cotton, potatoes, wheat - 1 per cent; beef - 10 per cent. H_0 cannot be rejected at any significance level up to 15 per cent for manufactured milk.

The test indicates a high degree of correspondence between the series of this study and of the Johnson study, a correspondence particularly marked in the five-year expected price series. It thus indicates that, despite the difficulty of evaluating outlook information in quantitative terms, different investigators are capable of arriving at similar estimates of the direction of change of expected price for year t relative to actual price in year t-1. This hypothesis is further substantiated because a different individual developed the expected price series for each commodity in the Johnson study.

Land Values and Expected Prices

The influence of anticipated prices on land values has long been recognized. Bean indicates that "the generally accepted theory that land values depend upon capitalized current income, and upon capitalized anticipated increases in income" was demonstrated in 1924.[1/] Bean[2/]

1/ Louis H. Bean, "Inflation and the Price of Land," Journal of Farm Economics, Vol. 20 (February 1938), p. 312.

2/ Ibid., p. 315.

and Thomsen[1/] use various past prices as proxy variables for expected net income in their studies of U.S. land values.

Table 3 indicates the extent to which changes in farm real estate value per acre and changes in ten-year aggregate expected price are related. The direction and magnitude of the changes in these two indices are closely related for the period prior to 1955. For example, the direction of change differs in only five of the thirty-seven years; 1925, 1926, 1940, 1945 and 1953. The simple correlation coefficient (r) between the two first-difference series is 0.74. However, the relationship between changes in the two indices is less obvious in 1955 and subsequent years. The value of r declines to 0.61 when the two series are compared for the 1918-62 period.

Table 4 illustrates similar information for the State of Michigan. Changes in the average value per acre of farm real estate are compared with a ten-year expected price index for Michigan. The latter is based on the ten-year expected product prices of this study, weighted in proportion to the value of sales of each of the commodities in Michigan during 1947-49. Again, there is a similar relationship between changes in the two indices for the period prior to 1955. The direction of change differs in

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1/ F. L. Thomsen, "Factors Affecting Farm Real Estate Values in the United States," Journal of Farm Economics, Vol. 17 (May, 1935), pp. 379-82.

only seven of the thirty-seven years; 1921, 1925, 1926, 1928, 1940, 1945 and 1954. The simple correlation coefficient (r) between these two series for this period is 0.62. Again, however, the relationship between changes in the two indices is not obvious in 1955 and later years. The value of r declines to 0.46 when the two first-difference series are compared for the 1918-62 period.

Evidence now coming available suggests, however, that the unusual post-1955 relationship between real estate values and longer-term expectations is not a result of errors in either the land value or expected price series. In a first-difference model relating changes in land values to factors including price expectations and technology, fellow graduate student Arne Larsen is finding data which indicate that the first differences of the technology variable are larger in these recent years than in earlier years. Larsen's technology variable (physical output per man-hour) includes influences such as that of farm consolidation. Thus, it seems likely that changes in production techniques and land purchases to better use some of these techniques are responsible for the unsatisfactory relationship shown in recent years in Table 3 and Table 4.[1/]

1/ An effort was made, using data from a study underway regarding income expectations, to determine if the anticipated cost of farm labor was an important factor in the price of land, particularly in the post-1955 years. The study is Venkareddy Chennareddy. Present Value of the Future Income Stream of a Worker and Its Relevance to Mobility of Workers from the Farm to Nonfarm Sectors (Ph.D. thesis in progress, Michigan State University, 1965). The attempt involved trying

This is supported by William H. Scofield of the Farm Production Economics Division, U.S.D.A., who states: "There is some indication that farm-land buyers ... have capitalized a substantial part of the gains realized from new technology ... into higher land prices."1/

The above indicates that relating land values and longer-term expected prices is an important and interesting test of the latter series.2/ A more comprehensive empirical test of this relationship, including an attempt to

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to determine if there has been a negative relationship between changes in real estate values per acre and changes in the present value of the expected future income stream in the remaining years of life of a 45 year old farm workers, both series being deflated by the wholesale price index. Although the results were inconclusive, this is likely due to the oversimplified model employed. For example, the model used made no provision for recognizing the declining relative importance of labor in agricultural production.

Nevertheless, in relating deflated farm real estate values per acre to deflated ten-year expected prices and to Chennareddy's deflated variable, "correct" and statistically significant coefficients were encountered for the earlier period (1917-54). Thus, Chennareddy's data appear deserving of further examination as an explanatory variable in farm real estate value changes.

1/ U.S.D.A. Farm Real Estate Market Developments (ERS: October, 1964), p. 45.

2/ It is evident that factors other than expected prices for agricultural products influence land values. What may be less obvious, however, is that influences from outside agriculture can also have an impact on the estimated value of farm real estate. While the U.S.D.A. has made an effort to purge the farm real estate value data of the influence of higher-value urban uses, it is apparently not possible to exclude completely such influences. This problem is discussed in U.S. Department of Agriculture, Major Statistical Series of the U.S.D.A., Vol. 6, Agriculture Handbook 118, pp. 3-4, and in U.S. Department of Agriculture, Farm Real Estate Market Developments (ERS: August, 1963), pp. 25-26. It is conceivable, therefore, that non-farm influences on land values contribute to the unsatisfactory relationship between farm real estate values and ten-year expected prices in recent years.

Table 3: Comparison of Changes in the Index of Average Value Per Acre of Farm Real Estate, U.S., with Changes in the Aggregate Index of Ten-Year Expected Price[1/]

Year (t)	Index of Average Value Per Acre of Farm Real Estate[2/] (I_t)	Change in Real Estate Value Index ($I_t - I_{t-1}$)	Change in Ten-Year Expected Price Index ($EP_{10t}-EP_{10t-1}$)
1917	77.1		
1918	84.0	6.9	11.1
1919	90.8	6.8	3.5
1920	109.6	19.1	5.0
1921	102.4	- 7.2	- 10.1
1922	90.5	- 11.9	- 11.3
1923	88.7	- 1.8	- 0.2
1924	85.7	- 3.0	- 0.3
1925	84.5	- 1.2	1.9
1926	82.6	- 1.9	2.6
1927	79.4	- 3.2	- 2.2
1928	78.2	- 1.2	- 0.7
1929	77.8	- 0.4	0.0
1930	76.6	- 1.2	- 3.7
1931	69.1	- 7.5	- 8.6
1932	57.9	- 11.2	- 10.5
1933	47.4	- 10.5	- 1.5
1934	48.9	1.5	4.9
1935	49.8	0.9	3.0
1936	51.3	1.5	5.2
1937	52.6	1.3	3.3
1938	52.5	- 0.1	- 3.0
1939	50.8	- 1.7	- 2.7
1940	50.1	- 0.7	0.7
1941	50.5	0.4	3.5
1942	54.3	3.8	10.7
1943	59.2	4.9	7.9
1944	67.7	8.5	3.9
1945	74.6	6.9	- 1.9
1946	84.2	9.6	4.8
1947	94.2	10.0	11.8
1948	101.0	6.8	8.0
1949	104.8	3.8	2.9

Table 3 - Continued

Year (t)	Index of Average Value Per Acre of Farm Real Estate 2/ (I_t)	Change in Real Estate Value Index ($I_t - I_{t-1}$)	Change in Ten-Year Expected Price Index ($EP_{10t}-EP_{10t-1}$)
1950	102.6	- 2.2	- 3.8
1951	118.1	15.5	5.1
1952	129.7	11.6	4.2
1953	131.6	1.9	- 2.3
1954	129.6	- 2.0	- 4.5
1955	134.8	5.2	- 0.4
1956	142.2	7.4	- 4.4
1957	153.6	11.4	- 0.2
1958	162.4	8.8	- 1.0
1959	175.4	13.0	- 1.0
1960	184.0	8.6	- 0.5
1961	186.8	2.8	0.1
1962	196.2	9.4	2.6

1/ Both indices are based on 1947-49 = 100.

2/ Calculated from data of average value per acre of farm real estate, presented in U.S. Department of Agriculture, Farm Real Estate Market Developments (ERS: August, 1963), p. 41.

Table 4: Comparison of Changes in the Index of Average Value Per Acre of Farm Real Estate, Michigan, with Changes in the Aggregate Index of Ten-Year Expected Price for Michigan[1]

Year (t)	Index of Average Value Per Acre of Michigan Farm Real Estate[2] (I_t)	Change in Real Estate Value Index ($I_t - I_{t-1}$)	Change in Ten-Year Expected Price for Michigan[3] ($EP_{10t} - EP_{10t-1}$)
1917	59.9		
1918	66.4	6.5	11.6
1919	67.9	1.5	4.3
1920	76.1	8.2	5.0
1921	76.5	0.4	- 1.7
1922	75.6	- 0.9	- 11.0
1923	75.3	- 0.3	- 3.3
1924	73.1	- 2.2	- 1.1
1925	71.8	- 1.3	0.3
1926	70.2	- 1.6	3.8
1927	69.8	- 0.4	- 0.9
1928	69.4	- 0.4	0.1
1929	69.4	0.0	0.0
1930	68.4	- 1.0	- 2.5
1931	65.0	- 3.4	- 7.5
1932	54.6	- 10.4	- 11.9
1933	45.4	- 9.2	- 2.3
1934	46.4	1.0	2.0
1935	46.5	0.1	5.2
1936	47.4	0.9	4.2
1937	51.3	3.9	2.4
1938	51.3	0.0	1.0
1939	51.3	0.0	- 3.1
1940	51.0	- 0.3	0.9
1941	51.5	0.5	1.0
1942	56.6	5.1	9.4
1943	61.3	4.7	9.1
1944	70.2	8.9	7.0
1945	75.1	4.9	- 3.0
1946	86.0	10.9	3.8
1947	98.6	12.6	12.2
1948	99.9	1.3	7.5
1949	101.5	1.6	6.9

Table 4 - Continued

Year (t)	Index of Average Value Per Acre of Michigan Farm Real Estate 2/ (I_t)	Change in Real Estate Value Index ($I_t - I_{t-1}$)	Change in Ten-Year Expected Price for Michigan 3/ ($EP_{10t} - EP_{10t-1}$)
1950	99.8	- 1.7	- 7.7
1951	114.9	15.1	2.9
1952	123.0	8.1	5.0
1953	129.1	6.1	0.2
1954	131.1	2.0	- 6.9
1955	137.1	6.0	- 1.1
1956	148.2	11.1	- 3.5
1957	162.3	14.1	1.4
1958	170.4	8.1	- 1.2
1959	188.5	18.1	- 0.7
1960	195.6	7.1	- 0.6
1961	197.6	2.0	- 0.3
1962	203.7	6.1	1.8

1/ Both indices are based on 1947-49 = 100.

2/ Calculated from average value of farm real estate per acre from U.S.D.A. sources. The data for 1917-49 are unpublished, but the data for 1950-62 are presented in U.S. Department of Agriculture, Farm Real Estate Market Developments (ERS: August, 1963), p. 36.

3/ Calculated from a ten-year aggregate expected price index in which the weights are the value of farm commodities sold in the State of Michigan during 1947-49. This aggregate index is from A. Larsen, Ph.D. thesis in progress, Michigan State University, 1965.

relate aggregate expected price indices for the other states to real estate value per acre in those states, is beyond the scope of this thesis. Such a test will, however, be one of the results of Larsen's current study. Larsen will report on the influence of expected price and a number of other variables on land values, and will also examine the relative usefulness of expected versus current price in "explaining" changes in land values.

The "Current-Year" Model and Land Values

In order to obtain further information pertinent to an evaluation of the relative usefulness of several expectation models, four sets of correlation coefficients are compared in Table 5. The first column relates changes in land values per acre and changes in the actual price index. This is a test of the hypothesis that farmers correctly anticipate prices. Table 5 provides scant supporting evidence. The second column shows the value of r when changes in real estate values per acre are related to actual price lagged one year. This is a test of the hypothesis that farmers expect present prices to continue in the future (a "current-year" model of price expectations). The third column is a test of the hypothesis that farmers employ a mechanical expectation model which uses prices from one or more past years to develop anticipations of this year's price. The third column presents the values of r discussed previously.1/

1/ Supra, p. 57.

Table 5: Comparison of Coefficients of Correlation (r) Between Changes in Real Estate Values per Acre and Changes in Four Other Indices, U.S.

Year	Correlation Coefficients Obtained when Average Value per Acre of Farm Real Estate in U.S. is Compared with[1]			
	Actual Price	Actual Price One Year Lagged[2]	Mechanical Ten-Year Expected Price[3]	Ten-Year Expected Price[4]
1917-54	.42***	.69	.64	.74
1917-62	.36*	.60	.53	.61

1/ Source of average value per acre of farm real estate: U.S. Department of Agriculture, Farm Real Estate Market Developments (ERS: August, 1963), p. 41.

Footnotes 2/, 3/, 4/ and asterisks: See end of Table 6.

Table 5 suggests that the current year model is better than a mechanical model as a means of approximating farmers' expectations of future price. The table also indicates that the current-year model has a level of r almost as high as that obtained by using ten-year expected price data of this study. This may indicate that, for certain purposes, a simple price expectation model such as the current-year one is nearly as useful as the ten-year expected price series presented here. Nevertheless, Figures 1, 2 and 3 illustrate that the use of a simple expectation model may conceal relevant information. These figures indicate the relationship between expected price for one, five and ten years, respectively, and the actual price index for these one, five and ten year periods, and

use the expected prices determined in this study. The data of Figure 1 are excerpted from Table 8. Figure 2 compares the actual five-year average price index with the five-year expected price for the five year period beginning in each year 1917-60. Figure 3 shows the relationship between the actual ten-year average price index and the ten-year expectation for the ten year period beginning in each year 1917-55.1/

Figure 1 illustrates that expected price has been above actual for much of the 1917-62 period studied. (This is particularly true of the pre-World War II period and the post-1951 period.) It also indicates that the amount by which expected price is above actual has tended to be an increasing function of the length of the expectation horizon. For these reasons, a simple test such as that of Table 5 is not wholly adequate to illustrate the distinction between the current-year model and the outlook model here used. Where considerations of the level of expected price, or of the difference in level among particular horizons, are important, the current-year model is shown to be inappropriate. Further, the test indicates, on the criterion of size of correlation coefficient, that the

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1/ The five-year and ten-year average price indices are based on the one-year index. Where I_t is the index number in year t, the five- and ten-year indices for year t are, respectively,

$$\frac{I_t + I_{t+1} + \ldots + I_{t+4}}{5} \quad \text{and} \quad \frac{I_t + I_{t+1} + \ldots + I_{t+9}}{10}$$

Figure 1: Comparison Between Index of Prices Received and Three Expected Price Indices, U.S., 1917 to 1962

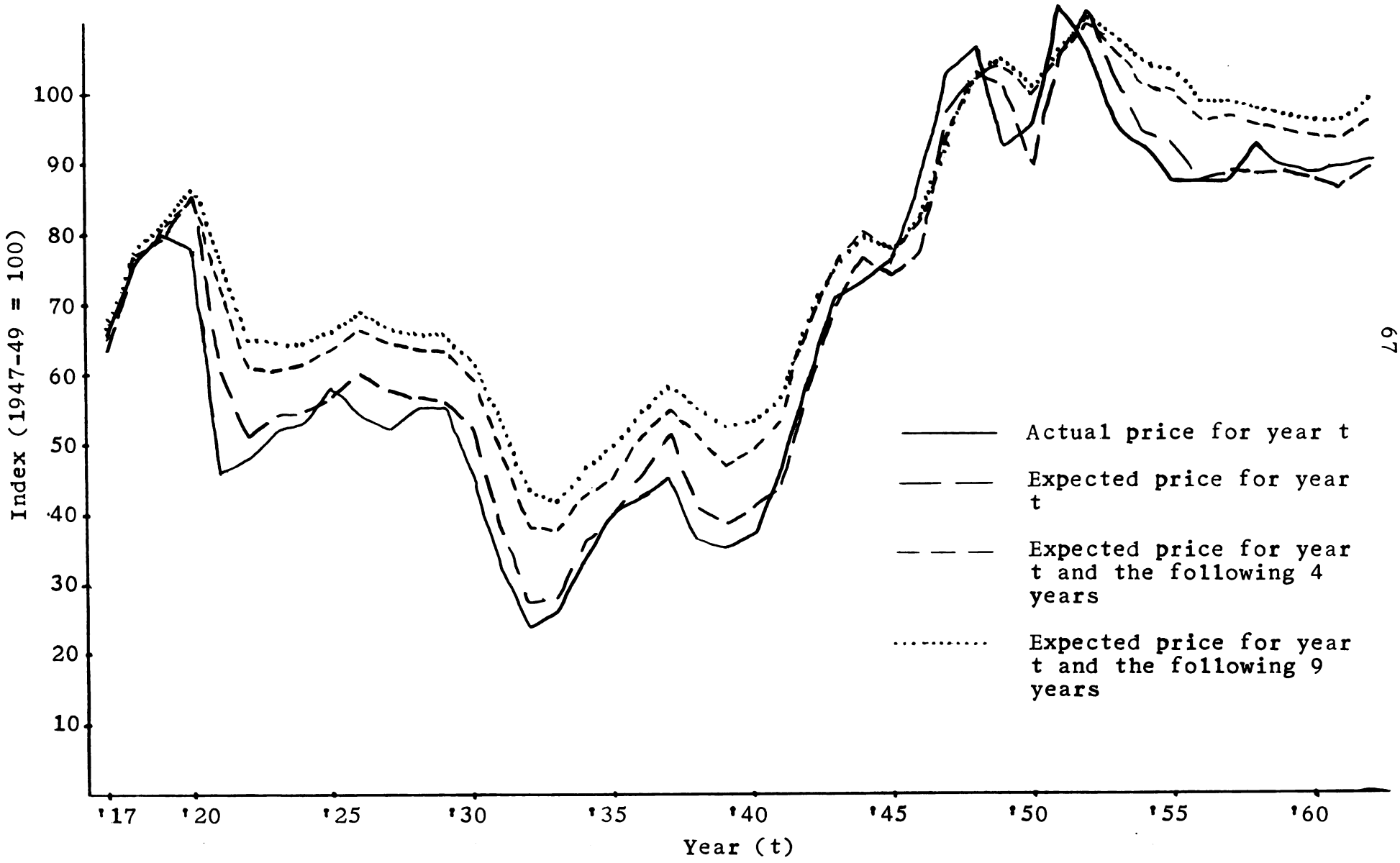


Figure 2: Comparison Between Index of Five-Year Expected Prices and Index of Actual Five-Year Average Prices, U.S., Mid-Year 1919 to Mid-Year 1962

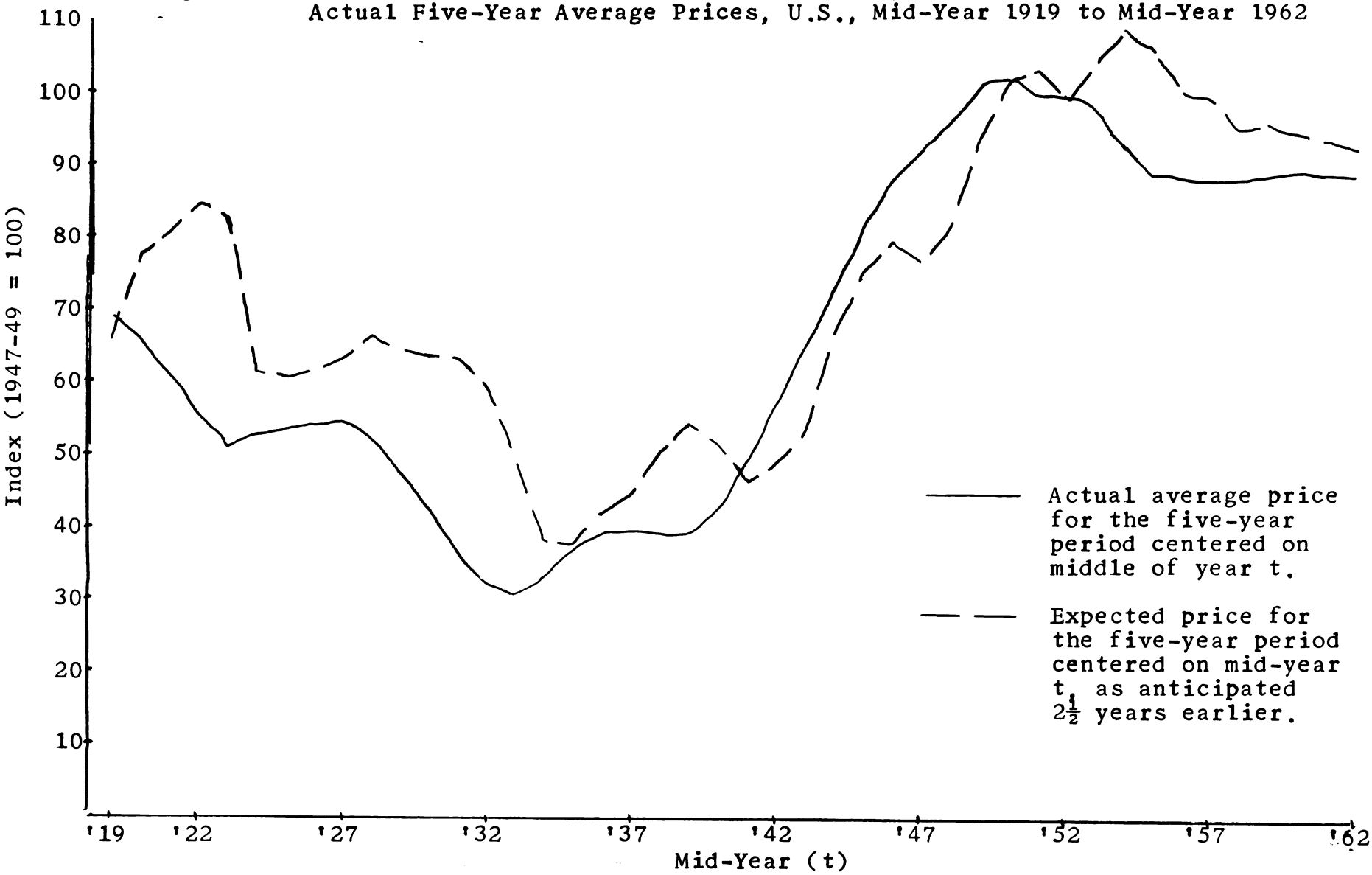
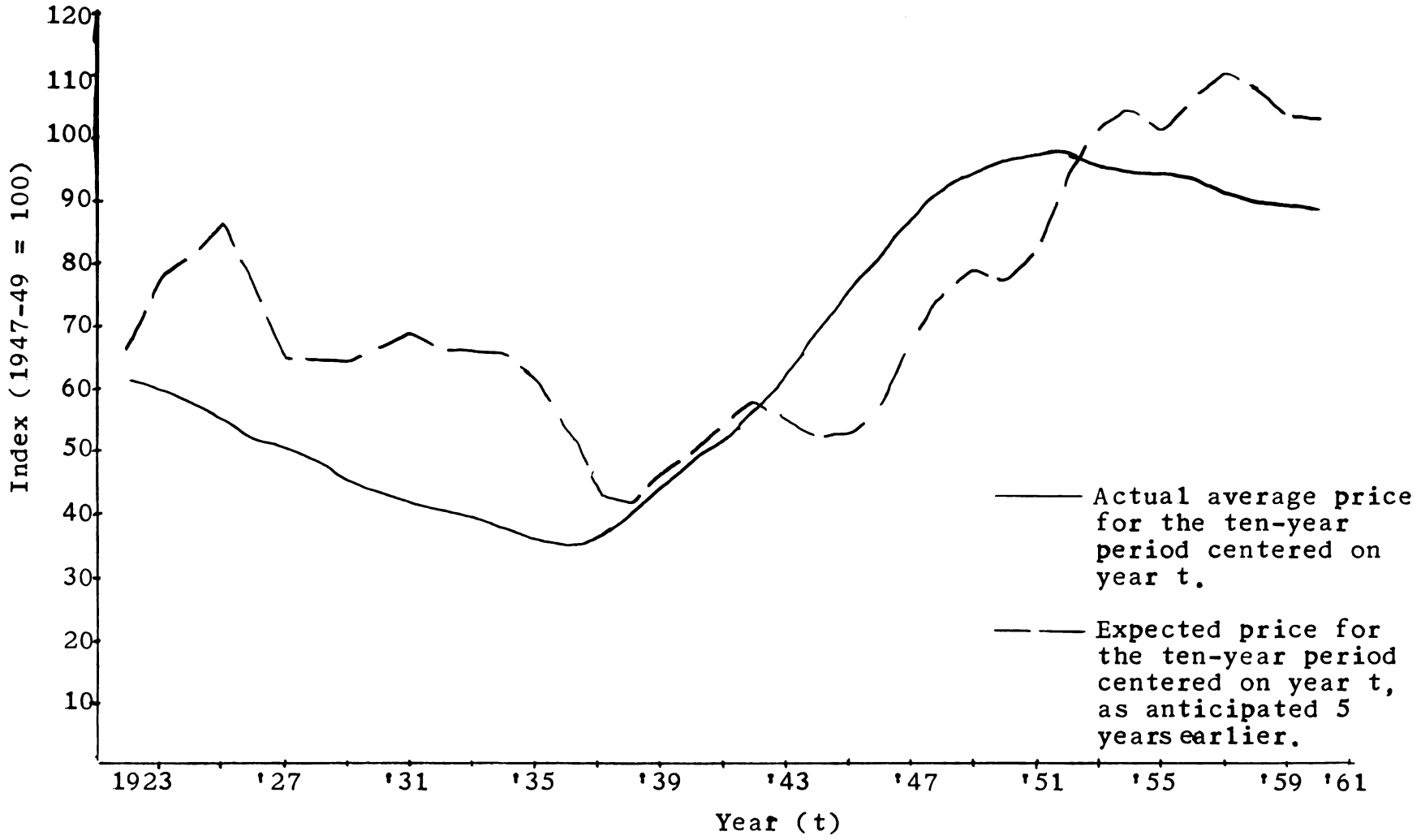


Figure 3: Comparison Between Index of Ten-Year Expected Prices and Index of Actual Ten-Year Average Prices, U.S., 1923 to 1961.



ten-year expectation is preferable. The margin of preference, and the reasons for believing an outlook model to be superior, suggest that the ten-year expected prices be used when they are available.

Deflation of Land Values

Some further evidence for preferring the ten-year expected prices is presented in Table 6. The correlation coefficients of Table 6 refer to relationships between series of deflated data. Table 5, on the other hand, indicates the relationship between changes in expected price and changes in undeflated farm real estate value per acre. It is possible, however, that although changes in the ten-year expectation are related to changes in real estate values per acre, the major impact of the expected price series is in approximating farmers' expectations of general inflation or deflation in the economy. If this is true, changes in the expected price series can be expected to be only slightly related to changes in real estate value, when both are expressed in constant dollar terms.

Table 6 indicates the correlation coefficients obtained by relating changes in deflated farm real estate values per acre and changes in deflated expected price, the expected prices having been derived from three different expectation models. Higher correlation coefficients are obtained by relating the expected prices of this study with farm real estate values per acre, relative to the coefficients obtained when expected prices from either a

Table 6: Comparison of Coefficients of Correlation (r) Between Changes in Deflated Real Estate Values per Acre and Changes in Three Deflated Indices of Expected Price, U.S.[1]

Year	Correlation Coefficients Obtained When Deflated Average Value per Acre of Farm Real Estate in U.S. is compared with		
	Deflated Actual Price Lagged One Year[2]	Deflated Mechanical Ten-Year Expected Price[3]	Deflated Ten-Year Expected Price[4]
1917-54	0.73	0.82	0.84
1917-62	0.70**	0.78	0.81

1/ The deflator used in the wholesale Price Index. Source: U.S. Department of Agriculture, Agricultural Statistics, 1952 and 1964.

2/ The actual price lagged one year corresponds to a "current-year" expected price model.

3/ The mechanical ten-year expected price index is calculated from the mechanical estimates of expected price ($\hat{P}_{10t}$) in this study.

4/ The ten-year expected price (EP_{10t}) is that developed in this study, after adjustment by outlook data.

*** Significantly different from the corresponding ten-year correlation coefficient at the 5 per cent level.

** Significantly different from the corresponding ten-year correlation coefficient at the 10 per cent level.

* Significantly different from the corresponding ten-year correlation coefficient at the 15 per cent level.

current-year model or mechanical model are used. The coefficients obtained, relative to those of Table 5, suggest the increased relative effectiveness of the expected prices of this study over those from a current-year model. That is, the data suggests that the efficiency of the current-year model relative to the model of this study is less when the objective is to approximate farmers' anticipations regarding changes in agricultural relative to non-agricultural prices, as compared with approximating expectations including changes in the general price level. Table 6 illustrates higher correlation coefficients for the mechanical model than the current-year model, the reverse of the situation of Table 5. This suggests that, of the two models the latter is preferable for approximating farmers' anticipations including the impact of inflation, while the former is preferable for approximating anticipations with the effect of general inflation or deflation removed.

Nevertheless, these conclusions must be regarded as tentative, because of the possible impact of the deflator used on the correlation coefficients.[1/] The deflator used for all four series - actual price lagged one year, mechanical ten-year expected price, ten-year expected

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1/ The significance of the deflator can be illustrated from the fact that correlation coefficients were also calculated on these data deflated by an index of prices paid by farmers for items used in living and production. While this index is likely less suitable than the one chosen, because of the greater weight given to agricultural commodities, the range of coefficients obtained was 0.54 to 0.74, as compared with a range of 0.70 to 0.84 in Table 6.

price and real estate values per acre - is the wholesale price index. The ideal index for this purpose should measure only general inflation or deflation in the economy. The wholesale price index is likely as good as or better, as an indicator of general inflation, than any other available index.

Table 6 also indicates that the relationship between each of the expected price series and farm real estate values per acre is less obvious in 1955 and subsequent years. This is consistent with information of Tables 3, 4 and 5. The problem has been discussed above.1/

The discussion of this section can be summarized as follows. The ten-year expected prices appear to be more efficient than either current-year expected prices or mechanically derived ten-year expected prices in approximating farmers' price anticipations. This is true both when the impact of general inflation or deflation is included in expected price and when the objective is solely to approximate expectations regarding changes in agricultural versus non-agricultural prices. The mechanical model appears to be less efficient than the current-year model in the former circumstance, but more efficient in the latter.

A Survey Regarding Expected Prices

In an effort to further evaluate these series, questionnaires were sent to thirty prominent agricultural

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1/ Supra, p. 58-59.

economists who are or have been associated with the agricultural economy during part of the pe··iod encompassed by this study. Each was asked to indicate, for each of about twenty years, whether he believed expected price was above actual or vice versa. These economists were divided into two groups, those who are familiar with broad aspects of the agricultural economy and those whose concern is or has been more directly with a particular commodity. Accordingly, questionnaires were sent to thirteen persons in the former category, asking them to provide expected price information for aggregate agricultural output. Questionnaires were sent to seventeen persons in the latter category, asking them to provide expected price information for the particular commodity in which each was judged a specialist.

Twenty-two of the thirty individuals responded. Nevertheless, only ten completed questionnaires were returned. In all cases but one, the reason given is that the individual concerned does not believe himself able to present meaningful expected prices.

> Frankly, I have no series that were or may have been expected by orange producers over these years, nor do I know what producers expected in any one year.1/

> I fear that you overestimate my knowledge of agricultural prices 2/

Some of those who returned questionnaires also

1/ Correspondence from Ben H. Pubols, Washington. April 13, 1965.

2/ Correspondence from Richard J. Foote, Germantown, Tennessee. April 14, 1965.

express reservations, based on problems of memory recall. "I am not very sure of the accuracy of the answers because it is so easy to forget events which happened many years ago."1/

Another problem arises from the fact that the respondents had to make their own estimates of expected price. In so doing, however, it appears that some tacitly assumed particular expectation models which need not provide the same results as those of this study. "The procedure I followed was to determine the expected price as an average of the actual prices of the preceding 3 years, giving the first year a weight of 3 and each of the others a weight of 1."2/

That agricultural economists find it necessary to use such models is both a problem and a recommendation for this study. It is a problem because the foregoing chapters argue that an expectation model which does not incorporate outlook information is inappropriate, and the expected prices derived from these non-outlook models cannot therefore be regarded as desirable tests of the expected prices of this study.

Conversely, the use of such models supports the thesis project which is here reported. If, as concluded

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1/ Correspondence from William I. Myers, Ithaca, New York. May 10, 1965.

2/ Correspondence from Leland Spencer, Ithaca, New York. April 15, 1965.

in Chapter 3, outlook information is relevant to the formation of price expectations, the importance of incorporating such data is evident. The unavailability, to several of the respondents, of an expected price variable incorporating this data supports an objective of this study, namely the provision of this information.

In spite of the difficulty of interpreting the returned questionnaires, their comparison with results of this study is of interest. The respondents are all persons closely associated with and knowledgeable in the area of agricultural prices. If there is a group of individuals which is able to provide the desired information, the respondents must be included in that group.

In addition, some of the respondents made suggestions of a general nature. One of these is important because it bears on the method used to construct the expected price series. It is particularly significant because the method suggested has much in common with that used in this thesis:

> First, you will need to do each commodity separately and then combine them into an index if you want an overall average ... . Your best bet would be to locate a file of the outlook issues of the various commodity situation reports issued by U.S.D.A. ... . I would take the commodities one at a time, read these reports ... and write down a price forecast for the following year (i.e., 1940 based on the 1939 Outlook issue, etc.). At the same time, you could make a 5- and 10-year projection based on legislation and any long-term trends that appeared to be developing. I believe this method would come close to giving you what you want, i.e., expectations of well-informed farmers.1/

1/ Foote, op. cit.

The Returned Questionnaires

Of the ten returned questionnaires, four relate to general price expectations and six relate to price expectations for specific commodities. Inasmuch as each respondent was only questioned with respect to one time horizon and with respect to a maximum of twenty-six observations, the resulting information is insufficient to test each datum of the project. Any inferences drawn rely, therefore, on the limited amount of test data which are available.

The test used on the information which is available is a modified sign-test, similar to that used previously.[1/] The hypotheses are as follows: The null hypothesis (H_0) is that there is no similar relationship between, on the one hand, the relative position of expected and actual price for any year in the questionnaire responses and, on the other hand, the relative position of expected and actual price (for the same year) in this study. The alternate hypothesis (H_A) is that such a relationship does exist, and that the relative position of expected and actual price is the same in questionnaire responses and in this study. The test is a one-tail test using the binomial distribution, and the results are given in Table 7.

For the aggregate expected price indices (i.e., those relating to aggregate agricultural output), four questionnaires were obtained. Three of these relate to

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1/ Supra, p. 54-55.

Table 7: Relationship Between Expected and Actual Prices of This Study Compared with Relationship Between Expected and Actual Prices, Questionnaire Respondents[1]

	Level of Significance[2]				Number of Observations
	1%	5%	10%	15%	
Aggregate Index of Expected Price					
Five-Year Expected Price	YES	YES	YES	YES	60
Ten-Year Expected Price	-	YES	YES	YES	16
Specific Product Expectations					
Five-Years					
Beef	YES	YES	YES	YES	21
Corn	YES	YES	YES	YES	21

1/ The completed questionnaires returned by respondents are reproduced in Appendix C.

2/ One-tailed test using modified sign test as indicated in text. "YES" indicates position of expected price relative to actual price is similar in this study and questionnaire responses. That is, the hypothesis that there is no similar relationship between the relative position of actual and expected price in this study and the questionnaire responses is rejected at that level of significance.

the five-year expected price series, and one relates to the ten-year expected price series. In both series, considerable similarity is exhibited between the data of the questionnaires and of this study. For the five-year expectations, H_0 is rejected (the relative position of actual and expected price is found to be similar) at the 1 per cent level. For the ten-year expected price series, H_0 is rejected at the 5 per cent level. No response was received regarding the one-year aggregate expected price index.

Regarding the expected prices for specific commodities, six questionnaires were returned. Three of these deal with the one-year expected price series. The commodities with which they are concerned are cotton, soybeans and tobacco. Application of the test to the questionnaire data for cotton and soybeans indicates that H_0 cannot be rejected at any significance level up to 15 per cent. This does not, however, reflect unfavorably in these expected price series. Each of the two individuals concerned reports that he has developed his one-year expected price series by using models not relying on outlook information. Regarding the one-year cotton expectation, the respondent states:

> For the crops, 1940 through 1950, prices received by farmers for the previous year were used as a guide for estimating prices expected at planting time for the following crop ... . For the crops, 1951 through 1962, when price support levels were announced prior to planting time, the principal guide was a comparison of the change in support prices from the previous crop

and the change in prices which actually occurred.[1] Similarly regarding the one-year soybean price expectation, the respondent states that he "used the average price received by farmers for the month of February as the expected price."[2]

The discussion of Chapter 3 argues that an expectation model which has relevance to farmer behavior must provide opportunity for the inclusion of outlook data, and that expected price is not likely to be a simple function of past or present prices. The expected prices developed by the respondents for cotton and soybeans violate one or both of these conditions.

Nor does Table 7 include information regarding the one-year expected price series for tobacco. The reason differs from that above. The questionnaire obtained lists the information for both flue-cured and burley tobacco. The tobacco expectation of this study is not disaggregated to this degree, and thus comparison is not possible The pertinent questionnaire is, however, included in Appendix C.[3]

1/Correspondence from James R. Donald, Washington. May 5,1965.

2/Correspondence from Robert M. Walsh, Washington. April 21, 1965.

3/The six questionnaires which provide the data of Table 7 are also reproduced in Appendix C. It can be seen that the respondents indicate in which years they believe the difference between actual and expected price is 10 per cent of more of the former. The original purpose of obtaining this information was to serve as a check for those observations on which the data of the respondents and of this study are not in agreement. In view of the marked similarity between questionnaire responses and data of this study, as illustrated in Table 7, it has not been necessary to use this "check" information.

The remaining three questionnaires deal with the five-year expected price for beef, corn and manufactured milk. Again, information from the third commodity is not included in Table 7, because the respondent obtained his estimates of expected price by using a mechanical model.[1] Nevertheless, for all three questionnaires, H_0 is rejected (the relative position of actual and expected price is found to be similar) at the 1 per cent level. No questionnaire responses were obtained regarding the ten-year expected prices for specific commodities.

The results from the six questionnaires, presented in Table 6, provide evidence of the validity of the relative position of actual and expected price in this study. In all cases, H_0 is rejected at the 1 per cent or 5 per cent level. Nevertheless, the test has two weaknesses. The first is the small number of observations obtained. A second, and related, weakness is that the test refers only to the longer-term expected price series, since no useable data were obtained for any of the one-year expected price series.

Nevertheless, the agreement between the data of the respondents and of this study supports the longer-term expected price series of this study. This has importance for a number of problems, including those policy problems related to resource over-commitment in agriculture. Jones, in his recent thesis, mentions the impact of these expected

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1/ See quotation from correspondence of Leland Spencer, Supra, p. 75.

prices on the expected marginal value product of labor.[1] Figures 2 and 3 illustrate a tendency to overestimate longer-term expected prices in all of the period studied except the years of and near World War II. The consistent overestimation of product prices in this fashion is an influence tending toward overcommitment of resources, labor and other, to agriculture.

Petit's Econometric Models

In his recently-completed thesis,[2] Petit presents econometric models for feed-grain, beef and hog production. These models use earlier versions of the expected price series for corn, beef and hogs presented in this study.[3] The Petit study spans the period 1929-62.

Nerlove reports an elasticity of corn acreage "with respect to expected normal price" of 0.2 to 0.4.[4] Petit estimates the price elasticity of supply of feed grains at

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1/ Bob F. Jones, Farm-Nonfarm Labor Flows, 1917-62, With Emphasis on Recent Manpower and Credit Programs (Unpublished Ph.D. thesis, Michigan State University, 1964), pp. 147-151.

2/ Michel Petit, Econometric Analysis of the Feed-Grain Livestock Economy (Unpublished Ph.D. thesis, Michigan State University, 1964).

3/ The series used by Petit include the influence of outlook data. Nevertheless, the series presented in Appendix A have been re-examined to ensure that, as much as possible, the pertinent outlook data are considered and the expected prices correctly reflect these data. Some of the re-checking had not been completed at the time Petit used the series.

4/ Nerlove, The Dynamics of Supply: Estimation of Farmers' Response to Price, op. cit., p. 26.

0.11, but comments that this may be an underestimation, partly because "the expected price of corn deflated by the index of prices paid [the price variable used by Petit] does not reflect relative profitability of growing feed grains rather than other crops."[1] Thus, it is not surprising that the Nerlove estimate is larger than Petit's, since the elasticity of supply for corn includes the possibility of shifting among feed grains, a possibility excluded in the Petit model.

Petit estimates the elasticity of supply of hog output with respect to expected price as 0.14 in one year, but reaching about 0.5 over 3 to 4 years.[2] In the case of cattle, he estimates the elasticity of supply as 0.12 in one year, but reaching .34 in the third year.[3] Heady and Tweeten estimate the elasticity of livestock numbers on farms with respect to previous year price as 0.19, but reaching about four times this amount for the long-run elasticity.[4] It is not surprising, however, that Petit's results differ from those of Heady and Tweeten, since the price variable used is a different one.

Petit states that, while his study is not concerned with the process of forming price expectations, "it can be

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1/ Petit, op. cit., p. 59.

2/ Ibid., p. 110.

3/ Ibid., pp. 175-177.

4/ Earl O. Heady and Luther G. Tweeten, Resource Demand and Structure of the Agricultural Industry (Ames: Iowa State University Press, 1963), pp. 443-444.

viewed as a practical test of the hypotheses underlying ... [these expected prices]. Generally speaking, it appears that these price expectations give reasonable results."[1]

With respect to hogs, Petit notes that

> in the explanation of the number of sows at the end of the year, current prices might have predicted better. For farrowings, we have not shown that these price expectations were superior to current prices for hogs at the time decisions to farrow are taken. However, the reverse is not true either as these price expectations have never proven inferior to any other price variable used and, in many instances, give fairly good results.[2]

Regarding beef, Petit continues: "The performance of the '5-year' expected price for beef is surprisingly good. In many equations, it appears as the key explanatory variable. Therefore our results appear encouraging for the new method employed by Lerohl."[3]

Petit developed the first econometric models using these expected price series and his is the only completed study using these expected prices. Though the expected price series cannot, therefore, be said to be confirmed, Petit's evidence suggests that the expected prices are valid estimates of farmer anticipations.

Summary of the Tests

This chapter concerns the tests of the expected prices calculated in this study. These tests are of four main kinds. The first of these involves comparison with

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1/ Op. cit., p. 214.

2/ Ibid.

3/ Ibid.

the series developed for a study by G. L. Johnson. The comparison of expected prices in this study with those from Johnson's study indicates that, despite the difficulty of evaluating outlook data in quantitative terms, different investigators can arrive at similar estimates of the direction of expected price relative to the previous year's actual price. Johnson's expected price data are particularly well suited to making this test, since a different individual developed the expected prices for each of the commodities with which his study deals. Since the method employed to develop the expected prices of this study is not identical with that employed in Johnson's study, the hypothesis that it is possible to calculate interpersonally comparable expected prices employing outlook data is further supported.

The second test relates changes in the ten-year expected price index to changes in an index of average value per acre of farm real estate. Changes in the ten-year index are shown to be more closely related to changes in real estate values per acre than are changes in actual price lagged one year. (The latter is equivalent to a current-year model of expectation formation.) A mechanically derived series of expected prices fares worse than the current year expected prices.

Three further comparisons regarding land values are carried out. One is between changes in farm real estate values per acre and changes in ten-year expected

price, both series being deflated by the wholesale price index. The second comparison is between changes in real estate values per acre and changes in actual price index numbers lagged one year, both deflated by the above index. The third substitutes changes in deflated, mechanically derived expected prices for the current-year expectations. These comparisons suggest that the expected prices presented in this study are as efficient in approximating farmers' anticipations regarding changes in agricultural prices relative to non-agricultural prices as in approximating farmers' anticipations including the impact of general inflation or deflation. They also suggest that the margin of superiority of these expected prices over the current-year model is greater in the former than in the latter circumstance. The mechanical model appears better than the current-year model in the former circumstance, however.

The third test discussed above reports on a number of questionnaires sent to various individuals familiar with the agricultural economy. These individuals were asked to indicate in which years they believe expected price was above the price which actually came to prevail, and in which years the opposite relationship was true. The questionnaires used strongly support the relative position of actual versus expected price in this study. Nevertheless, the test cannot be regarded as conclusive because only six useable questionnaires were obtained. None of the acceptable questionnaires are concerned with the

one-year expected price series.

Finally, some results are reported from a study carried out by Michel Petit using expected price data from this study. Petit's models deal with the feed-grain, beef and hog economies, and use expected price data for corn, hogs and beef. Petit concludes that the series of expected prices are superior to or as good as a current-year model of expected prices. Nevertheless, Petit compared only these two expectation models.

A feature of the tests discussed is that the one regarding Johnson's expected prices tends to complement the second and third tests (those related, respectively, to land values and questionnaire responses) because the former is primarily concerned with shorter-term and the latter two with longer-term expected prices. Nevertheless, there is a significant weakness as well. The individuals who provided G.L. Johnson with estimates of expected prices are, in general, the same individuals who provided information for the questionnaire response section of this chapter. For this and other reasons, the tests cannot be considered conclusive. Several other studies using expected prices from this thesis are mentioned, and the verdict of those studies will assist in evaluating the validity of these expected prices. An important part of this evaluation is likely to be a comparison of these expectations with expected prices which do not include outlook information.

CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

The objectives of this study were stated at the outset as being two-fold. The first was to calculate series of expected prices for several horizons for important U.S. agricultural commodities, for use individually and for aggregation into indices of prices expected by farmers. Expected price data for thirteen agricultural commidities, and the aggregate indices which are derived therefrom, are presented in Appendix A. For each series or index, expected prices are included for one-, five- and ten-year horizons.

The second objective of the study was stated as being a preliminary evaluation of the expected prices and indices. The previous chapter reported on the tests employed. It may be well, however, to reiterate the principal results of those tests. This chapter concludes by indicating important research areas where these expected prices are likely to prove valuable.

Summary Evaluation

Four main tests are carried out on the expected price data. The first compares the expected price data of this study with those developed by U.S.D.A. personnel for Glenn L. Johnson's study for the Committee on Economic Development. The Johnson series, which are available only for a post-war period, are compared with those of this study for several commodities and for the one- and five-year horizons. The results of the comparison suggest that

different investigators can arrive at similar conclusions regarding the direction of shifts of expected price relative to the previous year's actual price.

The ten-year expected price index is evaluated by comparing changes in this index with changes in the index of average value per acre of farm real estate. The test suggests that the ten-year expected price index is more closely related to changes in farm real estate values per acre than is either a series of current-year or a series of mechanically derived expected prices.

Letters were sent to thirty agricultural economists to determine their beliefs regarding the relative position of actual versus expected price for several commodities, several time horizons and for the aggregate indices. However, some of the data, including all information about the one-year expected prices, is not used because of particular expectation models employed by several respondents. In addition, these data are likely similar to those used for the first test, since some of the questionnaire responses were from individuals who had prepared series of expected prices for G. L. Johnson's study. The data used do, however, indicate a large measure of agreement between data of the respondent questionnaires and data of this study for the longer-term expected prices.

Several studies using these expected prices are being carried out by fellow graduate students at Michigan State University. One of these studies has been completed.

Michel Petit's study of the feed-grain livestock economy employs earlier versions of the expected price series presented in this study. Petit reports reasonable satisfaction with the performance of the expected price data in his models.

Using the Expected Prices

The expected price data of this study have been developed with the primary objective of being employed in other parts of the Resources for the Future, Inc. (RFF) project being carried out under Glenn L. Johnson. As indicated in Chapter 1, this RFF project is resource-oriented, and the expected prices presented here are being employed to explain the shifts of various resources into and out of agriculture. One study in the RFF project has been completed. Bob F. Jones' recent thesis deals with labor flows between the farm and non-farm sectors.[1] Jones discusses the impact of various government programs on the agricultural labor input.

As part of his project regarding capital flows between the agricultural and non-agricultural sectors, C. L. Quance plans to deal with up to six capital inputs to agriculture.[2] The expected marginal value products for these inputs will likely be an important illustration of the use of expected price data.

1/ Op. cit.

2/ C. L. Quance, The Effect of Government Programs on the Allocation of Capital in Farming in the United States (Unpublished research project outline).

G. E. Rossmiller's study is scheduled to report on the impact of government programs on farm real estate values.1/ The significance of expected price data for changes in real estate values has been discussed in Chapter 5. Further, Arne Larsen's study, also a RFF-aided project, is attempting to explain changes in land values, by states and regions, during the 1917-62 period.2/ Early results from Larsen's project, which uses expected price data from this study, are now coming available. These preliminary results support conclusions in Chapter 5 regarding land values; namely, that expected product price is an important variable in explaining the changes which have occurred in land values.

A study need not, however, be resource-oriented in order to make profitable use of these expected price series. A prominent illustration is in the area of agricultural supply analysis. Petit's models of the feed-grain, hog and beef economies use expected price data from this study, and are briefly discussed above.3/ Petit's results suggest that others may wish to follow his lead in employing such data in studies of various sectors of the agricultural industry.

Another example of such a study using expected price

1/ G. E. Rossmiller, The Effect of Selected Government Programs on Real Estate Values, 1930-62 (Outline of a seminar presented at Michigan State University, May 20, 1965).

2/ Arne Larsen, Changes in Land Values in the U.S., 1917-62 (Ph.D. thesis in progress, Michigan State University, 1965).

3/ Supra, pp. 82-84.

data is that of Samuel Unger, who is using expected price data for beef and corn in the supply equation of his simultaneous-equations model.[1] However, no results from Unger's work are available at the time of writing.

Thus, the expected price data presented are likely to be found useful in a variety of problems concerning resource allocation, both within the agricultural industry and between the agricultural and non-agricultural sectors. The data explicitly present estimates of farmers' expected prices, obviating the need for an investigator to employ another, and perhaps less appropriate, expectation model. In addition, results of the thesis suggest that the estimates of expected prices presented here are more accurate than those which an investigator might obtain relying solely on past, own-price information. Finally, these expected prices emphasize that anticipations are not likely to be invariant with respect to the time horizon. The data presented make it possible to employ expected prices which are appropriate to the time horizon for each decision regarding resource commitment.

1/ S. G. Unger, Simultaneous-Equation System Estimation: An Application in the Cattle-Beef Sector (Ph.D. thesis in progress, Michigan State University, 1965).

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APPENDIX A

THE EXPECTED PRICE SERIES

The expected price series developed in this study are presented below. The first table of this appendix, Table 8, illustrates the final result of the calculations of expected price for the thirteen commodities and the three time horizons. The aggregate expected price indices of Table 8 are presented along with an index of actual price received, by year, for purposes of comparison. Each datum EP_t indicates the expected price for aggregate agricultural output in year t. Each EP_{5t} indicates the expected price for aggregate agricultural output in year t and the following four years. Each EP_{10t} indicates the expected price for aggregate agricultural output for year t and the following nine years.

The one-year series of expected prices for each of the thirteen commodities follow Table 8. For each commodity, three columns of numbers are listed. The first, labelled P_t, indicates the actual average price to producers for each year for a commodity. The second, labelled $\hat{P}_t$, shows the mechanical estimates of expected prices. The third column, labelled EP_t, shows the estimates of expected price <u>for year t</u>. The data labelled EP_t are the estimates from the second column modified, where necessary, in the light of outlook information.

Following the one-year expected price, the five-year expected price series for each of the thirteen commodities is presented. There are, similarly, three columns. The first column, labelled P_{5t} (P_{5t} is the notation used for $\frac{P_t + P_{t+1} + \ldots + P_{t+4}}{5}$), indicates for each year the actual

average price of year t and the following four years. The second column, labelled $\hat{P}_{5t}$, shows the mechanical estimates of expected prices. The third column, labelled EP_{5t}, shows the estimates of expected prices for year t and the following four years. It is obtained by modifying, where necessary, the corresponding datum of the previous column in the light of outlook information.

Finally, the ten-year expected price series for each of the thirteen commodities is presented. There are, again, three columns. The first, labelled P_{10t} (P_{10t} is the notation used for $\frac{P_t + P_{t+1} + \ldots + P_{t+9}}{10}$, indicates for each year the actual average price of year t and the following nine years. The second column, labelled $\hat{P}_{10t}$, shows the mechanical estimates of expected prices. The third column, labelled EP_{10t}, is the estimate of expected price for year t and the following nine years. It is obtained by modifying, where necessary, the corresponding datum of the previous column in the light of outlook information.

The equations used to estimate $\hat{P}_t$, $\hat{P}_{5t}$ and $\hat{P}_{10t}$, as functions of actual prices in previous years, are summarized in Tables 9, 23 and 37.

Table 8: Index Of Prices Received By Farmers And Indices Of Prices Expected By Farmers For Farm Produced Commodities, By Years, 1917-62 (1947-49 = 100)

Year t	Index Of[1]			
	P_t[2]	EP_t	EP_{5t}	EP_{10t}
1917	66	63.0	65.3	66.6
1918	76	77.3	77.9	77.7
1919	80	79.4	80.9	81.3
1920	78	85.5	84.7	86.2
1921	46	60.3	72.4	76.1
1922	48	51.3	61.3	64.8
1923	52	54.1	60.6	64.6
1924	53	54.6	61.4	64.3
1925	58	56.7	63.6	66.1
1926	54	60.1	66.2	68.7
1927	52	57.5	64.4	66.5
1928	55	56.5	63.6	65.8
1929	55	56.2	63.2	65.8
1930	46	52.3	59.5	62.1
1931	32	38.8	49.6	53.6
1932	24	27.2	38.2	43.1
1933	26	27.9	37.4	41.6
1934	33	36.0	42.2	46.5
1935	40	39.8	44.8	49.5
1936	42	45.5	50.9	54.7
1937	45	50.8	54.4	58.0
1938	36	40.6	51.2	55.0
1939	35	38.4	46.9	52.3
1940	37	40.8	49.0	53.0
1941	46	43.6	53.0	56.5
1942	59	58.0	66.6	67.2
1943	71	69.1	75.7	75.1
1944	73	76.1	80.0	79.0
1945	76	73.4	77.2	77.1
1946	87	77.0	81.5	81.9
1947	102	97.0	94.2	93.7
1948	106	102.4	102.2	101.7
1949	92	100.6	103.6	104.6
1950	95	89.3	99.3	100.8
1951	112	105.0	105.0	105.9
1952	106	111.2	109.2	110.1
1953	95	101.8	106.3	107.8
1954	92	94.0	100.7	103.4

Table 8 - Continued

Year t	Index Of[1]			
	P_t[2]	EP_t	EP_{5t}	EP_{10t}
1955	87	92.4	100.0	103.0
1956	87	87.2	95.7	98.4
1957	87	88.7	96.3	98.3
1958	92	88.4	95.0	97.3
1959	89	88.3	94.1	96.3
1960	88	87.1	93.5	95.8
1961	89	86.2	93.5	95.9
1962	90	88.8	95.6	98.5

1/ P indicates actual price, EP indicates expected price, t indicates that year, 5t indicates that year and the succeeding four years and 10t indicates that year and the succeeding nine year.

2/ Source: U.S. Department of Agriculture, Major Statistical Series of the U.S.D.A., Volume 1, Agricultural Handbook 118, (Washington: U.S. Government Printing Office, 1957), p. 30 and U.S. Department of Agriculture, Agricultural Prices (January 1963), p. 56.

Table 9: Summary Of Regression Equations Used To Provide Mechanical Estimates Of One-Year Expected Prices[1/]

	a_0	a_1	a_2	a_3	a_4	$\bar{R}^2$[2/]
Apples	0.288 (.15)	0.665 (.15)	0.365 (.18)	-0.196 (.16)		.648
Beef	0.914 (.65)	1.468 (.15)	-0.989 (.25)	0.768 (.25)	-0.308 (.16)	.906
Chicken Meat	4.051 (1.66)	1.023 (.16)	-0.014 (.22)	-0.211 (.15)		.753
Corn	0.224 (.10)	0.772 (.10)				.588
Cotton	3.196 (2.08)	0.891 (.15)	-0.151 (.21)	0.134 (.15)		.709
Eggs	6.224 (2.86)	0.804 (.15)	0.194 (.20)	-0.190 (.15)		.688
Hogs	1.612 (1.03)	1.207 (.15)	-0.676 (.21)	0.354 (.14)		.777
Manufactured Milk	0.249 (.17)	1.109 (.16)	-0.221 (.23)	0.043 (.16)		.875
Oranges	1.247 (.39)	0.307 (.16)	0.444 (.16)	-0.109 (.19)	-0.236 (.16)	.242
Potatoes	0.745 (.34)	0.332 (.15)	0.054 (.16)	0.188 (.15)		.146
Soybeans	0.237 (.16)	0.868 (.08)				.753
Tobacco	1.043 (1.47)	1.099 (.15)	-0.054 (.22)	-0.322 (.22)	0.283 (.15)	.932
Wheat	0.162 (.10)	1.271 (.15)	-0.467 (.23)	0.082 (.15)		.837

1/ The coefficients are those for the equation

$$\hat{P}_t = a_0 + a_1 P_{t-1} + a_2 P_{t-2} + a_3 P_{t-3} + a_4 P_{t-4}$$

The numbers in parentheses are standard errors of the regression coefficients.

Table 10: One-Year Expected Prices For Apples, U.S., 1917-62

Year t	Average Price Received By Growers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	.82		
1917	1.11	.96	1.00
1918	1.28	1.18	1.15
1919	1.78	1.37	1.30
1920	1.24	1.71	1.60
1921	1.64	1.49	1.49
1922	.99	1.47	1.30
1923	1.10	1.29	1.15
1924	1.23	1.05	1.05
1925	1.26	1.30	1.30
1926	.88	1.35	1.35
1927	1.48	1.08	1.25
1928	1.09	1.34	1.34
1929	1.37	1.37	1.37
1930	1.03	1.31	1.31
1931	.64	1.25	.90
1932	.61	.81	.81
1933	.79	.72	.80
1934	.72	.91	.91
1935	.63	.93	.70
1936	.94	.81	.81
1937	.54	1.00	.85
1938	.69	.86	.86
1939	.58	.76	.85
1940	.72	.81	.81
1941	.90	.84	.90
1942	1.33	1.03	1.10
1943	2.30	1.35	1.50
1944	2.10	2.11	2.30
1945	2.80	2.24	1.90
1946	2.37	2.45	2.20
1947	1.76	2.45	2.15
1948	2.15	1.75	1.75
1949	1.34	1.88	2.25
1950	1.58	1.60	1.60
1951	1.89	1.39	1.80
1952	2.50	1.84	2.00
1953	2.55	2.31	2.50
1954	2.37	2.50	2.45

Table 10 - Continued

Year t	Average Price Received By Growers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	1.98	2.28	2.35
1956	2.49	1.95	1.95
1957	1.73	2.18	2.18
1958	1.79	1.94	1.94
1959	2.10	1.61	1.90
1960	2.57	1.98	2.25
1961	2.25	2.39	2.39
1962		2.38	2.38

Table 11: One-Year Expected Prices For Beef, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	6.76		
1917	8.54	7.74	8.00
1918	9.88	9.56	9.56
1919	9.97	10.23	9.90
1920	8.71	10.25	9.50
1921	5.63	8.79	7.00
1922	5.73	5.17	6.20
1923	5.84	7.37	6.00
1924	5.84	5.46	6.25
1925	6.53	6.37	6.37
1926	6.75	7.44	7.00
1927	7.62	7.05	7.05
1928	9.52	8.63	8.63
1929	9.47	10.52	9.50
1930	7.71	9.17	9.00
1931	5.53	7.82	7.00
1932	4.25	5.74	5.00
1933	3.75	4.68	4.00
1934	4.13	4.08	4.08
1935	6.04	4.83	5.00
1936	5.82	7.26	6.25
1937	7.00	5.50	6.25
1938	6.54	8.80	6.50
1939	7.14	6.20	6.75
1940	7.56	8.51	8.00
1941	8.82	7.81	8.25
1942	10.70	9.85	9.85
1943	11.90	11.50	11.50
1944	10.80	12.24	12.00
1945	12.10	10.49	10.49
1946	14.50	13.83	11.75
1947	18.40	14.85	15.25
1948	22.20	19.54	19.54
1949	19.80	22.70	21.50
1950	23.30	17.67	18.80
1951	28.70	26.90	24.00
1952	24.30	28.35	27.50
1953	16.30	19.98	19.98
1954	16.00	15.65	15.65

Table 11 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	15.60	18.09	16.00
1956	14.90	13.01	15.25
1957	17.20	14.61	15.50
1958	21.90	18.47	18.47
1959	22.60	22.68	22.68
1960	20.40	21.23	20.50
1961	20.20	20.01	19.50
1962	21.30	20.99	21.00

Table 12: One-Year Expected Prices For Chicken Meat, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	13.5		
1917	16.9	15.0	15.0
1918	21.7	18.7	18.0
1919	24.6	23.2	21.0
1920	26.3	25.4	24.0
1921	20.9	26.0	26.3
1922	19.2	19.9	20.5
1923	19.1	17.9	20.0
1924	19.4	18.9	19.5
1925	20.5	19.6	21.0
1926	22.1	20.7	20.7
1927	20.2	22.3	22.3
1928	21.4	20.1	20.1
1929	22.8	21.0	21.0
1930	18.4	22.8	20.0
1931	15.8	18.0	17.0
1932	11.7	15.2	14.5
1933	9.5	11.9	11.9
1924	11.6	10.3	10.3
1935	15.3	13.3	14.5
1936	15.5	17.5	15.0
1937	16.7	17.2	16.0
1938	15.4	17.7	16.0
1939	13.8	16.3	16.3
1940	13.9	14.4	16.5
1941	16.3	14.8	15.5
1942	19.8	17.6	18.5
1943	25.3	21.1	22.0
1944	24.9	26.2	25.0
1945	27.0	25.0	24.0
1946	29.0	26.0	26.0
1947	28.2	28.1	28.1
1948	32.3	26.8	29.0
1949	26.6	30.6	30.6
1950	24.9	24.9	24.9
1951	27.0	22.3	26.0
1952	26.0	25.7	27.0
1953	25.3	25.2	26.5
1954	21.1	23.9	23.9

Table 12 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	23.4	19.8	21.0
1956	18.9	22.4	22.4
1957	18.0	18.6	18.6
1958	17.7	17.3	17.3
1959	15.3	17.9	17.5
1960	16.3	15.7	15.7
1961	13.9	16.8	15.0
1962		14.8	14.0

Table 13: One-Year Expected Prices For Corn, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	1.13		
1917	1.39	1.10	1.25
1918	1.45	1.30	1.40
1919	1.44	1.34	1.34
1920	.54	1.34	1.50
1921	.46	.64	.50
1922	.69	.58	.50
1923	.76	.76	.76
1924	1.02	.81	.70
1925	.65	1.01	.80
1926	.72	.73	.73
1927	.80	.78	.78
1928	.80	.84	.75
1929	.76	.84	.75
1930	.55	.81	.65
1931	.29	.65	.45
1932	.29	.45	.25
1933	.49	.45	.40
1934	.80	.60	.60
1935	.63	.84	.70
1936	1.03	.71	.71
1937	.49	1.02	.90
1938	.47	.60	.50
1939	.54	.59	.59
1940	.60	.64	.60
1941	.74	.69	.69
1942	.89	.80	.85
1943	1.08	.91	1.00
1944	1.03	1.06	1.06
1945	1.23	1.02	1.02
1946	1.53	1.17	1.17
1947	2.16	1.41	1.55
1948	1.28	1.89	1.50
1949	1.24	1.21	1.40
1950	1.52	1.18	1.35
1951	1.66	1.39	1.65
1952	1.51	1.51	1.65
1953	1.48	1.39	1.39
1954	1.42	1.37	1.40

Table 13 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	1.35	1.32	1.35
1956	1.29	1.27	1.27
1927	1.11	1.22	1.22
1958	1.12	1.08	1.11
1959	1.05	1.09	1.05
1960	1.00	1.03	1.03
1961	1.08	1.00	1.05
1962	1.10	1.06	1.10

Table 14: One-Year Expected Prices For Cotton, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	17.4		
1917	27.1	18.0	20.0
1918	28.9	26.2	27.5
1919	35.3	27.2	27.2
1920	15.9	33.9	30.0
1921	17.0	15.9	16.0
1922	22.9	20.7	17.0
1923	28.7	28.5	28.5
1924	22.9	26.7	26.7
1925	19.6	23.2	22.0
1926	12.5	21.1	20.0
1927	20.7	14.5	14.5
1928	18.0	21.9	18.0
1929	16.8	17.9	17.9
1930	9.5	18.2	13.0
1931	5.7	11.5	8.0
1932	6.5	9.1	7.0
1933	10.2	9.4	8.0
1934	12.4	12.1	12.1
1935	11.1	13.6	12.4
1936	12.3	12.6	12.6
1937	8.4	14.1	14.1
1938	8.6	10.3	10.3
1939	9.1	11.2	8.6
1940	9.8	11.1	10.5
1941	17.0	11.7	11.7
1942	19.0	18.1	20.0
1943	19.9	18.8	20.0
1944	20.7	20.3	20.3
1945	22.5	21.2	21.2
1946	32.6	22.8	22.8
1947	31.9	31.6	31.6
1948	30.4	29.7	29.7
1949	28.6	29.9	28.0
1950	39.9	28.4	30.0
1951	37.7	38.5	36.0
1952	34.2	34.6	34.0
1953	32.1	33.3	33.3
1954	33.5	31.7	32.5

Table 14 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	32.3	32.8	34.0
1956	31.6	31.2	31.0
1957	29.5	31.0	31.0
1958	33.2	29.1	31.0
1959	31.4	32.6	32.6
1960	30.1	30.1	30.1
1961	32.8	29.7	30.5
1962		32.1	32.1

Table 15: One-Year Expected Prices For Eggs, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/doz.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	22.1		
1917	31.8	23.9	25.0
1918	36.0	32.4	32.4
1919	41.3	37.1	35.5
1920	43.5	40.4	35.0
1921	28.3	42.4	41.5
1922	25.0	29.6	28.0
1923	26.5	23.5	26.0
1924	26.7	27.0	27.0
1925	30.4	28.1	28.1
1926	28.9	30.8	30.0
1927	25.1	30.3	28.5
1928	28.1	26.2	26.2
1929	29.8	28.2	27.5
1930	23.7	30.9	26.0
1931	17.6	25.7	22.0
1932	14.2	19.3	16.5
1933	13.8	16.6	14.5
1934	17.0	16.7	15.0
1935	23.4	19.9	19.9
1936	21.8	25.7	23.0
1937	21.3	25.1	23.0
1938	20.3	23.1	20.0
1939	17.4	22.5	22.5
1940	18.0	20.1	20.1
1941	23.5	20.2	20.2
1942	30.0	25.3	25.3
1943	37.1	31.5	33.0
1944	32.5	37.4	37.4
1945	37.7	33.8	31.0
1946	37.6	35.8	35.8
1947	45.3	37.6	40.0
1948	47.2	42.8	45.3
1949	45.2	45.8	45.8
1950	36.3	43.1	43.1
1951	47.7	35.2	38.0
1952	41.6	43.0	46.0
1953	47.7	42.0	42.0
1954	36.6	43.6	43.6

Table 15 - Continued

Year t	Average Price Received By Farmers (¢/doz.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	39.5	37.0	37.0
1956	39.3	36.0	36.0
1957	35.9	38.5	38.5
1958	38.5	35.2	38.0
1959	31.4	36.7	36.7
1960	36.0	32.1	35.0
1961	35.5	33.9	33.9
1962		35.8	32.0

Table 16: One-Year Expected Prices For Hogs, Spring And Fall, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_t	P_t Spring[1]	P_t Fall[2]	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price Spring Farrowings[3] $EP_{t,S}$	Expected Price Fall Farrowings[4] $EP_{t,F}$
1916	8.37		8.95			
1917	13.90	12.00	15.42	10.00	10.50	13.25
1918	16.10	15.82	16.73	15.02	15.02	14.25
1919	16.40	17.03	16.92	14.60	16.25	15.25
1920	12.90	13.35	13.40	15.44	15.25	13.50
1921	7.63	8.27	7.42	11.79	13.40	8.00
1922	8.40	8.23	8.52	7.90	8.50	9.00
1923	6.94	7.42	6.74	11.15	7.50	7.25
1924	7.34	6.43	8.05	7.01	8.00	8.00
1925	10.90	10.38	11.47	8.75	9.50	11.50
1926	11.80	11.45	12.17	12.26	11.25	10.45
1927	9.64	10.62	9.12	11.08	10.40	10.00
1928	8.54	7.92	9.70	9.12	9.50	10.00
1929	9.42	9.33	9.66	9.58	10.75	9.30
1930	8.84	9.15	8.78	10.62	9.50	8.25
1931	5.73	6.90	5.35	8.93	8.00	6.50
1932	3.34	3.47	3.48	5.88	4.75	3.75
1933	3.53	3.08	3.88	4.90	3.75	4.50
1934	4.14	3.32	4.72	5.64	4.50	4.25
1935	8.65	7.40	9.48	5.40	6.50	8.00
1936	9.37	9.22	9.39	10.50	9.25	9.75
1937	9.50	9.40	10.33	8.54	9.90	9.00
1938	7.74	7.81	7.90	9.80	8.75	7.00
1939	6.23	6.88	6.06	7.85	6.00	6.00
1940	5.39	5.04	5.70	7.26	7.00	6.50
1941	9.09	7.33	10.15	6.64	7.00	8.25
1942	13.00	12.03	13.73	11.14	10.75	12.50
1943	13.70	14.15	13.58	13.06	13.75	14.00
1944	13.10	12.85	13.28	12.57	14.00	14.25
1945	14.00	13.90	14.10	12.76	14.50	14.00
1946	17.50	14.20	18.93	14.50	13.25	15.00
1947	24.10	23.60	24.30	17.90	20.00	23.00
1948	23.10	22.51	24.81	23.82	25.50	22.50
1949	18.10	19.33	18.30	19.39	22.00	18.50

Table 16 - Continued

Year	Average Price Received By Farmers ($/cwt.)			Regression Estimate of Expected Price	Expected Price	
					Spring Farrowings[3]	Fall Farrowings[4]
t	P_t	P_t Spring[1]	P_t Fall[2]	$\hat{P}_t$	$EP_{t,S}$	$EP_{t,F}$
1950	18.00	16.08	19.85	16.36	17.00	16.00
1951	20.00	20.31	20.07	19.27	20.50	19.50
1952	17.80	17.37	18.97	19.98	20.50	20.00
1953	21.40	19.60	22.55	15.94	21.00	21.00
1954	21.60	24.85	19.93	22.48	20.25	19.50
1955	15.00	16.43	15.35	19.51	19.50	15.75
1956	14.40	12.65	15.45	12.68	15.50	15.00
1957	17.80	17.00	18.43	16.49	16.25	18.00
1958	19.60	19.57	20.07	18.66	17.00	16.50
1959	14.10	15.95	13.35	18.33	15.00	14.50
1960	15.30	13.72	16.32	11.67	14.75	15.00
1961	16.60	16.80	16.58	17.48	15.75	16.00
1962		15.92	16.88	16.15	16.00	15.50

1/ Spring indicates equally weighted average of months December-May.

2/ Fall indicates equally weighted average of months June-November.

3/ $EP_{t,S}$ is expected price for pig crop born December-May and sold June-November.

4/ $EP_{t,F}$ is expected price for pig crop born June-November and sold December-May.

Table 17: One-Year Expected Prices For Manufactured Milk, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	1.73		
1917	2.38	1.89	1.89
1918	2.96	2.57	2.57
1919	3.29	3.08	2.85
1920	3.22	3.35	3.15
1921	2.30	3.22	2.90
1922	2.11	2.23	2.55
1923	2.49	2.22	2.30
1924	2.22	2.64	2.50
1925	2.38	2.25	2.35
1926	2.38	2.51	2.51
1927	2.51	2.46	2.46
1928	2.52	2.61	2.61
1929	2.53	2.59	2.59
1930	2.21	2.61	2.25
1931	1.69	2.25	2.00
1932	1.28	1.74	1.40
1933	1.30	1.39	1.35
1934	1.55	1.48	1.48
1935	1.72	1.74	1.74
1936	1.88	1.87	1.87
1937	1.99	2.02	2.02
1938	1.73	2.12	2.12
1939	1.69	1.81	1.81
1940	1.82	1.83	1.83
1941	2.19	1.97	2.05
1942	2.58	2.35	2.45
1943	3.12	2.71	2.71
1944	3.21	3.23	3.23
1945	3.19	3.23	3.23
1946	3.99	3.21	3.21
1947	4.07	4.11	4.11
1948	4.88	4.02	4.07
1949	3.95	4.93	4.93
1950	4.11	3.73	3.73
1951	4.74	4.15	4.50
1952	4.79	4.77	4.90
1953	4.26	4.69	4.90
1954	3.98	4.12	4.12

Table 17 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	4.05	3.93	3.93
1956	4.21	4.05	4.05
1957	4.24	4.20	4.20
1958	4.13	4.20	4.20
1959	4.19	4.07	4.10
1960	4.21	4.17	4.17
1961	4.22	4.17	4.20
1962		4.18	4.18

Table 18: One-Year Expected Prices For Oranges, U.S., 1917-62

Year t	Average Price Received By Growers ($/box) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	1.33		
1917	3.45	1.95	1.95
1918	2.81	2.47	2.75
1919	3.11	3.15	2.65
1920	1.85	2.76	2.76
1921	2.94	2.07	1.75
1922	1.95	1.96	2.50
1923	1.44	2.21	2.21
1924	2.85	1.80	1.80
1925	2.66	1.85	2.50
1926	2.52	2.71	2.71
1927	3.73	2.55	2.75
1928	1.63	2.55	2.55
1929	3.61	2.50	2.50
1930	1.35	2.07	2.25
1931	1.22	2.21	1.15
1932	.88	1.44	1.00
1933	1.39	1.05	.95
1934	1.15	1.61	1.61
1935	1.51	1.83	1.35
1936	1.75	1.86	1.45
1937	.83	2.00	1.85
1938	.76	1.84	1.00
1939	.95	1.30	1.00
1940	1.18	1.37	1.20
1941	1.56	1.75	1.40
1942	2.47	1.97	1.97
1943	2.64	2.34	2.75
1944	2.69	2.71	2.80
1945	2.93	2.61	2.25
1946	1.55	2.47	2.45
1947	1.30	2.11	1.25
1948	1.74	1.38	1.38
1949	2.22	1.50	1.90
1950	1.97	2.19	2.10
1951	1.51	2.34	2.20
1952	1.72	1.93	1.60
1953	1.96	1.71	1.71
1954	1.83	1.98	1.85

Table 18 - Continued

Year t	Average Price Received By Growers ($/box) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	2.35	2.13	2.13
1956	2.06	2.16	2.16
1957	3.06	2.26	2.05
1958	3.24	2.41	2.75
1959	2.75	2.82	2.82
1960	3.58	2.71	2.90
1961	2.46	2.49	3.05
1962		2.52	2.75

Table 19: One-Year Expected Prices For Potatoes, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	2.50		
1917	2.12	1.81	2.00
1918	1.95	1.80	2.05
1919	3.18	1.98	1.98
1920	2.10	2.30	2.75
1921	1.83	1.98	1.98
1922	1.11	2.06	1.65
1923	1.56	1.61	1.30
1924	1.14	1.67	1.60
1925	2.83	1.42	1.30
1926	2.15	2.04	2.04
1927	1.66	1.82	1.82
1928	.88	1.94	1.50
1929	2.17	1.53	1.25
1930	1.47	1.82	1.82
1931	.75	1.51	1.20
1932	.63	1.48	.75
1933	1.34	1.27	.80
1934	.71	1.36	1.15
1935	.98	1.17	.80
1936	1.87	1.36	1.36
1937	.84	1.55	1.55
1938	.90	1.31	.95
1939	1.16	1.44	1.00
1940	.85	1.34	1.10
1941	1.31	1.26	1.00
1942	1.90	1.44	1.50
1943	2.10	1.61	2.00
1944	2.40	1.79	2.25
1945	2.30	2.01	2.40
1946	2.02	2.03	2.03
1947	2.67	1.99	2.40
1948	2.53	2.17	2.50
1949	2.10	2.11	2.11
1950	1.50	2.08	1.60
1951	2.68	1.83	2.00
1952	3.21	2.11	2.75
1953	1.31	2.24	2.24
1954	2.15	1.85	1.85

Table 19 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	1.77	2.13	2.13
1956	2.02	1.69	2.00
1957	1.90	1.91	1.91
1958	1.31	1.82	1.82
1959	2.27	1.66	1.66
1960	1.85	1.93	2.05
1961	1.47	1.73	1.55
1962		1.76	1.65

Table 20: One-Year Expected Prices For Soybeans, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	2.19		
1917	3.17	2.14	2.45
1918	3.19	2.99	2.85
1919	3.53	3.01	2.60
1920	2.67	3.30	2.60
1921	2.16	2.56	2.65
1922	2.01	2.11	2.11
1923	2.28	1.98	2.00
1924	2.46	2.22	2.00
1925	2.34	2.37	2.37
1926	2.01	2.27	2.27
1927	1.81	1.98	2.10
1928	1.88	1.81	1.81
1929	1.88	1.87	1.80
1930	1.37	1.87	1.55
1931	.50	1.43	1.10
1932	.54	.67	.67
1933	.94	.71	.71
1934	.99	1.05	.80
1935	.73	1.10	.85
1936	1.27	.87	.75
1937	.85	1.34	1.10
1938	.67	.98	1.05
1939	.81	.82	.65
1940	.90	.94	.85
1941	1.55	1.02	1.15
1942	1.61	1.58	1.58
1943	1.81	1.64	1.75
1944	2.05	1.81	2.00
1945	2.08	2.02	2.15
1946	2.57	2.04	2.15
1947	3.34	2.47	2.65
1948	2.27	3.14	3.45
1949	2.16	2.21	2.21
1950	2.47	2.11	2.20
1951	2.73	2.38	2.85
1952	2.72	2.61	2.61
1953	2.72	2.60	2.60
1954	2.46	2.60	2.30

Table 20 - Continued

Year t	Average Price Expected By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	2.22	2.37	2.10
1956	2.18	2.16	2.15
1957	2.07	2.13	2.13
1958	2.00	2.03	2.03
1959	1.96	1.97	2.05
1960	2.13	1.94	1.94
1961	2.28	2.09	2.20
1962	2.34	2.22	2.22

Table 21: One-Year Expected Prices For Tobacco, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	14.8		
1917	24.0	17.3	19.0
1918	27.9	26.5	26.5
1919	31.2	28.1	28.5
1920	17.3	30.3	26.5
1921	19.5	16.2	21.0
1922	22.8	19.4	20.0
1923	19.0	28.3	20.0
1924	19.0	19.3	19.3
1925	16.8	19.1	17.0
1926	17.9	18.8	17.0
1927	20.7	19.1	19.1
1928	20.0	22.8	18.0
1929	18.3	20.9	18.0
1930	12.8	18.5	15.5
1931	8.2	13.5	11.5
1932	10.5	9.1	12.0
1933	13.0	13.2	9.5
1934	21.3	15.7	16.5
1935	18.4	22.7	18.0
1936	23.6	18.9	18.9
1937	20.4	22.8	20.0
1938	19.6	22.3	20.0
1939	15.4	19.1	17.5
1940	16.1	17.0	17.0
1941	26.4	17.4	19.0
1942	36.9	29.8	29.8
1943	40.5	39.3	39.3
1944	42.0	39.6	41.0
1945	42.6	40.6	40.6
1946	45.1	43.0	42.0
1947	43.6	46.2	46.2
1948	48.2	44.7	50.0
1949	45.9	49.2	47.0
1950	51.7	47.6	47.6
1951	51.1	52.2	50.0
1952	49.9	53.3	49.0
1953	52.3	49.5	49.5
1954	51.1	54.0	50.0

Table 21 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	53.2	52.8	52.8
1956	53.7	54.0	53.2
1957	56.1	55.5	58.0
1958	59.9	57.1	57.1
1959	58.3	61.6	60.0
1960	60.9	59.0	59.0
1961	63.8	61.4	61.4
1962	59.0	66.1	61.0

Table 22: One-Year Expected Prices For Wheat, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1916	1.43		
1917	2.04	1.61	1.61
1918	2.05	2.17	2.17
1919	2.16	1.93	2.30
1920	1.82	2.12	2.12
1921	1.03	1.64	1.64
1922	.96	.80	.85
1923	.92	1.05	1.05
1924	1.24	.97	1.05
1925	1.43	1.39	1.35
1926	1.21	1.48	1.35
1927	1.18	1.13	1.21
1928	.99	1.21	1.10
1929	1.03	.97	1.05
1930	.66	1.11	.90
1931	.38	.60	.60
1932	.38	.42	.42
1933	.74	.52	.45
1934	.84	.96	.80
1935	.83	.92	.84
1936	1.02	.89	.89
1937	.96	1.14	.95
1938	.58	.97	.97
1939	.69	.51	.65
1940	.67	.86	.75
1941	.80	.74	.74
1942	1.09	1.10	1.00
1943	1.35	1.16	1.20
1944	1.41	1.45	1.45
1945	1.49	1.41	1.41
1946	1.90	1.51	1.51
1947	2.29	2.00	2.00
1948	1.98	2.31	2.00
1949	1.88	1.76	1.90
1950	2.00	1.82	1.85
1951	2.11	1.99	2.05
1952	2.09	2.06	2.06
1953	2.04	2.00	2.10
1954	2.12	1.95	2.04

Table 22 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_t	Regression Estimate of Expected Price $\hat{P}_t$	Expected Price EP_t
1955	1.99	2.08	2.15
1956	1.97	1.87	1.87
1957	1.93	1.91	2.00
1958	1.75	1.86	1.86
1959	1.76	1.65	1.75
1960	1.75	1.74	1.70
1961	1.79	1.71	1.70
1962		1.76	1.95

Table 23: Summary of Regression Equations Used To Provide Mechanical Estimates of Five-Year Expected Prices[1/]

	a_0	a_1	a_2	a_3	$\bar{R}^2$
Apples	0.637	0.590			.431
	(.16)	(.11)			
Beef	4.659	0.895	-0.459	0.254	.560
	(1.07)	(.29)	(.45)	(.29)	
Chicken Meat	10.674	0.861	-0.389		.375
	(2.33)	(.22)	(.21)		
Corn	0.433	0.545			.423
	(.11)	(.10)			
Cotton	5.735	0.643	0.114		.620
	(2.18)	(.16)	(.16)		
Eggs	11.321	0.641			.512
	(3.15)	(.10)			
Hogs	3.509	0.786	-0.407	0.362	.548
	(1.37)	(.21)	(.31)	(.21)	
Manufactured Milk	0.576	0.840			.714
	(.25)	(.08)			
Oranges	1.679	0.177			.038
	(.24)	(.11)			
Potatoes	1.085	0.246	0.119		.187
	(.21)	(.10)	(.10)		
Soybeans	0.621	0.647			.518
	(.21)	(.11)			
Tobacco	2.745	0.957	-0.224	0.277	.828
	(2.34)	(.23)	(.34)	(.23)	
Wheat	0.423	0.961	-0.501	0.228	.555
	(.15)	(.23)	(.35)	(.23)	

1/ The coefficients are those for the equation

$$\hat{P}_{5t} = a_0 + a_1 P_{t-1} + a_2 P_{t-2} + a_3 P_{t-3}$$

The numbers in parentheses are standard errors of the regression coefficients.

Table 24: Five-Year Expected Prices For Apples, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	1.41	1.12	.95
1918	1.39	1.29	1.10
1919	1.35	1.39	1.25
1920	1.24	1.69	1.40
1921	1.24	1.37	1.40
1922	1.09	1.60	1.35
1923	1.19	1.22	1.22
1924	1.19	1.29	1.20
1925	1.22	1.36	1.36
1926	1.17	1.38	1.38
1927	1.13	1.16	1.16
1928	.95	1.51	1.40
1929	.89	1.28	1.28
1930	.76	1.46	1.25
1931	.68	1.24	1.00
1932	.74	1.01	.80
1933	.73	1.00	1.00
1934	.70	1.10	1.00
1935	.68	1.06	.90
1936	.69	1.01	.90
1937	.69	1.19	.90
1938	.84	.95	.95
1939	1.17	1.04	.95
1940	1.47	.98	.95
1941	1.89	1.06	1.10
1942	2.18	1.17	1.10
1943	2.27	1.42	1.42
1944	2.24	1.99	1.99
1945	2.08	1.87	1.87
1946	1.84	2.29	2.10
1947	1.74	2.03	2.10
1948	1.89	1.67	1.85
1949	1.97	1.90	2.00
1950	2.18	1.43	1.65
1951	2.26	1.57	1.85
1952	2.38	1.75	2.05
1953	2.22	2.11	2.55
1954	2.07	2.14	2.50

Table 24 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	2.02	2.03	2.40
1956	2.14	1.80	2.10
1957	2.09	2.10	2.20
1958		1.66	2.05
1959		1.69	2.00
1960		1.88	2.15
1961		2.15	2.30
1962		1.96	2.30

Table 25: Five-Year Expected Prices For Beef, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	8.54	9.49	8.50
1918	7.98	10.79	9.50
1919	7.18	11.29	9.50
1920	6.35	11.21	8.00
1921	5.91	10.38	8.00
1922	6.14	8.23	6.50
1923	6.52	9.41	6.50
1924	7.25	8.68	6.75
1925	7.98	8.66	7.50
1926	8.21	9.30	8.00
1927	7.97	9.18	8.00
1928	7.30	10.04	9.00
1929	6.14	11.39	9.50
1930	5.07	10.70	8.50
1931	4.74	9.63	7.50
1932	4.80	8.47	5.50
1933	5.35	7.88	5.00
1934	5.91	7.47	5.25
1935	6.51	7.71	6.00
1936	6.81	9.12	6.50
1937	7.41	8.14	7.00
1938	8.15	9.78	7.35
1939	9.22	8.77	7.50
1940	9.96	9.82	8.50
1941	10.86	9.81	9.50
1942	12.00	10.89	10.89
1943	13.54	12.10	11.50
1944	15.60	12.63	12.00
1945	17.40	11.58	11.58
1946	19.64	13.55	12.25
1947	22.48	14.82	14.82
1948	23.66	17.54	19.00
1949	22.48	19.76	20.00
1950	21.72	16.86	19.50
1951	20.18	22.05	22.05
1952	17.42	24.67	22.00
1953	16.00	19.14	19.50
1954	17.12	15.37	15.37

Table 25 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	18.44	17.66	16.50
1956	19.40	15.41	16.50
1957	20.46	14.89	18.00
1958	21.28	17.17	18.00
1959		19.15	19.50
1960		19.21	19.00
1961		18.11	18.50
1962		19.12	20.00

Table 26: Five-Year Expected Prices For Chicken Meat, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	22.1	17.7	17.0
1918	22.5	20.0	18.0
1919	22.0	22.8	20.0
1920	21.0	23.4	22.5
1921	19.8	23.7	23.7
1922	20.1	18.4	22.0
1923	20.3	19.1	21.0
1924	20.7	19.6	20.0
1925	21.4	19.9	19.9
1926	21.0	20.8	20.5
1927	19.7	21.7	21.7
1928	18.0	19.5	21.0
1929	15.6	21.2	21.2
1930	13.4	22.0	21.0
1931	12.8	17.6	17.6
1932	12.7	17.1	15.5
1933	13.7	14.6	13.0
1934	14.9	14.3	12.0
1935	15.3	17.0	15.0
1936	15.1	19.3	16.0
1937	15.2	18.1	17.0
1938	15.8	19.0	17.0
1939	17.8	17.4	17.0
1940	20.0	16.6	16.6
1941	22.7	17.3	17.3
1942	25.2	19.3	19.3
1943	26.9	21.4	23.0
1944	28.3	24.8	24.8
1945	28.6	22.3	22.3
1946	28.2	24.2	24.2
1947	27.8	25.1	25.1
1948	27.4	23.7	26.0
1949	26.0	27.5	27.5
1950	24.9	21.0	23.0
1951	24.6	21.8	23.5
1952	23.0	24.2	24.2
1953	21.3	22.7	24.0
1954	19.8	22.3	22.3

Table 26 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	18.7	19.0	20.5
1956	17.2	22.6	21.0
1957	16.2	17.8	17.8
1958		18.8	17.0
1959		18.9	17.0
1960		17.0	15.5
1961		18.8	14.5
1962		16.3	13.8

Table 27: Five-Year Expected Prices For Corn, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	1.06	1.05	1.05
1918	.92	1.19	1.19
1919	.78	1.22	1.22
1920	.69	1.22	1.30
1921	.72	.73	.73
1922	.77	.68	.60
1923	.79	.81	.70
1924	.80	.85	.75
1925	.75	.99	.85
1926	.73	.79	.79
1927	.64	.83	.83
1928	.54	.87	.78
1929	.48	.87	.78
1930	.48	.85	.70
1931	.50	.73	.60
1932	.65	.59	.45
1933	.69	.59	.50
1934	.68	.70	.60
1935	.63	.87	.65
1936	.63	.78	.78
1937	.57	.99	.80
1938	.65	.70	.65
1939	.77	.69	.65
1940	.87	.73	.65
1941	.99	.76	.76
1942	1.15	.84	.95
1943	1.41	.92	1.05
1944	1.45	1.02	1.02
1945	1.49	.99	.99
1946	1.55	1.10	1.10
1947	1.57	1.27	1.27
1948	1.44	1.61	1.30
1949	1.48	1.13	1.25
1950	1.52	1.11	1.25
1951	1.48	1.26	1.30
1952	1.41	1.34	1.45
1953	1.33	1.26	1.35
1954	1.26	1.24	1.35

Table 27 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	1.18	1.21	1.30
1956	1.11	1.17	1.20
1957	1.07	1.14	1.15
1958	1.07	1.04	1.10
1959		1.04	1.04
1960		1.00	1.04
1961		.98	1.08
1962		1.02	1.12

Table 28: Five-Year Expected Prices For Cotton, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	25.8	18.2	18.2
1918	25.2	25.1	25.1
1919	25.2	27.4	26.0
1920	22.7	31.7	27.0
1921	23.4	20.0	21.0
1922	22.5	18.5	21.0
1923	20.8	26.3	26.3
1924	18.6	27.5	26.0
1925	17.4	23.7	22.0
1926	15.4	20.9	20.9
1927	14.0	16.0	16.0
1928	11.3	20.1	18.0
1929	9.7	19.6	18.0
1930	8.9	18.6	15.0
1931	9.2	13.8	11.0
1932	10.5	10.5	10.5
1933	10.9	10.6	10.6
1934	10.6	13.0	13.0
1935	9.9	14.9	13.0
1936	9.6	14.3	13.0
1937	10.6	14.9	14.9
1938	12.7	12.5	12.5
1939	14.9	12.2	10.0
1940	17.2	12.6	11.5
1941	19.8	13.1	12.5
1942	22.9	17.8	19.0
1943	25.5	19.8	19.8
1944	27.6	20.6	20.0
1945	29.2	21.3	20.5
1946	32.7	22.6	22.6
1947	33.7	29.3	29.3
1948	34.2	30.0	29.3
1949	34.5	28.9	28.9
1950	35.5	27.6	29.0
1951	34.0	34.7	34.7
1952	32.7	34.5	33.5
1953	31.8	32.0	32.5
1954	32.0	30.3	32.5

Table 28 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	31.6	30.9	33.0
1956	31.2	30.3	30.5
1957	31.4	29.7	30.5
1958		28.1	30.5
1959		30.2	31.5
1960		29.5	30.5
1961		28.4	30.5
1962		30.0	31.0

Table 29: Five-Year Expected Prices For Eggs, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/doz.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	36.2	25.5	27.0
1918	34.8	31.7	31.7
1919	32.9	34.4	34.4
1920	30.0	37.8	37.8
1921	27.4	39.2	39.0
1922	27.5	29.5	31.0
1923	27.5	27.3	27.3
1924	27.8	28.3	28.3
1925	28.5	28.4	28.0
1926	27.1	30.8	30.0
1927	24.9	29.8	28.5
1928	22.7	27.4	27.4
1929	19.8	29.3	27.5
1930	17.3	30.4	27.0
1931	17.2	26.5	22.5
1932	18.0	22.6	17.0
1933	19.5	20.4	15.0
1934	20.8	20.2	16.0
1935	20.8	22.2	21.0
1936	19.8	26.3	24.0
1937	20.1	25.3	24.0
1938	21.8	25.0	24.0
1939	25.2	24.3	22.0
1940	28.2	22.5	22.5
1941	32.2	22.9	22.9
1942	35.0	26.4	26.4
1943	38.0	30.5	35.0
1944	40.1	35.1	35.1
1945	42.6	32.1	30.0
1946	42.3	35.5	35.0
1947	44.3	35.4	35.4
1948	43.6	40.3	40.3
1949	43.7	41.6	41.6
1950	42.0	40.3	40.3
1951	42.6	34.6	34.6
1952	40.9	41.9	41.9
1953	39.8	38.0	42.0
1954	38.0	41.9	41.9

Table 29 - Continued

Year t	Average Price Received By Farmers (¢/doz.) P_{5t}	Regession Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	36.9	34.8	38.0
1956	36.2	36.6	36.6
1957	35.5	36.5	36.5
1958		34.3	36.0
1959		36.0	36.0
1960		31.4	34.5
1961		34.4	34.0
1962		34.1	33.0

Table 30: Five-Year Expected Prices For Hogs, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	13.39	10.17	10.17
1918	12.29	13.36	13.36
1919	10.45	13.53	13.53
1920	8.64	14.87	12.50
1921	8.24	12.79	12.79
1922	9.08	10.19	10.19
1923	9.32	11.67	8.25
1924	9.64	8.30	8.30
1925	10.06	9.49	9.00
1926	9.65	11.60	11.00
1927	8.43	11.00	10.75
1928	7.17	10.22	10.22
1929	6.17	10.56	11.00
1930	5.12	10.92	10.00
1931	5.08	9.71	8.25
1932	5.81	7.82	6.50
1933	7.04	7.00	5.50
1934	7.88	7.00	5.75
1935	8.30	6.53	6.53
1936	7.65	9.90	8.50
1937	7.59	8.85	9.40
1938	8.29	10.29	9.50
1939	9.48	9.11	7.50
1940	10.86	8.69	8.00
1941	12.58	8.01	8.00
1942	14.26	10.71	11.50
1943	16.48	11.97	13.00
1944	18.36	12.27	13.75
1945	19.36	12.93	13.25
1946	20.16	14.13	13.00
1947	20.66	16.30	18.00
1948	19.40	20.38	22.00
1949	19.06	18.18	21.00
1950	19.76	17.05	19.50
1951	19.16	18.64	19.00
1952	18.04	18.44	18.44
1953	18.04	15.86	19.00
1954	17.68	20.31	18.50

Table 30 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	16.18	18.21	18.00
1956	16.24	14.24	17.00
1957	16.68	16.53	17.00
1958		17.07	17.00
1959		16.88	16.00
1960		13.06	16.00
1961		16.89	16.00
1962		15.43	16.00

Table 31: Five-Year Expected Prices For Manufactured Milk, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	2.83	2.03	1.85
1918	2.78	2.58	2.50
1919	2.68	3.06	2.75
1920	2.47	3.34	3.05
1921	2.30	3.28	3.00
1922	2.32	2.51	2.51
1923	2.40	2.35	2.35
1924	2.40	2.67	2.45
1925	2.46	2.44	2.40
1926	2.43	2.58	2.45
1927	2.29	2.58	2.45
1928	2.05	2.69	2.50
1929	1.80	2.69	2.50
1930	1.61	2.70	2.35
1931	1.51	2.43	2.10
1932	1.55	2.00	1.60
1933	1.69	1.65	1.55
1934	1.77	1.67	1.55
1935	1.80	1.88	1.80
1936	1.82	2.02	1.90
1937	1.88	2.16	2.00
1938	2.00	2.25	2.15
1939	2.28	2.03	1.90
1940	2.58	2.00	1.95
1941	2.86	2.11	2.00
1942	3.22	2.42	2.42
1943	3.52	2.74	2.80
1944	3.87	3.20	3.25
1945	4.02	3.27	3.15
1946	4.20	3.26	3.19
1947	4.35	3.93	3.93
1948	4.49	4.00	4.00
1949	4.37	4.68	4.50
1950	4.38	3.89	3.89
1951	4.36	4.03	4.20
1952	4.26	4.56	4.56
1953	4.15	4.60	4.60
1954	4.12	4.16	4.16

Table 31 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	4.16	3.92	4.10
1956	4.20	3.98	4.00
1957	4.20	4.11	4.11
1958		4.14	4.10
1959		4.05	4.05
1960		4.10	4.10
1961		4.12	4.12
1962		4.12	4.12

Table 32: Five-Year Expected Prices For Oranges, U.S., 1917-62

Year t	Average Price Received By Farmers ($/box) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	2.83	1.91	1.85
1918	2.53	2.29	2.29
1919	2.26	2.17	2.35
1920	2.21	2.23	2.50
1921	2.37	2.01	2.25
1922	2.28	2.20	2.30
1923	2.64	2.02	2.02
1924	2.68	1.93	1.85
1925	2.83	2.18	2.50
1926	2.57	2.15	2.65
1927	2.31	2.12	2.40
1928	1.74	2.34	2.34
1929	1.69	1.97	2.25
1930	1.20	2.32	2.00
1931	1.23	1.92	1.50
1932	1.34	1.89	1.20
1933	1.33	1.83	1.20
1934	1.20	1.92	1.75
1935	1.16	1.88	1.40
1936	1.09	1.95	1.50
1937	1.06	1.99	1.70
1938	1.38	1.83	1.25
1939	1.76	1.81	1.15
1940	2.11	1.85	1.20
1941	2.46	1.89	1.60
1942	2.46	1.95	1.90
1943	2.22	2.11	2.11
1944	2.04	2.14	2.30
1945	1.95	2.15	2.15
1946	1.76	2.20	2.20
1947	1.75	1.95	1.20
1948	1.83	1.91	1.35
1949	1.88	1.99	1.80
1950	1.80	2.07	2.00
1951	1.87	2.03	2.10
1952	1.98	1.95	1.60
1953	2.25	1.98	1.65
1954	2.51	2.02	1.75

Table 32 - Continued

Year t	Average Price Received By Farmers ($/box) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	2.69	2.00	2.00
1956	2.94	2.09	2.05
1957	3.02	2.04	2.05
1958		2.22	2.25
1959		2.25	2.40
1960		2.17	2.60
1961		2.31	2.75
1962		2.11	2.70

Table 33: Five-Year Expected Prices For Potatoes, U.S. 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	2.24	1.84	1.84
1918	2.03	1.91	1.91
1919	1.96	1.82	1.82
1920	1.55	2.10	2.10
1921	1.69	1.98	1.98
1922	1.76	1.79	1.75
1923	1.87	1.58	1.58
1924	1.73	1.60	1.60
1925	1.94	1.55	1.45
1926	1.67	1.92	1.75
1927	1.39	1.95	1.75
1928	1.18	1.75	1.60
1929	1.27	1.50	1.50
1930	.98	1.72	1.72
1931	.88	1.71	1.35
1932	1.11	1.44	.90
1933	1.15	1.33	.95
1934	1.06	1.49	1.10
1935	1.15	1.42	.95
1936	1.24	1.41	1.20
1937	1.01	1.66	1.35
1938	1.22	1.51	1.20
1939	1.46	1.41	1.20
1940	1.71	1.48	1.20
1941	2.00	1.43	1.25
1942	2.14	1.51	1.65
1943	2.30	1.71	1.95
1944	2.38	1.83	2.00
1945	2.32	1.93	1.95
1946	2.16	1.94	1.90
1947	2.30	1.86	2.00
1948	2.40	1.98	2.00
1949	2.16	2.03	2.00
1950	2.17	1.90	1.90
1951	2.22	1.70	2.00
1952	2.09	1.92	2.10
1953	1.83	2.20	2.00
1954	1.83	1.79	1.79

Table 33 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	1.85	1.77	1.85
1956	1.87	1.78	1.85
1957	1.76	1.79	1.85
1958		1.69	1.80
1959		1.63	1.70
1960		1.80	1.80
1961		1.81	1.70
1962		1.67	1.70

Table 34: Five-Year Expected Prices For Soybeans, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	2.94	2.04	2.25
1918	2.71	2.67	2.50
1919	2.53	2.68	2.40
1920	2.32	2.90	2.35
1921	2.25	2.35	2.45
1922	2.22	2.02	2.25
1923	2.18	1.92	2.15
1924	2.10	2.10	2.15
1925	1.98	2.21	2.21
1926	1.79	2.14	2.14
1927	1.49	1.92	2.15
1928	1.23	1.79	1.95
1929	1.05	1.84	1.90
1930	.87	1.84	1.65
1931	.74	1.51	1.50
1932	.89	.95	.95
1933	.96	.97	.85
1934	.90	1.23	.95
1935	.87	1.26	1.00
1936	.90	1.09	.95
1937	.96	1.44	1.15
1938	1.11	1.17	1.17
1939	1.34	1.06	.95
1940	1.58	1.14	1.05
1941	1.82	1.20	1.25
1942	2.02	1.62	1.45
1943	2.37	1.66	1.66
1944	2.46	1.79	1.80
1945	2.48	1.95	1.95
1946	2.56	1.97	1.97
1947	2.59	2.28	2.28
1948	2.47	2.78	2.40
1949	2.56	2.09	2.25
1950	2.62	2.02	2.20
1951	2.57	2.22	2.45
1952	2.46	2.39	2.45
1953	2.33	2.38	2.40
1954	2.19	2.38	2.30

Table 34 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	2.09	2.12	2.20
1956	2.07	2.06	2.20
1957	2.09	2.03	2.15
1958	2.14	1.96	2.10
1959		1.82	2.10
1960		1.89	2.05
1961		2.00	2.10
1962		2.10	2.10

Table 35: Five-Year Expected Prices For Tobacco, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	24.0	17.6	20.0
1918	23.7	24.9	24.9
1919	22.0	28.2	28.0
1920	19.5	33.0	27.0
1921	19.4	20.0	23.0
1922	19.1	26.2	21.5
1923	18.7	25.0	21.0
1924	18.9	21.2	19.0
1925	18.7	23.0	18.0
1926	17.9	19.8	18.0
1927	16.0	21.4	18.5
1928	14.0	23.2	19.0
1929	12.6	22.2	19.0
1930	13.2	21.5	17.0
1931	14.3	16.4	13.0
1932	17.4	12.8	13.0
1933	19.3	14.5	11.5
1934	20.7	15.1	15.1
1935	19.5	23.1	17.0
1936	19.0	19.2	18.5
1937	19.6	27.1	20.0
1938	22.9	22.1	20.0
1939	27.1	23.5	18.5
1940	32.4	18.7	18.7
1941	37.7	20.1	20.1
1942	41.4	28.7	31.5
1943	42.8	36.6	38.0
1944	44.3	40.5	40.5
1945	45.1	44.1	38.0
1946	46.9	45.3	38.0
1947	48.1	48.0	40.0
1948	49.4	46.1	44.0
1949	50.2	51.6	45.0
1950	51.2	47.9	47.9
1951	51.5	55.3	49.0
1952	52.0	52.8	49.0
1953	53.3	53.3	49.0
1954	54.8	55.7	50.0

Table 35 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	56.2	53.7	52.0
1956	57.8	56.7	53.0
1957	59.8	56.3	55.0
1958	60.4	59.1	55.5
1959		62.2	59.0
1960		60.7	59.0
1961		64.6	60.0
1962		66.3	60.0

Table 36: Five-Year Expected Prices For Wheat, U.S., 1917-62

Year t	Average Price Received By Farmers($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1916			
1917	1.82	1.54	1.54
1918	1.60	1.88	1.88
1919	1.38	1.70	2.00
1920	1.19	1.94	2.00
1921	1.12	1.56	1.56
1922	1.15	.99	.99
1923	1.20	1.24	1.10
1924	1.21	1.06	1.06
1925	1.17	1.37	1.30
1926	1.01	1.38	1.32
1927	.85	1.15	1.25
1928	.69	1.28	1.20
1929	.64	1.06	1.10
1930	.60	1.18	1.00
1931	.63	.77	.85
1932	.76	.69	.65
1933	.88	.75	.65
1934	.84	1.03	.82
1935	.81	.95	.82
1936	.78	.97	.90
1937	.76	1.18	.95
1938	.79	1.02	.95
1939	.95	.71	.71
1940	1.09	1.02	.85
1941	1.26	.85	.85
1942	1.45	1.15	1.05
1943	1.69	1.15	1.15
1944	1.81	1.39	1.35
1945	1.91	1.35	1.35
1946	2.01	1.46	1.46
1947	2.05	1.82	1.70
1948	2.01	2.01	1.85
1949	2.02	1.61	1.75
1950	2.07	1.76	1.80
1951	2.07	1.85	2.00
1952	2.04	1.88	2.00
1953	2.01	1.83	2.00
1954	1.95	1.82	2.00

Table 36 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{5t}	Regression Estimate of Expected Price $\hat{P}_{5t}$	Expected Price EP_{5t}
1955	1.88	1.91	2.05
1956	1.83	1.74	1.85
1957	1.80	1.80	1.90
1958		1.75	1.85
1959		1.59	1.75
1960		1.68	1.68
1961		1.62	1.65
1962		1.67	1.80

Table 37: Summary of Regression Equations Used To Provide Mechanical Estimates of Ten-Year Expected Prices[1]

	a_0	a_1	a_2	a_3	a_4	$\bar{R}^2$
Apples	0.834 (.19)	0.469 (.13)				.241
Beef	5.452 (1.56)	0.960 (.36)	-0.337 (.58)	0.473 (.72)	-0.536 (.52)	.505
Chicken Meat	16.668 (2.43)	0.640 (.24)	-0.461 (.23)			.148
Corn	0.604 (.12)	0.388 (.12)				.218
Cotton	11.217 (2.86)	0.495 (.13)				.276
Eggs	17.264 (3.86)	0.451 (.13)				.253
Hogs	5.781 (1.75)	0.712 (.28)	-0.373 (.44)	0.233 (.29)		.305
Manufactured Milk	1.050 (.36)	0.699 (.13)				.437
Oranges	1.807 (.17)	0.074 (.08)				0
Potatoes	1.382 (.18)	0.191 (.10)				.078
Soybeans	1.156 (.26)	0.364 (.14)				.170
Tobacco	6.143 (3.25)	0.950 (.11)				.670
Wheat	0.755 (.18)	0.720 (.25)	-0.282 (.26)			.284

1/ The coefficients are those for the equation

$$\hat{P}_{10t} = a_0 + a_1 P_{t-1} + a_2 P_{t-2} + a_3 P_{t-3} + a_4 P_{t-4}$$

The numbers in parentheses are standard errors of the regression coefficients.

Table 38: Ten-Year Expected Prices For Apples, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	1.25	1.22	.90
1918	1.29	1.35	1.00
1919	1.27	1.43	1.20
1920	1.23	1.67	1.40
1921	1.21	1.42	1.42
1922	1.11	1.60	1.35
1923	1.07	1.30	1.30
1924	1.04	1.35	1.25
1925	.99	1.41	1.41
1926	.93	1.43	1.43
1927	.93	1.25	1.15
1928	.84	1.53	1.40
1929	.80	1.35	1.35
1930	.72	1.49	1.20
1931	.69	1.32	1.00
1932	.71	1.13	.90
1933	.78	1.12	1.12
1934	.94	1.20	1.10
1935	1.07	1.17	1.00
1936	1.29	1.13	1.00
1937	1.43	1.28	1.00
1938	1.56	1.09	1.09
1939	1.70	1.16	1.10
1940	1.78	1.11	1.05
1941	1.86	1.17	1.05
1942	1.96	1.26	1.05
1943	2.08	1.46	1.30
1944	2.10	1.91	1.80
1945	2.13	1.82	1.82
1946	2.05	2.15	2.00
1947	2.06	1.95	2.00
1948	2.06	1.66	1.85
1949	2.02	1.84	2.00
1950	2.10	1.46	1.70
1951	2.20	1.58	1.90
1952	2.23	1.72	2.10
1953		2.01	2.60
1954		2.03	2.60

Table 38 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		1.95	2.45
1956		1.76	2.15
1957		2.00	2.25
1958		1.65	2.10
1959		1.67	2.10
1960		1.82	2.10
1961		2.04	2.25
1962		1.89	2.25

Table 39: Ten-Year Expected Prices For Beef, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	7.34	9.59	8.50
1918	7.25	10.83	9.50
1919	7.21	11.89	9.50
1920	7.16	12.10	8.00
1921	7.06	10.54	8.00
1922	7.05	7.33	7.33
1923	6.91	7.83	7.83
1924	6.70	7.12	7.12
1925	6.53	8.78	8.00
1926	6.48	9.44	8.50
1927	6.38	9.36	8.50
1928	6.32	10.44	9.00
1929	6.02	11.71	9.50
1930	5.79	11.31	8.50
1931	5.78	10.07	7.71
1932	6.10	7.53	5.75
1933	6.75	6.23	5.50
1934	7.56	6.10	6.10
1935	8.23	7.20	7.20
1936	8.84	9.35	8.00
1937	9.71	8.94	8.00
1938	10.85	10.84	8.25
1939	12.41	8.88	8.88
1940	13.68	10.29	9.50
1941	15.25	9.64	9.64
1942	17.24	11.24	10.50
1943	18.60	12.49	11.50
1944	19.04	13.38	11.75
1945	19.56	12.13	11.75
1946	19.91	13.31	12.25
1947	19.95	14.01	14.50
1948	19.83	18.15	18.15
1949	19.80	20.92	20.00
1950	20.08	17.89	19.00
1951	19.79	21.77	21.77
1952	18.94	22.60	21.75
1953	18.64	19.50	19.50
1954		13.97	15.50

Table 39 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		11.42	16.50
1956		9.71	16.50
1957		13.31	18.00
1958		15.72	18.00
1959		19.35	19.50
1960		19.89	19.50
1961		18.54	19.00
1962		16.90	21.00

Table 40: Ten-Year Expected Prices For Chicken Meat, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	21.1	19.9	16.0
1918	21.4	21.3	17.5
1919	21.4	22.8	20.0
1920	21.2	22.4	22.5
1921	20.4	22.2	23.7
1922	19.9	17.9	22.0
1923	19.1	19.3	21.0
1924	18.2	20.0	20.5
1925	17.4	20.3	20.3
1926	16.9	20.9	20.5
1927	16.2	21.4	21.4
1928	15.9	19.4	21.0
1929	15.3	21.1	21.1
1930	14.4	21.4	21.0
1931	13.9	17.9	17.9
1932	14.0	18.3	15.5
1933	14.8	16.9	13.5
1934	16.4	17.4	13.0
1935	17.7	19.7	16.0
1936	18.9	21.1	17.0
1937	20.2	19.5	18.0
1938	21.4	20.2	18.0
1939	23.0	18.8	18.0
1940	24.3	18.4	17.0
1941	25.4	19.2	18.0
1942	26.5	20.7	19.0
1943	27.1	21.8	21.8
1944	27.1	23.7	23.7
1945	26.8	20.9	20.9
1946	26.4	22.5	22.5
1947	25.4	22.8	22.8
1948	24.4	21.4	24.0
1949	22.9	24.4	24.4
1950	21.8	18.8	22.0
1951	20.9	20.4	22.5
1952	19.6	22.5	24.0
1953		20.9	23.0
1954		20.9	21.5

Table 40 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		18.5	20.0
1956		21.9	20.0
1957		18.0	17.5
1958		19.5	16.5
1959		19.7	16.5
1960		18.3	15.0
1961		20.0	14.0
1962		18.1	13.5

Table 41: Ten-Year Expected Prices For Corn, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	.91	1.04	1.04
1918	.85	1.14	1.14
1919	.79	1.17	1.17
1920	.72	1.16	1.30
1921	.72	.81	.81
1922	.70	.78	.60
1923	.66	.87	.70
1924	.64	.89	.75
1925	.62	1.00	.85
1926	.61	.86	.80
1927	.64	.88	.80
1928	.61	.91	.78
1929	.58	.91	.78
1930	.56	.90	.70
1931	.56	.82	.65
1932	.61	.72	.55
1933	.67	.72	.55
1934	.73	.79	.65
1935	.75	.91	.70
1936	.81	.85	.80
1937	.86	1.00	.80
1938	1.03	.79	.70
1939	1.11	.79	.70
1940	1.18	.81	.70
1941	1.27	.84	.84
1942	1.36	.89	.89
1943	1.42	.95	.95
1944	1.46	1.02	.95
1945	1.50	1.00	.95
1946	1.52	1.08	1.08
1947	1.49	1.20	1.20
1948	1.39	1.44	1.25
1949	1.37	1.10	1.20
1950	1.35	1.08	1.20
1951	1.30	1.19	1.30
1952	1.24	1.25	1.45
1953		1.19	1.35
1954		1.18	1.35

Table 41 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		1.16	1.30
1956		1.13	1.20
1957		1.10	1.12
1958		1.04	1.10
1959		1.04	1.04
1960		1.01	1.04
1961		.99	1.08
1962		1.02	1.12

Table 42: Ten-Year Expected Prices For Cotton, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	23.7	19.8	18.0
1918	23.0	24.6	24.6
1919	21.9	25.5	25.5
1920	20.0	28.7	25.0
1921	19.4	19.1	22.5
1922	18.3	19.6	22.0
1923	16.0	25.5	25.5
1924	14.2	25.4	25.4
1925	13.1	22.6	22.0
1926	12.3	20.9	20.9
1927	12.3	17.4	17.4
1928	11.1	21.2	18.0
1929	10.2	20.1	18.0
1930	9.4	19.5	16.0
1931	9.4	15.9	12.0
1932	10.5	14.0	11.0
1933	11.8	14.4	11.0
1934	12.7	16.3	14.0
1935	13.6	17.4	14.0
1936	14.7	16.7	14.0
1937	16.7	17.3	17.3
1938	19.1	15.4	13.0
1939	21.3	15.5	11.0
1940	23.2	15.7	12.0
1941	26.2	16.1	13.0
1942	28.3	19.6	18.0
1943	29.8	20.6	19.5
1944	31.1	21.0	19.5
1945	32.3	21.5	20.0
1946	33.3	22.4	22.4
1947	33.2	27.4	27.4
1948	33.0	27.0	27.0
1949	33.3	26.3	28.5
1950	33.5	25.4	29.0
1951	32.6	31.0	32.0
1952	32.1	29.9	33.0
1953		28.3	32.0
1954		27.3	32.0

Table 42 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		28.0	32.5
1956		27.4	30.5
1957		27.0	30.0
1958		26.0	30.0
1959		27.8	31.0
1960		26.9	30.5
1961		26.3	30.5
1962		27.6	31.0

Table 43: Ten-Year Expected Prices For Eggs, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/doz.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	31.8	27.2	26.0
1918	31.2	31.6	31.6
1919	30.4	33.5	33.5
1920	29.2	35.9	38.0
1921	27.2	36.9	39.0
1922	26.2	30.0	32.0
1923	25.1	28.5	28.5
1924	23.8	29.2	29.2
1925	22.9	29.3	28.0
1926	22.2	31.0	30.0
1927	21.4	30.3	28.5
1928	21.1	28.6	28.6
1929	20.3	29.9	27.5
1930	19.0	30.7	27.5
1931	18.5	27.9	23.5
1932	19.1	25.2	17.5
1933	20.6	23.7	15.5
1934	23.0	23.5	17.0
1935	24.5	24.9	22.0
1936	26.0	27.8	24.0
1937	27.5	27.1	25.0
1938	29.9	26.9	25.0
1939	32.6	26.4	23.0
1940	35.4	25.1	23.5
1941	37.2	25.4	24.0
1942	39.7	27.9	26.0
1943	40.8	30.8	31.5
1944	41.9	34.0	34.0
1945	42.3	31.9	29.0
1946	42.5	34.3	34.3
1947	42.6	34.2	34.2
1948	41.7	37.7	37.7
1949	40.8	38.5	38.5
1950	39.4	37.6	37.6
1951	39.4	33.6	33.6
1952	38.2	38.8	38.8
1953		36.0	40.0
1954		38.8	41.0

Table 43 - Continued

Year t	Average Price Received By Farmers (¢/doz.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		33.8	38.0
1956		35.1	37.0
1957		35.0	36.0
1958		33.4	35.0
1959		34.6	35.0
1960		31.4	34.0
1961		33.5	34.0
1962		33.3	33.0

Table 44: Ten-Year Expected Prices For Hogs, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	11.23	11.08	10.00
1918	10.80	14.06	12.00
1919	10.05	14.01	12.50
1920	9.35	14.69	12.50
1921	8.94	12.60	12.60
1922	7.56	10.22	10.22
1923	8.25	11.92	8.25
1924	7.91	9.37	8.30
1925	7.59	10.37	9.00
1926	7.36	12.42	11.00
1927	7.12	11.82	10.75
1928	7.11	10.78	10.25
1929	7.03	11.01	11.01
1930	6.71	11.55	10.00
1931	6.36	10.55	8.25
1932	6.70	8.76	7.00
1933	7.66	8.08	6.00
1934	8.68	8.38	6.25
1935	9.58	8.19	7.00
1936	10.11	11.21	8.50
1937	10.92	10.19	9.40
1938	12.38	11.06	9.50
1939	13.92	9.93	8.00
1940	15.11	9.54	8.00
1941	16.37	9.10	8.00
1942	17.46	11.69	11.69
1943	17.94	12.90	12.90
1944	18.71	12.80	12.80
1945	19.56	13.02	13.00
1946	19.66	14.05	13.00
1947	19.35	16.07	18.00
1948	18.72	19.67	22.00
1949	18.37	17.31	21.00
1950	17.97	15.66	19.50
1951	17.70	17.22	18.50
1952	17.36	17.52	18.00
1953		15.19	18.50
1954		19.04	18.50

Table 44 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		17.32	18.00
1956		13.39	17.00
1957		15.47	17.00
1958		16.58	17.00
1959		16.45	16.00
1960		12.66	16.00
1961		15.98	16.00
1962		15.18	16.00

Table 45: Ten-Year Expected Prices For Manufactured Milk, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	2.57	2.26	1.85
1918	2.59	2.71	2.50
1919	2.54	3.12	2.75
1920	2.47	3.35	3.05
1921	2.36	3.30	3.05
1922	2.30	2.66	2.66
1923	2.22	2.53	2.53
1924	2.10	2.79	2.45
1925	2.04	2.60	2.40
1926	1.97	2.71	2.45
1927	1.92	2.71	2.45
1928	1.87	2.80	2.50
1929	1.79	2.81	2.50
1930	1.70	2.82	2.40
1931	1.66	2.60	2.20
1932	1.72	2.23	1.75
1933	1.84	1.95	1.65
1934	2.03	1.96	1.65
1935	2.19	2.13	1.90
1936	2.34	2.25	1.95
1937	2.55	2.36	2.00
1938	2.76	2.44	2.15
1939	3.07	2.26	1.95
1940	3.30	2.23	2.00
1941	3.53	2.32	2.00
1942	3.78	2.58	2.35
1943	4.00	2.85	2.70
1944	4.12	3.23	3.15
1945	4.20	3.29	3.10
1946	4.28	3.28	3.19
1947	4.30	3.84	3.84
1948	4.32	3.90	3.90
1949	4.25	4.46	4.46
1950	4.27	3.81	4.00
1951	4.28	3.92	4.10
1952	4.23	4.36	4.36
1953		4.40	4.50
1954		4.03	4.20

Table 45 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		3.83	4.15
1956		3.88	4.00
1957		3.99	4.10
1958		4.01	4.10
1959		3.94	4.05
1960		3.98	4.05
1961		3.99	4.10
1962		4.00	4.12

Table 46: Ten-Year Expected Prices For Oranges, U.S., 1917-62

Year t	Average Price Received By Farmers ($/box) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	2.56	1.91	1.75
1918	2.59	2.06	2.06
1919	2.47	2.02	2.25
1920	2.52	2.04	2.50
1921	2.47	1.95	2.25
1922	2.30	2.03	2.30
1923	2.19	1.95	2.00
1924	2.18	1.91	1.90
1925	2.01	2.02	2.50
1926	1.90	2.01	2.65
1927	1.82	1.99	2.30
1928	1.53	2.09	2.25
1929	1.45	1.93	2.25
1930	1.18	2.08	2.08
1931	1.16	1.91	1.50
1932	1.20	1.90	1.30
1933	1.36	1.87	1.30
1934	1.48	1.91	1.75
1935	1.63	1.89	1.45
1936	1.78	1.92	1.50
1937	1.76	1.94	1.70
1938	1.80	1.87	1.35
1939	1.90	1.86	1.25
1940	2.03	1.88	1.20
1941	2.11	1.90	1.50
1942	2.10	1.92	1.80
1943	2.03	1.99	2.00
1944	1.96	2.00	2.15
1945	1.87	2.01	2.00
1946	1.82	2.03	2.00
1947	1.87	1.92	1.40
1948	2.04	1.90	1.40
1949	2.19	1.94	1.80
1950	2.24	1.97	1.90
1951	2.41	1.95	2.00
1952	2.50	1.92	1.55
1953		1.93	1.60
1954		1.95	1.65

Table 46 - Continued

Year t	Average Price Received By Farmers ($/box) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		1.94	1.90
1956		1.98	1.95
1957		1.96	1.95
1958		2.03	2.15
1959		2.05	2.30
1960		2.01	2.50
1961		2.07	2.60
1962		1.99	2.60

Table 47: Ten-Year Expected Prices For Potatoes, U.S., 1917-62

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	2.00	1.86	1.86
1918	1.95	1.79	1.85
1919	1.84	1.75	1.80
1920	1.74	1.99	1.99
1921	1.68	1.78	1.95
1922	1.57	1.73	1.75
1923	1.52	1.59	1.59
1924	1.50	1.68	1.60
1925	1.46	1.60	1.45
1926	1.27	1.92	1.75
1927	1.25	1.79	1.75
1928	1.16	1.70	1.60
1929	1.17	1.55	1.55
1930	1.06	1.80	1.70
1931	1.00	1.66	1.35
1932	1.06	1.52	.95
1933	1.19	1.50	1.00
1934	1.26	1.64	1.10
1935	1.43	1.52	.95
1936	1.56	1.57	1.20
1937	1.58	1.74	1.35
1938	1.76	1.54	1.20
1939	1.92	1.55	1.20
1940	2.02	1.60	1.20
1941	2.08	1.54	1.25
1942	2.22	1.63	1.63
1943	2.35	1.74	1.90
1944	2.27	1.78	1.95
1945	2.25	1.84	1.90
1946	2.19	1.82	1.85
1947	2.19	1.77	1.95
1948	2.12	1.89	2.00
1949	2.00	1.87	2.00
1950	2.01	1.78	1.90
1951	2.05	1.67	2.00
1952	1.93	1.89	2.05
1953		2.00	2.00
1954		1.63	1.80

Table 47 - Continued

Year t	Average Price Received By Farmers ($/cwt.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		1.79	1.85
1956		1.72	1.85
1957		1.77	1.85
1958		1.75	1.80
1959		1.63	1.70
1960		1.82	1.80
1961		1.74	1.70
1962		1.66	1.70

Table 48: Ten-Year Expected Prices For Soybeans, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	2.58	1.95	2.15
1918	2.45	2.31	2.35
1919	2.32	2.32	2.35
1920	2.15	2.44	2.35
1921	2.02	2.13	2.45
1922	1.85	1.94	2.25
1923	1.71	1.89	2.15
1924	1.57	1.99	2.15
1925	1.43	2.05	2.20
1926	1.26	2.01	2.15
1927	1.19	1.89	2.15
1928	1.10	1.82	1.95
1929	.97	1.84	1.90
1930	.87	1.84	1.75
1931	.82	1.66	1.66
1932	.92	1.34	1.10
1933	1.03	1.35	.95
1934	1.12	1.50	1.05
1935	1.22	1.52	1.10
1936	1.36	1.42	1.05
1937	1.49	1.62	1.25
1938	1.74	1.47	1.25
1939	1.90	1.40	1.15
1940	2.03	1.45	1.15
1941	2.19	1.48	1.25
1942	2.31	1.72	1.45
1943	2.42	1.74	1.55
1944	2.51	1.82	1.65
1945	2.55	1.90	1.80
1946	2.57	1.91	1.80
1947	2.53	2.09	2.09
1948	2.40	2.37	2.37
1949	2.37	1.98	2.25
1950	2.35	1.94	2.20
1951	2.32	2.06	2.40
1952	2.27	2.15	2.35
1953	2.24	2.15	2.30
1954		2.15	2.30

Table 48 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		2.05	2.20
1956		1.96	2.20
1957		1.95	2.15
1958		1.91	2.10
1959		1.88	2.10
1960		1.87	2.05
1961		1.93	2.10
1962		1.99	2.10

Table 49: Ten-Year Expected Prices For Tobacco, U.S., 1917-62

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	21.5	20.2	19.0
1918	21.2	29.0	24.5
1919	20.4	32.7	27.5
1920	19.1	35.8	27.5
1921	18.7	22.6	24.0
1922	17.6	24.7	22.0
1923	16.3	27.8	21.5
1924	15.7	24.2	19.0
1925	16.0	24.2	18.0
1926	16.1	22.1	18.0
1927	16.7	23.2	18.5
1928	16.6	25.8	19.0
1929	16.6	25.2	19.0
1930	16.3	23.5	18.0
1931	16.6	18.3	15.0
1932	18.5	13.9	15.0
1933	21.1	16.1	13.0
1934	23.9	18.5	15.5
1935	25.9	26.4	17.0
1936	28.4	23.6	19.0
1937	30.5	28.6	20.0
1938	32.8	25.5	20.0
1939	35.7	24.8	19.0
1940	38.7	20.8	19.0
1941	42.3	21.4	20.0
1942	44.8	31.2	31.2
1943	46.1	41.2	37.0
1944	47.2	44.6	39.0
1945	48.2	46.1	36.0
1946	49.2	46.6	36.0
1947	50.1	49.0	40.0
1948	51.3	47.6	44.0
1949	52.5	52.0	45.0
1950	53.7	49.8	48.0
1951	54.6	52.3	49.0
1952	55.9	54.7	49.0
1953	56.8	53.5	49.0
1954		55.8	50.0

Table 49 - Continued

Year t	Average Price Received By Farmers (¢/lb.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		54.7	52.0
1956		56.7	53.0
1957		57.2	55.0
1958		59.4	56.5
1959		63.0	59.0
1960		61.5	59.0
1961		64.0	60.0
1962		66.8	60.0

Table 50: Ten-Year Expected Prices For Wheat, U.S., 1917-62

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1916			
1917	1.49	1.51	1.51
1918	1.40	1.82	1.82
1919	1.29	1.66	1.90
1920	1.18	1.73	1.90
1921	1.07	1.46	1.46
1922	1.00	.98	.98
1923	.94	1.16	1.16
1924	.92	1.15	1.15
1925	.88	1.39	1.30
1926	.82	1.43	1.30
1927	.80	1.22	1.25
1928	.78	1.26	1.20
1929	.74	1.14	1.14
1930	.71	1.22	1.00
1931	.71	.94	.94
1932	.76	.84	.70
1933	.83	.92	.70
1934	.90	1.18	.85
1935	.95	1.15	.82
1936	1.02	1.12	.90
1937	1.11	1.25	.95
1938	1.24	1.16	.95
1939	1.38	.89	.89
1940	1.50	1.09	.90
1941	1.63	1.04	.90
1942	1.75	1.24	1.15
1943	1.85	1.27	1.27
1944	1.92	1.42	1.35
1945	1.99	1.39	1.30
1946	2.04	1.43	1.35
1947	2.05	1.70	1.60
1948	2.01	1.87	1.75
1949	1.99	1.54	1.75
1950	1.98	1.55	1.80
1951	1.95	1.66	1.95
1952	1.92	1.71	1.95
1953		1.66	1.95
1954		1.64	1.95

Table 50 - Continued

Year t	Average Price Received By Farmers ($/bu.) P_{10t}	Regression Estimate of Expected Price $\hat{P}_{10t}$	Expected Price EP_{10t}
1955		1.71	2.05
1956		1.59	1.85
1957		1.61	1.90
1958		1.59	1.85
1959		1.47	1.75
1960		1.53	1.65
1961		1.52	1.62
1962		1.55	1.75

APPENDIX B

COMMODITY NOTES FOR EXPECTED PRICES

In order to develop the expected prices presented in this study, numerous publications have been examined in order to determine the actual position of each commodity with respect to relevant demand and supply variables. The procedure followed also attempts to guage prospective changes in these variables for each of the thirteen commodities dealt with in the study. In order to arrive at these expected values, and to facilitate checking them, some of the influences on the expected price in each year were noted. The following pages present, for each of four commodities, a one-paragraph summary of information pertinent to the development of the expected prices for each year.

As noted in Chapter 4, it is on occasion necessary to interpret U.S.D.A. data given in such terms as "slight" or "large" rather than in quantitative terms. The convention adopted is that "slight" indicates a change of five per cent or less, "slight to moderate" indicates a change of approximately ten per cent, "moderate" indicates a change of about fifteen per cent and "large" indicates a change of twenty per cent or more. The year-by-year notes for beef, hogs, corn and wheat, which follow, make a limited amount of use of this convention. The importance of the convention is much greater in establishing the approximate size of an expected change in price, and this can be seen by comparing the commodity notes which follow with the relevant expected prices, presented in Appendix A.

The numbers used in each paragraph refer to publications listed at the end of this appendix under the title "References Cited."

BEEF

1917

It is anticipated that the feeding of cattle during the winter 1916-17 will be less than usual, because of high feed costs [1, October 16, 1916, p. 4]. A high 1917 price is also supported by continued war demand for beef, and anticipation of a continued high level of industrial activity [1, December 14, 1916, p. 4]. The prospect of a sharp decline in cattle prices following the war is discounted [1, September 11, 1916, p. 4].

1918

A higher price is indicated by the need for higher meat production and a continued high level of demand [1, October 18, 1917], probably more than offsetting the increased cattle population at January 1, 1918 [13, p. 27].

1919

A decline has occured in cattle population in the year prior to January 1, 1919 [13, p. 27].

1920

It will be several years until European cattle population returns to its pre-war level, but exports of meat products may thereafter decline [1, September 22, 1919, p. 2]. The longer-term expectation of price is further reduced by the fact that late 1919 cattle shipments to farms

appear to have included a large proportion of cows and heifers[1, November 6, 1919, p. 2].

1921

Late estimates indicate the 1920 corn crop may become the largest on record. Feed supplies will be ample and feeder prices are low [1, October 9, 1920]. The decline in cattle population at January 1, 1921 from the previous year indicates that the longer-term price may not decline sharply [13, p. 27].

1922

Cattle inventory did not increase during 1921 [13, p. 27].

1923

Substantial increases in sales of stocker and feeder cattle in the autumn of 1922 indicate that an increase in beef supply is likely for 1923. However, storage holdings of beef are lower than usual [2, November 1922, pp. 5, 11]. Partly due to decreased inventory of cattle on farms [14, p. 6], the livestock outlook for 1923 is for a higher price [2, December 1922, p. 2].

1924

The livestock population on farms at January 1, 1924 is below that of a year earlier [14, p. 6]. Urban demand is expected to continue strong [2, December 1923, p. 11].

1925

Cattle numbers are again down [14, p. 6]. It was also probable "that there will be a very considerable

decrease in the number of cattle fed for market this coming winter and this may result in higher prices for cattle during the first half of 1925." Pork marketings are also expected to be at a slower rate [2, November 1924, p. 21]. The quantity of beef in storage has declined [2, December 1924, p. 7].

1926

Cattle numbers at January 1, 1926 are below those of a year earlier [14, p. 6]. Low corn prices and increased feeding will mitigate the likely price rise [2, December 1925, p. 21].

1927

Cattle inventories at January 1, 1927 are more than two million head below a year earlier [14, p. 6]. Little change is anticipated in the level of aggregate demand [2, December 1926, p. 7]. The level of cattle feeding appears little different from the previous year [12, p. 31].

1928

October 1, 1927, indications are for reduced cattle feeding during the winter 1927-28, although an expected drop in corn prices during the autumn of 1927 will likely limit the decline in cattle on feed [2, November 1927, p. 18]. Conditions about November 1 continue to bear out the prediction of less feeding [3, December 1927, p. 15]. The inventory of cattle on farms at January 1, 1928 is below that of a year earlier [14, p. 6].

1929

Although early (July to September, 1928) movement of cattle to feeders was heavy, this is not expected to continue. Indications are for a slight increase in feeding in the Corn Belt and a decrease in the western feeding region [2, November 1928, pp. 14-15]. Livestock population at January 1, 1929 is above that of a year earlier by 1.5 million [14, p. 6].

1930

Although possible impacts on employment are recognized, the crash in the securities market is not expected strongly to affect the cattle market. Nevertheless, there exists decreased industrial activity, above-average storage stocks of beef and other meats [2, November 1929, pp. 1-2, 22] and a substantial rise in cattle population on farms [14, p. 6].

1931

The decline in farm prices has brought beef cattle to $6.41 per hundredweight at November, 1930. Due to drought, the 1930 corn crop is one-fifth below its average level [2, December 1930, pp. 14-15]. The drought is expected to reduce feeding[1/] and allow higher prices in 1931 (than those of November), particularly if range conditions improve sufficiently to prevent large forced marketings, and drought conditions have been alleviated in some sections of the country [2, November 1930, p. 6]. Cattle inventory has increased during the year by two million head [14, p. 6].

1/ It did not. See [12, p. 31].

1932

Apparently in large part due to financing difficulties, shipments of stocker and feeder cattle during early autumn, 1931, are below normal. An ample supply of low priced feed [2, November 1931, p. 12] is expected to lead to increased movement in later autumn [12, p. 31]. Cattle inventory has increased by 2.8 million during 1931 [14, p. 6].

1933

Cattle inventory has increased each year since 1926, and increased slaughtering over the next few years (following 1932) is anticipated. "Prospects for an increased movement of stocker and feeder cattle this fall point to larger supplies of well-finished cattle during the spring and summer of 1933 than in the corresponding period this year" [2, September 1932, p. 2].

1934

"Moderate improvement in the consumer demand for beef has been in evidence in recent months... [but] ... demand for beef during the remainder of 1933 will be adversely affected to some extent by the unusually large supplies of other meats available for consumption." Larger beef supplies are, however, anticipated for early 1934, since fewer cattle are being put on feed [2, September 1933, p. 9]. Heavy slaughter is expected to continue for several years, enhanced by financial necessity and feed shortage in many areas [2, November 1933, p. 10].

1935

Although the widespread drought of summer, 1934, was alleviated by autumn rains, feed supplies for winter 1934-35 are probably the smallest on record. Cattle population at the beginning of 1935 is below a year earlier, due to heavy marketings and large government purchases, the latter totalling 2.5 million by mid-September [2, October 1934, pp. 2-3]. "In view of the probable sharp curtailment in slaughter supplies of cattle and other meat animals during 1935, the general level of cattle prices is expected to be considerably higher than in 1934" [2, December 1934, p. 9].

1936

Although total cattle population at January 1, 1936 is expected to be about the same as a year earlier, sales of grain fed cattle during 1936 are expected to be larger. This moderates the price rise due to the anticipated increase in consumer demand. Longer term price expectations are somewhat higher, but the rise is tempered by the prospect that 1936 slaughter will include relatively more steers and relatively fewer cows, heifers, and calves than in 1935 [2, November 1935, pp. 8-9].

1937

The widespread drought of 1936 markedly reduced feed supplies. The probable rise in beef price is moderated, however, by the fact that there appear to be a larger than usual number of cattle ready for market in the spring and summer of 1937 [2, September 1936, pp. 4-5]. A decrease is

evident both in livestock feeding in late 1936 and early 1937, and in total numbers of cattle at January 1, 1937 (1.8 million below a year earlier) [14, p. 6], [12, p. 31].

1938

A substantial increase in cattle feeding during the 1937-38 winter is anticipated. In combination with reduced consumer demand (which is expected, however, to improve in late 1938), some price reduction for the year 1938 is anticipated [2, December 1937, pp. 2, 6]. Cattle population declined during 1937 [14, p. 6].

1939

A reduction in slaughter of cattle is forecast for 1939 [2, November 1938, p. 5]. The outlook for additional improvement in consumer demand for agricultural products in 1939 also supports a rise in price, although an anticipated increase in feeding might lead to as much or greater total beef slaughter (in spite of the expected decrease in the number of cattle slaughtered) [2, December 1938, pp. 2, 4-5], [12, p. 31].

1940

Stronger domestic demand and anticipated slightly lower total live weight of cattle marketed indicate that cattle prices will average slightly higher in 1940 than in 1939. The preference of importing countries engaged in the war is for "concentrated" products such as meat. A moderating factor on any price rise is the larger January 1, 1940 inventory of cattle [4, November 1939, pp. 4, 8, 15].

Another moderating factor is the anticipated large slaughter of livestock, although most of the increase is expected to be in hogs [10, November 1939, p. 6].

1941

There will be approximately the same slaughter in 1941 as in 1940, but stronger consumer demand for meats in 1941. The build-up in cattle numbers is forecast to continue for several years, probably reaching new highs. Considerable improvement in consumer demand will be necessary if a downward trend is subsequently to be avoided [4, October 1940, p. 11]. There appears to be little change in the number of cattle being fed in the winter of 1940-41 compared to a year earlier. It is probable that "prices of better grades of slaughter cattle ... [will be] substantially higher than a year earlier in the late winter and spring of ... [1940], while they may not be greatly different from a year earlier in the late summer and fall." The uptrend in cattle numbers will continue for at least two or three more years [10, October 1940, pp. 10, 14].

1942

Indications are that a smaller number of cattle will be fed during the winter and spring of 1942 than during the 1940-41 winter feeding season [4, November 1941, p. 9]. Earlier reports [eg. 10, August 1941, pp. 14-15] were somewhat pessimistic regarding price prospects, but were based on larger feeding operations than that supported by later evidence (quoted above). The number of cattle on farms at the beginning of 1942 is above that of a year earlier, but

the increase during 1942 is expected to be less than that during 1941. The long-time outlook for the industry depends much on holding numbers approximately to the level of early 1942. A continuing rise of consumer incomes will then lead to higher prices to producers over the longer period [10, August 1941, p. 16].

1943

Sharply enlarged military and lend-lease purchases of food in 1943 "are expected to be equivalent to about 20 per cent of current domestic production, compared with about 13 per cent this year [1942] and 4 per cent in 1941." Although cattle inventory at January 1, 1943 is expected to be up by about one million head, the increased military needs plus strong consumer demand will support cattle prices during 1943 at or near 1942 levels. The total number of cattle fed in 1942-43 is expected again to be large [4, October 1942, pp. 7, 12-13]. Price ceilings will come into play, preventing much, if any, rise in cattle prices above current levels. Cattle numbers at January 1, 1943 will be about one million head above a year earlier [9, October, 1942, pp. 11, 13-14].

1944

Military demand will again be substantially higher in 1944 than in 1943, and some increase is expected in domestic civilian demand. The amount of meat allocated to civilians in 1944 will be less than that of 1943, although total output is forecast to be as large as the record

production of 1943. Although cattle inventory is up from a year ago, the movement of cattle into feedlots as of September 1943 is smaller than usual [4, September 1943, pp. 2, 9]. Although cattle prices appear high in relation to OPA ceilings, a price decline is unlikely in view of the very strong demand conditions. There will likely be an increase of 2 to 3 million cattle on farms in 1943 [9, September 1943, pp. 10, 12].

1945

Reductions in military purchases of meat, mainly beef, and some decline in civilian demand are forecast. With total cattle and calf slaughter about 10 per cent above a year earlier, a decline in price in 1945 is probable [4, October 1944, pp. 6-7]. The number of cattle on farms at January 1, 1944 was a record 82 million, a level which will be slightly reduced by the beginning of 1945. Nevertheless, record or near-record levels of cattle slaughter are in prospect during 1945 and 1946 [9, October 1944, p. 9].

1946

A decline in returns to cattle producers in 1946 is forecast as is a cattle population decrease over the following two or three years [4, October 1945, p. 7].

1947

"[Present] ceilings will permit prices of cattle around ten per cent higher than in the first half of 1946" [4, September 1946, p. 13]. Beef prices from January 15 - June 15, 1946 rose by months from $11.80 to $14.10 per hundredweight [9, November 1946, p. 21].

1948

Considerable inflation is being experienced, with indications of a further rise in the general price level. The beef population has declined during 1947, and a smaller slaughter is anticipated. Employment and income are rising [4, September 1947, pp. 10, 11, 16].

1949

The 1948 feed grain harvest is large [4, September 1948, p. 15] and larger numbers of cattle are on feed at January 1, 1949. Nevertheless, the likely price decline will be cushioned by a lower cattle population and less cattle slaughtered than in 1948. [8, September 1948, pp. 15, 16].

1950

Meat prices are expected to be lower with a larger total output (most of the increase is expected to be in pork) and high, if slightly lower than 1948, consumer incomes [8, October 1949, p. 6]. Large corn supplies will also influence 1949 price. "This (1948 and expected 1949) uptrend in numbers promises more beef and veal for years farther in the future" [4, October 1949, p. 22].

1951

An increase in cattle slaughter is anticipated, as is an increase in numbers on farms [4, October 1950, p. 20]. "It is likely ... that (meat) prices will trend higher despite larger supplies." However, the increases indicated are expected to be moderate. Cattle and calf numbers increased by two million in 1949 and two to three million in

1950 [8, October 1950, pp. 7, 17].

1952

An increase in meat output, largely beef and veal, is expected in 1952. Substantial price decreases are unlikely, however [4, October 1951, p. 19]. The longer period (1953-55) outlook for beef supplies is for substantial increases [8, October 1951, pp. 6, 7, 11].

1953

The number of cattle slaughtered in 1953 will probably rise sharply over that of 1952. Cattle population has increased from 88 million (January, 1952) to an expected level of 93 million in January 1953. It was expected that, despite heavier slaughter, cattle population will again increase in 1953 [4, October 1952, pp. 22, 23].

1954

Cattle slaughter is forecast to continue heavy in 1954, but prices will become more stable. The upswing in cattle production has, however, been halted [4, October 1953, p. 27]. Nevertheless, "data on the kind of cattle and calves being slaughtered in 1953 indicate the productive capacity of the cattle industry is not being reduced" [8, October-November 1953, p. 11].

1955

Cattle prices in 1955 will probably remain near the level which has prevailed since mid-1953 [4, October 1954, p. 29]. A gradual reduction in livestock numbers is

anticipated through 1955, and possibly following, as the liquidation part of the beef cycle progresses [8, October 1954, p. 9].

1956

The strong consumer demand for meat and increased supplies and lower prices of feed indicate record production of meat in 1955 and will allow production very nearly as high during 1956 [4, November 1955, p. 33]. The 1955 harvest yielded six per cent more feed grains and five per cent more hay than the previous year [8, November 1955, pp. 12, 15].

1957

Little change is likely in the 1957 cattle inventory. Although slaughter would be as large as in 1956, lower average weights will lead to a decline in beef output. The five year price outlook is bright for cattle, with inventory expected to remain around 97.5 million for a year or two following 1956 [4, November 1956, pp. 5, 38-39]. It is anticipated that when the production uptrend recommences, it will be more slowly than in the recent (pre-1956) past [8, November 1956, p. 29].

1958

Cattle prices will likely be higher in 1958 than in 1957. However, "abundant feed will encourage a high volume of cattle feeding ... As another consequence, it may help to slow down the present downswing in cattle numbers on farms ..." [4, November 1957, p. 36]. Cattle and calf

inventory, which was down at January 1, 1957 from the previous year, will be down further at January 1, 1958, to approximately 93 million head [8, November 1957, p. 12].

1959

Feed crops were large in 1958, and "feed prices are almost certain to remain relatively low." Slaughter of beef is likely to increase slightly in 1959 from the 1958 low [8, November 1958, pp. 7, 14]. "Prices of cattle will likely hold up well [in 1959] but prices of hogs will decline considerably." Demand for feeder cattle will be high, with total slaughter in 1959 probably not much above that of 1958 [4, November 1958, p. 27].

1960

"Meat output ... will probably set a new high in 1960[1/] ... with the largest increase in beef ... [A] price rise next spring [1960] comparable to that of last [1959] spring is not likely." Inventory increases are expected to continue [4, November 1959, p. 28]. "Imports of live animals and meats will likely continue high in 1960 ... . Increased domestic production and lower prices will be the principal restraints ... ." [8, November 1959, p. 5].

1961

With hog production and prices in 1961 not greatly different from 1960, and with increases slaughter of fed cattle, beef prices are expected to average slightly lower

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1/ This applies to total, rather than per capita, meat production [8, November 1959, p. 4].

than in 1960. The longer run prospect is for further price depression, since there was a possibility of pork production increases coinciding with larger beef marketings within about two years [4, November 1960, p. 30]. Cattle inventory will likely increase during 1961, but largely in slaughter stock rather than breeding stock [8, November 1960, p. 7].

1962

A slight increase is anticipated in beef slaughter, but it is expected that it will include more cows and fewer fed heifers. This is expected to lead to reduced processing beef imports and slightly lower per capita beef consumption. Although cow prices will decline, some improvement is likely in fed cattle prices over those of 1961 [4, November 1961, p. 26]. The longer-term indication is that cattle population increases have been approximately "in line with the rate of population growth and gain in per capita income." Although an increase in marketing of over-age cows is expected to take place in the next three or four years, due to an excessive proportion of this class of animals, decreased imports over the period will cushion the price influence of such slaughter [8, November 1961, p. 16].

HOGS

1917 Spring

Cattle numbers have increased by about one million during 1916. Nevertheless, demand conditions continue strong

[19, March 7, 1917, p. 3]. Efforts are continuing on the part of the U.S.D.A. to increase meat production [19, January 10, 1917, p. 2].

1917 Fall

"The livestock holdings of the farmers of the United States are already too low" [19, April 25, 1917, p. 2]. At April 1, 1917, the Bureau of Crop Estimates reports approximately three per cent less sows on farms than a year earlier [19, May 9, 1917, p. 1].

1918 Spring

Corn production in 1917 is up about 23 per cent over the relatively short 1916 crop, and slightly above the 1915 crop [16, December 1917, p. 120]. Cattle and hogs numbers have increased slightly during 1917 [16, February 1918, p. 1].

1918 Fall

Corn acreage is down five per cent from 1917 [16, July 1918, p. 1]. The number of breeding sows at March 21, 1917 is up 10 per cent from a year earlier [16, April 1918, p. 35].

1919 Spring

Corn production in 1918 is moderately below that of 1917 [16, December 1918, p. 1]. The U.S. swine population increased six per cent during 1918, but there was almost no change in cattle population [16, February 1919, p. 1].

1919 Fall

The acreage devoted to corn in 1919 is down four per

cent from a year earlier, but the crop will likely yet exceed that of 1918 [16, July 1919, p. 1].

1920 Spring

Corn production in 1919 is moderately above that of 1918 [16, December 1919, p. 1]. Cattle population has remained about constant during 1919, but swine numbers declined about two per cent [16, February 1920, p. 9].

1920 Fall

A one per cent greater area devoted to corn may nvertheless produce slightly less output than in 1919 [16, July 1920, p. 1].

1921 Spring

Corn production in 1920 is moderately above that of 1919 [16, December 1920, p. 1]. The swine population has declined in 1920 by seven per cent, with slight declines also occurring in cattle population [16, February 1921, p. 1].

1921 Fall

Corn acreage in 1921, although up four per cent from 1920, may produce about the 1920 output [16, July 1921, p. 1]. The estimated number of hogs on farms in March is up slightly from a year earlier [15, May 7, 1921, p. 293].

1922 Spring

Corn production in 1921 is down slightly from a year earlier [16, December 1921, p. 147]. The number of hogs on farms November 1, 1921 is up slightly from a year earlier. Cattle population is marginally down over the same

period [18, January 21, 1922, p. 52].

1922 Fall

The number of cattle on farms has increased slightly from January 1 to March 1, but hog population has declined moderately during this period [18, April 1, 1922, p. 268].

1923 Spring

The 1922 corn crop was down about 10 per cent from 1921. October 1 holdings of pork are up slightly from a year earlier [2, November 1922, pp. 6, 11]. The number of sows on farms at January 1, 1923 is 14.1 million, up from 12.8 million a year earlier [14, p. 34].

1923 Fall

Corn acreage may be slightly up in 1923 from 1922. "Beyond next fall, nobody has much idea what may happen to the hog market," but there is a larger hog population than a year earlier. However, industrial prosperity will likely continue [2, April 1923, pp. 16, 18].

1924 Spring

Sow population at January 1, 1924 has declined by 2.0 million, to 12.1 million, from a year earlier [14, p. 34]. The 1923 corn crop is up slightly from 1922. Pork stocks at October are above a year earlier [2, December 1923, pp. 3, 12-14].

1924 Fall

The number of brood sows is down by at least 13 per cent in the corn belt area as compared with a year ago [2, May 1924, p. 1]. Acreage of corn for 1924 will likely be

up three per cent from 1923 [2, April 1924, p. 3].

1925 Spring

It appears that "there are ... fewer hogs in sight for next year than for any time since 1920." In addition, the 1924 corn crop is moderately below that of 1923 [2, November 1924, pp. 1, 3]. The number of sows and gilts on farms at January 1, 1925 is down to 10.1 million [14, p. 34].

1925 Fall

"Extent of liquidation in hogs suggests possible sharp reversal of corn-hog price situation this year ... ." [2, March 1925, p. 2]. Corn acreage in 1925 will be up 2.3 per cent from 1924 [2, April 1925, p. 1].

1926 Spring

The population of sows and gilts on farms at January 1, 1926 is up marginally from 1925 at 10.5 million head [14, p. 34]. The 1925 corn crop is up moderately from the short 1924 crop. The movement of cattle onto feed is lighter than usual [2, December 1925, pp. 2, 3].

1926 Fall

The acreage sown to corn in 1926 will be almost unchanged from that of 1925. Nevertheless, the production of feed crops may be more than can be disposed of with available livestock [2, April 1926, p. 3]. There will likely be an increase in hog numbers [2, May 1926, p. 2].

1927 Spring

The number of sows and gilts over six months of age

on U.S. farms has increased to 11.2 million at January 1, 1927 [14, p. 34]. Hog producers are making considerable effort to expand production. Corn is low-priced relative to hogs. The presence of hog cholera may tend to damp the increase in hog numbers [2, November 1926, pp. 2, 3].

1927 Fall

Farmers intend to plant two per cent more corn in 1927 than in 1926 [3, March 1927, p. 82]. The June hog survey indicates that 30 per cent more sows are expected to farrow in 1927 than in 1926. However, the poor corn prospects and the unfavorable corn-hog ratio may lead to a decline in hog farrowings in the corn belt, but perhaps an increase elsewhere. "Hence little change in hog supplies in the summer and fall of 1928, from supplies last year and this, is indicated" [3, July 1927, p. 235].

1928 Spring

It is expected that three to five per cent less sows will farrow in spring, 1928 than a year earlier. Part of the reason is the short 1927 corn crop [3, December 1927, p. 451]. The cattle population declined two per cent during 1927, and the hog population increased eight per cent [3, February 1928, pp. 39, 41].

1928 Fall

Farmers plan to plant three per cent more corn than in 1927 [3, March 1928, p. 74]. A moderate decline is forecast in farrowings in fall, 1928. The demand situation for hogs for the next 18 months is likely to be better than

for the 1927-28 season. The prediction is that prices will rise "considerably" above the average of the first half of 1928 [3, July 1928, pp. 236, 237].

1929 Spring

A decrease of 4 - 7 per cent is expected in the spring pig crop. The 1928 corn crop was about equal to that of 1927 [3, January 1929, pp. 2, 3]. The cattle population has stayed almost constant during 1928, but there was a nine per cent drop in the hog population [3, February 1929, pp. 39, 40, 42].

1929 Fall

Intention reports indicate farmers may plant one per cent less corn in 1929, but total feed grain acreage will likely be equal to that of 1928 [3, April 1929, p. 116]. "No marked change in either domestic or foreign demand is likely during the next 18 months." (!!) A fall pig crop of about 1928 size in the corn belt, and slightly less in other areas is likely [3, July 1929, p. 246].

1930 Spring

It is likely there will be a small decrease in the number of sows farrowing in spring, 1930. The general commodity price index is continuing to move downward [3, January 1930, pp. 7, 30]. The population of cattle and calves increased three per cent, that of hogs declined eight per cent [3, February 1930, pp. 38, 39, 41].

1930 Fall

Corn acreage will increase three per cent in 1930

[2, April 1930, p. 1]. The hog market appears the most satisfactory of any livestock product, but demand conditions are highly unsure [2, March 1930, pp. 10-11].

1931 Spring

The number of sows and gilts over six months increased only marginally in the past year to 9.8 million at January 1, 1931 [14, p. 34]. The 1930 crop of feed grains is "the smallest on record." Cattle feeding will likely decline sharply over winter [2, November 1930, p. 1].

1931 Fall

Acreage of feed-grains is due to increase for 1931, that of corn climbing by five per cent. "The market for hogs ... is still having to contend with an unusually weak demand condition ... ." Pork exports in 1930 were the lowest in the century [2, April 1931, pp. 1, 5, 6].

1932 Spring

The number of sows and gilts over six months at January 1, 1932 is unchanged from a year earlier at 9.8 million [14, p. 34]. The 1931 corn crop was about equal to the 1925-29 average, but well above the small 1930 crop [2, December 1931, p. 13].

1932 Fall

A slight increase in feed grain acreage is likely for 1932, but corn acreage will be unchanged from a year earlier [2, April 1932, p. 1]. Hog slaughter in the near future (i.e., spring 1933) will be up from a year earlier. Nevertheless, cattle supplies should be down [2, May 1932, p.1].

1933 Spring

The population of sows and gilts climbed during the year from 9.8 to 10.0 million [14, p. 34]. The 1932 corn crop was slightly larger than that of 1931. There is a possibility - due to well-distributed feed supplies - of a larger pig crop in spring, 1933 [2, October 1932, pp. 1, 12].

1933 Fall

A decrease of 3.5 per cent in corn acreage is likely for 1933 [2, April 1933, p. 1]. The passage of the AAA took place during May, 1933, and hogs are designated as a "basic agricultural commodity." Hog prices rose sharply in the first three weeks of May to over $5.00 per hundredweight [2, June 1933, pp. 1, 5, 11].

1934 Spring

The population of sows and gilts declined from 10.0 million to 8.7 million during 1933 [14, p. 34]. Hogs are expected to "make a somewhat stronger market showing after the turn of the year." Prospects indicate expansion of agricultural exports, but for livestock products these will very likely be well below the levels of the 1920's [2, December 1933, pp. 1, 7].

1934 Fall

A corn acreage decrease of 10 per cent is likely for 1934 [2, April 1934, p. 1]. Prospects for a 1934 drought are increasing [2, June 1934, p. 1].

1935 Spring

The population of sows and gilts over six months of age has declined from 8.7 to 6.1 million during 1934 [14, p. 34]. The short feed situation has resulted in both hogs and cattle being sent to market in heavy volume [2, December 1934, p. 1]. The 1935 spring pig crop is likely to be even smaller than that of 1934. Only in the event of conditions highly favorable to hog production will it take as little as several years for hog slaughter to rise to the level of the past five years [2, November 1934, p. 5].

1935 Fall

The indicated 1935 corn acreage of 95 million acres is about equal to 1934, but well above the harvested acreage of 87 million in 1934 [2, April 1935, p. 3]. The probable tendency will be to increase hog production next fall, since production is now at a very low level. "Meanwhile, the only things that stand in the way of still higher hog prices are the bad export situation and the low buying power of domestic consumers." [2, June 1935, p. 1].

1936 Spring

The population of sows and gilts over six months increased from 6.1 to 7.7 million during 1935 [14, p. 34]. The spring pig crop is likely to show an increase from a year earlier. More cattle will likely be fed out this winter than last [2, December 1935, p. 1]. Although some increase in hog marketing is probable for fall, 1936, the major impact of the hog expansion likely will occur after

next autumn [2, November 1935, p. 1].

1936 Fall

The 1936 corn crop will likely be slightly below average, but feed supplies will likely be ample in view of anticipated five per cent less-than-average livestock population [2, April 1936, p. 1]. Losses of early pigs during spring 1936 were very heavy [2, May 1936, p. 1].

1937 Spring

Although the population of all pigs and hogs remained about constant during 1936, the number of sows and gilts over 6 months of age decreased from 7.7 to 7.1 million [14, p. 34]. The recent heavier runs of cattle and hogs have been absorbed at sustained prices, indicating improved demand conditions [2, December 1936, p. 1].

1937 Fall

Acreage planted to feed-grains in 1937 will decline from 1936. Nevertheless, the harvested acreage will likely exceed the low level of 1936. Storage holdings of pork are the largest on record. Nevertheless, demand conditions continue strong, and hog prices will likely depend on the 1937 corn crop [2, April 1937, pp. 6, 7].

1938 Spring

The number of sows and gilts has increased from 7.1 to 7.6 million head during 1937 [14, p. 34]. Some indication of weakening consumer demand has appeared. The spring pig crop is certain to be larger than a year earlier [2, November 1937, pp. 2, 7].

1938 Fall

The AAA, 1938 has been enacted, and includes corn in its basic commodities [2, March 1938, p. 9]. Large feed supplies are likely in spite of a slightly reduced corn crop from 1937. Farrowings this autumn may be above those of last autumn. Spring farrowings were up from a year earlier [2, April 1938, pp. 4, 5], [17, pp. 12, 13].

1939 Spring

The number of sows and gilts has increased to 9.5 from 7.6 million during the year [14, p. 34]. The total supply of feed grains is "probably the second largest since 1921." This increase in hogs may put sufficient pressure on the hog-corn ratio, however, to prevent further increases in the near future [2, November 1938, pp. 11-12].

1939 Fall

An improvement in demand conditions is foreseen. The number of sows farrowing in spring, 1939 is substantially larger than a year earlier, so heavier fall farrowings are a distinct possibility [2, May 1939, pp. 2, 4, 5].

1940 Spring

The fall pig crop is up sharply from a year earlier [17, p. 13]. The seasonal reduction in hog marketings in late winter and early spring may be less than average. However, expansion in hog exports in 1940 may occur as a result of the war. Increasing domestic demand will also be a supports factor [2, December 1939, pp. 2, 6].

1940 Fall

Corn plantings for 1940 are expected to be below those of 1939 by four per cent. The 1940 spring pig crop was slightly smaller than that of 1939. This decline may continue due to an unfavorable hog-feed price ratio [2, April 1940, pp. 4, 5, 6], [17, p. 12].

1941 Spring

The fall, 1940 pig crop was down about 10 per cent from a year earlier [17, p. 13]. The 1940 corn crop was up three per cent, leading to the second largest supply of corn since 1932. The 1941 spring pig crop will likely be moderately smaller than the spring crop of 1940 [2, December 1940, pp. 5, 6].

1941 Fall

The purchasing program under lend-lease will add substantially to the demand for agricultural products. Corn plantings are likely to be down less than one per cent from a year earlier. Hog production will increase in fall, 1941 and spring, 1942. Conditions point "unmistakably to higher prices" for hogs [2, April 1941, pp. 1, 2, 4, 6].

1942 Spring

The spring pig crop is likely to be up 10 to 15 per cent from 1941. This will be required to meet the Government hog-slaughter goals for 1942 [2, December 1941, p. 6]. The fall corn crop was moderately larger than that of previous years. Supplies available to consumers in 1942 will

not be greatly different from those of 1941, but consumer demand has increased [10, December 1941, pp. 11, 12].

1942 Fall

Sharp increases are expected in lend-lease purchases of pork. Storage holdings have been reduced, contrary to the usual pattern in April. Nevertheless, maximum prices on pork products have been set by the OPA [10, April 1942, pp. 6, 7, 8, 9]. Corn acreage will increase by five per cent [2, April 1942, p. 3].

1943 Spring

The 1943 goal calls for a 15 per cent increase over 1942 in both spring and fall pig crops, and a 10 pound increase in average market weight. Hog prices will be supported at $13.25, basis Chicago for Good and Choice [10, December 1942, p. 3].

1943 Fall

Corn acreage in 1943 will likely increase by six per cent from 1942 [2, April 1943, p. 21]. Nevertheless, the 1943 corn crop may be less than that of 1942. Hog price supports have been raised to $13.75 from $13.25. The number of livestock being fed in 1943 may be up 11 per cent from 1942 [9, April 1943, pp. 2, 6, 7].

1944 Spring

A 16 per cent decrease from a year earlier is expected in spring hog farrowings. The number of cattle on feed is also below a year earlier. Civilians will receive approximately the same per capita quantities of meat as in

1943 [9, January 1944, pp. 1, 2, 6, 7].

1944 Fall

Corn acreage will increase 2.5 per cent, but is still marginally below the 1944 goal [2, April 1944, p. 2]. The support price for hogs will be reduced to $12.50 (from $13.75) effective October 1, 1944 [9, May 1944, p. 6]. The fall pig crop is indicated to be 33 per cent below the record crop of 1943 [9, June 1944, p. 3].

1945 Spring

The 1945 spring pig crop is likely to be about six per cent smaller than that of 1944. The total hog slaughter in 1945 may, however, be down 20 to 25 per cent from 1944, mostly during the early part of the year and reflecting the sharp decline in pig crops in 1944 as compared with 1943. Ceiling prices on barrows and gilts (over 270 pounds) has been increased to $14.75 per hundredweight at Chicago [9, December 1944, pp. 7, 8]. Demand for most farm products will likely continue at wartime levels through most of 1945. The sharp declines in pork output will not be offset by expected increases in beef and veal [4, January 1945, pp. 2, 5, 6].

1945 Fall

Farmers intend to farrow 12 per cent more sows in fall, 1944 than a year earlier. Although this may yield the fourth largest fall crop on record, it will fall short of the goal for fall pigs by two million (35 million expected). Cattle slaughter at the time these hogs come to

market is likely to be about as large as in 1945 [9, June 1945, pp. 3, 8, 9].

1946 Spring

On the basis of farmers' intentions at December 1, 1945, the spring, 1946 pig crop may be up two per cent from the 1945 spring crop. With large supplies of soft and wet corn available, cattle feeding will be at a higher level than in winter 1945 [9, December 1945, pp. 3, 10].

1946 Fall

The fall pig crop is to be reduced from the level of 1945 [4, June 1946, p. 7]. Corn acreage in 1946 will be almost unchanged from 1945, and about equal to the 1946 goal [2, April 1946, p. 2].

1947 Spring

The number of sows farrowed in spring, 1947 will likely be up six per cent, compared with a 13 per cent increase suggested in the 1947 goals. The favorable hog-corn ratio will likely lead to further expansion later in 1947. Nevertheless, consumer demand is currently strong, and will hold meat prices at high levels through most of 1947 [9, December 1946, pp. 6, 10]. Meat animal prices rose sharply after the lapse of price control on July 1, 1946 [9, July 1946, p. 3].

1947 Fall

The spring pig crop was only one per cent above a year earlier, due to a decrease in the number of hogs per litter saved. The fall pig crop is expected to be up by

six per cent from 1946. The number of livestock on farms - except hogs and chickens - is declining, and further declines are expected this year [8, June 1947, pp. 4, 8]. Acreage of corn in 1947 will be below that of 1946, and also below the 1947 goal [2, April 1947, p. 2].

1948 Spring

A decrease of nine per cent from 1947 is expected for the 1948 spring pig crop. Beef supplies will also be smaller in 1948 than in 1947 [8, December 1947, pp. 4, 6]. Feed prices are expected to remain high, at least until summer, 1948 [4, January 1948, p. 8]. The population of pigs, cattle and sheep on farms declined during 1947 [11, pp. 2, 3].

1948 Fall

The 1948 fall pig crop is likely to be only one per cent below that of 1947 [8, June 1948, p. 9]. The corn acreage in 1948 will be about the same as in 1947. This is, nevertheless, below the 1938-47 average [2, March-April 1948, p. 4].

1949 Spring

Demand prospects, while good for the first half of 1949, are more uncertain for the latter half of the year. Total meat supply will be about equal to that of 1948, but will consist of more pork and less beef than in 1948. The bumper feed grain harvest of 1948 is likely to be an important factor. Pork prices will likely drop more than seasonally under heavy marketings in late 1949 [4, September 1948,

pp. 3, 14, 15]. There occurred a slight increase in hog population and a slight decrease in cattle population during 1948 [11, p. 2]. Intention reports indicate a 10 per cent greater spring pig crop than in 1948 [8, December 1948, p. 3].

1949 Fall

Corn acreage in 1949 will decline almost two per cent from 1948 [2, April 1949, p. 9]. The 1949 spring pig crop was up 15 per cent from 1948, and the fall pig crop will likely be up nine per cent from 1948 [8, June 1949, p. 3].

1950 Spring

The spring pig crop in 1950 will likely be six per cent larger than in 1949. Prices will likely be lower than in 1949, particularly for the latter part of 1950. In addition, price supports have not been announced for dates after March 31, 1950. Support after this date is permissive, at anything up to 90 per cent of parity [8, December 1949, pp. 3, 9, 11].1/ Parity price of hogs at November 15, 1959 was $17.40 per hundredweight [2, December 1949, p. 14]. The number of both hogs and cattle on farms increased slightly during 1949 [11, p. 2].

1950 Fall

Acreage planted to corn is likely to decline by six per cent due to allotment restrictions [2, April 1950, p. 4]. An increase in the fall pig crop of five per cent over

1/ Hog prices were previously supported at 90 per cent of parity under an extension of the Steagall Amendment [8, July 1949, p. 12].

the level of a year earlier is anticipated. Demand conditions are strong, and may improve [8, June 1950, pp. 4, 10].

1951 Spring

The spring pig crop will likely increase by six per cent from a year earlier [8, December 1950, p. 4] In spite of increased meat supplies, "stronger demand is expected to raise prices of each class of meat animals moderately above 1950." Any general inflation would likely carry hog prices to even higher levels [2, December 1950, pp. 8, 14]. Both the cattle and hog population have increased during 1950 [11, p. 2].

1951 Fall

A fall pig crop up three per cent from last year is indicated by farmers' intention reports [8, June 1951, p. 3]. Corn acreage will increase by almost two per cent, but still remain five per cent below acreage guides of the U.S.D.A. [2, April 1951, p. 3, 4].

1952 Spring

The 1952 spring pig crop will likely be down nine per cent from a year earlier. An important factor is the smaller supply of corn [8, November-December, 1951, p. 4]. Hog population stayed relatively constant during 1951, but cattle population climbed from 82.0 to 88.0 million [11, p. 2]. "The defense program will continue to be the dominant influence in the outlook for 1952" with respect to demand conditions [2, December 1951, p. 3].

1952 Fall

The 1952 corn acreage will likely be about equal to that of 1951 [2, April 1952, p. 3]. It is expected that nine per cent less sows will farrow in fall, 1952 than a year earlier. "Prices of hogs next winter could be considerably higher than last winter." [8, May-June 1952, pp. 6, 7].

1953 Spring

Hog population has decreased sharply during 1952, but there has been a slight to moderate increase in cattle population [11, p. 2]. Farmers intend to farrow 13 per cent fewer sows in the spring of 1953 than a year earlier. The increase in beef and veal production will tend to offset the pork decline, however, providing meat supplies in 1953 approximately as large as in 1952 [8, November-December 1952, p. 3].

1953 Fall

Corn acreage will likely be down one per cent from the below-average 1952 acreage [5, March-April 1953, p. 4]. A five per cent reduction in the fall pig crop as compared with a year earlier is anticipated [8, May-July 1953, p.11].

1954 Spring

Hog population declined moderately during 1953, while there was a slight increase in cattle numbers [11, p. 2]. "Hog production appears to be starting a new expansion." The spring pig crop will probably be up by five to ten per cent from a year earlier. Hog production will

likely continue to increase for at least a year or more, in spite of continuing relatively high production of beef [8, October-November 1953, pp. 21, 24].

1954 Fall

Farmers plan to plant about the same corn acreage as in 1953 [2, April 1954, p. 2]. Farmers intend to farrow 10 per cent more pigs in fall, 1954 than a year earlier [8, July 1954, p. 6].

1955 Spring

There was a slight increase in cattle numbers during 1954, and a moderate increase in hog population [11, p. 2]. "The supply of meat for consumers (in 1955) will remain large ... . Prices of hogs will stay below their highs of last spring but will likely average close to the summer-fall prices of this year (1954)." Hog production appears to be increasing, while cattle population appears to be on a slow decline [2, November 1954, p. 9]. The 1955 spring pig crop will be only two to five per cent above that of 1954 [8, October 1954, p. 3].

1955 Fall

Corn acreage in 1955 will be about the same as that of 1954, but total feed grain acreage will be up slightly [2, April 1955, p. 2]. The fall pig crop will likely be a little larger than a year earlier [8, May 1955, p. 10].

1956 Spring

Meat output in 1956 will be about equal to that of 1955, with hogs probably accounting for a larger proportion

than in 1955. The 1956 spring pig crop is expected to be about equal to that of 1955, but prices during the early part of 1956 will be held down by the larger-than-expected (up 10 per cent) fall pig crop [8, November 1955, pp. 5, 7]. Cattle population declined slightly during 1955, while hog population climbed about 10 per cent [11, p. 2].

1956 Fall

Producers plan to farrow seven per cent less sows in fall, 1956 than a year earlier [8, June 1956, pp. 2, 4]. Corn acreage in 1956 will likely decline 3.5 per cent from 1955 [4, April 1956, p. 30].

1957 Spring

Hog slaughter in 1957 will decline and "prices for hogs will be higher than in 1956." The longer-period outlook for hogs is not as bright as for cattle. A gradual increase in meat animal population is forecast [4, November 1956, pp. 37, 38]. The cattle population declined slightly during 1956, as did the number of hogs [11, pp. 4, 5]. Producers plan a decrease of two per cent in spring farrowings as compared with a year earlier [8, January 1957, p. 3].

1957 Fall

The total acreage of feed grains in 1957 will likely be up slightly from 1956, but corn acreage will decline by four million acres [4, April 1957, p. 21]. A two per cent decrease in fall farrowings, as compared with a year earlier, is expected [8, July 1957, p. 3].

1958 Spring

There was a slight decline in cattle numbers during 1957, and also a slight decline in hog population, although the number of sows remained approximately stable [11, pp. 4, 5]. Prices for hogs will be appreciably lower in the last half of 1958. Abundant feed supplies will likely lead to increased output of pork in 1958, but total meat supplies will likely be about the same as in 1957. The spring pig crop may be up by 8 to 10 per cent [4, November 1957, pp. 36, 37].

1958 Fall

The total supply of feed grains produced in 1958 will be only slightly below that of 1957. Corn acreage will increase by two per cent [4, April 1958, p. 24]. "A sizable uptrend in hog production apparently is beginning with this fall's farrowings." A 13 per cent increase is expected in the number of sows to farrow in fall, 1958 [8, July 1958, p. 4].

1959 Spring

The hog and cattle populations each increased during 1958, the former moderately and the latter slightly [11, pp. 4, 5]. The spring pig crop prospect is for a 13 per cent increase. Cattle slaughter for the year as a whole is likely to be only slightly above that of 1958 [8, January 1959, p. 3]. Prices of hogs will "decline considerably" in 1959 [4, November 1958, p. 27].

1959 Fall

The total supply of feed-grains in 1959-60, including carryover, is likely to be at least as large as that of a year earlier [4, April 1959, p. 26]. Producers plan for eight per cent more fall pigs than a year earlier [8, July 1959, p. 3].

1960 Spring

The population of both hogs and cattle increased slightly during 1959. However, there was a moderate reduction in the sow population [11, p. 4, 5]. It is expected that the 1960 spring pig crop will be down slightly from 1959 [8, November 1959, p. 17]. Feed supplies continue at a high level [4, October 1959, p. 15].

1960 Fall

Corn acreage in 1960 will be about equal to that of 1959, but total feed-grain acreage will likely be up one per cent [4, March 1960, p. 21]. A four per cent cut in fall farrowings is likely but an upturn in farrowings is likely for 1961 [8, July 1960, p. 3].

1961 Spring

The number of sows on farms increased marginally in 1960, but there was a slight decline in cattle numbers and a slight to moderate decline in total hog population [11, pp. 4, 5]. An increase in total meat production is likely in 1961, with most of the increase occurring in beef. Producers are apparently increasing the late fall, 1960 and spring, 1961 pig crops. Prices during the last half

of 1961 may drop below the same period in 1960, but average price for the year will not likely differ greatly from 1960 [8, November 1960, pp. 5, 15].

1961 Fall

Feed-grain output is expected to decline in 1961, but the extent of the reduction is difficult to estimate since farmers indicated their intentions before the feed grain program was announced [4, April 1961, p. 31]. Producers plan two per cent more sows to farrow fall pigs. Production of both hogs and cattle appears to be expanding [8, July 1961, p. 3].

1962 Spring

Both cattle and hog numbers increases slightly during 1961, but the sow population remained almost constant [11, pp. 4, 5]. The spring, 1962 pig crop will be up by three to five per cent. Total beef production in 1962 will be up only about two per cent above 1961 [4, November 1961, pp. 26, 27]. The outlook for 1962 is that hog prices may average slightly below those of 1961 [8, November 1961, p.3].

1962 Fall

Feed grain acreage in 1962 will be about equal to that of 1961 [4, April 1962, p. 26]. An increase of two per cent is expected for fall farrowings. Nevertheless, such a crop would yield total 1962 production below that of 1961 [8, July 1962, p. 6].

CORN

1917

"Peace in Europe, coming before a new crop of grains, would mean a severe shrinkage in values" [1, December 16, 1916, p. 2]. Farm reserves of corn are expected to be low at the end of the present crop year [1, March 5, 1917, p. 4]. The supply on farms at March 1, 1917 is 780 million bushels, down from 1,117 million bushels a year earlier [1, March 8, 1917, p. 1]. Entry of the U.S. into the war is expected at the special congressional session scheduled for April 2, 1917.

1918

The prospects are for a larger supply of meat available to consumers, and the "voluntary restrictions" on food consumption are being eased by the food administration [1, March 4, 1918, p. 4]. At the same time, corn acreage may decline because of shortage of seed and shortage of labor [1, March 6, 1918, p. 2]. Corn reserves on farms at March 1 are 1,293 million bushels, up from 782 million bushels a year earlier (stocks of oats and barley are also up over the same period) [1, March 8, 1918, p. 1].

1919

The stocks of corn on farms at March 1, 1919 are 884 million bushels, down 6.7 per cent from the level of a year earlier [1, March 7, 1919, p. 1].

1920

Reduced corn acreage in 1920 is likely [1, March 11, 1920, p. 4]. Corn prices up to $1.50 per bushel were reported in March [1, March 19, 1920, p. 5].

1921

Corn stocks are up 500 million bushels from a year earlier. The outlook as well is for "an undersupply" of meat animals [1, March 9, 1921, p. 4].

1922

Any price changes are dependent on reversal of the current depression.

1923

The markets for cattle and hogs are expected to remain strong at least for 1923. Although corn acreage may be slightly higher than in 1922, corn prices will be influenced more by conditions in the hog market [2, April 1923, p. 16]. A survey indicates that the number of sows bred to farrow in the first six months of 1923 is up 13 per cent [2, March 1923, p. 11].

1924

January 1 estimates indicate moderate decrease in hog numbers compared with a year ago. The December hog survey shows a definite downward trend in hog production. At the same time, corn growers intend to plant as much or more corn as was planted in 1923 [2, February 1924, pp. 1, 2, 14].

1925

Twenty per cent fewer sows will farrow this spring than last, and last year's total pig crop was down by 19 per cent. The general tendency in the corn belt this spring will be toward more corn and fewer hogs [2, February 1925, p. 1]. However, the short 1924 corn crop has resulted in all stocks of old grain having been used up [2, March 1925, p. 1]. Corn planting intentions show a rise of 2.3 per cent in anticipated acreage. Hog prices have begun to rise, however, which may influence corn prices over the crop year [2, April 1925, p. 1].

1926

Farmers reported intentions to seed about the same acreage of corn as last year [2, April 1926, p. 1]. Indications are "that hog producers are now making considerable effort to increase production ..." [2, March 1926, p. 1].

1927

Market supplies of hogs in 1927 will be about the same as in 1926, with prices also near the 1926 level [2, February 1927, p. 1]. A reduction in corn output of about seven per cent is expected, assuming average yields [2, April 1927, p. 3].

1928

An increase of three per cent is expected in the 1928 corn crop as compared with 1927. Some reduction in the pig crop in 1928 is probable. These downward influences on price are offset, to some extent, by expected lower stocks

of old corn at the beginning of the 1928 crop year [2, April 1928, pp. 2, 3, 15].

1929

The estimated number of hogs on farms at January 1, 1929 is 55 million head, down five million from a year earlier. A reduction in the spring, 1929, pig crop is indicated, and may be about four to nine per cent in the Corn Belt region. Such a reduction would mean that the supply of hogs during the winter of 1929-30 will be less than a year earlier [2, February 1929, p. 8]. Farmers' intentions show that corn plantings will probably be slightly below those of 1928, producing a crop probably one per cent below a year ago [2, April 1929, p. 20].

1930

The U.S. swine population at January 1, 1930 is down 7.5 per cent from a year earlier, and down six per cent in the corn belt [2, February 1930, p. 1]. Farmers report intentions to seed three percent more acreage to corn than a year earlier. In addition, there have been declining commodity markets and uncertainty regarding the future trend of the general price level [2, April 1930, pp. 1, 2].

1931

The total number of hogs in the country declined during 1930, though there was a slight increase in the Corn Belt region. However, the prospect of not more than a slight decline during 1931 will be a stabilizing influence

on longer-term corn price expectations [2, February 1931, p. 1]. Farmers indicate intentions to plant five per cent more corn than a year earlier, although the effect on corn supplies will be mitigated by the very low stocks of corn on farms [2, April 1931, p. 1].

1932

The supply of corn on farms at March 1 is up significantly from 1931, and slightly above the 5-year (1925-29) average. Intention reports indicate about 1.5 per cent more acreage may be harvested in 1932 than in 1931 [2, April 1932, pp. 2, 5]. The year 1931 saw a decline in pork demand in the U.S., and increased supplies of pork in Europe [2, February 1932, pp. 4-5].

1933

The number of hogs on farms at January 1, 1933 is up three per cent from a year earlier, although the increase in the Corn Belt region was not as great [2, March 1955, p. 1]. Farmers' intentions indicate 3.5 per cent less area will be seeded to corn this year than last [2, April 1933, p. 1].

1934

Swine population at January 1, 1934 is down nine per cent from a year earlier, due in large part to AAA purchases since the autumn of 1933 [2, March 1934, p. 11]. Farmers' intentions are to plan 10 per cent less corn. Farm stocks of corn are relatively small, with 260,000,000 bushels under Government seal for loans on the basis of 45 cents

per bushel. The corn loan will be 55 cents per bushel for 1934 [2, April 1934].

1935

The decline in hog population in the Corn Belt region during 1934 was in excess of 40 per cent [2, March 1935, p. 1]. Corn acreage harvested in 1935 will likely be 96 million acres as compared with 87 million acres in 1934 [2, April 1935, p. 1]. The corn loan will be 45 cents per bushel.

1936

Corn acreage, as indicated by farmers' intentions, will be slightly below average in 1936. Ample feed for livestock will be available in view of the probable five per cent less than average number of livestock on farms [2, April 1936, p. 1]. However, hog numbers are increasing from the very low level of a year ago [2, March 1936, p. 1].

1937

Indications are that there may be considerable hog feeding in the fall of 1937 [2, March 1937, p. 6]. Although feed grain acreage will be smaller than a year ago, the harvest will likely exceed that of 1936 (because of abandonment due to drought). A moderating influence on the expected price decline is that carry-over at the beginning of harvest will be smaller than usual [2, April 1937, p. 6].

1938

A decrease of two per cent in corn plantings is expected. Nevertheless, supplies on hand are large relative

to numbers of livestock on feed. It is expected that "prices in 1938-39 may not average very different from prices in the 1937-38 marketing year" [2, April 1938, pp. 3, 4-5].

1939

A decline in corn acreage of about one per cent compared with actual 1938 acreage is forecast. A large increase in the spring pig crop over that of 1938 is also likely [2, April 1939, p. 5].

1940

"The outlook for feed grains (in 1940) has been materially improved by the continued increase in livestock numbers ..." [2, November 1939, p. 11]. Later information indicates that prospective corn acreage is four million below 1939. Nevertheless, the spring and fall, 1940 pig crops will likely be smaller than a year earlier [2, April 1940, pp. 5-6].

1941

Administrators of the Lend-Lease Act are now purchasing hogs for export to Great Britain. Indications are that the fall pig crop will be larger than in 1940 [2, April 1941, pp. 4, 5].

1942

Purchases under lend-lease are expected to be substantially above those of 1941 [2, October 1941, p. 3]. "With an average growing season this year, supplies of feed grains for 1942-43 are expected to be about five per cent

smaller than for 1941-42 and 10 to 12 per cent smaller per animal unit" [4, April 1942, p. 4].

1943

"The 'hold-the-line' executive order against inflation, issued April 8, 1943, goes further in establishing limits on prices and wage increases than any previous order." The production of the four feed grains is expected to be about 11 per cent below 1942, while livestock numbers will increase. Cash and future prices of corn are at ceiling levels - currently $1.07 at Chicago for cash No. 2 Yellow Corn [4, April 1943, pp. 4, 8-9].

1944

It is estimated that the stock of feed grains on hand in the U.S. at July 1, 1944 will be the smallest since 1937. There are record numbers of livestock and poultry on farms [5, April 1944, pp. 4-5]. However, an increase of two per cent is forecast in area planted to feed grains, and the spring pig crop in 1944 is "materially" below that of 1943 [8, April 1944, p. 8].

1945

March 1 intentions indicate that acreage of the four principal feed grains will decline by about 1.5 per cent from that of 1944. In order to encourage hog farrowings, an increase in the support price for hogs has been announced [8, April 1945, pp. 7, 11].

1946

Supplies of feed grains for the 1946-47 season will

probably be down from a year earlier, but livestock numbers will also be down, leaving the supply of feed grain per animal unit in 1946-47 about the same as in 1945-46 [4, April 1946, p. 10].

1947

Average yields on the acreage farmers intend to seed will yield an output of the four feed grains eight per cent below the record 1946 crop. An increase in hog production will occur in late 1947 and 1948 [4, March 1947, pp. 6, 7]. Nevertheless, the corn carry-over at October 1, 1947 is expected to be about 350 million bushels, compared with 158 million bushels a year earlier [4, April 1947, p. 6].

1948

The planned corn acreage in 1948 is about the same as 1947, which was the smallest acreage in 50 years. However, larger feed supplies are in prospect as oats, barley and sorghum increases are likely [5, March 1948, p. 3]. The 1948 fall pig crop is likely to be the smallest in 10 years [4, April 1948, p. 7].

1949

Prospects plantings of corn for 1949 are two per cent below the levels of 1948, while acreage of the four principal feed grains will be down three per cent. At average yields, this will produce one-fifth less feed grains than in 1948. With carry-over, however, the supply will be only seven per cent smaller than in 1948-49. It

is expected that feed prices will be near or below support rates in 1949-50. Loans on corn will be based on 90 per cent of parity. The parity price of corn on March 15, 1949 is $1.58 per bushel [5, March 1949, pp. 3, 8]. There has been a substantial rise in corn stocks [7, p. 17].

1950

March 1 farmers' intentions indicated a reduction of corn acreage by six per cent from the 1949 level. At average yields, total production will be about 10 per cent below the larger output of feed grains of 1949. The price in 1950 will probably be near the loan rate, but only farmers in the commercial areas who plant within their allotments will be eligible for the loan, which will be 90 per cent of parity [4, March 1950, p. 13]. At spring, 1950 prices, the support level for corn would be about $1.44 per bushel.

1951

The prospective corn acreage is only 1.6 per cent above the low level of 1950, and total feed grain acreage will likely be down by four per cent. "Demand for feed grain is expected to continue strong ... in the 1951-52 feeding year. Prices of all feed grains ... probably will remain above ... supports in 1951-52." The price support for corn will be at a minimum $1.54 per bushel [5, March 1951, pp. 4, 11, 12]. Corn stocks have decreased [7, p.17].

1952

The intended corn acreage in 1952 is about the same

as 1951, with acreage of the four feed grains totalling slightly under last year. Reductions in hog numbers are expected for 1952-53 [5, March-April 1952, p. 3]. The support price for the 1952 crop has been set at not less than $1.60 per bushel. "Unless the growing season is unusually favorable, feed grain prices probably will remain generally above supports in 1952-53" [4, April 1952, p. 28].

1953

Total acreage in feed grains will likely increase slightly in 1953, as a prospective slight decrease in corn acreage is more than offset by more oats and sorghum. Including carry-over, this would provide a supply of feed grains about equal to that of 1952-53. "The number of hogs to be fed from 1953-54 feed supplies probably will be a little smaller than in 1952-53, as a result of the prospective 15 per cent reduction in the 1953 spring pig crop." The 1953 corn crop will be supported at a minimum of $1.53 per bushel [5, March-April 1953, pp. 3, 8, 9].

1954

The acreage planted to feed grains in 1954 will likely increase over 1953, in spite of slightly smaller corn plantings. At 1948-52 average yields, the total feed concentrate supply in 1954-55 (including carry-over) will be about five per cent higher than that of 1953-54, and about equal to the 1950-51 record. The minimum price support for 1954 will be $1.62 per bushel. In the commercial area, producers must comply with acreage allotments

to be eligible. In the non-commercial area, support will be at 75 per cent of the commercial support rate, but no allotments will be in effect. An expansion of sow farrowings in spring, 1954 over 1953 by 6 per cent or perhaps slightly more is indicated. Nevertheless, the number of hogs on farms has declined sharply over the past two years [5, April 1954, pp. 3, 9, 16].

1955

The acreage of corn planted in 1955 will likely be about the same as 1954, although acreage of the four feed grains will likely be up two per cent. This will, at average yields, produce a slightly larger output than last year. The 1955 price support will be not less than $1.58 per bushel. A five per cent increase in spring, 1955 farrowings is planned, but a narrowing of the hog-corn price ratio has made further increases uncertain [5, March 1955, pp. 3, 16].

1956

Area planted to corn, oats, and barley will decline in 1956, with little change expected for sorghum. However, including carry-over, these acreages will still provide with two or three per cent of the record 1955-56 supply of feed concentrates. The support level will be at least $1.40 per bushel, and will require acreage allotment compliance in the commercial area. Although hog population on farms at January 1, 1956 is up nine per cent from a year earlier, farmers indicate intentions to reduce the 1956

spring pig crop.

1957

Although a slightly larger total acreage of the four major feed grains is likely, a sizable cut in corn plantings from 1956 may result in smaller total production by 8 - 9 per cent. The prospective corn acreage decline reflects, in part, the sign-up under the Soil Bank Program. However, carry-over in 1957 will likely make the supply of concentrates in 1957-58 only a little below the record level of the previous year. The minimum national average support price for 1957 for farmers complying with their acreage allotments is $1.36 per bushel. Although December reports indicated spring farrowings would be down two per cent, a March report indicated that farrowings may exceed slightly the December expectations [5, April 1957, pp. 3, 5, 7, 8, 14].

1958

Corn acreage in 1958 is likely to increase by two per cent, although total feed grain production will likely decline from the 1957 levels. Nevertheless, total feed concentrate supply in 1958-59 will probably be only a little below 1957-58. Farmers also indicate intentions to increase their spring and fall, 1958, farrowings [5, March 1958, pp. 3, 7, 9]. The minimum support price in 1958 will be $1.36 per bushel [5, May 1958, p. 27].

1959

Discontinuance of the acreage allotments and the Corn

Acreage Reserve Program will likely push corn acreage up 12 per cent in 1959. Total corn output in 1959 may therefore be a record, with total feed grain supply in 1959-60 at least equal to 1958-59. An offsetting factor is an expected 13 per cent rise in spring, 1959, farrowings, and some further expansion in the fall crop. The minimum national average support for corn for 1959 is $1.12 per bushel [5, April 1959, pp. 4, 6, 7, 9].

1960

Farmers plan about the same acreage of corn, but a slightly smaller acreage of all feed grains than in 1959. Nevertheless, total supplies (including carry-over) may set a new record high. The minimum national average support for 1960 corn is $1.06 per bushel. As in 1959, corn produced anywhere in the U.S. that meets the quality and storage requirement will be eligible for price support. A reduction of 13 per cent is forecast in spring 1960 hog farrowings in the Corn Belt region [5, April 1960, pp. 3, 8, 13].

1961

A special feed grain program was signed into law March 22, 1961 which requires farmers to take 20 per cent of their corn and grain sorghum acreage out of production in order to be eligible for price supports. The base is 1959 and 1960 acreage. The national average support rate for corn is $1.20 per bushel. Acreage of corn will decline in 1961 from 1960. Although there is considerable uncertainty

regarding 1961 production, a slight decline in total feed concentrate supplies is likely for the 1961-62 season. An eight per cent increase in spring farrowings is likely, with some fall increase as well [5, April 1961, pp. 3, 6, 8].

1962

A three per cent decline is expected in 1962 corn acreage, although total feed grain supplies will likely be near 1961-62 levels. March 1 intentions showed a five per cent increase in hog farrowings anticipated for June-August. The 1962 feed grain program, essentially unchanged from 1961, maintains the corn support rate at $1.20 per bushel [5, April 1962, pp. 3, 8].

WHEAT

1917

"Peace in Europe, coming before a new crop of grains, would mean a severe shrinkage in values" [1, December 16, 1916, p. 2]. The amount of wheat on farms at March 1, 1917 is 101 million bushels, down from 244 million bushels a year earlier [1, March 8, 1917, p. 1].

1918

Government buyers have entered the wheat market, purchasing at a basic price of $2.20 per bushel at Chicago. All wheat will now be channeled through the ($50,000,000) United States Grain Corporation [1, September 5, 1917, p. 3].

1919

In March, the purchase price for wheat was raised to

$2.50 per bushel [1, March 22, 1918, p. 4]. This is equivalent to $2.75 per bushel at Chicago, basis No. 2 wheat [1, March 25, 1918, p. 3].1/

1920

March 1, 1919 stocks of wheat on farms are 129 million bushels, as compared with 108 million bushels on hand a year earlier [1, March 7, 1919, p. 1]. Conditions for seeding fall wheat were favorable [1, September 25, 1919, p. 6].

1921

Wheat futures dropped below $2.00 per bushel for the first time in three years [1, October 5, 1920, p. 4]. Wheat price has declined during September and October, 1920.

1922

Wheat stocks on farms and mills at March 1, 1921 are estimated at 320 million bushels, down slightly from 338 million a year earlier [1, March 11, 1921, p. 5]. Conditions for planting fall wheat appear to be near ideal [1, September 15, 1921, p. 5]. Visible supplies of wheat in the U.S. in September are up from a year earlier [1, September 27, 1921, p. 5].

1923

Argentina and Australia have sown 12 per cent and 10 per cent more wheat, respectively, this year than last, and crop prospects are good. Uncertainty regarding the

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1/ This was later reduced to $2.26 per bushel [1, March 7, 1919, p. 1].

size of European purchases is indicated, but gradual improvement in European ability to purchase wheat is foreseen [2, November 1922, pp. 4, 17-18].

1924

Indications are of smaller acreage being sown than a year ago [2, October 1923, p. 2]. Wheat growing areas, particularly the spring wheat areas, are giving attention to diversifying because of low returns in wheat relative to other farm commodities [2, November 1923, p. 2].

1925

There are indications of an increase in acreage, but this probably will mean production at a level not exceeding 1924, since 1924 yields have been the highest in six years [2, September 1924, p. 2]. Wheat crops are expected to be down in Argentina and about the same in Australia, as compared with a year earlier [2, December 1924, p. 20].

1926

The high 1925 prices were in part due to a shorter crop than usual [2, October 1925, pp. 22-23].

1927

Wheat stocks on hand are low, and 1926 production in the Northern Hemisphere is about the same as last year, with likelihood of only a modest increase, if any, in Southern Hemisphere production [2, November 1926, p. 23].

1928

August 1 reports indicate that U.S. farmers will

increase winter wheat plantings by 13.7 per cent. World wheat output in 1928 will probably be up [2, September 1927, p. 16].

1929

Low 1928 prices for wheat are partly the result of a record 1928 wheat crop in Canada. The shortage of feed grains in Europe, leading to an increase in the use of wheat for feed, is a stabilizing influence on price, however [2, December 1928, pp. 10, 15].

1930

August 1, 1929 carry-over of wheat shows an increase of 100,000,000 bushels over 1928 [6, p. 56], with total August 1 carry-over in principal exporting countries up by twice this amount [2, December 1929, p. 2].

1931

The Smoot-Hawley Tariff Act of 1930 will make it more difficult for other countries to obtain foreign exchange, and is therefore likely to have a downward influence on wheat prices. Although the low 1930 wheat prices are partly a result of large supplies and distress sales, the uncertain economic situation and the downward trend of business conditions provide no indication that 1931 prices will be higher [2, December 1930, pp. 16, 22].

1932

The possibility exists of a smaller 1932 crop as compared with 1931. In Kansas, for example, August farmers' intentions are to plant wheat at a level 15 per cent below

a year earlier [2, October 1931, p. 4]. Poor weather conditions exist in some wheat-growing areas [2, November 1931, p. 2], and wheat stocks continue large [6, p. 56].

1933

Farmers' intentions are to sow about one per cent less wheat than last fall [2, September 1932, p. 1]. An improvement in business conditions is likely [2, November 1932, p. 24].

1934

"The Agricultural Adjustment Administration will pay farmers who cooperate in its acreage reduction campaign 28 to 30 cents per bushel on 54 per cent of their 3-year average production of wheat in 1930-32 ..." [2, September 1933, p. 6]. The London Wheat Agreement (IWA) indicates prices will improve over 1932, and likely over 1933. However, it is believed that "[domestic] governmental action will be a prime factor in determining the level of wheat prices in the United States during the coming year" [2, November 1933, p. 3].

1935

An increase in wheat acreage in the fall of 1934 [2, January 1935, p. 7] [7, p. 55] is one reaction to the small (due to drought) wheat crop harvested in 1934. Stocks will, however, be reduced prior to the 1935 harvest.

1936

"For the 1936 crop contract, signers may plant 95 per cent of their base acreage ... [which] may be expected

to be somewhat larger than that sown for the current [1935 crop] year ... . Only in the event of unusual circumstances ... is it likely that the 1936-37 average Liverpool price will be greatly above last year's level" [2, September 1, 1935, pp. 4-5].

1937

The severe drought of 1936 has induced larger wheat plantings for the 1937 crop year [7, p. 55].

1938

A slackening of demand has occurred during late 1937, and brought a decline in wheat prices [2, November 1937, p. 3]. However, slightly less wheat was planted [7, p. 55].

1939

Loan rates (59 to 60 cents per bushel) were announced in July for the 1938 crop. Indications are that the world crop in 1938 will be of record size [2, August 1938, p. 4]. A large carry-over into 1939 is likely [2, September 1938, p. 4]. The wheat allotment, at average yields, will produce slightly less wheat than domestic disappearance [2, November 1938, p. 4].

1940

"BAE looks for somewhat larger seeded acreage of wheat for 1940 than for 1939." [2, September 1939, p. 4]. "Increases in foreign demand due to the war may be relatively slow in materializing" [4, October 1939, p. 2].

1941

The U.S. and world wheat crops are unlikely to be

very different from those of 1940. "Wheat prices in the United States, on the other hand, are expected to remain independent, to a considerable extent, of prices in other countries" [2, October 1940, p. 14].

1942

Total U.S. supplies for 1942 will be about average in spite of a large carry-over [4, September 1941, p. 14]. Price increases are expected in most commodities, due to higher levels of income, larger food-for-defense needs and a rising general price level. The national goal for 1942 is 50 to 55 million acres [2, October 1941, pp. 2, 19].

1943

Growing military and lend-lease needs will absorb about 20 per cent of total domestic food production in 1943, as compared with 13 per cent in 1942. "Wheat prices ... are expected to average ... higher than in 1942-43" [4, October 1942, pp. 7, 11].

1944

Continued price inflation and large quantities of wheat going to nonfood uses indicate price increases in spite of heavy wheat plantings [4, September 1943, p. 7] [7, p. 55].

1945

"The 1945 wheat goal of 68.6 million acres is an increase of about 1.9 million acres above the acreage seeded for the 1944 crop" [2, November 1944, p. 10]. Continuation of the price support loans of 90 per cent of

parity for two calendar years following the cessation of hostilities is guaranteed by present legislation. With the support program, 1945-46 wheat prices are expected to be about the same as those of 1944-45 [4, October 1944, p.10].

1946

U.S. acreage will be at least as great as for the 1945 crop, but large export demand is likely to hold prices for the 1946 crop very close to ceiling levels. The large wheat acreage currently planted, if maintained beyond several years, could lead to difficult disposal problems [4, October 1945, p. 12].

1947

Growers will seed about the same wheat acreage as was done for the 1946 crop. Carry-over on July 1, 1948 will be about equal to that on July 1, 1947. However, it is uncertain that exports in succeeding years can be maintained at the present high levels [20, August 1946, pp. 3, 9].

1948

"Demand for very large exports of United States wheat is very likely to continue through 1948-49. The quantity of wheat the United States has to export, however, will not be sufficient to meet demands unless yields are again (as in 1942-48) unusually large" [20, August 1947, p. 3].

1949

The recommended wheat goal for 1949 is 71.5 million

acres, down 6.2 million from the 1948 seeded acreage. Prospects for exports are much below the 1948 crop. Prices for the 1949 crop will be close to loan level for the year. As provided in The Agricultural Act of 1948, loan rates for 1949 will be 90 per cent of parity. There has been a marked recovery in world wheat production [20, August 1948, pp. 3, 4, 9].

1950

I.W.A. came into force July 1, 1949 setting a U.S. price equivalent of $1.80 per bushel for No. 1 Manitoba Northern at Fort William or Port Arthur, Canada. An export subsidy is necessary to reimburse exporters who fulfull U.S. obligations under this agreement. Acreage in the U.S. will be about 73 million for the 1950 crop [20, August 1949, pp. 3, 14-15].

1951

National average support price for the 1951 wheat crop will be not less than $1.99 per bushel [7, p. 61] [20, August 1950, p. 3]. The support level will probably be about 10 cents higher, however. The national acreage allotment is 72.8 million acres, and ample supplies are in prospect.

1952

The price for the 1952 crop will be supported at not less than $2.17 per bushel. This will likely provide enough wheat for an increased carry-over at the end of the 1952-53 marketing year [4, October 1951, p. 24]. The

question of extending I.W.A. beyond 1952-53 is uncertain at seeding time.

1953

The support level for the 1953 crop will not likely be below $2.20 per bushel, with neither acreage allotments nor marketing controls. With expected reduced exports during 1953-54, the carry-over at the end of the 1953 marketing year will probably increase [20, August-September 1952, p. 6].1/

1954

The loan rate will likely not differ greatly from the $2.21 applicable to the 1953 crop. Marketing quotas will be in effect on all farms planting more than 15 acres of wheat. With a national allotment of 62 million acres, it is expected that not much change in carry-over will occur during the 1954 marketing year [20, July-September 1953 pp. 3, 11-12].

1955

A 12 per cent reduction in acreage for the 1955 crop is expected as a result of the approval of marketing quotas by farmers in a July referendum. The national average support level for 1955 will be not less than $2.06 per bushel and $2.24 in commercial areas [4, October 1954, p. 34]. Production on such a scale may lead to some reduction in inventories following the 1955 marketing year [20, August 1954, p. 3].

1/ The increase which actually occurred was from 6.27 to 14.99 million bushels [7, p. 63].

1956

A further decline in output in 1956 is anticipated if average yields prevail [4, November 1955, p. 38]. The support rate will be not less than $1.81 per bushel [20, August 1955, p. 4].

1957

Of importance is "that the 1957 crop is going to be considerably less than total disappearance." The minimum average support rate in commercial areas for those who comply with farm allotments will be $2.00 per bushel [20, August 1956, pp. 4, 5].

1958

The minimum national average support price for the 1958 wheat crop is $1.78 per bushel. It is likely that carry-over on July 1, 1959 will show further reduction from a year earlier [20, August 1957, p. 4].

1959

The minimum support level for the 1959 crop is $1.81, as compared with a level of $1.82 as the national average for the 1958 crop. Carry-over at the end of the 1958-59 crop will be the largest in history, however, and a further increase may occur in 1959-60 [4, November 1958, pp. 34-35].

1960

The minimum support level for the 1960 crop is $1.77, down $.04 [20, August 1959, p. 28]. It is likely that the 1960 crop will be larger, by perhaps eight per cent, than the 1959 crop, and this may result in a further increase

in carry-over at the end of the 1959-60 marketing year [4, November 1959, p. 36].

1961

The minimum support level for 1961 crop wheat is $1.78. A further increase in carryover following the 1961-62 marketing year is likely [4, November 1960, p. 37].

1962

The support level in the 39 commercial states will be at $2.00 per bushel. There is a mandatory 10 per cent cut in the 55 million acre wheat allotment [4, November 1961, pp. 31-32].

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APPENDIX C

QUESTIONNAIRES FROM SURVEY RESPONDENTS

This appendix reproduces seven questionnaires received from respondents to the writer's query with respect to the relative position of actual versus expected prices. Six of the questionnaires were used in this study. The seventh, that relating to tobacco, is included because it contains relevant information, but at a more disaggregated level than that at which tobacco is treated in this study. Three other questionnaires were received, but are not reproduced here for reasons indicated in the text. In addition, a number of individuals wrote letters with their questionnaires, or sent letters in lieu of returning completed questionnaires. Although none of these letters are included in this appendix, relevant portions of several of them are included in Chapter 5.

The name of each person who provided information is listed on the questionnaire which he completed.

INDEX OF PRICES EXPECTED BY FARMERS FOR FARM-PRODUCED COMMODITIES

YEAR	PRICE EXPECTED AT JANUARY 1 FOR THE NEXT FIVE YEARS WAS		WAS THE DIFFERENCE TEN PER CENT OR MORE OF THE INDEX OF PRICES RECEIVED?
	ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	
1917		X	X
1918		X	X
1919		X	
1920	X		X
1921	X		X
1922	X		
1923		X	
1924		X	
1925	X		
1926	X		
1927	X		
1928	X		
1929	X		
1930	X		
1931	X		X
1932	X		X
1933	X		X
1934		X	
1935		X	
1936		X	
1937		X	
1938	X		
1939	X		
1940	X		

Source: W. I. Myers.

INDEX OF PRICES EXPECTED BY FARMERS FOR FARM-PRODUCED COMMODITIES

YEAR	PRICE EXPECTED AT JANUARY 1 FOR THE NEXT FIVE YEARS WAS: ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	WAS THE DIFFERENCE TEN PER CENT OR MORE OF THE INDEX OF PRICES RECEIVED?
1940 1/			
1941		X	X
1942		X	X
1943		X	X
1944 2/			
1945		X	
1946		X	X
1947		X	X
1948		X	X
1949	X		X
1950		X	
1951		X	X
1952	X		
1953	X		X
1954	X		
1955	X		
1956 1/			
1957 1/			
1958		X	
1959 1/			
1960 1/			

1/ Expected and actual equal.

2/ Relationship not indicated.

Source: C. Kyle Randall

INDEX OF PRICES EXPECTED BY FARMERS FOR FARM-PRODUCED COMMODITIES

YEAR	PRICE EXPECTED AT JANUARY 1 FOR THE NEXT FIVE YEARS WAS		WAS THE DIFFERENCE TEN PER CENT OR MORE OF THE INDEX OF PRICES RECEIVED?
	ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	
1928	X		NO
1929	X		YES
1930	X		YES
1931	X		NO
1932		X	NO
1933		X	NO
1934		X	NO
1935		X	NO
1936	X		NO
1937	X		NO
1938		X	YES
1939		X	YES
1940		X	YES
1941		X	YES
1942		X	YES
1943		X	YES
1944		X	NO
1945		X	NO
1946		X	NO
1947	X		NO
1948	X		NO
1949	X		NO
1950	X		NO

Source: F. V. Waugh

INDEX OF PRICES EXPECTED BY FARMERS
FOR FARM-PRODUCED COMMODITIES

YEAR	PRICE EXPECTED AT JANUARY 1 FOR THE NEXT TEN YEARS WAS		WAS THE DIFFERENCE TEN PER CENT OR MORE OF THE INDEX OF PRICES RECEIVED?
	ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	
1940		X	YES
1941		X	YES
1942		X	YES
1943		X	YES
1944		X	YES
1945		X	YES
1946		X	YES, probably
1947	X		NO, probably not
1948	X		YES
1949	X		NO, probably not
1950		X	YES
1951	X		YES
1952	X		YES
1953	X		YES, probably
1954	X		NO
1955		X	NO

Source: E. W. Grove

COMMODITY: TOBACCO

YEAR	PRICE EXPECTED AT PLANTING TIME FOR THE CROP YEAR WAS ABOVE PRICE WHICH OCCURRED		BELOW PRICE WHICH OCCURRED		WAS THE DIFFERENCE TEN PER CENT OR MORE OF ACTUAL PRICE?	
	Flue-Cured	Burley	Flue-Cured	Burley	Flue-Cured	Burley
1940	X	X				
1941			X	X	X	X
1942			X	X	X	X
1943			X	X	X	
1944		X	X		X	
1945		X	X		X	
1946		X	X		X	
1947	X			X		X
1948			X	X		
1949			X	X		
1950			X	X	X	
1951		X	X			
1952	X	X				
1953			X	X		
1954			X	X		
1955			X	X		X
1956			X	X		X
1957			X	X		X
1958			X	X		X
1959			X	X		
1960			X	X		
1961 1/				X		
1962		X	X			

1/ Not indicated for flue-cured.

Source: A. G. Conover

COMMODITY: BEEF

YEAR	PRICE EXPECTED AT JANUARY FOR THE NEXT FIVE YEARS WAS		WAS THE DIFFERENCE TEN PER CENT OR MORE OF ACTUAL PRICE?
	ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	
1940		X	X
1941		X	X
1942		X	X
1943	X		
1944		X	X
1945		X	X
1946		X	X
1947		X	X
1948		X	X
1949		X	X
1950		X	X
1951	X		X
1952	X		X
1953	X		X
1954	X		
1955		X	
1956		X	X
1957		X	X
1958		X	
1959	X		
1960	X		

Source: H. F. Breimyer

COMMODITY: CORN

YEAR	PRICE EXPECTED AT PLANTING TIME FOR THE NEXT FIVE CROP YEARS WAS ABOVE PRICE WHICH OCCURRED	BELOW PRICE WHICH OCCURRED	WAS THE DIFFERENCE TEN PER CENT OR MORE OF ACTUAL PRICE?
1940		X	X
1941		X	X
1942		X	X
1943		X	X
1944		X	X
1945		X	X
1946		X	X
1947		X	
1948		X	X
1949		X	X
1950		X	
1951	X		
1952	X		
1953	X		
1954	X		X
1955	X		
1956	X		X
1957	X		
1958	X		
1959	X		
1960		X	

Source: M. Clough

APPENDIX D

COMPARISON OF ESTIMATES OF COEFFICIENT OF EXPECTATION

This appendix reports an attempt to ascertain whether the expected price series of this study are comparable with some of the empirical relationships postulated by Nerlove. The pertinent data are reported in Table 51 and 52.

Where P_t^* is expected price for period t, P_t is the actual price in period t and β is the coefficient of expectation, Nerlove poses an equation of the form:

$$P_t^* - P_{t-1}^* = \beta (P_{t-1} - P_{t-1}^*) \qquad 0 < \beta \leq 1 \qquad (D1)$$

Nerlove develops estimates of β by two techniques, thereby arriving at two estimates of β for each of corn, cotton and wheat. He states: "All analyses rested on the assumption that the difference between long- and short-run equilibrium acreage was negligible."[1/] In the terminology of this thesis, the assumption is being made that β is invariant with respect to the time horizon.

Tables 51 and 52 provide the result of fitting equations similar to (D1) to data of this study. These tables illustrate the results from fitting three equations to each of the three commodities discussed by Nerlove:[2/]

1/ The Dynamics of Supply: Estimation of Farmers' Response to Price, op. cit., p. 199.

2/ EP_t is used here in place of Nerlove's P_t^* to indicate expected prices as estimated in this study.

$$EP_t - EP_{t-1} = \beta_1(P_{t-1} - EP_{t-1}) \qquad (D2)$$

$$EP_{5t} - EP_{5t-1} = \beta_2(P_{t-1} - EP_{5t-1}) \qquad (D3)$$

$$EP_{10t} - EP_{10t-1} = \beta_3(P_{t-1} - EP_{10t-1}) \qquad (D4)$$

EP_t = expected price for year t.

EP_{t-1} = expected price for year t-1.

EP_{5t} = expected price for year t and the succeeding four years.

EP_{5t-1} = expected price for year t-1 and the succeeding four years.

EP_{10t} = expected price for year t and the succeeding nine years.

EP_{10t-1} = expected price for year t-1 and the succeding nine years.

Several observations are possible on the basis of data in these two tables. First, Table 51 suggests a possibility of "over-adjustment" (i.e., $\beta > 1$) for wheat. Second, Table 52 shows that, in the data of this study, the coefficient of expectation is not invariant with respect to the time horizon. Third, Table 52 suggests, for corn and wheat, that the coefficient of expectation has not been constant over the period 1917-62. That the coefficient has changed over the period is not obvious for cotton, however. Nevertheless, the data of Table 52 indicate that Johnson's concern, regarding the constancy of the coefficient of expectation over time, is deserving of further study.[1/]

1/ Supra, p. 28.

Table 51: Comparison of Estimates of Coefficient of Expectation, Nerlove and This Study

Commodity	Nerlove Estimates[1]		This Study
	Iterative	Non-Iterative	One-Year[2]
Corn	.25	.54, .60	0.772 (.08)
Cotton	.04	.41	0.887 (.07)
Wheat	.37	.52	1.145 (.08)

1/ Source: Nerlove, The Dynamics of Supply: Estimation of Farmers' Response to Price, op. cit., pp. 201, 202, 204.

2/ The numbers in parentheses are standard errors. These coefficients are estimates of β_1 (see equation D2) and are based on expected and actual price data for the period 1917-62.

Table 52: Comparison of Estimates of Coefficient of Expectation, Three Time Horizons and Three Commodities, This Study[1]

Commodity	Entire Period[2]	Early Period[3]	Late Period[4]
	One-Year		
Corn	0.772 (.08)	0.984 (.08)	0.532 (.12)
Cotton	0.887 (.07)	0.930 (.12)	0.820 (.09)
Wheat	1.145 (.08)	1.232 (.12)	1.029 (.12)
	Five-Year		
Corn	0.321 (.06)	0.578 (.06)	0.142 (.07)
Cotton	0.500 (.06)	0.491 (.09)	0.537 (.08)
Wheat	0.580 (.07)	0.730 (.12)	0.451 (.09)
	Ten-Year		
Corn	0.264 (.05)	0.486 (.06)	0.115 (.05)
Cotton	0.333 (.05)	0.330 (.09)	0.351 (.07)
Wheat	0.264 (.05)	0.534 (.14)	0.262 (.08)

1/ One-year, five-year and ten-year indicate, respectively, coefficients β_1, β_2 and β_3 calculated from equations (D2), (Dβ) and (D4).

2/ The coefficients in this column are calculated from expected and actual price data from the period 1917-62.

3/ The coefficients in this column are calculated from expected and actual price data from the period 1917-32.

4/ The coefficients in this column are calculated from expected and actual price data from the period 1933-62.