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Price Expectations of Tennessee Farmers

University of Tennessee Agricultural Experiment Station

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Price Expectations of Tennessee Farmers

by

C. M. Cuskaden
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ACKNOWLEDGMENT

This report is based in part on research developed under regional research project S-67, "Evaluation of the Beef Production Industry in the South." This project is a cooperative effort of State Agricultural Experiment Stations in 12 Southern states, the Farm Production Economics Division of the Economic Research Service, and the Tennessee Valley Authority.

The overall objectives of the regional project were: 1) to determine various resource characteristics and combinations employed in beef production in the South, and to evaluate selected operator attributes and appraise adjustment trends that have occurred; 2) to evaluate the microeconomic and macroeconomic effects of selected aspects of alternative beef production systems; and 3) to estimate for selected alternative systems of beef production the relative effects on firm survival and/or growth of constraints such as forage production risks, price risks, institutional restrictions, and changes in value of assets.
SUMMARY

Product price expectations must be formulated by farm managers to determine the combination and quantity of products to produce in order to maximize net returns. This study investigated the usefulness of three elementary price expectation models in explaining farmers' 1970 price expectations for feeder calves, market hogs, and corn. The price expectation models tested were based on: 1) current price, 2) average prices for 1968, 1966-68, 1959-68, and 1954-68, and 3) price trends for 1966-68, 1964-1968, 1959-68, and 1954-68.

The price expectations of a sample of 359 farm operators obtained in 1969 in three regions of Tennessee were used in this analysis. All of the farms included in the sample were classified by type of farm as either beef or nonbeef farms.

The average feeder calf and corn price expectations of farmers did not differ significantly by type of farm. In contrast, average market hog price expectations were significantly different by type of farm.

The average 1970 price expectations of farmers for feeder calves and corn were significantly different from average market prices for these commodities in 1970. However, their average 1970 price expectations for market hogs were fairly close to average market hog prices in that year.

Current price movements explained a relatively low proportion of variation in the price expectations of farm operators for feeder calves, market hogs, and corn. However, there was a significant positive relationship between feeder calf prices and farmers' feeder calf price expectations. A negative relationship existed between market hog price expectations and current market hog prices for both beef and nonbeef farm operators and this relationship was significant for beef farm operators. Current corn prices were insignificant in explaining farmers' corn price expectations.

Tennessee farmers appear to recognize the general upward trend in feeder calf prices in recent years in formulating feeder calf price expectations. Their average feeder calf price expectations seem best explained by the projection of either the previous year's average price or the price trend for a 15-year period.

The average market hog price expectation of Tennessee farmers suggests that they are aware of both price cycles and trends in formulating price expectations. Price trends for 5 and 10 years most closely approximated farmers' average market hog price ex-
pectations; but even these appear to have limited usefulness, since they gave 1970 projected prices significantly different from average 1970 market hog price expectations of beef farm operators.

The average corn price expectation of farmers appears bounded by the projection of average annual and harvesttime corn prices based on average price models.
Price Expectations of Tennessee Farmers

by

C. M. Cuskaden*

INTRODUCTION

Most farm management decisions require price information. Product price information is needed in determining the combination of products to produce, or the quantity of a product to produce, on a particular farm in order to maximize net returns. However, because of the nature of the agricultural production process and the structure of the market for most agricultural commodities, perfect product price information is not available to the farm manager at the time production decisions must be made. Therefore, product price expectations must be formulated by farm managers in the decision-making process concerning the combination and quantity of products to produce.

Various models have been proposed to explain how farm managers formulate future price expectations. The purpose of this study is to empirically test selected price expectation models.

DATA USED IN ANALYSIS

Price expectations for feeder calves, market hogs, and corn for the year 1970 were obtained from a sample of 359 farm operators in three regions of Tennessee (Figure 1). All farms

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2Many farm operators did not give price expectations for all three commodities. See Tables 1, 2, and 3 for the number of farmers giving price expectations for feeder calves, market hogs, and corn, respectively.

For more detailed information on the sampling technique used, see: Tennessee Agricultural Experiment Station Bulletin 491, February, 1972, p. 8. All farms included in the sample consisted of at least 50 acres of open land or had at least $1,000 gross farm receipts in the previous year.
Figure 1. Regions used in sampling.
included in the sample were classified as either beef farms or non-beef farms. The farm operators were contacted during the months of June through September, 1969, and asked the most likely price they expected to receive in 1970 for each of the three commodities. Their responses were interpreted as average expected prices for the commodities during calendar 1970. Summaries of the price expectations obtained in the sample for feeder calves, market hogs, and corn are given in Tables 1, 2, and 3, respectively.

Beef farm operators had higher feeder calf price expectations on the average than nonbeef farm operators (Table 1). The average feeder calf price expectations for these two groups of farm operators were not significantly different from each other, however. Nor were there any significant differences between regions.

A farm unit must have had 10 or more head of beef cattle to qualify as a beef farm. Beef cattle were defined as cows or yearlings other than those used to produce milk or dairy replacement stock.

Table 1. Number, average, and range of 1970 feeder calf price expectations of a sample of Tennessee farm operators by type of farm and by region and average market price of feeder calves in Tennessee for calendar 1970

<table>
<thead>
<tr>
<th>Farm type and region</th>
<th>Number</th>
<th>Average</th>
<th>Low</th>
<th>High</th>
<th>1970 price expectations</th>
<th>Range</th>
<th>Average</th>
<th>Low</th>
<th>High</th>
<th>1970 market price a</th>
</tr>
</thead>
<tbody>
<tr>
<td>All farms</td>
<td>183</td>
<td>28.52</td>
<td>22.00</td>
<td>38.00</td>
<td>34.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All beef farms</td>
<td>135</td>
<td>28.71</td>
<td>22.00</td>
<td>38.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West beef</td>
<td>62</td>
<td>29.44</td>
<td>22.00</td>
<td>38.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle beef</td>
<td>45</td>
<td>27.93</td>
<td>23.00</td>
<td>35.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East beef</td>
<td>28</td>
<td>28.38</td>
<td>24.00</td>
<td>37.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All nonbeef farms</td>
<td>48</td>
<td>27.99</td>
<td>22.00</td>
<td>35.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West nonbeef</td>
<td>19</td>
<td>28.68</td>
<td>22.00</td>
<td>35.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle nonbeef</td>
<td>21</td>
<td>27.83</td>
<td>24.00</td>
<td>33.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East nonbeef</td>
<td>8</td>
<td>26.75</td>
<td>25.00</td>
<td>31.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

in the feeder calf price expectations of beef farm operators or non-
beef farm operators.\textsuperscript{6}

The average of Tennessee farm operators’ 1970 price expectations for feeder calves was significantly different from the 1970
average feeder calf market price in Tennessee.\textsuperscript{6} The actual 1970
average market price for feeder calves was over $6.00 higher
than the average 1970 price expectations of all farm operators.

Beef farm operators’ average market hog price expectations
were significantly different from those of nonbeef farm operators\textsuperscript{3}
(Table 2). But among beef farm operators and nonbeef farm
operators there was not a significant difference in market hog
price expectations between the three sample regions.

Tests for differences in feeder calf price expectations between regions
were made separately for beef and nonbeef farm operators. \( H_0: \mu_W = \mu_M = \mu_E \) vs. \( H_A: \mu_W \neq \mu_M \neq \mu_E \); where: \( \mu_W, \mu_M, \) and \( \mu_E \) = average of expected
feeder calf prices of farm operators in West, Middle, and East Tennessee,
respectively; was tested at the 0.05 level using the F test. Tests for dif-
fferences in the average price expectations of West, Middle, and East Ten-
nessee farmers for market hogs and corn, discussed below, were made in a
similar manner.

\( H_0: \mu = \$34.79 \) vs. \( H_A: \mu \neq \$34.79 \); where: \( \mu \) = average of expected
feeder calf prices for all farm operators, and \$34.79 = average market price
of feeder calves; was tested at the 0.05 level using the t test. Tests for
differences between average price expectations of all farmers and average
market prices for market hogs and corn, discussed below, were made in a
similar manner.

Differences in the market hog price expectations of beef and nonbeef
farm operators may have arisen out of differences in their experience with
swine enterprises. Brood sows were reported on a higher percentage of
nonbeef farms than beef farms (see table below). However, nonbeef farmers
reported smaller brood sow herds on the average, and were more likely to
produce feeder pigs, than beef farmers. Beef farm operators not only re-
ported selling market hogs more frequently than nonbeef farmers but the
average number sold per farm reporting market hog sales was considerably
higher for beef farms. A comparison of the swine enterprises of the beef and
nonbeef farm operators from whom price expectations were obtained is given
below.

<table>
<thead>
<tr>
<th></th>
<th>Beef farms</th>
<th>Nonbeef farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% farms reporting</td>
<td>Head per farm reporting</td>
</tr>
<tr>
<td>Brood sows</td>
<td>22.7</td>
<td>11.2</td>
</tr>
<tr>
<td>Feeder pigs sold</td>
<td>13.5</td>
<td>97.9</td>
</tr>
<tr>
<td>Market hogs sold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased</td>
<td>5.4</td>
<td>143.9</td>
</tr>
<tr>
<td>Raised</td>
<td>11.2</td>
<td>173.9</td>
</tr>
</tbody>
</table>

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|c|c|}
\hline
                  & Beef farms & Nonbeef farms & Beef farms & Nonbeef farms \\
\hline
% farms reporting &             &               &             &               \\
Head per farm reporting &             &               &             &               \\
Brood sows       & 22.7        & 11.2          & 35.6        & 8.3           \\
Feeder pigs sold & 13.5        & 97.9          & 27.6        & 94.1          \\
Market hogs sold &             &               &             &               \\
Purchased        & 5.4         & 143.9         & 2.0         & 11.1          \\
Raised           & 11.2        & 173.9         & 9.6         & 39.1          \\
\hline
\end{tabular}
\caption{Comparison of swine enterprises of beef and nonbeef farm operators.}
\end{table}
Table 2. Number, average, and range of 1970 market hog price expectations of a sample of Tennessee farm operators by type of farm and by region and average market price of market hogs in Tennessee for calendar 1970

<table>
<thead>
<tr>
<th>Farm type and region</th>
<th>Number</th>
<th>Average</th>
<th>Low</th>
<th>High</th>
<th>Range</th>
<th>1970 market price*</th>
</tr>
</thead>
<tbody>
<tr>
<td>All farms</td>
<td>126</td>
<td>22.15</td>
<td>17.00</td>
<td>30.00</td>
<td>14.00</td>
<td>21.80</td>
</tr>
<tr>
<td>All beef farms</td>
<td>87</td>
<td>22.55*</td>
<td>17.00</td>
<td>30.00</td>
<td>13.00</td>
<td>21.80</td>
</tr>
<tr>
<td>West beef</td>
<td>42</td>
<td>23.12</td>
<td>20.00</td>
<td>30.00</td>
<td>10.00</td>
<td>21.80</td>
</tr>
<tr>
<td>Middle beef</td>
<td>34</td>
<td>21.76</td>
<td>17.00</td>
<td>27.00</td>
<td>10.00</td>
<td>21.80</td>
</tr>
<tr>
<td>East beef</td>
<td>11</td>
<td>22.82</td>
<td>19.00</td>
<td>26.00</td>
<td>3.00</td>
<td>21.80</td>
</tr>
<tr>
<td>All nonbeef farms</td>
<td>39</td>
<td>21.26*</td>
<td>17.00</td>
<td>28.00</td>
<td>4.00</td>
<td>21.80</td>
</tr>
<tr>
<td>West nonbeef</td>
<td>16</td>
<td>21.50</td>
<td>18.00</td>
<td>26.00</td>
<td>3.00</td>
<td>21.80</td>
</tr>
<tr>
<td>Middle nonbeef</td>
<td>19</td>
<td>21.26</td>
<td>17.00</td>
<td>28.00</td>
<td>4.00</td>
<td>21.80</td>
</tr>
<tr>
<td>East nonbeef</td>
<td>4</td>
<td>20.25</td>
<td>18.00</td>
<td>23.00</td>
<td>5.00</td>
<td>21.80</td>
</tr>
</tbody>
</table>

*The mean market hog price expectations of all beef farm operators and all nonbeef farm operators were significantly different from each other at the 0.05 level.


Tennessee farm operators' average 1970 price expectations for market hogs were within $.50 per hundredweight of the actual 1970 average price for market hogs in Tennessee. Their market hog price expectations were much more accurate on the average than were their feeder calf price expectations and not significantly different from average market hog prices received by farmers in 1970.

The corn price expectations of nonbeef farmers were higher than those of beef farm operators on the average, but nonbeef farm operators did not have significantly different average corn price expectations from those of beef farm operators (Table 3). Among beef farmers, there was no significant difference in corn price expectations between West, Middle, and East Tennessee. The same was also true for nonbeef farmers.

On the average, Tennessee farm operators' 1970 corn price expectations underestimated the average Tennessee market corn
Table 3. Number, average, and range of 1970 corn price expectations of a sample of Tennessee farm operators by type of farm and by region and average market price of corn in Tennessee for calendar 1970

<table>
<thead>
<tr>
<th>Farm type and region</th>
<th>Number</th>
<th>1970 price expectations</th>
<th>Average</th>
<th>Low</th>
<th>High</th>
<th>Average market price*</th>
</tr>
</thead>
<tbody>
<tr>
<td>All farms</td>
<td>210</td>
<td></td>
<td>1.24</td>
<td>.80</td>
<td>2.00</td>
<td>1.43</td>
</tr>
<tr>
<td>All beef farms</td>
<td>135</td>
<td></td>
<td>1.23</td>
<td>.90</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>West beef</td>
<td>62</td>
<td></td>
<td>1.23</td>
<td>.90</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Middle beef</td>
<td>42</td>
<td></td>
<td>1.24</td>
<td>.90</td>
<td>1.60</td>
<td></td>
</tr>
<tr>
<td>East beef</td>
<td>31</td>
<td></td>
<td>1.22</td>
<td>.90</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>All nonbeef farms</td>
<td>75</td>
<td></td>
<td>1.26</td>
<td>.80</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>West nonbeef</td>
<td>28</td>
<td></td>
<td>1.26</td>
<td>.80</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>Middle nonbeef</td>
<td>26</td>
<td></td>
<td>1.25</td>
<td>1.00</td>
<td>1.60</td>
<td></td>
</tr>
<tr>
<td>East nonbeef</td>
<td>21</td>
<td></td>
<td>1.26</td>
<td>1.00</td>
<td>1.40</td>
<td></td>
</tr>
</tbody>
</table>


Price for calendar 1970 by about $.20 per bushel and the 1970 harvesttime corn price by an even larger amount. The average of all farmers' 1970 price expectations for corn was significantly different from the 1970 average market price of corn. However, it should be noted that corn prices in 1970 were influenced by abnormal conditions. The supply of corn was severely reduced due to the unexpected occurrence of corn blight in that year. Farm operators formulating 1970 corn price expectations in 1969 would not have had any reason to consider the influence of corn blight on corn prices in 1970.

**METHOD OF ANALYSIS**

Price expectations for feeder calves and corn were analyzed using the total number of farmers giving price expectations for each of these commodities since these expectations did not differ significantly by type of farm. Market hog price expectations of beef and nonbeef farmers were significantly different from each other. Therefore, price expectations for market hogs were analyzed separately for these two subgroups.
State average market prices for each of the three commodities were used in this study. This appeared justified since there were no significant differences between sample regions in the price expectations of either beef or nonbeef farm operators for any of the three commodities studied.

Three price expectation models were used in this study: 1) current price, 2) average price, and 3) price trend.

**Current Price Model**

The current price model is based on the assumption that price expectations are a function of current market prices. Ordinary least squares regression analysis was used to examine the relationship between current market prices and farmers’ price expectations. Cross-sectional observations of farm operators’ price expectations for 1970 were the dependent variables and average market prices for the week before farm operators were interviewed in 1969 were the independent variables used in the regression analysis.

**Average Price and Price Trend Models**

The average price model is based on the assumption that price expectations are formulated by projecting an average market price from some past period into the future. The periods 1968, 1966-68, 1964-68, 1959-68, and 1954-68 were used in this study with the average price model to analyze farmers’ price expectations.

The price trend model is based on the assumption that price expectations are formulated by projecting simple linear market price trends from some past period into the future. Market price trends for 1966-68, 1964-68, 1959-68, and 1954-68 were used in this study to analyze farmers’ price expectations.

Testing of the average price and price trend expectation models consisted of three steps. First, commodity prices were projected

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9The trend model was based on the linear model: $Y_i = a + bX_i$; where: $Y_i$ = average commodity price received by farmers in year $i$, and $X_i$ = time measured in years, i.e., 1, 2, 3, etc., with the most recent year assigned the largest value. The trend model was estimated by ordinary least squares regression analysis.
for 1970 using each of the price expectation models for the time periods given above. Second, the averages of the 1970 price expectations obtained from farm operators were calculated for the three commodities. Finally, the commodity price projections for 1970 based on the price expectation models were compared with the farm operators' average 1970 price expectations for that commodity.

The average price and price trend expectation models for corn were tested using both average calendar-year corn market prices and average harvest-time corn market prices in an attempt to determine which was more closely related to farm operators' corn price expectations.

RESULTS OF ANALYSIS

Current Price Model

A relatively low proportion of the variation in farm operators' price expectations for feeder calves, market hogs, and corn was explained by variation in market prices for these commodities during the study period (Table 4). However, two of the current price regression coefficients were significantly related to farmers' price expectations. There was a significant positive relationship between current feeder calf market prices and the feeder calf price expectations of farm operators.

The market hog price expectations of farm operators were negatively related to current market hog prices. This suggests that farmers tend to expect future market hog price movements to be the opposite of current price movements. Although the current market hog price regression coefficients for both beef and nonbeef farm operators were negative, only that for beef farm operators was significant.

The analysis of the current price expectation model for corn gave no indication that corn price expectations of farm operators

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10 Prices were obtained from: *Tennessee Agricultural Statistics, Tennessee Crop Reporting Service, Annual Bulletins* for various years.

11 Time differences in obtaining price expectations from farm operators were ignored in analyzing the average price and price trend expectation models. The analysis of the current price model discussed later in this report appears to justify this approach since no more than about 5% of the variation in farmers' price expectations was explained by the previous week's average commodity prices.

12 Average price for October and November.
Table 4. Summary of current price expectation model for feeder calves, market hogs, and corn

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Intercept</th>
<th>Regression coefficient for current price</th>
<th>R-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder calves</td>
<td>14.7749</td>
<td>0.4103*</td>
<td>0.0468</td>
</tr>
<tr>
<td></td>
<td>(4.6204)</td>
<td>(0.1377)</td>
<td></td>
</tr>
<tr>
<td>Market hogs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef farms</td>
<td>45.0041</td>
<td>-0.8799*</td>
<td>0.0520</td>
</tr>
<tr>
<td></td>
<td>(10.4046)</td>
<td>(0.4076)</td>
<td></td>
</tr>
<tr>
<td>Nonbeef farms</td>
<td>29.1591</td>
<td>-0.3083</td>
<td>0.0065</td>
</tr>
<tr>
<td></td>
<td>(16.1273)</td>
<td>(0.6290)</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>1.0899</td>
<td>0.1091</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>(1.1813)</td>
<td>(0.8592)</td>
<td></td>
</tr>
</tbody>
</table>

*Regression coefficient significantly different from zero at 0.05 level.

Note: The figures in ( ) below the coefficients are standard errors.

were related to current corn prices. The regression coefficient for current price in this model was positive, but its standard error was so large that no meaningful inferences can be made concerning it.

These results indicate that weekly market price fluctuation during June-September, 1969, for feeder calves, market hogs, and corn had relatively little influence on Tennessee farmers' price expectations for these three commodities, respectively. Therefore, the date price expectations were obtained during the study period was ignored in testing the average price and price trend models discussed in the next section.

Average Price and Price Trend Models

Feeder Calves

The 1970 feeder calf price expectations of farm operators seem best explained by the last year average price model or the price
Tennessee farm operators appear to recognize the recent upward trend in feeder calf prices in formulating price expectations. All price expectation models based on average prices from past periods—except the model using last year's price—underestimated their feeder calf price expectations.

However, Tennessee farm operators appear rather cautiously optimistic when projecting short-term price trends for feeder calves into the future. On the average, their 1970 feeder calf price expectations were less than 1970 price projections based on trend models for either 3 or 5 years.

**Market Hogs**

The average 1970 market hog price expectations of both beef and nonbeef farmers were significantly different from 1970 projected prices for all average price expectation models (Table 5). Therefore, farm operators' average 1970 market hog price expectations do not appear based on the simple projection of averages from historical time periods. However, as with feeder calves, Tennessee farmers do appear to recognize a general upward trend in market hog prices. Their average 1970 market hog price expectations were consistently higher than 1970 price projections for all time periods used for the average price model.

Analysis of farmers' price expectations for market hogs also suggests that they are aware of price cycles in addition to price trends. The negative regression coefficients obtained for current market hog price in the analysis of the current price model indicate that farmers expect cycles in market hog prices. In addition, average 1970 market hog price expectations of both beef and nonbeef farm operators were greater than, and significantly different from, the 1970 projected price for the 3-year trend model.

The price trend model for 5 and 10 years gave 1970 projected prices for market hogs which were closer to the average 1970

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13 All other time periods studied for the average and trend models gave 1970 projected prices significantly different from farmers' average 1970 feeder calf price expectations. Tests for significant differences were based on the hypothesis: $H_0: \mu_{CP} = P_{1970}$ vs. $H_A: \mu_{CP} \neq P_{1970}$; where: $\mu_{CP}$ = average expected price of feeder calves in 1970, and $P_{1970}$ = price of feeder calves projected by appropriate model; this was tested at the 0.05 level using the $t$ test.

Tests for differences between price expectations and model price projections for market hogs and corn, discussed below, were made in a similar manner.
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Units</th>
<th>Average 1970 price expectations</th>
<th>1970 price projections for average price models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder calves</td>
<td>$/cwt.</td>
<td>28.52</td>
<td>28.54</td>
</tr>
<tr>
<td>Market hogs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef farms</td>
<td>$/cwt.</td>
<td>22.55</td>
<td>18.50*</td>
</tr>
<tr>
<td>Nonbeef farms</td>
<td>$/cwt.</td>
<td>21.26</td>
<td>18.50*</td>
</tr>
<tr>
<td>Corn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar year</td>
<td>$/bu.</td>
<td>1.24</td>
<td>1.20*</td>
</tr>
<tr>
<td>Harvesttime</td>
<td>$/bu.</td>
<td>1.24</td>
<td>1.11*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1970 price projections for price trend models</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1966-68</td>
</tr>
<tr>
<td>Feeder calves</td>
<td>$/cwt.</td>
<td>28.52</td>
<td>31.25*</td>
</tr>
<tr>
<td>Market hogs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef farms</td>
<td>$/cwt.</td>
<td>22.55</td>
<td>13.50*</td>
</tr>
<tr>
<td>Nonbeef farms</td>
<td>$/cwt.</td>
<td>21.26</td>
<td>13.50*</td>
</tr>
<tr>
<td>Corn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar year</td>
<td>$/bu.</td>
<td>1.24</td>
<td>1.07*</td>
</tr>
<tr>
<td>Harvesttime</td>
<td>$/bu.</td>
<td>1.24</td>
<td>0.77*</td>
</tr>
</tbody>
</table>

*Significantly different from average price expectations at the 0.05 level.
market hog price expectations of Tennessee farmers than any other average or trend model tested. However, the average 1970 market hog price expectations of beef farmers were significantly different from the 1970 price projections of the price trend model even for these two time periods.

Corn

The corn price expectations of farm operators appear bounded by calendar year and harvesttime corn price projections of the average price model (Table 5). Farm operators' average 1970 corn price expectations were generally less than 1970 average price model projections of calendar-year corn prices and greater than the same projections of harvesttime corn prices.

Neither short-run nor long-run corn price trends seem to explain the average 1970 corn price expectations of farm operators. Both the 3-year and the 15-year trend models gave 1970 projected corn prices significantly different from average 1970 corn price expectations of farm operators regardless of whether calendar-year or harvesttime corn prices were considered.

Average 1970 corn price expectations of the farm operators in this study seem best explained by the average calendar-year corn price during the 1959-68 period or the projection of the harvesttime price trend during this same period. Farm operators may consider this a "normal" period. The general downward trend in corn prices following World War II appeared to end about 1959-60 and the average annual price of corn in Tennessee has ranged between $1.15 and $1.35 per bushel since that time, while a fairly stable upward trend in harvesttime prices was established in the early 1960's.

The results of this analysis do not indicate that one corn price, average calendar-year or harvesttime, is more useful in explaining farmers' price expectations than the other.
LIMITATIONS OF STUDY AND CONCLUSIONS

Limitations of Study

The cross-sectional price expectation data in this study has limitations for analyzing how farm operators formulate price expectations. Time series data would have been more desirable for investigating the influence of current market prices on farmers' price expectations.

Farmers were asked to give the most likely price they expected for a commodity during a calendar year. Whether or not farm operators formulated their responses as average prices for a calendar year as assumed in this study is open to question. They may have based their expectations on a particular period during the year in which they usually market a commodity or, for corn, on the crop year instead of the calendar year. Since the prices of some commodities vary considerably during a year, it would have been desirable to obtain price expectations for periods of shorter duration.

No attempt was made in this study to obtain an indication of the conviction with which a price expectation was held by a farm operator. The concept of a probability distribution of expected prices was omitted from this study. Finally, no attempt was made to investigate how farm operators formulated price expectations during the data-gathering process itself.

The models used to analyze farm operators' price expectations in this study are rather elementary. And the method used to test the average price and price trend models cannot prove that a particular model was used by farm operators in formulating price expectations even if no significant differences were found between the average price expectations of farmers and price projections based on the models. Certain models may, however, be rejected as an explanation of farmers' average price expectations if the 1970 projected price based on the model is significantly different from farm operators' average price expectations.

The method of analysis used in this study does not consider individual differences between farmers in the formulation of price expectations. In fact, many different models may be used by different farmers in formulating price expectations for a given commodity. And over time, the type of price expectation model used by a farmer for a particular commodity may vary.
Conclusions

Significant differences in the market hog price expectations of beef and nonbeef farmers were observed in this study indicating that beef and nonbeef farmers in Tennessee formulate market hog price expectations differently.

The average of 1970 market hog price expectations of Tennessee farm operators observed in this study was fairly close to the average 1970 actual market price for hogs. However, these same farm operators did not formulate 1970 feeder calf and corn price expectations as accurately as their hog price expectations using 1970 average market prices for comparison.

Although Tennessee farmers appeared to recognize the recent upward trend in feeder calf prices, they were rather conservative in formulating feeder calf price expectations. The average of 1970 feeder calf price expectations of Tennessee farm operators seemed to be based on either 1970 price projections of the average price model for 1968 or 1970 price projections of the price trend model for 1954-68.

None of the average price models, nor any of the price trend models, analyzed in this study appeared very useful in explaining the average 1970 market hog price expectations of Tennessee farmers. Farmers did appear to recognize both trends and cycles in formulating market hog price expectations. A model incorporating both price trends and cycles might prove more useful in explaining farmers' market hog price expectations.

Farmers appeared to base their corn price expectations on average corn prices from past years. Their average 1970 corn price expectations appeared bounded by average model projections of calendar-year and harvesttime corn prices which were both fairly consistent for all time periods used in this study.
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