AN ECONOMIC ANALYSIS OF CHARACTERISTICS AFFECTING OKLAHOMA FOOD PRODUCERS' FARM POLICY PREFERENCES

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CHAPTER I

OVERVIEW

Introduction

Many changes have occurred within the domestic and international commodity markets during the past decade. Continued changes will have a significant affect on the nations' food producers who continuously cope with income instability in the midst of an evolving economy (Variyam et. al.). Since the 1930s, the federal government has worked to stabilize producer incomes and prices by providing compensatory benefits ranging from direct payments to commodity loans. As we enter the 1990s agricultural programs are being examined as a source of reductions in a continuous effort to balance the budget. With the Bush administration attempting to reduce the federal deficit, the future of several agricultural programs has become a major concern among the agricultural sector, more specifically, the nations' food producers (Penn).

In an effort to determine how these producers thought about possible changes in current and future farm legislation, a nationwide survey of food producers was conducted in twenty one states during the fall of 1989. This survey involved issues concerning current and proposed farm commodity programs, federal spending, conservation programs and international trade and development.

Oklahoma became a part of this effort in the winter of 1989 when over 1700 of the states agricultural producers were asked to respond to a survey

designed to determine policy preferences within the state. The results provided by those responding to the survey will be used to determine what factors influence policy opinions and may serve in aiding the legislative process within the state.

Background

Early in the nation's history, policy for U.S. agriculture was largely limited to land disbursement and the creation of institutions to increase productivity. After World War I, farm prices collapsed and several changes took place. The Great Depression contributed to passage of the Agricultural Adjustment Act of 1933, which emphasized compensation policies rather than the developmental programs of earlier years. Agricultural policy has taken on many changes since 1933, but the original goals of balancing supply and demand, providing "fair" prices for producers and consumers, and offering support for the nations' food producers remain the same in the 1990s (Amstertz).

Today, as in early years, agricultural policy is unique in that no other domestic sector has price and income programs resembling that of agriculture and it relates to a resource essential to human survival - - - food. It is for these reasons that food legislation is often a highly debated topic among the several different groups affected by its outcome. J.B. Penn discussed six characteristics which he considered key to agricultural policy. The first was the fact that Congress typically has the greatest role in determining agricultural policy. Although the administration is responsible for submitting a comprehensive farm bill proposal, several changes often occur in Congress before the final legislation becomes law.

A second factor involves the belief that agricultural policy is still largely bipartisan. Serious policy decisions are often left to the leadership of both the Democratic and Republican parties. An example of this is The Food Security Act of 1985 which (1985 FSA) is sometimes referred to as the Dole-Foley Bill (Penn).

Quite important is the fact that economic conditions and current events play a major role in influencing agricultural policy. Penn cites the 1985 FSA as an example. He believes this legislation was somewhat more generous than it would have been due to a perceived financial crisis in 1985.

Another characteristic to be considered is the strong influence exerted on an administration policy objective by agencies in the executive branch. These agencies include the Office of Management and Budget, the Council of Economic Advisers and other groups whose influence periodically prevails over the Secretary of Agriculture and the USDA.

A additional attribute of agricultural policy is that it is more evolutionary than revolutionary. This tends to make any administrative attempt to shift farm policy direction nearly impossible, thus preventing any wholesale legislative revisions.

The final characteristic discussed by Penn is the idea that agricultural policy is somewhat ironic. Prior to 1990 farm legislation, involvement by the Bush administration in markets and farmers' production decisions had led to programs whose costs far exceeded all others. The irony is that all of this was taking place during a time of concern over a reduction in the federal deficit and a balanced budget (Penn).

As mentioned previously, the strong pressure from U.S. consumers to continually lower food prices has left the nations' food producers "holding the bag" (Cochrane). Cochrane summed up this situation by stating that "there are

difficult problems in the farm sector, some that have been around a long time, some that are new, some that are beyond the capacity of a single farmer or a group of farmers to cope with individually" (Cochrane). Although farmers remain at the center of the turmoil, processors and consumers are eventually affected by the economic problems faced by food producers. Some maintain that without effective government involvement, whole communities, regional areas and even the nation as a whole will eventually suffer the impacts of a declining agricultural sector as characterized by declining income, farm numbers and increasing food prices (Cochrane). Runge and Myers discuss the implications of imperfect information and incomplete risk markets when evaluating agricultural policies. The authors stated a need for government participation in the form of corrective policies as a means of improving social welfare and thus offsetting market failures in agriculture and other sectors caused by risk and uncertainty. Furthermore, distributive issues have a tendency to control the policy making process, and therefore stress the necessity to obtain information about social preferences. This information can provide a greater explanation of the perceived irrelevance of policy analysis which is primarily concerned with price and income stability (Runge and Myers).

Despite the progressiveness of agricultural policy during the past 60 years, there are those who believe government intervention has hindered rather than helped the problem of agricultural compensation. Some think that without government intervention, agricultural adjustment would be more efficient and much less of an ordeal. Arguments in favor of government-free agriculture recognize price supports as barriers which prevent resources from migrating to a more profitable use (Hathaway). A more recent example of efforts to reduce government involvement came as a result of the Bush administrations' attempts

to move the U.S. toward a free market through the reduction of national subsidies.

It is important to understand the factors influencing program participation when conducting economic analyses of alternative farm program effects. Having an understanding of these factors will allow for an in-depth evaluation of current and alternative policies and serve as an aid to policy makers. Despite the fact that the agricultural sector receives considerable support through government programs, participation in these programs varies somewhat between farms and/or commodities. Because the decision to participate is an individual one, farmer participation in government programs may vary substantially as the needs and characteristics of each farm and its operator(s) change (Goodwin and Featherstone).

Previous Work

Despite the fact that the agricultural population has continued to decline, farm policy has maintained a high ranking in regard to issues discussed during national election campaigns (Cochrane). Since their peak of 6.8 million in 1935, the number of farmers has dropped to a level which represents less than 5% of the eligible voting public. In spite of the number of people involved, farm policy, and farmers' opinions concerning farm policy, have received considerable political attention. This may be attributed to a concern for maintaining sufficient food reserves or other reasons such as preserving the rural way of life, but regardless of the reason, the political attention given to the agricultural sector has led researchers and policy makers to focus on farmers' opinions of public policy (Cochrane).

A great deal of the published work in this area involves the use of survey data to determine farmers' preferences. This work involves determining what proportion of the population favors a specific policy, support for policies by subgroups, and the correlation between individual characteristics and policy preferences (Orazem et.al).

Numerous studies have analyzed operators' preferences regarding farm legislation (Orazem et.al; Zulaf et.al; Barkley and Flinchbaugh; Guither et.al; and Edelman and Lasley). Results of these studies have shown that a producer's opinions regarding agricultural legislation may be correlated with anything from his/her financial situation to political affiliation. Having an understanding of the factors which influence farmer participation in farm programs will allow for an in-depth evaluation of current and alternative policies and serve as a valuable aid to policy makers (Goodwin and Featherstone).

Variyam et. al used results from a nationwide survey to determine citizen's preferences regarding agricultural policies. Survey data provided responses to multiple questions concerning public opinion of the government role in protecting farmers. Previous studies in this area indicated that income, education, location of residence, political affiliation, sex and age were all statistically significant factors. The authors expanded on these variables by including such characteristics as race, agricultural education, farm indebtedness, employment status and degree of religion. Estimates of the economic and socio-demographic variables influence on policy preferences were computed using a multiple-indicator model. After final testing, income, education, sex, age, race and region of the country offered coefficient estimates that had a statistically significant influence on policy preferences. Further results showed that individuals act in their own self-interest in deciding

preferences for government policy in agriculture which falls in line with the utility maximization theory (Variyam et.al).

Prior to 1990 farm legislation, Kansas operators were asked to respond to a survey designed to determine farm operator opinions on farm and public policy. While analyzing this survey data, Barkley and Flinchbaugh incorporated a logistic multiple regression model to determine which characteristics influenced the opinions of the survey participants. Eight questions, having ordered responses, were chosen to conduct the analysis. Age, gross sales, education, off farm income and farm type were each broken down into separate categories as a means of providing a more detailed analysis. As a result of this categorization, the authors were able to determine that each of the previous characteristics was statistically significant for one or more questions, but the significance was dependent upon which category of each characteristic was being analyzed. Furthermore, as in similar studies, economic self interest was found to be a major determinant of economic behavior (Barkley and Flinchbaugh).

Kansas, once again, served as the backdrop for determining factors affecting farm program participation after the 1985 FSA. Goodwin and Featherstone used samples drawn from over 2,000 Kansas farms for eight years to provide data for empirical evaluation of factors influencing farmers' participation decisions. Tobit regression was implemented to determine the effects of these various factors on the probability and expected participation levels in farm programs. This particular analysis considered the discrete choice of whether to participate in farm programs and the expected level of participation.

Results of the analysis implied that differences in farm size, income, types and farming practices all influenced the level of government program participation (Goodwin and Featherstone).

Perry et al went one step beyond analyzing producers participation decisions. The authors chose to implement empirical analysis in an attempt to evaluate government program decisions at the farm level. A mixed integer-linear programming (MIP) model was implemented because of its ability to maximize net present value of present and future return resulting from crop production and program participation.

The MIP model showed that participation decisions on a Texas cotton and grain sorghum farm were highly dependent upon resource levels and base acreage restrictions. Payment limitations were not considered an influential factor. Further results showed that some farm programs, such as limited cross compliance, "discouraged changes in base acreage mix and resulted in less desirable crop mixes and rotations" (Perry et.al).

Kramer and Pope followed a similar path by analyzing the net benefits of participation in farm commodity programs through the use of a normative risk model which was based on stochastic dominance theory. In conducting their analysis, the authors found that participation decisions were heavily dependent upon farmer expectations, farm size, loan rates and attitudes toward risk. Additional results showed risk averse groups preferred program participation because of its income stabilizing effects.

Objectives

The primary objectives of this study are to: 1) present the opinions held by a sample of Oklahoma food producers concerning current and future farm

legislation; 2) provide policy preferences in accordance with survey respondent's age, gross sales, education, nonfarm income and previous year enrollment in certain agricultural programs; 3) determine which of the previous characteristics (if any) has a statistically significant influence upon survey responses concerning specific policy proposals; 4) determine if survey data can be used to estimate probabilities associated with food producers' policy preferences, given their characteristics.

Presenting the opinions held by a sampling of Oklahoma food producers will involve providing results of a survey addressing policy preferences among state farm operators. The second objective can be obtained by classifying survey participants according to their individual characteristics and providing response rates associated with each of these groups. The third objective will be achieved through the use of chi square analysis which is used to determine the level of interaction existing among individual characteristics and responses to alternative policy proposals. Finally, the fourth objective will be obtained through the implementation of a multinomial logit model designed to estimate probability levels given individual characteristics.

In the following chapters, U.S. agricultural policy and farm operator opinions regarding these policies will be discussed in further detail. The second chapter will provide survey results, both overall and according to individual characteristics, and discuss which characteristics have a significant influence upon responses to certain policy proposals.

The third chapter will focus on the multinomial logit model. Characteristics such as age, education and nonfarm income will be utilized and the model will be formulated to determine probability levels given these and other factors. Lastly, chapter four will include the summary and conclusions for each objective along with suggestions for further research.

CHAPTER II

PROCEDURE

Data Collection

Prior to the enactment of 1990 farm legislation, a multi-state study was conducted to determine the opinions and preferences of the nations' farm operators regarding current and future farm legislation. As a part of this effort, over 1700 Oklahoma food producers were randomly chosen to participate in a national mail survey. Questions comprising this survey involved farm commodity programs, conservation programs, crop insurance, international trade and development, federal spending and personal characteristics such as gross sales, education and nonfarm income.

The sample was selected by the Oklahoma Agricultural Statistics Service. Grain farmers with minimum gross sales of $40,000 were over sampled relative to the population as a means of insuring input by sub-population directly affected by farm programs. Of the 1700 participants who were surveyed, 475 producers responded, providing a rate of 27 percent (Ray and Sanders). A breakdown of the primary source of receipts for those responding to the survey can be found in Table 1. A copy of this survey and corresponding results is in the appendix.

TABLE 1

PRIMARY SOURCE OF FARM RECEIPTS OF OKLAHOMA SAMPLE RESPONDENTS, 1989

	Sample Respondents	1987 Census
Grains[1]	23%	14%
Livestock[2] or Mixed[3]	56%	68%
Other[4]	17%	18%

1 Census percentage includes cash grains and general farms which are primarily crop.

2 Livestock includes only cattle, hogs, sheep and goats.

3 Sample percentage includes mixed grain and livestock farms.

4 Other includes dairy, poultry, animal specialities and field crops except grains. Sample percentages do not add to 100 because of rounding and no replies.

Source: Ray and Sanders.

Operator Characteristics and Policy Opinions

Initial analysis was conducted using overall results from participant responses. These results were summarized and percentage values were calculated to provide a general idea of the preferences held by those responding to the survey. Further analysis involved the sub-categorization of

each respondent according to his or her personal characteristics. Age, gross sales, off farm income and education were broken down into sub-categories to provide a closer look at responses within each of the previously mentioned groups, i.e. age under 35, gross sales over $500,000 etc. These sub-categories are as follows:

	Age		Off-farm income
1.	Under 35	1.	Under $10,000
2.	35 to 49	2.	$10,000-19,999
3.	50 to 64	3.	$20,000-40,000
4.	65 or over	4.	Over $40,000
	Gross sales		**Education**
1.	Under $40,000	1.	Grade school
2.	$40,000-99,999	2.	Some high school
3.	$100,000-249,999	3.	High school graduate
4.	$250,000-499,999	4.	Some college
5.	Over $500,000	5.	College graduate

Also among the characteristics being analyzed was previous year participation in certain government programs. Previous year program enrollment was treated as seven separate characteristics (See survey section G,question 6). Participation in each program was represented by a yes or no response and thus prevented the need for any sub-categorization. Five programs will be analyzed in this study and are listed below. The remaining two, previous year enrollments in rice and other programs, were excluded due to an insufficient number of responses. Also livestock and farm type were not analyzed in this study due to insufficient detailed data.

Previous Year Program Enrollment for:

1. Wheat
2. Feed Grains
3. Cotton
4. Conservation Reserve Program
5. 1988 Disaster Program

All of the previously listed characteristics were selected because they were proven to be significant in earlier research and/or perceived as having some influence on food producers responses to agricultural legislation. The number of participants within each of the characteristic classifications are available in Table 2.

After examining response rates, chi square testing was implemented to determine if any correlation existed between personal characteristics and responses to specific policy proposals. The chi square analysis did not include any of the previously listed sub-categories i.e. (age under 35, gross sales over $500,000 etc.) because it would involve assigning 0,1 values to these groups and cause the exclusion of data associated with the experiment, thus leading to erroneous conclusions (Mendenhall et al). Therefore age, education, gross sales and nonfarm income were tested with survey responses as a whole. Previous year program participation could be tested as five different characteristics due to its format and therefore provided a total of nine characteristics to be used in chi square analysis.

Chi Square Analysis

Categorization of participant responses and personal data was conducted using chi square analysis. The chi square test is used in this study to

TABLE 2

CHARACTERISTICS OF RESPONDENTS TO OKLAHOMA FARM OPERATOR OPINION SURVEY, 1989

	Percent of Respondents
Operator Age (Years)	
Under 35	6
35 - 49	31
50 - 64	39
65 and older	20
No response	4
Annual Gross Sales	
Under $40,000	17
$40,000 - $99,999	28
$100,000 - $249,999	32
$250,000 - $499,999	13
Over $500,000	5
No response	5
Education	
Grade School	6
Some High School	6
High School Graduate	28
Some College or Tech. School	21
College Graduate	35
No response	4
Off-farm Income	
Under $10,000	25
$10,000 - $19,999	11
$20,000 - $39,999	10
Over $40,000	9
No response	45
Previous Year Program Enrollment	
Price Support & Acreage Reduction for Wheat	75
Price Support & Acreage Reduction for Feed grain	27
Price Support & Acreage Reduction for Cotton	19
Price Support & Acreage Reduction for Rice	.2
Conservation Reserve Program	16
1988 Disaster Program	28

Source: Ray and Sanders

determine if respondents' policy preferences are dependent upon the characteristics being tested. A significant chi square value means responses to the proposal being tested are significantly dependent upon a characteristic at either the one, five or ten percent confidence levels. More specifically, the chi square test can be used, in a comparative situation, as a quantitative test of the difference between the observed frequency (fi) and the expected frequency (Fi). In this study, the observed frequency represents the actual number of participants who selected a specific response. Expected frequency is the number of participants who would be expected to choose the same response if that response were in no way influenced by the characteristics being tested i.e. age, education etc. The null hypothesis used in chi square analysis is as follows: No significant correlation exists between a theoretical (expected) set of frequencies and an observed set of frequencies (Roscoe and Byars, Cochran).

In a comparative situation, such as this one, chi square analysis serves as a test of independence between two different data sets. Large differences between observed and expected frequencies result in large chi square values. Large values of chi square will lead to the rejection of the null hypothesis that the data sets being tested (i.e. responses to a specific survey question and a personal characteristic) are independent (Mirer). Therefore, the greater the difference between the number of observed and expected responses to a survey question, the higher the level of dependence occurring between the actual responses to that question and the personal characteristics comprising the test.

In this analysis, n x 5 or n x 3 contingencies are used to test various hypothesis of correlation, using the chi square method. During this study n will represent one of the following: age, off farm income, education, gross sales or a previous year program enrollment. Testing of a question with three responses

(yes, no, not sure) will involve an n x 3 contingency and analysis of a question containing five responses (A, B, C, D, E) will result in an n x 5 contingency.

As mentioned earlier, previous year program enrollment is comprised of the following five programs: wheat, feed grains, cotton, the Conservation Reserve and disaster programs. This particular question was formatted in a manner such that a respondent either participated in the program or they did not. Consequently, participation in a particular program, (wheat for example) resulted in a value of 1 and non-participation a value of 0. This participation=1, 0 otherwise format allowed for the use of chi square analysis for each of the five previous year participation alternatives.

An example of the chi square procedure can be found in Figure 1. In this table, chi square analysis is being used to determine if a participants' age has an influence upon his or her preferences toward soil conservation and water quality compliance. Each participant represents an observation in the data and there are measurements on two variables: age and responses. The expected frequencies (Fi) in this illustration are the frequencies that would be predicted if age were independent of responses to the question. The expected frequencies are calculated by taking the proportion of participants in each age group and the frequency of each response. As shown on the table, 41 percent of those responding to the question are between 50 and 65 years of age; similarly, 60 percent of the total responses were yes. Based on these observed relative frequencies, one would predict that if age were independent of responses, then the previous percentages would remain the same i.e. 41 percent of the participants would be between 50 and 65 and 60 percent of the responses would be favorable. The age specific predictions for the other responses are computed with the same procedure, which involves multiplying the total number of participants within a certain age group by the relative frequency of each

response. For example, total number of participants under 35 (28) times the relative frequency of a favorable response (60%) is equal to an expected frequency of 16.7. The procedure taking place next, within the contingency table, involves calculating a chi square value for each cell. This is done using the following formula:

Cell chi square = $(fi - Fi)^2/Fi$ where i = 1 to K or 3 in this example and

fi = observed frequency

Fi = expected frequency

K = number of cells

Observed Frequency Expected Frequency Deviation Cell Chi Square	Yes	No	Not Sure	Total
Under 35	23	2	3	28(6%)
	16.688	9	2.313	
	6.313	-7	0.688	
	2.388	5.444	0.204	
35 to 49	98	37	14	149(33%)
	88.801	47.893	12.306	
	9.199	-10.890	1.694	
	0.953	2.478	0.233	
50 to 65	95	76	12	183(41%)
	109.060	58.821	15.114	
	-14.06	17.179	-3.114	
	1.814	5.017	0.642	
Over 65	51	29	8	88(20%)
	52.446	28.286	7.268	
	-1.446	0.714	0.732	
	0.040	0.018	0.074	
Total	267(60%)	144(32%)	35(8%)	

Overall chi square value =19.304 with 6 degrees of freedom. This value is significant at a 1 percent confidence interval.

Figure 1. Contingency Table of Age by Responses to Soil Conservation and Water Quality Compliance as a Condition for Receiving Farm Program Benefits.

Again, using those under 35 years of age with a yes response we get $(6.313)^2/16.688 = 2.388$ which is the cell chi square given for the particular age group and response.

After calculating the individual cell chi square values for each age group and corresponding responses, the values (12 in this example) are then summed to find the calculated chi square value for the entire table which is represented by the following formula:

Calculated chi square = Summation of $(fi - Fi)^2/Fi$

This value (19.304) is then used to test the following hypothesis:

Null hypothesis: Ho : No significant correlation exists between rows and columns;

Alternative hypothesis: H1 : Significant correlation exists between rows and columns

where: Rows represent age, gross sales, off farm income, education and the five previous year program participation alternatives and columns represent responses to questions comprising the analysis.

The decision rule is:

If chi square calculated is $\leq$ chi square tabulated, accept the null hypothesis and no dependence exists between rows and columns.

If chi square calculated is $\geq$ chi square tabulated, reject the null hypothesis and dependence does exist between rows and columns.

The chi square value has a distribution with (R - 1) x (C -1) degrees of freedom where R and C represent the number of rows and columns in the main body of the contingency table. Returning to the example, with three rows and four columns there are six degrees of freedom for the relevant chi square

distribution. At a 1 percent significance level the tabulated chi square value is 16.81, which is less than the calculated chi square of 19.30 and allows us to reject the null hypothesis, thus proving dependence exists between age and responses to the question in Figure 1 at a 1 percent significance level.

Tabulated chi square values will vary with degrees of freedom and significance was tested at 10, 5 and 1 percent levels for all questions used in this study (Mirer).

Survey Results

Five major objectives have traditionally been foremost for twentieth century U.S. agricultural legislation (Johnson). These are as follows:

1. Raising the average level of farm income.
2. Reaching a reasonable level of stability for farm prices and incomes.
3. Providing a satisfactory supply of food and fiber for American consumers at reasonable prices.
4. Managing the supply of key farm products so that objectives 1 and 2 may be achieved without imposing heavy costs upon taxpayers or creating unacceptably high surpluses.
5. Improving the capability of American agriculture in order to increase exports, while carefully protecting it from imports of competitive agricultural products.

The 1985 FSA attempted to achieve these objectives by not only continuing traditional farm programs such as marketing loans and target prices, but also by incorporating other traditional programs such as domestic food assistance, foreign aid, rural development and research and extension (Knutson et al).

Survey participants were asked to provide responses to several questions pertaining to the previously mentioned legislation. Results from twenty of these questions were analyzed using the three procedures discussed earlier in this chapter. These questions were selected because they pertained to federal legislation which has and will continue to affect many of the nations' food producers during the 1990s. Their preferences concerning these program policies provided an opportunity to evaluate farm legislation from a producer perspective.

1985 Farm Bill Commodity Programs

Continuations and Changes

Initially, those participating in the survey were given alternatives involving the future of programs instituted by the 1985 FSA and overall survey results indicated that Oklahoma farmers were generally satisfied with this agricultural legislation. This was exemplified by the fact that the greatest percentage of those responding (35 percent) expressed an interest in maintaining the programs set forth by the 1985 Farm Bill. However, another 29 percent preferred the idea of eliminating set-aside, price supports, deficiency payments and government storage programs. Twenty percent desired mandatory supply control programs with all farmers participating and 13 percent expressed an interest in separating government payments from production requirements (decoupling).

Results by individual characteristics further supported a general contentment with programs set forth by the 1985 FSA. When classified according to their personal characteristics, most of those responding favored a continuation of this legislation, but there were exceptions. The greatest number

of those with gross sales under $40,000 (42%) expressed a desire to gradually eliminate commodity programs, as did participants with gross sales levels between $250,000 and $499,999 (32%) and over $500,000 (40%) as shown on Table 3. Other exceptions included educational levels and nonfarm income. Respondents with some college education chose the establishment of mandatory supply control programs for all farmers as their most popular response (34%) and the largest percentage of those with a college degree (32%) preferred the gradual elimination of commodity programs. The greatest number of participants with a nonfarm income of over $40,000 also favored program elimination.

Chi square analysis showed that gross sales levels, education and previous year participation in wheat, feed grains, cotton and Conservation Reserve programs all had significant correlation with responses to this particular question. Gross sales, education and wheat program participation proved to be significant at the 1 percent level and the remaining three characteristics at the 5 percent level. Further interpretation of these chi square results means that responses to this question were dependent upon participants' gross sales, education and enrollment in wheat programs during the previous year when tested at a 1 percent level. Dependence also occurred between responses and participation in feed grains, cotton and the Conservation Reserve program, but at a 5 percent level.

Target Prices

Target prices were established in 1973 farm legislation as a means of increasing producers' income and lowering prices. They also served as a method of addressing price competitiveness in the world market. Although this

TABLE 3

RESPONSES TO ALTERNATIVE POLICIES TOWARD PRODUCTION CONTROLS AND ASSOCIATED PRICE SUPPORTS AFTER THE FOOD SECURITY ACT OF 1985 EXPIRES, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	D	E	Degrees of Freedom[2]	Chi Square
Overall Results	157(35)	91(20)	58(13)	130(29)	14(3)		
Age						12	14.458
Under 35	12(43)	3(10)	3(10)	10(37)	0(0)		
35-49	41(38)	33(22)	23(16)	43(29)	7(5)		
50-64	60(35)	37(21)	23(13)	51(29)	4(2)		
65 or over	40(46)	18(21)	8(9)	20(23)	1(1)		
Gross Sales						16	41.005***
Under $40,000	26(34)	12(16)	4(5)	32(42)	2(3)		
$ 40,000 - $99,999	47(38)	35(29)	13(11)	27(22)	0(0)		
$100,000 - $249,999	55(37)	31(21)	26(18)	33(22)	3(2)		
$250,000 - $499,999	16(26)	10(16)	10(16)	19(32)	6(10)		
Over $500,000	8(32)	2(8)	4(16)	10(40)	1(4)		
Education						16	32.070***
Grade School	12(54)	6(27)	1(5)	3(14)	0(0)		
Some High School	13(50)	4(15)	2(8)	7(27)	0(0)		
H.S. Graduate	50(39)	21(16)	19(15)	36(28)	2(2)		
Some College	29(31)	32(34)	7(7)	24(26)	2(2)		
College Graduate	49(30)	27(16)	28(17)	54(32)	8(5)		
Non Farm Income						12	16.176
Under $10,000	38(36)	19(17)	16(15)	35(32)	2(1)		
$10,000 - $19,999	20(43)	8(17)	5(10)	13(28)	1(2)		
$20,000 - $40,000	18(40)	7(16)	6(13)	14(31)	0(0)		
Over $40,000	6(14)	7(16)	11(25)	17(38)	3(7)		
Previous Year Program Participation							
Wheat	130(37)	83(24)	48(14)	79(23)	8(2)	4	37.252***
Feed Grains	38(31)	36(30)	17(14)	26(21)	5(4)	4	11.802**
Cotton	37(43)	18(20)	16(((18)	16(18)	1(1)	4	9.699**
Conservation Reserve	25(32)	25(32)	11(14)	15(19)	2(3)	4	9.992**
Disaster Program	48(38)	23(18)	15(12)	34(27)	6(5)	4	2.735

1. Responses are as follows
   - A: Keep the present program.
   - B: Establish a mandatory supply control program with all farmers required to participate if approved in a farmer referendum.
   - C: Separate government payments form production requirements.
   - D: Gradually eliminate commodity programs.
   - E: Other.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

form of direct payment does not affect market prices specifically, it does lower them indirectly through grain producers' supply response to higher prices (Knutson et.al). Overall survey results indicated that fifty-five percent, or 251 of 425, of those responding were in favor of raising target prices at a rate equal to inflation. Twenty-six percent took an opposite position by voting to completely phase out target prices over the next five to ten years and 10 percent wanted them to remain at current levels. Seven percent preferred lowering target prices 2 to 4 percent each year over the period of the legislation.

Further classification involving individual characteristics provided results which supported those previously mentioned. The greatest number of participants in each group favored an increase in prices to match inflation rates. However, it was the proposal of phasing out target prices completely which prevailed among two groups who also favored the elimination of commodity programs when questioned previously. Participants with gross sales over $500,00 had a plurality (46%) in favor of target price elimination as did forty five percent of those with a nonfarm income of over $40,000 (Table 4). The second highest level of responses within each of the two previously mentioned categories were in favor of raising target prices.

Gross sales and previous year program participation for wheat and cotton were the only characteristics which significantly influenced responses to target price legislation. All three groups were significant at a 1 percent confidence level.

Commodity Loan Rates

The Commodity Credit Corporation (CCC) is primarily responsible for providing the funds necessary to finance farm programs. Between 1985 and

TABLE 4

PREFERRED TARGET PRICE POLICIES, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	D	E	Degrees of Freedom[2]	Chi Square
Overall Results	45(10)	251(55)	34(7)	118(26)	11(2)		
Age						12	15.858
Under 35	6(21)	10(36)	3(11)	9(32)	0(0)		
35-49	15(10)	77(52)	8(5)	45(30)	4(3)		
50-64	14(8)	105(58)	12(9)	44(25)	4(2)		
65 or over	9(10)	53(60)	10)11)	15(17)	2(2)		
Gross Sales						16	41.056***
Under $40,000	7(9)	32(40)	12(15)	27(34)	2(2)		
$ 40,000 - $99,999	12(9)	81(65)	11(9)	21(17)	0(0)		
$100,000 - $249,999	17(11)	93(63)	5(3)	31(21)	3(2)		
$250,000 - $499,999	5(8)	29(47)	4(6)	20(32)	4(6)		
Over $500,000	3(13)	8(33)	1(4)	11(46)	1(4)		
Education						16	19.832
Grade School	5(22)	15(65)	1(4)	2(9)	0(0)		
Some High School	3(11)	14(52)	3(11)	7(26)	0(0)		
H.S. Graduate	14(11)	77(60)	7(5)	28(22)	2(2)		
Some College	6(6)	58(59)	9(9)	24(25)	1(1)		
College Graduate	16(10)	80(48)	13(8)	52(31)	7(3)		
Non Farm Income						12	10.498
Under $10,000	12(11)	54(47)	10(8)	35(31)	3(3)		
$10,000 - $19,999	10(20)	23(47)	3(6)	12(25)	1(2)		
$20,000 - $40,000	5(11)	25(56)	2(4)	12(27)	1(2)		
Over $40,000	4(9)	17(38)	2(4)	20(45)	2(4)		
Previous Year Program Participation							
Wheat	40(11)	212(60)	25(7)	70(20)	6(2)	4	35.565***
Feed Grains	10(8)	78(61)	7(5)	31(24)	2(2)	4	2.556
Cotton	14(16)	57(64)	2(2)	15(17)	1(1)	4	13.807***
Conservation Reserve	8(10)	47(60)	6(8)	16(21)	1(1)	4	2.037
Disaster Program	12(10)	67(53)	11(9)	32(24)	5(4)	4	2.271

1. Responses are as follows
   - A: Keep target prices at current levels.
   - B: Raise target price each year to match inflation.
   - C: Lower target prices 2 to 4% each year to reduce federal deficiency payments and federal expenditures and discourage over production.
   - D: Phase out target prices completely over a 5 to 10 year period.
   - E: Other.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

*** Denotes a significant chi square value when alpha = .01.

1990 a significant amount of these funds were appropriated for the non-recourse loan, which serves as a market price floor since the participant can turn over the grain to the CCC at loan maturity as full payment of the loan, if the market price is below the loan rate. In response to a question concerning how loan rates should be set in the future, 37 percent of those surveyed favored basing the loan rate on the previous five year average of market prices in an effort to keep prices at a competitive level. Just over 31 percent wanted to raise loan rates and 32 percent preferred the elimination of loan rates and commodity loans completely.

Analysis involving sub-categories of personal characteristics and previous year program enrollments resulted in numbers that were somewhat contradictory with overall results. Raising loan rates as a primary means to support prices was the most popular response among those who had completed grade school, some high school and also those with a high school diploma. The percentages for members of these groups who supported this increase were 41%, 38 percent and 37 percent respectively. The greatest number of those with gross sales between $250,000 to $499,999 and over $500,000 preferred the elimination of loan rates and commodity loans completely as did the largest number of college graduates and respondents with a non farm income over $40,000.

Gross sales and education displayed significant interaction with responses when chi square testing was conducted and confidence levels were set at 10 percent (Table 5). Previous year participation in wheat and cotton programs proved to be more significant by producing chi squares at a 1 percent level.

TABLE 5

PREFERRED LOAN RATE POLICY, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	Degrees of Freedom[2]	Chi Square
Overall Results	165(37)	139(31)	141(32)		
Age				6	3.956
Under 35	13(46)	6(21)	9(33)		
35-49	55(38)	40(27)	51(25)		
50-64	62(37)	56(33)	61(30)		
65 or over	33(38)	31(35)	24(27)		
Gross Sales				8	14.102*
Under $40,000	31(40)	17(22)	30(38)		
$ 40,000 - $99,999	43(35)	56)38)	43(27)		
$100,000 - $249,999	61(42)	49(33)	36(25)		
$250,000 - $499,999	21(34)	14(23)	26(43)		
Over $500,000	7(32)	6(27)	9(41)		
Education				8	14.283*
Grade School	8(36)	9(41)	5(23)		
Some High School	8(31)	10(38)	8(31)		
H.S. Graduate	45(36)	47(37)	34(27)		
Some College	39(41)	32(34)	24(25)		
College Graduate	62(38)	35(22)	64(40)		
Non Farm Income				6	9.761
Under $10,000	44(39)	29(26)	39(35)		
$10,000 - $19,999	14(30)	17(37)	15(33)		
$20,000 - $40,000	20(46)	12(28)	11(26)		
Over $40,000	11(24)	11(24)	23(52)		
Previous Year Program Participation					
Wheat	135(39)	19(35)	88(26)	2	24.812***
Feed Grains	50(40)	41(33)	34(27)	2	1.640
Cotton	48(54)	26(30)	14(16)	2	17.742***
Conservation Reserve	32(43)	27(36)	16(21)	2	4.466
Disaster Program	51(43)	29(24)	40(33)	2	4.072

1. Responses are as follows
   - A: Base loan rate on the previous 5 year average.
   - B: Raise loan rates as a primary means of supporting prices.
   - C: Eliminate loan rates and commodity loans completely.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 3 columns and df = 6.

* Denotes a significant chi square value when alpha = .10.

Marketing Loans

Adjusting loan rates upward can lead to a floor price which is well above competitive prices. A marketing loan is designed to address such an occurrence by allowing farmers to pay off CCC loans at current market prices, even when market prices are below the loan rate. The 1985 Farm Bill made marketing loans mandatory for rice and cotton, but excluded wheat, feed grains and soybeans (Knutson et al.,1990). When asked if the latter three crops should be considered eligible for marketing loans, 49 percent of the participants surveyed responded positively as compared to twenty eight percent who answered with a no. Twenty three percent were not sure.

Respondents with non farm income greater than $40,000 were the only group in which a plurality did not favor an extension of the marketing loan to include wheat, feed grains and soybeans. Nineteen of the forty five participants (42 percent) who were classified in this group responded negatively. Results from the other classifications showed that at least 40 percent (the greatest percentage in all cases) favored such an extension and those who participated in wheat and feed grain programs during the previous year favored the idea by 54 and 69 percent (Table 6).

Chi square tests resulted in a significant value for only previous year program participation in wheat, cotton and disaster programs. All of these were valid at the 1 percent level and the chi square value for previous year wheat enrollment was a rather significant 25.552.

TABLE 6

PREFERENCES FOR EXTENDING THE MARKETING LOAN TO INCLUDE WHEAT, FEED GRAINS AND SOYBEANS, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	221(49)	124(28)	104(23)		
Age				6	7.185
Under 35	17(61)	8(29)	3(10)		
35-49	64(44)	44(30)	38(26)		
50-64	87(49)	47(26)	45(25)		
65 or over	47(57)	22(26)	14(17)		
Gross Sales				8	11.975
Under $40,000	31(40)	30(39)	18(21)		
$ 40,000 - $99,999	60(49)	32(26)	31(25)		
$100,000 - $249,999	80(55)	30(21)	35(24)		
$250,000 - $499,999	33(53)	20(32)	9(15)		
Over $500,000	11(48)	8(35)	4(17)		
Education				8	7.959
Grade School	10(45)	6(27)	6(27)		
Some High School	13(48)	10(37)	4(15)		
H.S. Graduate	71(55)	31(24)	26(21)		
Some College	44(46)	23(23)	29(21)		
College Graduate	77(48)	51(31)	34(21)		
Non Farm Income				6	5.921
Under $10,000	63(57)	31(28)	17(15)		
$10,000 - $19,999	23(49)	14(30)	10(21)		
$20,000 - $40,000	21(47)	13(29)	11(24)		
Over $40,000	18(40)	19(42)	8(18)		
Previous Year Program Participation					
Wheat	187(54)	76(22)	84(24)	2	25.552***
Feed Grains	69(54)	28(22)	30(24)	2	2.945
Cotton	58(67)	10(11)	19(22)	2	16.911***
Conservation Reserve	42(55)	16(21)	18(24)	2	2.117
Disaster Program	58(46)	27(21)	41(33)	2	9.440***

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 3 columns and df = 6.

*** Denotes a significant chi square value when alpha = .01

Annual Paid Land Diversion

Certain components of the 1985 Farm Bill were left to the discretion of the Secretary of Agriculture. Annual paid land diversion, designed to control production, was one of these components. Fifty-eight percent of the Oklahoma food producers who responded felt that the Secretary should be allowed to continue this policy. Twenty five percent disagreed with a continuation and nearly 17 percent were unsure of their responses.

Once again, overall results proved to be a representative sampling of responses which were categorized according to participants' individual characteristics and previous year program participation. With few exceptions, at least 50 percent of the individuals within each group favored the continuation of a discretionary policy for land diversion. These exceptions consisted of those with gross sales under $40,000, who disapproved of a continuation by a 41 percent rate, and those with only a grade school education who had 39 percent both for and against the continuation. Participants with some high school education also had a favorable response rate of below 50 percent, but the greatest percentage of people responding in this category, 13 of 26 or 46 percent, still preferred a discretionary policy.

Three personal characteristics displayed a significant level of interaction with responses when chi square testing was implemented. Testing of gross sales and previous year participation in wheat and cotton programs all resulted in chi square values which were significant at the 1 percent level (Table 7).

Acreage Bases

Acreage bases, set forth by the 1985 FSA, proved to be inflexible and, despite market changes, tended to keep acres in the program crop in order to

TABLE 7

PREFERENCES TOWARD THE CONTINUATION OF ANNUAL PAID LAND DIVERSION AS AN OPTION AVAILABLE TO THE SECRETARY OF AGRICULTURE, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	264(58)	114(25)	80(17)		
Age				6	8.887
Under 35	19(68)	6(21)	3(11)		
35-49	94(63)	33(22)	23(15)		
50-64	99(55)	53(29)	29(16)		
65 or over	46(53)	18(21)	22(26)		
Gross Sales				8	33.326***
Under $40,000	30(38)	33(41)	17(21)		
$ 40,000 - $99,999	69(55)	34(27)	22(18)		
$100,000 - $249,999	108(72)	18(12)	23(16)		
$250,000 - $499,999	33(54)	17(28)	11(18)		
Over $500,000	17(68)	6(24)	2(8)		
Education				8	6.549
Grade School	9(39)	9(39)	5(22		
Some High School	13(46)	8(29)	7(25)		
H.S. Graduate	75(58)	30(23)	24(19)		
Some College	59(60)	23(24)	16(16)		
College Graduate	101(61)	40(24)	25(15)		
Non Farm Income				6	6.406
Under $10,000	57(50)	32(28)	25(22)		
$10,000 - $19,999	32(65)	13(27)	4(8)		
$20,000 - $40,000	23(50)	16(35)	7(15)		
Over $40,000	25(57)	12(27)	7(16)		
Previous Year Program Participation					
Wheat	221(63)	69(20)	63(17)	2	24.377***
Feed Grains	81(63)	27(21)	20(16)	2	2.354
Cotton	58(67)	10(11)	19(22)	2	16.911***
Conservation Reserve	51(65)	14(18)	13(17)	2	2.832
Disaster Program	69(54)	31(24)	28(22)	2	2.438

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 3 columns and df = 8.

*** Denotes a significant chi square value when alpha = .01

maintain farmers' program base and payments (Collins and Salathe). Survey participants exhibited a general dissatisfaction with the restraints imposed by this policy as shown by the fact that nearly a two to one (60 percent to 34 percent) margin disapproved of continuing the current crop acreage base programs.

This dissatisfaction was further exemplified within sub-categories and previous program enrollment groups. Only those participants with a grade school education did not have a plurality who favored the assignment of total crop acreage bases to each farm. In this group, 48 percent preferred continuing the current policy while another 48 percent preferred implementing a total crop acreage base for each farm. Continuing the current policy was disapproved by a large margin of over fifty percent of the groups comprising each personal characteristic.

Responses to alternatives concerning acreage bases displayed a significant level of dependence upon age, gross sales and previous year wheat program participation. Chi square values showed that age had a significant correlation with responses at the 10 percent level, gross sales at the 5 percent level and previous year participation in wheat programs at a 1 percent confidence level (Table 8).

PIK Certificates

The PIK or payment in kind program has been a strong component of domestic farm policy during the 1980s. In 1983, PIK payments were a major contributor in the largest U.S. acreage reduction program ever. This program was used to control wheat acreage in 1983, 1984 and 1986 and is considered to be a relatively efficient means of disposing of surplus commodities (Gardner).

TABLE 8

PREFERENCES TOWARD ACREAGE BASES, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	Degrees of Freedom[2]	Chi Square
Overall Results	153(34)	271(60)	27(6)		
Age				6	11.561*
Under 35	10(36)	18(64)	0(0)		
35-49	44(30)	92(63)	11(7)		
50-64	54(37)	98(55)	15(8)		
65 or over	30(35)	55(65)	0(0)		
Gross Sales				8	15.976**
Under $40,000	24(30)	45(57)	10(13)		
$ 40,000 - $99,999	43(35)	77(62)	4(3)		
$100,000 - $249,999	51(34)	93(63)	4(3)		
$250,000 - $499,999	24(39)	30(49)	7(12)		
Over $500,000	6(29)	14(66)	1(5)		
Education				8	9.795
Grade School	11(48)	11(48)	1(4)		
Some High School	9(37)	15(63)	0(0)		
H.S. Graduate	45(45)	80(62)	4(3)		
Some College	36(37)	55(57)	6(6)		
College Graduate	58(29)	101(62)	15(9)		
Non Farm Income				6	8.806
Under $10,000	37(34)	67(61)	6(5)		
$10,000 - $19,999	21(43)	24(49)	4(8)		
$20,000 - $40,000	11(24)	29(65)	5(11)		
Over $40,000	9(21)	28(65)	6(14)		
Previous Year Program Participation					
Wheat	119(34)	118(62)	3(4)	2	14.739***
Feed Grains	48(37)	74(58)	6(5)	2	1.331
Cotton	29(33)	56(64)	3(3)	2	1.473
Conservation Reserve	21(28)	53(70)	2(2)	2	4.202
Disaster Program	43(34)	78(61)	7(5)	2	3.107

1. Responses are as follows
   - A: Continue the current policy of specific crop acreage bases.
   - B: Assign each farm a total crop acreage base, excluding hay and pasture, and allow any crop to be grown on the permitted acreage.
   - C: Other.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 3 columns and df = 6.

* Denotes a significant chi square value when alpha = .10.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

The largest number of respondents, 231 of 459 or 50 percent, favored the continuation of PIK certificates as a means of price and income support. Just over thirty-five percent preferred the termination of the program and 15 percent were not sure.

This program remained popular once further categorization took place for age, education, gross sales and nonfarm income. The proposal of continuing PIK certificates prevailed among the greatest number of those in each group, including previous year program enrollments. Two exceptions included participants having a gross sales level below $40,000 and also those with some high school education. Most of the people in both groups did not want to continue the PIK program and those in the latter category responded negatively by a margin of 75 percent.

Two characteristics proved to have significant correlation with responses in this case. These values belonged to education and, once again, previous year participation in wheat programs. Both were significant at the 1 percent level (Table 9).

Farmer Owned Grain Reserve

The farmer-owned reserve (FOR) was instituted in the late 1970s as a device designed to stabilize prices and provide both domestic and foreign customers with increased supply assurance(Gardner, 1987). When Oklahoma food producers were asked to respond to the idea of establishing a national minimum and maximum amount of grain to be stored as part of the FOR program, 46 percent were in favor of such action, 32 percent were not and 22 percent were unsure.

TABLE 9

PREFERENCES TOWARD THE CONTINUATION OF GENERIC (PIK) CERTIFICATES AS A PART OF PRICE AND INCOME SUPPORT PROGRAMS, OKLAHOMA 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	231(50)	159(35)	69(15)		
Age				6	6.417
Under 35	16(57)	7(25)	5(18)		
35-49	80(54)	47(32)	21(14)		
50-64	79(43)	74(41)	29(16)		
65 or over	48(54)	27(31)	13(15)		
Gross Sales				8	10.975
Under $40,000	30(37)	34(42)	17(21)		
$ 40,000 - $99,999	69(56)	39(31)	16(13)		
$100,000 - $249,999	80(53)	53(35)	17(12)		
$250,000 - $499,999	29(47)	22(35)	11(18)		
Over $500,000	14(56)	6(24)	5(20)		
Education				8	9.795
Grade School	11(48)	11(48)	1(4)		
Some High School	9(37)	15(63)	0(0)		
H.S. Graduate	45(45)	80(62)	4(3)		
Some College	36(37)	55(57)	6(6)		
College Graduate	58(29)	101(62)	15(9)		
Non Farm Income				6	26.131***
Under $10,000	54(48)	43(38)	16(14)		
$10,000 - $19,999	28(58)	18(38)	2(4)		
$20,000 - $40,000	21(47)	16(35)	8(18)		
Over $40,000	27(60)	15(33)	3(7)		
Previous Year Program Participation					
Wheat	191(54)	121(34)	41(12)	2	17.054**
Feed Grains	65(50)	49(38)	15(12)	2	1.963
Cotton	46(51)	34(38)	10(11)	2	1.477
Conservation Reserve	46(59)	21(27)	11(14)	2	3.066
Disaster Program	73(57)	34(27)	21(16)	2	5.152

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: Age has 4 rows, 3 columns and df = 6.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

Those with sales levels between $250,000 and $499,999 failed to follow the overall trend as exhibited by the fact that the most participants in this group (44%) did not favor a continuation of the FOR. A similar pattern occurred among those with a nonfarm income between $20,000 and $40,000; however in this case an even 39 percent both favored and disapproved of a continuation. With the exception of these two instances, each group had a plurality which preferred continuing the farmer owned grain reserve.

Only one characteristic proved to be significant in this situation. Previous year participation in cotton programs had a chi square value of 6.66 which was significantly correlated with responses to a FOR continuation at a 5 percent level (Table 10).

Conservation, Federal Spending and Rural Development

Conservation Reserve

The Conservation Reserve Program was primarily designed to remove highly erodible, fragile and environmentally sensitive cropland from agricultural production. In addition to idling highly erodible land, the CRP has also served to reduce crop supply and help control the adverse environmental impacts of agricultural production. The 1985 Food Security Act authorized the Secretary of Agriculture to place 40 to 45 million acres of cropland into a 10 year conservation reserve and offered annual payments as incentive for doing so (Dicks et.al). Policy makers helped to insure further effectiveness of this program by requiring farms to develop a conservation plan as a prerequisite for eligibility for farm program benefits. Nearly 60 percent of those responding to the survey felt that such a plan should be mandatory for farm operators before

TABLE 10

PREFERENCES TOWARD THE CONTINUATION OF THE FARMER OWNED GRAIN RESERVE, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	212(46)	149(32)	98(22)		
Age				6	3.766
Under 35	14(50)	8(29)	6(21)		
35-49	65(43)	54(36)	31(21)		
50-64	79(44)	62(34)	40(22)		
65 or over	47(54)	23(26)	17(20)		
Gross Sales				8	10.413
Under $40,000	40(50	20(25)	20(25)		
$ 40,000 - $99,999	56(45)	41(33)	28(22)		
$100,000 - $249,999	69(46)	49(33)	31(21)		
$250,000 - $499,999	25(40)	27(44)	10(16)		
Over $500,000	15(60)	9(36)	1(4)		
Education				8	12.573
Grade School	10(43)	5(22)	8(35)		
Some High School	12(44)	9(33)	6(22)		
H.S. Graduate	65(51)	36(28)	27(21)		
Some College	44(45)	28(28)	27(27)		
College Graduate	74(44)	68(40)	26(16)		
Non Farm Income				6	2.286
Under $10,000	54(58)	39(34)	20(18)		
$10,000 - $19,999	25(51)	16(33)	8(16)		
$20,000 - $40,000	8(39)	18(39)	10(22)		
Over $40,000	24(53)	13(29)	8(18)		
Previous Year Program Participation					
Wheat	162(46)	122(34)	71(20)	2	3.193
Feed Grains	64(50)	40(31)	25(19)	2	0.899
Cotton	52(58)	22(25)	15(17)	2	6.666*
Conservation Reserve	38(49)	23(29)	17(22)	2	0.395
Disaster Program	55(43)	44(34)	29(23)	2	0.740

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: gross sales has 5 rows, 3 columns and df = 8.

* Denotes a significant chi square value when alpha = .10.

becoming eligible for farm program benefits. On the other hand, 33 percent disapproved of such a requirement.

Evaluations of sub-category and previous year enrollment responses showed support for overall results in that the largest percentage of participants, within all groups, agreed with such a compliance. In fact, these percentages were nearly equal to or greater than 50 percent in all cases. Negative response rates were higher (above 40%) among participants between fifty to sixty-four years of age, those with some high school education and high school graduates (Table 11).

Significant chi square values occurred with age, education and previous year participation in cotton programs. Among these three groups, age and education displayed significance at the 1 percent level and cotton participation at the 5 percent level.

CRP Expansion

In a related question, the greatest number of participants (30 percent) favored expanding the CRP to the 45 million acres authorized by the 1985 Farm Bill, twenty-seven percent expressed a desire to expand the program to 60 million acres and 23 percent supported elimination of the CRP all together (Table 12).

General results changed somewhat when respondents were classified into smaller groups and previous year program enrollment was examined. Under 35 years of age, gross sales over $500,000 and nonfarm income between $10,000 and $19,999 were three groups whose members failed to support overall results by having a plurality who preferred an expansion of the CRP to 60 million acres. Eliminating the CRP completely was the most popular

TABLE 11

PREFERENCES TOWARD REQUIRING SOIL CONSERVATION AND WATER QUALITY COMPLIANCE, AS A CONDITION NECESSARY FOR RECEIVING FARM PROGRAM BENEFITS, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	274(59)	149(33)	39(8)		
Age				6	19.304***
Under 35	23(82)	2(7)	3(11)		
35-49	98(66)	37(25)	14(9)		
50-64	95(52)	76(41)	12(7)		
65 or over	51(58)	29(33)	8(9)		
Gross Sales				8	5.171
Under $40,000	47(57)	26(32)	9(11)		
$ 40,000 - $99,999	78(62)	42(33)	6(5)		
$100,000 - $249,999	84(56)	51(35)	14(9)		
$250,000 - $499,999	41(66)	17(27)	4(7)		
Over $500,000	14(56)	8(32)	3(12)		
Education				8	23.365***
Grade School	12(52)	5(22)	6(26)		
Some High School	13(48)	12(44)	2(8)		
H.S. Graduate	67(51)	55(42)	10(7)		
Some College	65(66	29(30)	4(4)		
College Graduate	109(65)	43(26)	15(9)		
Non Farm Income				6	10.732*
Under $10,000	66(58)	39(34)	9(8)		
$10,000 - $19,999	23(48)	19(40)	6(12)		
$20,000 - $40,000	36(77)	9(19)	2(4)		
Over $40,000	30(67)	10(22)	5(11)		
Previous Year Program Participation					
Wheat	210(59)	114(32)	31(9)	2	0.169
Feed Grains	77(60)	36(28)	14(12)	2	3.209
Cotton	50(56)	37(41)	3(3)	2	6.441*
Conservation Reserve	46(59)	26(33)	6(8)	2	0.098
Disaster Program	75(58)	40(31)	14(11)	2	1.360

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 3 columns and df = 6.

* Denotes a significant chi square value when alpha = .10.

*** Denotes a significant chi square value when alpha = .01

TABLE 12

PREFERENCES REGARDING FUTURE CRP ACREAGE ENROLLMENT, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	D	E	Degrees of Freedom[2]	Chi Square
Overall Results	83(18)	136(30)	120(27)	109(23)	11(2)		
Age						12	15.926
Under 35	5(18)	8(29)	12(43)	3(10)	0(0)		
35-49	22(15)	45(30)	39(26)	35(24)	7(3)		
50-64	37(20)	49(27)	47(26)	44(25)	4(2)		
65 or over	18(21)	(32(36)	17(19)	21(24)	0(0)		
Gross Sales						16	37.210***
Under $40,000	17(21)	19(24)	11(14)	30(37)	3(4)		
$ 40,000 - $99,999	28(22)	38(30)	31(25)	28(22)	1(1)		
$100,000 - $249,999	25(17)	53(36)	47(31)	23(15)	1(1)		
$250,000 - $499,999	10(17)	17(28)	17(28)	12(20)	4(9)		
Over $500,000	1(4)	7(27)	9(35)	7(27)	2(7)		
Education						16	24.259*
Grade School	3(13)	13(57)	3(13)	3(13)	1(4)		
Some High School	7(26)	3(11)	6(21)	11(39)	1(3)		
H.S. Graduate	30(23)	39(30)	32(25)	28(22)	0(0)		
Some College	17(17)	29(30)	26(26)	23(24)	3(3)		
College Graduate	24(14)	50(30)	48(29)	38(23)	6(4)		
Non Farm Income						12	6.027
Under $10,000	21(18)	36(31)	28(24)	26(23)	4(4)		
$10,000 - $19,999	10(21)	13(27)	14(29)	9(19)	2(4)		
$20,000 - $40,000	6(13)	16(35)	10(22)	12(26)	2(4)		
Over $40,000	8(19)	13(29)	7(16)	15(34)	1(2)		
Previous Year Program Participation							
Wheat	68(19)	115(32)	99(28)	63(18)	9(3)	4	30.524***
Feed Grains	19(15)	51(40)	32(26)	23(18)	1(1)	4	11.868**
Cotton	15(17)	33(37)	29(32)	11(13)	1(1)	4	10.687**
Conservation Reserve	15(19)	33(43)	18(23)	8(10)	4(5)	4	15.632***
Disaster Program	23(18)	42(33)	30(24)	28(22)	4(3)	4	6.737

1. Responses are as follows
   - A: Limit the CRP to the current level of about 30 million acres.
   - B: Expand the CRP to 45 million acres as provided in the 1985 act.
   - C: Further expand the CRP to around 60 million acres.
   - D: Eliminate the CRP program.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: education has 5 rows, 3 columns and df = 8.

* Denotes a significant chi square value when alpha = .10.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

alternative among those falling within the following three groups: Gross sales under $40,000, some high school education and a non farm income of over $40,000.

Six of the nine personal characteristics being tested displayed significant interaction with responses to this particular proposal. Gross sales, previous year enrollment in wheat programs, and previous year participation in the Conservation Reserve Program all had chi square values which were significant at the 1 percent level. Previous year participation in feed grains and cotton programs were significant at the 5 percent level and years of education at 10 percent.

Regulation to Reduce Pollution

Similar questioning regarding government actions to regulate certain farming practices and land use as a means of reducing pollution of underground water, resulted in the following responses: 20 percent agreed, 39 percent strongly agreed, 14 percent were not sure, 17 percent disagreed and 10 percent strongly disagreed.

The greatest number of respondents with only a grade school education (8 of 21) agreed strongly with regulations designed to prevent water contamination. Participants comprising the remaining groups followed a pattern established by the overall results in that the greatest percentage within each group simply agreed with the idea of regulating farm practices and land use to reduce pollution. The highest rate of disagreement was 24 percent which came from those with nonfarm incomes between $10,000 and $19,999.

None of the previous year program participation categories, including the Conservation Reserve, exhibited any significant correlation with responses to

this proposal. However, gross sales produced a chi square value which was significant at the 5 percent level and nonfarm income displayed significant interaction with responses at a 10 percent confidence level (Table 13).

Payment Limits

The 1936 Farm Bill was the first legislation to provide direct payments to farmers and gave rise to payment limits which were enacted two years later in the 1938 Farm Bill (Knutson et.al). The 1985 Food Security Act limited direct price support payments to $50,000 and 44 percent of those participating in the survey preferred maintaining the payment limit at this level. Twenty three percent wanted a reduction, 13 percent an increase and over 16 percent favored eliminating price supports completely.

When further categorization took place and previous year program enrollment was examined, allowing the limit to remain unchanged still prevailed as the most popular response for participants within each group. However, there were exceptions to this trend from those with gross sales under $40,000 and also from those with some high school education. Both of these classes favored a decrease in the $50,000 payment limit. Also, of those with gross sales over $500,000, 31 percent favored the idea of making no change while another 31 percent preferred eliminating the limit completely (Table 14).

Chi square testing resulted in a significant degree of correlation for six characteristics. Gross sales prevailed with an extremely high value of 84.93, followed by education and previous year participation in wheat, feed grains and Conservation Reserve Program, all qualifying at the 1 percent level. Age proved significant at the 5 percent level with a chi square value of 23.517.

TABLE 13

RESPONSES TOWARD GOVERNMENT REGULATION OF CERTAIN FARMING PRACTICES TO REDUCE WATER POLLUTION, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	87(20)	175(39)	61(14)	75(17)	45(10)		
Age						12	13.774
Under 35	5(18)	13(48)	2(8)	5(18)	2(8)		
35-49	24(16)	71(48)	16(11)	25(17)	12(8)		
50-64	39(23)	62(34)	26(14)	31(17)	22(12)		
65 or over	17(22)	24(31)	16(21)(	11(14)	19(12)		
Gross Sales						16	24.504**
Under $40,000	15(19)	32(40)	15(19)	9(12)	8(10)		
$ 40,000 - $99,999	31(26)	50(42)	12(10)	19(16)	7(6))		
$100,000 - $249,999	22(15)	47(33)	21(15)	27(19)	25(18)		
$250,000 - $499,999	12(19)	30)48)	6(10)	11(18)	3(5)		
Over $500,000	4(16)	9(36)	5(20)	5(20)	2(8)		
Education						16	8.871
Grade School	6(28)	5(25)	4(19)	4(19)	2(9)		
Some High School	4(17)	11(46)	3(12)	4(17)	2(8)		
H.S. Graduate	27(22)	46(37)	16(13)	18(14)	18(14)		
Some College	20(21)	41(43)	11(11)	17(18)	7(7)		
College Graduate	28(17)	66(40)	26(16)	29(18)	16(9)		
Non Farm Income						12	20.363*
Under $10,000	24(22)	41(38)	12(12)	23(21)	7(7)		
$10,000 - $19,999	10(22)	12(26)	6(13)	11(24)	7(15)		
$20,000 - $40,000	9(19)	24(51)	4(8)	8(17)	2(5)		
Over $40,000	9(20)	14(32)	10(23)	3(7)	8(18)		
Previous Year Program Participation							
Wheat	66(19)	134(39)	49(14)	57(17)	35(11)	4	.520
Feed Grains	20(16)	53(42)	23(18)	19(15)	10(9)	4	5.361
Cotton	16(20)	31(36)	14(16)	13(15)	11(13)	4	1.806
Conservation Reserve	15(19)	25(32)	13(17)	13(17)	12(15)	4	4.466
Disaster Program	21(16)	57(45)	18(14)	15(12)	17(13)	4	6.737

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: gross sales has 5 rows, 5 columns and df = 16.

* Denotes a significant chi square value when alpha = .10.

** Denotes a significant chi square value when alpha = .05.

TABLE 14

PREFERENCES TOWARD DIRECT PRICE SUPPORT PAYMENT LIMITS, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] A	B	C	D	E	Degrees of Freedom[2]	Chi Square
Overall Results	58(13)	206(44)	105(23)	74(16)	20(4))		
Age						12	23.517**
Under 35	5(18)	14(50)	4(14)	4(14)	1(4)		
35-49	27(18)	57(38)	27(18)	28(19)	10(7)		
50-64	17(9)	83(46)	44(24)	32(18)	6(3)		
65 or over	6(7)	46(51)	28(31)	7(8)	3(3)		
Gross Sales						16	84.926***
Under $40,000	3(4)	28(35)	38(47)	7(9)	4(5)		
$ 40,000 - $99,999	7(5)	68(54)	37(29)	10(8)	5(4)		
$100,000 - $249,999	23(15)	76(50)	16(11)	30(20)	6(4)		
$250,000 - $499,999	16(27)	19(32)	9(15)	14(23)	2(3)		
Over $500,000	6(22)	8(31)	2(8)	8(31)	2(8)		
Education						16	35.789***
Grade School	0(0)	13(56)	8(35)	2(9)	0(0)		
Some High School	3(11)	9(34)	12(44)	2(7)	1(4)		
H.S. Graduate	9(7)	65(49)	33(25)	21(16)	4(3)		
Some College	13(13)	48(49)	22(23)	13(13)	2(2)		
College Graduate	30(17)	65(39)	27(16)	33(20)	13(8)		
Non Farm Income						12	14.813
Under $10,000	16(14)	44(39)	30(26)	20(18)	3(3)		
$10,000 - $19,999	8(16)	23(48)	9(18)	7(14)	2(4)		
$20,000 - $40,000	4(8)	18(38)	13(28)	6(13)	6(13)		
Over $40,000	4(9)	17(38)	8(18)	10(22)	6(13)		
Previous Year Program Participation							
Wheat	52(15)	170(48)	64(18)	57(16)	11(3)	4	28.978***
Feed Grains	20(17)	72(57)	17(13)	14(11)	3(2)	4	18.292***
Cotton	14(15)	44(49)	15(18)	14(15)	3(3)	4	3.348
Conservation Reserve	21(28)	34(44)	10(13)	11(14)	1(1)	4	21.976***
Disaster Program	17(13)	65(50)	24(18)	21(16)	4(3)	4	3.316

1. Responses are as follows:
   A: Increase the Limit
   B: Make no change
   C: Decrease the limit
   D:. Eliminate the limit completely
   E: Other
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

Government Lending

During the 1970s, government-originated credit enhancements were not essential due to the availability of farm real estate loans at reasonable rates. However, changes in the Federal Reserve's monetary policy and modifications in banking legislation during the latter part of that decade created a need for government supported loans during the 1980s (Mathis et.al) When asked if the government should continue to loan money to those with limited capital and no alternative sources of credit, 47 percent of the survey participants answered "yes" while 39 percent responded by saying "no". Another fourteen percent were unsure of their response (Table 15).

Three groups went against the standard set by general results. These three had a plurality which responded negatively toward a continuation of government lending for those experiencing financial stress and were either under 35 years of age (50 percent no responses), had gross sales over $500,000 (54%), or had a non farm income greater than $40,000 (47%). The remaining groups followed the pattern established by overall results.

Chi square values were only significant for previous year participation in wheat programs and disaster programs. This significance occurred at a 10 percent confidence level.

Farm Program Reductions

One of the main goals of farm policy during the early 1990s will be reducing the federal deficit (Collins and Salathe). The agricultural sector has become a likely candidate for such reductions and, with this in mind, survey participants were questioned about the possibility of reducing farm program expenditures as a means of reducing the federal deficit. Thirty two percent of

TABLE 15

PREFERENCES REGARDING A CONTINUATION BY THE GOVERNMENT TO LOAN MONEY TO FARMERS WITH LIMITED CAPITAL AND NO OTHER SOURCE OF CREDIT, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) YES	NO	NOT SURE	Degrees of Freedom[1]	Chi Square
Overall Results	202(47)	170(39)	60(14)		
Age				6	7.211
Under 35	7(27)	13(50)	6(23)		
35-49	75(52)	54(37)	16(11)		
50-64	81(47)	67(39)	24(14)		
65 or over	35(45)	29(37)	14(18)		
Gross Sales				8	12.211
Under $40,000	37(50)	22(30)	15(20)		
$ 40,000 - $99,999	50(44)	43(38)	21(18)		
$100,000 - $249,999	70(49)	61(43)	12(8)		
$250,000 - $499,999	30(50	22(37)	8(13)		
Over $500,000	9(38)	13(54)	2(8)		
Education				8	3.257
Grade School	10(48)	8(38)	3(14)		
Some High School	10(43)	8(35)	5(22)		
H.S. Graduate	57(45)	50(39)	21(16)		
Some College	46(52)	31(35)	11(13)		
College Graduate	74(46)	66(41)	20(13)		
Non Farm Income				6	2.766
Under $10,000	55(56)	35(35)	9(9)		
$10,000 - $19,999	24(51)	19(40)	4(9)		
$20,000 - $40,000	21(46)	19(41)	6(13)		
Over $40,000	20(44)	21(47)	4(9)		
Previous Year Program Participation					
Wheat	151(46)	143(40)	45(14)	2	0.668
Feed Grains	63(55)	35(30)	17(15)	2	5.414*
Cotton	40(48)	35(42)	8(10)	2	1.589
Conservation Reserve	40(54)	24(32)	10(14)	2	2.112
Disaster Program	63(52)	37(31)	21(17)	2	5.754*

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: gross sales has 5 rows, 3 columns and df = 8.

* Denotes a significant chi square value when alpha = .10.

those who responded were in favor of such a proposal but, at the same time, thirty percent disagreed with the idea. Ten percent strongly agreed, 14 percent strongly disagreed and another 14 percent were unsure.

Only ten of twenty-three groups had the largest percentage of its members in agreement with a reduction in farm program expenditures. Of the remaining 13, nine had a plurality which disagreed with the proposal and the largest number of respondents in the remaining four categories were split evenly between agreement and disagreement (Table 16).

Two of the nine chi square values (wheat and cotton participation) were significant at the 1 percent level. Gross sales and years of education produced numbers which were valid at the 5 percent level and previous year participation in feed grain programs proved to be significant at a 10 percent confidence level.

As a follow up to previous question, participants were asked which form of farm program reductions they would prefer should such a need occur. Over forty five percent (202 of 444) favored across the board percentage cuts as required and only nine percent expressed a preference toward cutting some commodity programs more than others. Thirty-seven percent agreed with the option of continuing payments to small and moderately sized farm operators while reducing payments to large operators and 7 percent preferred the proposal of making payments only to farmers who exhibited the greatest financial need.

Once previous year program enrollments and further classifications according to personal characteristics were examined, results showed that the greatest number of participants within each group preferred either across the board percentage cuts or continuing payments to only small and moderate size farm operators. Of these previously mentioned groups, better than half favored across the board percentage cuts, including 80 percent of those with gross

TABLE 16

RESPONSES TO A PROPOSAL OF REDUCING THE FEDERAL DEFICIT BY CUTTING FARM PROGRAM EXPENDITURES, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	46(10)	139(32)	60(14)	133(30)	62(14)		
Age						12	10.513
Under 35	1(4)	10(37)	8(30)	5(18)	3(11)		
35-49	16(11)	47(32)	17(11)	48(32)	20(14)		
50-64	21(12)	54(31)	21(12)	52(30)	26(15)		
65 or over	7(9)	23(29)	13(16)	24(30)	13(16)		
Gross Sales						16	30.097**
Under $40,000	8(10)	32(40)	15(19)	14(17)	11(14)		
$ 40,000 - $99,999	16(14)	29(25)	10(8)	48(41)	14(12)		
$100,000 - $249,999	7(5)	45(31)	22(15)	46(32)	24(17)		
$250,000 - $499,999	8(15)	20(34)	9(15)	15(26)	6(10)		
Over $500,000	5(20)	6(24)	2(8)	6(24)	6(24)		
Education						16	26.570**
Grade School	3(14)	5(22)	3(14)	8(36)	3(14)		
Some High School	3(12)	9(35)	5(19)	4(15)	5(19)		
H.S. Graduate	16(13)	28(23)	10(8)	43(35)	25(21)		
Some College	4(4)	37(40)	12(13)	25(27)	15(16)		
College Graduate	19(12)	54(32)	29(18)	49(30)	14(8)		
Non Farm Income						12	10.721
Under $10,000	12(11)	31(30)	17(16)	32(30)	14(13)		
$10,000 - $19,999	5(10)	13(28)	6(13)	17(36)	6(13)		
$20,000 - $40,000	3(7)	13(28)	6(13)	19(41)	5(11)		
Over $40,000	7(125)	21(46)	5(11)	8(17)	5(11)		
Previous Year Program Participation							
Wheat	26(8)	99(29)	49(15)	109(32)	52(16)	4	17.117***
Feed Grains	5(4)	39(33)	21(17)	36(30)	19(16)	4	8.448*
Cotton	4(5)	18(21)	10)12)	27(32)	25(30)	4	25.060***
Conservation Reserve	5(7)	20(26)	11(15)	27(35)	13(17)	4	3.622
Disaster Program	13(10)	34(27)	21(18)	34(27)	22(18)	4	4.413

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: gross sales has 5 rows, 5 columns and df = 16.

* Denotes a significant chi square value when alpha = .10.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

sales over $500,000. At the same time, seven groups preferred a continuation of payments to small and moderate size operators (Table 17).

Chi square analysis resulted in a comparatively large value of 71.932 when determining correlation between gross sales and responses to program reduction alternatives. Education also proved to be a characteristic which was significant at the 1 percent level while age and previous year participation in wheat programs displayed significance at the 5 percent level.

Rural Development

In efforts to provide price and income stability, some agricultural legislation has inadvertently created certain adverse side effects. One example of this has been the decline of rural communities resulting from policies designed to lower production levels (Knutson et.al). When questioned about the idea of the federal government increasing funds for rural development programs as a way of expanding employment and economic activity in rural areas, the following responses were submitted: 23 percent agreed strongly, 40 percent agreed, 16 percent were not sure, another 16 percent disagreed and 5 percent disagreed strongly.

Classification within each personal characteristic category and examination of previous year program enrollments showed that, like overall results, the greatest percentage of respondents among nearly all groups agreed with a funding increase for rural development. Those with gross sales over $500,000 strongly agreed with the proposal as did participants with no education beyond a grade school level. An average of better than 15 percent among all groups were unsure of their responses and the percentages of

TABLE 17

PREFERENCES REGARDING REDUCTIONS IN FEDERAL SPENDING FOR AGRICULTURE, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent)[1] Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[2]	Chi Square
Overall Results	202(45)	39(9)	163(37)	29(7)	11(2)		
Age						12	21.021*
Under 35	17(60)	1(4)	6(21)	3(1)	1(4)		
35-49	75(50)	15(10)	53(85)	4(3)	3(2)		
50-64	82(46)	18(10)	61(34)	12(7)	5(3)		
65 or over	28(33)	5(6)	42(48)	10(11)	2(2)		
Gross Sales						16	71.932***
Under $40,000	24(30)	5(6)	38(47)	13(16)	1(1)		
$ 40,000 - $99,999	41(34)	15(13)	54(45)	8(7)	1(1)		
$100,000 - $249,999	76(50)	10(7)	55(37)	5(3)	4(3)		
$250,000 - $499,999	39(64)	7(11)	112(20)	1(2)	2(3)		
Over $500,000	21(80)	2(8)	0(0)	0(0)	3(12)		
Education						16	32.654***
Grade School	6(26)	2(9)	12(52)	3(13)	0(0)		
Some High School	7(26)	1(4)	13(48)	5(18)	1(4)		
H.S. Graduate	54(42)	7(5)	55(43)	10(8)	2(2)		
Some College	50(52)	13(13)	31(32)	2(2)	1(1)		
College Graduate	85(51)	16(10)	50(30)	9(5)	7(4)		
Non Farm Income						12	16.823
Under $10,000	52(46)	9(8)	41(36)	10(9)	1(1)		
$10,000 - $19,999	22(45)	3(6)	20(41)	3(6)	1(2)		
$20,000 - $40,000	13(29)	5(11)	19(42)	3(7)	5(11)		
Over $40,000	19(42)	7(16)	14(31)	2(4)	3(7)		
Previous Year Program Participation							
Wheat	170(48)	28(8)	127(36)	19(5)	7(3)	4	9.335*
Feed Grains	63(50)	11(9)	42(34)	6(5)	3(2)	4	2.182
Cotton	42(47)	6(7)	38(42)	2(2)	2(2)	4	4.783
Conservation Reserve	40(53)	5(6)	28(37)	1(1)	2(3)	4	5.362
Disaster Program	66(51)	8(6)	43(33)	7(6)	5(4)	4	5.005

1. Responses are as follows:
   - A: Make across the board percentage cuts as required.
   - B: Cut some commodity programs more than others.
   - C: Continue payments to operators of small to moderate size farms and reduce payments to large farm operators.
   - D: Make payments only to farmers with the most severe financial need.
   - E: Other.
2. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

* Denotes a significant chi square value when alpha = .10.

*** Denotes a significant chi square value when alpha = .01

those strongly disagreeing with rural aid remained primarily in the single digits (Table 18).

Responses to this proposal showed no significant dependence upon any personal characteristics other than years of education. Education had a chi square value of 29.14 which was significant at the 10 percent level.

International Trade and Development

Trade Barrier Reductions

Since the 1985 Farm Bill there has been a substantial movement in the nations' capital to initiate a free trade system. The U.S.-Canada Free Trade Agreement was arranged in 1988 and their is currently support among law makers for a near-term solution to the GATT and a North America Free Trade Agreement between the U.S., Canada and Mexico (Sanders). When asked to respond to the idea of a free trade system, nearly forty-eight percent of those surveyed agreed that the U.S. should negotiate world-wide reductions in trade barriers and over 37 percent agreed strongly with such action. Only 6 percent of those responding either disagreed or disagreed strongly with this idea while 9 percent were unsure of their opinions toward this proposal.

At least one group within each individual characteristic agreed strongly with a proposal to reduce world-wide trade barriers. These included those between 50 to 64 years of age, gross sales over $500,000, years of education ending after grade school and participants with nonfarm incomes between $10,000 to $19,999 and over $40,000. Respondents with previous year program participation in cotton and disaster programs also agreed strongly with a reduction. The remaining groups followed overall results by having a plurality

TABLE 18

RESPONSES TO A PROPOSAL OF INCREASING FEDERAL FUNDING FOR RURAL DEVELOPMENT

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	102(23)	181(40)	74(16)	70(16)	22(5)		
Age						12	14.241
Under 35	5(18)	9(34)	6(22)	6(22)	1(4)		
35-49	25(17)	64(43)	30(20)	19(13)	11(7)		
50-64	44(24)	73(30)	26(14)	31(17)	8(5)		
65 or over	26(32)	29(36)	11(14)	12(15)	2(3)		
Gross Sales						16	20.339
Under $40,000	19(24)	41(52)	10(13)	7(9)	2(2)		
$ 40,000 - $99,999	31(26)	48(39)	21(17)	17(14)	5(4))		
$100,000 - $249,999	31(21)	57(39)	25(17)	26(18)	6(5)		
$250,000 - $499,999	11(18)	22(35)	9(14)	14(23)	6(10)		
Over $500,000	7(28)*	5(20)	6(24)	4(16)	3(12)		
Education						16	29.143**
Grade School	10(48)	6(28)	1(56)	4(19)	0(0)		
Some High School	9(36)	10(40)	1(4)	4(16)	1(4)		
H.S. Graduate	35(27)	52(41)	21(16)	15(12)	5(4)		
Some College	24(25)	39(40)	18(19)	13(13)	3(3)		
College Graduate	22(14)	67(40)	32(19)	32(19)	13(8)		
Non Farm Income						12	15.692
Under $10,000	25(23)	41(38)	18(17)	15(14)	9(8)		
$10,000 - $19,999	13(28)	19(40)	3(17)	6(13)	1(2)		
$20,000 - $40,000	8(18)	27(57)	6(13)	4(8)	2(4)		
Over $40,000	4(9)	17(38)	8(18)	10(22)	6(13)		
Previous Year Program Participation							
Wheat	76(22)	140(40)	61(18)	55(16)	14(4)	4	3.925
Feed Grains	33(27)	45(36)	22(17)	23(18)	3(2)	4	5.016
Cotton	23(26)	27(31)	19(22)	15(17)	4(4)	4	4.992
Conservation Reserve	21(27)	32(41)	14(18)	8(10)	3(4)	4	2.807
Disaster Program	32(25)	53(41)	20(16)	14(11)	9(7)	4	4.690

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

** Denotes a significant chi square value when alpha = .05.

who simply agreed with the negotiation of reductions in world-wide trade barriers (Table 19).

Gross sales was the only characteristic which had a significant chi square statistic. This significance occurred at a 1 percent confidence level with a value of 36.242.

Further questioning in this area included a proposal to reduce our agricultural import barriers in order to encourage more trade and overall results showed the greatest percentage of those responding (29%) disagreed with this alternative. Only 25 percent agreed, and just 10 percent of those responding agreed strongly.

Respondents in eight of the twenty-three individual categories went against general results by having a plurality which either agreed with a reduction in import barriers or were evenly split between agreement and disagreement. However, the greatest number of participants in the fifteen remaining groups supported overall results and disagreed with a reduction in agricultural import barriers (Table 20).

Gross sales, joined by previous year participation in cotton programs, was the only characteristic displaying any significant interaction with responses to a reduction in import barriers. Gross sales was valid at the 1 percent level with a value of 37.972 and cotton participation at 5 percent with a value of 8.347.

Export Enhancement Program

As mentioned previously, the federal government has continued to display a strong interest in the area of international agricultural trade and development. Assistance programs have been developed to satisfy the basic

TABLE 19

RESPONSES TO PROPOSAL OF NEGOTIATING REDUCTIONS IN WORLD-WIDE TRADE BARRIERS, OKLAHOMA 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	164(37)	216(48)	41(9)	18(4)	10(2)		
Age						12	8.926
Under 35	10(38)	15(58)	1(4)	0(0)	0(0)		
35-49	51(34)	78(52)	1(7)	7(5)	3(2)		
50-64	75(42)	75(42)	18(10)	7(4)	4(2)		
65 or over	26(31)	42(51)	10(12)	3(4)	2(2)		
Gross Sales						16	36.242***
Under $40,000	24(30)	35(43)	17(21)	3(4)	2(2)		
$ 40,000 - $99,999	41(35)	58(49)	9(7)	9(7)	2(2)		
$100,000 - $249,999	58(40)	72(49)	10(7)	1(1)	5(3)		
$250,000 - $499,999	22(36)	35(56)	2(3)	3(5)	0(0)		
Over $500,000	15(60)	8(32)	1(4)	1(4)	0(0)		
Education						16	22.691
Grade School	10(45)	7(32)	4(18)	1(5)	0(0)		
Some High School	7(28)	11(44)	6(24)	1(4)	0(0)		
H.S. Graduate	41(33)	58(47)	16(13)	5(4)	4(3)		
Some College	35(36)	47(49)	8(8)	5(5)	1(1)		
College Graduate	69(41)	86(51)	6(3)	5(3)	4(2)		
Non Farm Income						12	12.262
Under $10,000	38(34)	57(52)	9(8)	4(4)	2(2)		
$10,000 - $19,999	23(49)	20(42)	4(9)	0(0)	0(0)		
$20,000 - $40,000	15(33)	24(51)	4(8)	3(6)	1(2)		
Over $40,000	21(45)	17(37)	3(7)	2(4)	3(7)		
Previous Year Program Participation							
Wheat	119(35)	172(40)	30(9)	14(4)	8(2)	4	2.917
Feed Grains	44(35)	64(52)	10(8)	5(4)	1(1)	4	2.255
Cotton	40(45)	36(41)	7(8)	4(4)	1(1)	4	4.397
Conservation Reserve	27(35)	41(54)	5(6)	3(4)	1(1)	4	1.636
Disaster Program	58(46)	55(43)	11(8)	3(2)	1(1)	4	7.743

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1) . For example: age has 4 rows, 5 columns and df = 12.

*** Denotes a significant chi square value when alpha = .01

TABLE 20

RESPONSES TO A PROPOSAL OF REDUCING U. S. AGRICULTURAL IMPORT BARRIERS TO ENCOURAGE MORE TRADE, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	45(10)	111(25)	96(22)	126(29)	60(14)		
Age						12	13.597
Under 35	4(15)	8(31)	2(8)	7(27)	5(19)		
35-49	8(6)	37(25)	35(24)	46(31)	20(14)		
50-64	19(11)	43(24)	39(22)	51(239)	25(14)		
65 or over	14(18)	20(26)	17(22)	17(22)	10(12)		
Gross Sales						16	37.972***
Under $40,000	7(9)	23(29)	19(24)	20(25)	10(13)		
$ 40,000 - $99,999	14(13)	28(24)	22(19)	32(28)	19(16)		
$100,000 - $249,999	16(11)	35(24)	37(26)	40(28)	16(11)		
$250,000 - $499,999	4(8)	13(21)	10(16)	24(39)	10(16)		
Over $500,000	4(16)	7(29)	5(21)	3(13)	5(21)		
Education						16	18.007
Grade School	5(24)	5(24)	4(19)	5(24)	2(9)		
Some High School	3(12)	9(36)	4(16)	7(28)	2(8)		
H.S. Graduate	19(16)	28(23)	26(21)	34(28)	15(12)		
Some College	4(4)	22(23)	19(20)	33(35)	17(18)		
College Graduate	14(9)	44(27)	40(24)	41(25)	24(15)		
Non Farm Income						12	8.618
Under $10,000	9(8)	24(23)	20(19)	34(312)	19(18)		
$10,000 - $19,999	7(15)	9(20)	5(10)	16(35)	9(20)		
$20,000 - $40,000	5(11)	15(34)	10(22)	11(24)	4(9)		
Over $40,000	4(9)	12(27)	8(18)	15(33)	6(13)		
Previous Year Program Participation							
Wheat	35(10)	90(27)	74(22)	91(27)	47(14)	4	2.738
Feed Grains	11(9)	29(23)	28(23)	38(31)	17(14)	4	0.832
Cotton	11(13)	30(34)	18(20)	16(18)	13(15)	4	8.347*
Conservation Reserve	9(12)	20(26)	14(18)	23(30)	11(14)	4	0.855
Disaster Program	17(13)	29(23)	23(18)	39(31)	18(14)	4	3.582

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

* Denotes a significant chi square value when alpha = .10.

*** Denotes a significant chi square value when alpha = .01

human needs of those abroad and to facilitate and encourage trade. Targeted export assistance and enhancement conditions within domestic farm policies have been established in an attempt to recover lost export markets. After markets for U.S. farm products are identified, the programs assist firms selling U.S. products by providing market development activities and technical assistance, enhancing buyer awareness among those in importing countries and creating an appreciation of U.S. farm products in importing countries. One type of assistance is referred to as the Export Enhancement Program which can be described as an export PIK program (Knutson et al.). Oklahoma food producers were asked their opinions regarding a continuation of the export enhancement program (set forth by FSA 85) and other government export subsidies. In response, 19 percent agreed strongly with the continuation of such programs, 45 percent agreed, 23 percent were not sure, 9 percent disagreed and 4 percent strongly disagreed.

After further classification of individual characteristics and examination of previous year program enrollments, results showed that most respondents remained in agreement with a continuation of programs designed to increase export markets for domestic goods. The greatest number of those under 35 years of age agreed strongly with the proposal to continue government export subsidies, but the largest percentage of participants between 35 and 49 years old reversed this pattern by disagreeing with a continuation. A rather large average of 21 percent within each group were unsure of their responses toward this proposal.

Chi square values that were significant at the 1 percent level included numbers representing gross sales and previous year wheat program participation. The only remaining significant value occurred with age at a 5 percent confidence level (Table 21).

TABLE 21

RESPONSES TOWARD A PROPOSAL OF CONTINUING THE EXPORT ENHANCEMENT PROGRAM, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	83(19)	202(45)	101(23)	40(9)	17(4)		
Age						12	22.433**
Under 35	11(42)	9(35)	6(23)	0(0)	0(0)		
35-49	5(3)	35(24)	34(23)	47(32)	26(18)		
50-64	30(17)	82(46)	37(21)	19(11)	11(6)		
65 or over	17(22)	33(42)	23(29)	3(4)	2(3)		
Gross Sales						16	37.973***
Under $40,000	4(5)	33(42)	25(32)	15(19)	2(2)		
$ 40,000 - $99,999	21(18)	51(44)	31(26)	7(6)	7(6)		
$100,000 - $249,999	35(24)	69(48)	30(20)	7(5)	4(3)		
$250,000 - $499,999	14(23)	33(53)	8(13)	5(8)	2(3)		
Over $500,000	7(29)	9(37)	3(123)	3(13)	2(8)		
Education						16	7.201
Grade School	6(30)	9(45)	4(20)	1(5)	0(0)		
Some High School	5(24)	11(44)	6(20)	2(8)	1(4)		
H.S. Graduate	21(18)	53(43)	31(35)	14(1)	4(3)		
Some College	14(15)	47(49)	23(24)	8(8)	4(4)		
College Graduate	35(20)	73(47)	33(20)	13(8)	8(5)		
Non Farm Income						12	14.267
Under $10,000	26(24)	42(39)	21(20)	12(11)	6(6)		
$10,000 - $19,999	6(13)	26(55)	9(19)	5(11)	1(2)		
$20,000 - $40,000	9(20)	21(45)	11(24)	4(9)	1(2)		
Over $40,000	3(7)	21(47)	9(20)	7(15)	5(11)		
Previous Year Program Participation							
Wheat	72(21)	163(48)	72(21)	22(7)	9(3)	4	23.733***
Feed Grains	20(16)	66(54)	22(18)	13(10)	2(2)	4	7.403
Cotton	23(27)	37(43)	14(16)	7(8)	5(6)	4	6.978
Conservation Reserve	14(18)	38(49)	14(18)	8(11)	3(4)	4	1.366
Disaster Program	27(21)	54(43)	28(22)	10(8)	7(6)	4	2.585

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: age has 4 rows, 5 columns and df = 12.

** Denotes a significant chi square value when alpha = .05.

*** Denotes a significant chi square value when alpha = .01

Developing Country Assistance

Even though the largest percentage of those responding to the survey supported the reduction of trade barriers, a plurality also failed to agree with the proposal of assisting developing countries as a means of increasing their agricultural productivity and trade potential. A combined fifty-one percent either disagreed or strongly disagreed with such action as opposed to just over twenty-nine percent of the participants who agreed (in some manner) with this form of assistance.

Although the greatest percentage of participants within most groups were not in favor of the proposal to aid developing countries, there were exceptions. The largest number of participants within four groups failed to follow overall results and agreed with the idea of assisting developing countries. These four were: those over 65, participants with gross sales over $500,000, those with some high school education and respondents who participated in feed grain programs during the previous year. Once again, an unusually large number of people within most categories (20 percent) were not sure if assistance should be provided (Table 22).

Previous year program participation in cotton and disaster programs were the only characteristics to display any significant correlation with responses to this proposal. Cotton had a chi square value of 12.642 and the disaster program a value of 9.655. Both were valid at the 5 percent level.

Conclusion

General results imply that the greatest number of Oklahoma food producers who responded to this survey preferred a continuation of the

TABLE 22

RESPONSES TO A PROPOSAL OF ASSISTING DEVELOPING COUNTRIES IN INCREASING THEIR AGRICULTURAL PRODUCTIVITY AND TRADE POTENTIAL, OKLAHOMA, 1989

Personal Characteristics	Number of Responses (Percent) Strongly Agree	Agree	Not Sure	Dis-agree	Strongly Disagree	Degrees of Freedom[1]	Chi Square
Overall Results	21(5)	105(24)	89(20)	142(33)	77(18)		
Age						12	11.691
Under 35	2(8)	3(11)	4(15)	9(35)	8(31)		
35-49	5(3)	35(24)	34(23)	47(32)	26(18)		
50-64	8(5)	42(24)	52(18)	39(34)	34(19)		
65 or over	5(7)	23(30)	18(24)	21(28)	8(11)		
Gross Sales						16	11.957
Under $40,000	3(4)	21(27)	18(23)	26(33)	10(13)		
$ 40,000 - $99,999	6(5)	26(22)	24(21)	33(28)	27(23)		
$100,000 - $249,999	6(4)	34(24)	28(20)	51(36)	23(16)		
$250,000 - $499,999	2(3)	16(26)	12(21)	21(34)	10(16)		
Over $500,000	3(14)	5(23)	4(18)	4(18)	6(27)		
Education						16	18.007
Grade School	2(10)	2(10)	6(30)	6(30)	4(20)		
Some High School	1(4)	9(39)	6(26)	5(22)	2(9)		
H.S. Graduate	3(3)	28(23)	30(25)	35(29)	24(20)		
Some College	4(4)	22(23)	16(17)	35(37)	18(19)		
College Graduate	10(6)	42(26)	29(18)	55(33)	28(17)		
Non Farm Income						12	17.502
Under $10,000	6(16)	16(15)	31(29)	28(26)	25(24)		
$10,000 - $19,999	4(9)	12(26)	9(19)	15(33)	6(13)		
$20,000 - $40,000	3(7)	11(24)	7(15)	20(43)	5(11)		
Over $40,000	1(2)	13(29)	6(13)	15(33)	10(22)		
Previous Year Program Participation							
Wheat	13(4)	82(25)	71(21)	106(32)	61(18)	4	3.769
Feed Grains	5(4)	34(28)	26(21)	32(26)	26(21)	4	4.562
Cotton	2(3)	19(22)	27(31)	19(22)	19(22)	4	12.642**
Conservation Reserve	4(5)	18(23)	14(18)	30(39)	11(15)	4	2.042
Disaster Program	10(8)	26(21)	27(22)	33(26)	29(23)	4	9.655**

1. Chi square degrees of freedom are computed as (rows-1) x (columns-1). For example: gross sales has 5 rows, 5 columns and df = 16.

** Denotes a significant chi square value when alpha = .05.

legislation enacted by the 1985 Food Security Act. when given other alternatives. Overall response rates show that participants were, for the most part, in favor of a continuation of these policies, more specifically the loan rates, annual paid land diversion, PIK certificates, the FOR and CRP programs, crop insurance, and payment limits. However, there were also those who felt certain programs required modifications or even abolishment, in some cases, before they should be considered among the farm policies being implemented in the 1990s. These policies involved acreage bases, target prices, and less discretion by the Secretary of Agriculture.

Further examination of classifications within each personal characteristic and previous year program participation showed a contradictory pattern among the greatest percentage of respondents in three particular groups. Those with gross sales under $40,000, gross sales over $500,000 and participants with a nonfarm income over $40,000, all seemed to favor the elimination of government involvement in agriculture. Eliminating commodity programs, target prices, loan rates and the PIK program was a prevalent response among the greatest number of respondents in each of these groups, as was reducing payment limits and trade barriers. The greatest number of those with either a grade school education or some high school education favored an increase in both payments to smaller farm operators and loan rates. Also, the largest percentage of participants in previous year wheat and cotton programs favored a reduction in trade barriers. Only the groups mentioned above displayed any consistent patterns among responses to specific agricultural legislation and individual characteristics.

Results from chi square analysis showed there were no particular patterns of significant correlation between any one characteristic and responses related to a certain proposal regarding agricultural legislation. However, gross

sales, previous year participation in wheat programs and previous year participation in cotton programs, all displayed a significant level of interaction with responses to at least twelve of the twenty questions being analyzed. This is to say that producer policy opinions were significantly dependent on their gross sales levels and whether they participated in wheat and/or cotton programs during the previous year. Further testing led to results in which gross sales had a significant chi square value for 14 of 20 questions, wheat participation for thirteen and cotton participation for twelve. Of these three groups, both gross sales and previous year wheat program participation had eleven chi square values that proved to be significant at the 1 percent level.

Education was the only other characteristic, among the nine being tested, which displayed a significant level of interaction with responses to at least half of the questions comprising this study. Only six of these ten questions produced chi square values which were significant at a 1 percent confidence interval. The next highest number displaying any significant correlation between responses and personal characteristics occurred with previous year participation in feed grain programs, which had a total of six.

Analysis involving percentage comparisons of responses between each personal characteristic and chi square testing provided results which were important in determining preferences of those responding to this survey. The resulting information may aid policy makers in developing agricultural legislation in the future.

CHAPTER III

MULTINOMINAL LOGIT ANALYSIS

Farm policy is quite unique in that no other domestic sector has price and income programs resembling those of agriculture (Runge and Myers). As a result of an ever changing economy, revisions designed to maintain the effectiveness of these programs are continuously needed. During this process, policy makers are often provided with information regarding producers' opinions toward food and farm legislation. The ability to analyze these opinions can become an important tool for policy evaluation, and requires empirical analysis. In this study, a multinomial logit model will be used to determine if the probability associated with survey participants' policy choices can be predicted, given their individual characteristics. This model will focus on food producers' agricultural policy preferences in hopes of providing information concerning those characteristics which influence operators' opinions of both current and future farm programs.

Logit Model

A logit model is implemented is this study to determine whether a food producer is more or less likely to prefer a specific policy alternative given certain characteristics. This likelihood involves probability levels, more specifically a value for change in probbability which can be interpreted in a manner similar to a simple regression equation. For example, if a change in probability for an

independent variable is .25, then with a 1 percent change in that variable the probability of a producer selecting a certain policy proposal increases by 25 percent.

The logit model is based on the cumulative logistic probability function, which determines the probability associated with a specific outcome, given knowledge of certain factors. This model is defined by the following formula:

$$P_i = F(Z_i) = F(\alpha+\beta X_i) = \frac{1}{1+e^{-Z_i}} = \frac{1}{1+e^{(-\alpha+\beta X_i)}}$$

where: P_i represents the probability that an individual will make a certain choice, given knowledge of X_i and e is the base of natural logarithms ($\approx$ 2.718). Alpha (α) denotes the intercept value, ß the coefficient estimate, and X_i the ith row of the n x p matrix of regressors (typically characteristics). As specified in the formula, $Z_i = \alpha + Bx_i$ and i=1,...,n where n=sample size and p=number of coefficients (Pindyck and Rubinfeld and Capps,1983). A major justification for use of a logit model is the fact that the logistic distribution function $F(Z_i)$ is both similar to, and has a simpler form than the normal distribution function (Amemiya).

The model specified above $F(Z_i)$ can be estimated by first multiplying both sides of the equation by $1 + e^{-Z_i}$ to get

$$(1+e^{-Z_i})\, P_i = 1$$

If we divide by P_i and then subtract by 1, results are

$$e^{-Z_i} = \frac{1}{P_i} - 1 = \frac{1-P_i}{P_i}$$

However, $e^{Z_i} = \frac{1}{e^{-Z_i}}$, so

$$e^{Z_i} = \frac{P_i}{1-P_i}$$

Finally, taking the natural logarithm of both sides will lead to

$$Z_i = \log\left(\frac{P_i}{1-P_i}\right)$$

which is equal to $\alpha + \beta X_i$ •

The dependent variable of log (P_i/ 1-P_i) is the logarithm of the odds that a particular choice will be made. An additional advantage of the logit procedure is that it transforms the task of predicting probabilities within a (0,1) interval to the problem of predicting the odds of an event's taking place within the range of the entire line. The slope of the cumulative logistic distribution is greatest at P= $\frac{1}{2}$, implying that changes in explanatory variables will have the greatest influence on the probability of choosing a certain alternative at the midpoint of the distribution. Low slopes near the endpoints of the distribution imply that substantial changes in X are required to bring about a small change in probability.

Estimating Z_i directly would not be appropriate. If P_i were to equal either 0 or 1, then the odds, $P_i/(1-P_i)$, would equal either 0 or infinity and the logarithm of these odds would then be undefined. Therefore, the application of ordinary least-squares estimation to Z_i, where P_i is set equal to 1 if a given choice is made and 0 otherwise, would cause serious difficulties. Correct estimation of the logit model is best understood by distinguishing between studies containing individual observations as the basic units of analysis and studies involving the use of grouped data (Pindyck and Rubinfeld).

First, consider a case in which information about the frequency of an event taking place in a given subgroup of the population is available, but there is no information concerning the behavior of every individual in that subgroup. In other words, assume that a single independent explanatory variable, such as gross sales, is depicted by S different values in the sample (i.e. $40,000, $100,000), with n_1 individuals having income X_1, $n_2$individuals having X_2 etc. Furthermore, let r_1 represent the number of times the first alternative is selected by those with income X_1 (voting yes), r_2 the number of times the first alternative is selected by those with income X_2 and so on. Now, estimating the logit model by using an estimate of the probability associated with a given choice for each group of individuals is a feasible approach. In doing so, we approximate P_i as

$$\hat{P}_i = \frac{r_i}{n_i}$$

and thus can estimate the logit probability model by using P_i to approximate P_i so that

$$\log \frac{P_i}{1-P_i} \approx \log \frac{\hat{P}_i}{1-\hat{P}_i}$$

and

$$\log \frac{\hat{P}_i}{1-\hat{P}_i} = \log \frac{r_i/n_i}{1-r_i/n_i} = \log \frac{r_i}{n_i-r_i} = \alpha^* + \beta^* X_i + \varepsilon_i$$

The above equation is linear in the parameters and can be estimated using ordinary least squares. It should be noted that the following grouping procedure is also used when individual observations are available, as is the case in this study. Results from both of these procedures improve as the number of observations associated with each levels of X increases in magnitude. More specifically, the estimated parameters are consistent when

the sample in each group gets arbitrarily large. Consistency is necessary to assure that the distribution of observations are available and, unlike a common regression model, the error term arises because $\hat{P}_i$ is only an estimate of the true probability P_i (Pindyck and Rubinfeld).

Goodness of Fit

The logit model was implemented using the LOGIST procedure available in SAS. After running each model, the model likelihood ratio (L.R.) chi square, its p-value, and degrees of freedom are printed. Also formulated is a statistic (R) which measures the predictive ability of the model. The L.R. chi square is twice the difference between the log likelihood of the final model and the likelihood of the model based only on intercepts. The R statistic is similar to the multiple correlation coefficient after correcting for the number of parameters estimated and is computed as follows:

$$R = \sqrt{(\text{model chi square}-2p)/(-2L(0))}$$

where p is the number of variables in the model, excluding intercepts, and L(0) is the maximum log-likelihood with only intercepts in the model. If the model chi square is less than 2p, R will be set equal to 0 (Harvell). R is derived from Akaike's information criterion and is related to Mallows' C (Atkinson and Harrell) which is:

$$C(i,\alpha) = ESS + \alpha q_i \hat{\sigma}^2$$

where α is the intercept, $\hat{\sigma}^2$ is an estimate of variance, and the residual sum of squares for the ith model after n observations is ESS. Q_i represents the ith coefficient estimate. Deriving R from the previous equation allows for the

implementation of the log-likelihood into the model therefore provides a better test for goodness of fit (Atkinson and Harrell).

R^2 is the proportion of log-likelihood explained by the model and will have a value of 0 if the model is of no value and 1 if the model is explained perfectly. The R^2, resulting from the R value provided by the LOGIST procedure, is a pseudo R (incorporates likelihood ratios) with corrections for degrees of freedom. However, Kennedy states that R^2 values are likely to be very low for this type of regression due to the fact that the deviations are great with the type of variables involved in logit analysis. The author also suggests that R^2 should not be used as a test for goodness of fit in this context; therefore a model chi square value will also be provided as further estimation criterion.

Multinomial Analysis of Farm Policy Preferences

A multinomial logit model was used to analyze factors affecting farm operators' policy preferences. Multinomial logit was chosen over multinomial probit because it is considered to be more practical in terms of econometric theory and involves fewer computations (Capps and Kramer). Eighteen survey questions were tested using this procedure[1]. However, only eleven of these questions had ordered survey responses, which allow for the use of a qualitative dependent variable. Results from these eleven questions will be presented and discussed. The questions comprising the multinomial logit analysis were chosen because of their current and future impacts on Americas' agricultural producers and involved programs ranging from those found in the

[1] Chi square analysis was applicable for all survey questions because this method is capable of testing for interaction with both ordered and unordered responses. Multinomial logit involves testing for the the probability of a certain response given the probability of remaining responses, which cannot be done if responses are not ordered. Examples of ordered responses are section A, question 4 and section D, question 4, in the appendix. Examples of unordered responses are section A, questions 1 through 3, also found in the appendix.

1985 FSA to international trade. These questions, along with corresponding results, are available in the appendix.

As in chi square testing, the selection of a given survey response is assumed to be a function of nine operator characteristics, which are as follows: age, education, gross sales, nonfarm income and previous year program participation in wheat, feed grains, cotton, the Conservation Reserve and disaster programs. Once again, these variables were chosen because they were expected to have some influence on policy opinions and displayed significance in previous research. In logit analysis, the explanatory variables are dummy variables. A dummy variable is an independent variable used to determine the effects of a qualitative characteristic. Values are such that a 1 is assigned to the explanatory variable being tested (i.e. age over 65) and 0 is assigned to remaining alternatives (responses from any of the remaining age groups) (Mendenhall et.al). A list and description of the independent variables used in this analysis can be found on Table 23. With the exception of previous year program enrollments, which were treated as five individual characteristics, one dummy variable for each characteristic was ommitted to assure that perfect collinearity between the variables did not exist (Rubinfeld and Pindyck).

As part of the modeling procedure, a polychotomous random variable (Y_i) that corresponds to a response of a certain survey question (Y), was specified. For example i=0 is a "Not sure" response, i=1 a "Yes" response and i=2 a "No" response for a given question Y. The probability of a survey participant selecting a given response (P_i) depends on a vector of independent variables associated with producer j, or operator characteristics comprising this study.

TABLE 23

INDEPENDENT VARIABLES USED IN MULTINOMIAL LOGIT ANALYSIS

Variable*	Description
AGE1	Age between 35-49=1;else=0
AGE2	Age between 50=64=1;else=0
AGE3	Age over 65=1;else=0
SALES1	Gross sales between $40,000-99,999=1;else=0
SALES2	Gross sales between $100,000-249,999=1;else=0
SALES3	Gross sales between $250,00-499,999=1;else=0
SALES4	Gross sales over $500,000=1;else=0
ED1	Some high school=1;else=0
ED2	High school graduate=1;else=0
ED3	Some college or technical school=1;else=0
ED4	College graduate=1;else=0
NONFM1	Nonfarm income between $10,000-19,999=1;else=0
NONFM2	Nonfarm income between $20,000-40,000=1;else=0
NONFM3	Nonfarm income over $40,000=1;else=0
WHEAT	Previous year participation in Wheat pgms=1;else=0
FEEDGR	Previous year participation in Feed Grain pgms=1;else=0
COTTON	Previous year participation in Cotton pgms=1;else=0
CONRES	Previous year participation in the Conservation Reserve Program=1;else=0
DISPGM	Previous year participation in the Disaster Program=1;else=0

* With the exception of previous year program enrollments, which were treated as five individual characteristics, one dummy variable for each characteristic was ommitted to assure that perfect collinearity between the variables did not exist (Pindyck and Rubinfeld).

The probability of operator j selecting survey response Y_i, (P_i^j) is a function of his or her characteristics such that

$$P_i^j = \exp(X_j,\beta) = \sum_{i=1}^{T} \exp(X_j,\beta)$$

where ß is a vector of coefficients to be estimated and "T" corresponds to the number of possible responses for a particular survey question (Barkley and Flinchbaugh).

Model Specification

The multinomial logit model in this study was specified as follows:

$$\log P_i/P_j = \beta_{0ij} + \beta_{1ij} AGE1 + \beta_{2ij} AGE2 + \beta_{3ij} AGE3 + \beta_{4ij} SALES1 + \beta_{5ij} SALES2 + \beta_{6ij} SALES3 + \beta_{7ij} SALES4 + \beta_{8ij} ED1 + \beta_{9ij} ED2 + \beta_{10ij} ED3 + \beta_{11ij} ED4 + \beta_{12ij} NONFM1 + \beta_{13ij} NONFM2 + \beta_{14ij} NONFM3 + \beta_{15ij} WHEAT + \beta_{16ij} FEEDGR + \beta_{17ij} COTTON + \beta_{18ij} CONRES + \beta_{19ij} DISPGM$$

where:

subscript i	=	ith class of the qualitative dependent variable
subscript j	=	jth class of the qualitative dependent variable
$\log P_i/P_j$	=	natural logarithm of the probability of a class i system relative to the probability of a class j system
AGE	=	age of farm operator measured in years
SALES	=	approximate annual gross sales
ED	=	last year of school completed
NONFM	=	approximate amount of off farm income
WHEAT	=	previous year enrollment in wheat programs
FEEDGR	=	previous year enrollment in feed grain programs
COTTON	=	previous year enrollment in cotton programs

CONRES = previous year enrollment in the Conservation Reserve Program

DISPGM = previous year enrollment in the Disaster program

The intercept value (denoted by the parameter $=\beta_{oi}$) is provided by the LOGIST procedure in order to calculate probabilities and changes in probability. Therefore, when the dependent variable represents three alternatives, (Yes, No and Not Sure) two intercept values are given so that probabilities may be computed using the procedure described later in this chapter. Similarly, when the dependent variable represents five alternatives, (Strongly Agree, Agree, Not Sure, Disagree and Strongly Disagree) four intercept values are provided.

The estimated coefficients of the multinomial procedure reveal the direction of change in the probability of selecting a given response resulting from a change in the independent variables. However, these coefficients do not represent the actual change in probability. According to Oral Capps, the initial step in determining estimated changes in probability when given LOGIST output is to find a value, K, which is a linear combination of beta's and their respected means such that

$$K = \Sigma(B_j \cdot x_i)$$

The resulting K value is then used to calculate probabilities. Given five responses, one must calculate five probabilities beginning with the probability that Y=0 through the probability that Y=4 i.e. Y=0, Y=1, Y=2....Y=4. This can be done using the following formulas:

Probability Y=0 is 1-Probability $Y \geq 1$ which is equal to

$$\left(\frac{1}{1+e^{K} \cdot e^{\alpha 1}}\right)$$

where α_1 = intercept one.

Probability Y=1 is the Prob.Y $\geq$ 1 - Prob. Y $\geq$ 2 which equals

$$(e^{k} \cdot e^{\alpha 1}/1 + e^{k} \cdot e^{\alpha 1}) - (e^{k} \cdot e^{\alpha 2}/1+e^{k} \cdot e^{\alpha 2})$$

Probability Y=2 is the Prob.Y $\geq$ 2 - Prob. Y $\geq$ 3 which equals

$$(e^{k} \cdot e^{\alpha 2}/1+e^{k} \cdot e^{\alpha 2}) - (e^{k} \cdot e^{\alpha 3}/1+e^{k} \cdot e^{\alpha 3})$$

Probability Y=3 is the Prob.Y $\geq$ 3 - Prob. Y $\geq$ 4 which equals

$$(e^{k} \cdot e^{\alpha 3}/1+e^{k} \cdot e^{\alpha 3}) - (e^{k} \cdot e^{\alpha 4}/1+e^{k} \cdot e^{\alpha 4})$$

Probability Y = 4 = $e^{k} \cdot e^{\alpha 4}/1+e^{k} \cdot e^{\alpha 4}$ or 1-Prob.Y=0 through 3.

The sum of these probabilities must be equal to one to satisfy probability axioms (Capps,1991 and Larson).

Changes in probability are calculated by taking the partial derivative of the probability that Y=i with respect to K, which is the probability density function f(z) for the ith value, and then multiplying it by each beta coefficient such that:

$$\text{Change in Probability} = \frac{\partial \text{Prob } Y = i}{\partial K} \cdot \beta_j = f(z) \cdot \beta_j$$

Interpretation of this value, except in terms of probabilities, is equivalent to the partial regression coefficient associated with a conventional regression model. More specifically, the resulting value from the previous equation can be defined as the probability that a participant will select the ith choice given a one percent change in the explanatory variable with i = 0 to 4.

Probability changes were calculated for each independent variable while holding the other variables constant at their sample means and reported in Tables 25 through 27. The "Change in Probability" in this study is the probability of a respondent answering "yes" in questions 1 through 4 and

"agree" or "strongly agree" in questions 5 through 11, given a one unit change in the independent variable X , ceterus paribus. Probability changes for a yes response (with yes=1) were computed as:

$$\frac{\partial Prob\ Y = 1}{\partial K} \cdot \beta_j$$

Changes in probability for agree and disagree were also computed using the previous formula, but with Y=3 for agree and Y=4 for strongly agree. After being calculated, each change in probability for agree and strongly agree were summed to determine the "Change in Probability" of a participant agreeing or disagreeing (Capps,1991). Furthermore, dependent variable values were assigned so that a positive coefficient represents a producer who is more likely to favor the proposal in question, while a negative coefficient depicts an operator who is less likely to prefer the idea being proposed (Capps,1991).

Theoretical Expectations

Several hypothesis will be tested using the multinomial logit model. These tests will involve the use of all nine personal characteristics mentioned previously in this chapter. Aggregate expectations concerning these hypotheses are based on the premise that individuals will act to maximize both profit and utility (with profit being considered a component of utility maximization). Furthermore, previous research has indicated that individuals act in their own self-interest in determining preferences for government policy in agriculture and farmer participation in government programs may vary substantially as the needs and characteristics of each farm and its operator(s) changes (Goodwin and Featherstone, Variyam et.al, and Barkely and Flinchbaugh). Because of these facts, theoretical expectations will be primarily

limited to the aggregate level and will be based on both economic theory and previous research.

Operator age is expected to have some influence on policy decisions. Determining policy preferences according to individual age groups would be extremely difficult and lacking in terms of economic theory. However, results from the previously mentioned studies indicate that older operators will have the greatest influence upon agricultural legislation because of their increased experience with production and farm policy. This influence is assumed to be positive as age increases.

Expectations are that gross sales will have a very significant influence upon agricultural policy, especially programs which offer a possibility of increasing or reducing profits. Payment limit and financial assistance increases are presumed to be positively influenced by those with lower income levels, but declining in popularity as levels increase and, more specifically, among those having a substantial ($100,000 or better) amount of farm income.

Education is expected to have a positive influence upon legislation based on the idea that agricultural programs often require an understanding which is more prevalent among those with a higher educational level. This assumption involves the premise that as understanding increases, program popularity will also increase.

Assumptions involving nonfarm income are that this characteristic will have only a small influence on agricultural policy preferences. Participants with a greater off-farm income are presumed to be less dependent upon government programs, and therefore will probably be more likely to prefer less government intervention in the market system.

Previous year participation in wheat programs are expected to have a large influence on any policy alternatives involving the production or revenue

associated with the crop itself. This is because wheat remains a commonly produced crop throughout the state of Oklahoma. Cotton participation, although concentrated in the Southwest part of the state, is also expected to have some influence on legislative proposals, as is previous year disaster program enrollment. The remaining two categories within this group (feed grain and Conservation Reserve program participation) are presumed to have little, if any, influence on policy choices.

Results of the Multinomial Logit Analysis

Multinomial analysis conducted in this study involved the use of nineteen explanatory variables. Statistical significance was measured for each of these at the one, five and ten percent levels. With the exception of previous year participation in feed grain programs, all proved to be statistically significant in at least one equation, or question being tested.

Age

Expectations were that operator age would have some influence on policy decisions and this influence would be positive as age increased. This assumption was partially supported by results showing age as having a small influence on operators' policy opinions and, in a few cases, a positive relationship did occur as this variable increased. Age coefficients from five questions moved in a positive direction as levels increased (Q. 2,3,6,7 and 10;Tables 25-27). These questions involved extending the marketing loan, continuing PIK certificates, influencing number and size of farms through government commodity programs, and increasing funding for rural development. Furthermore, the establishment of production and marketing

TABLE 24

MULTINOMIAL LOGIT RESULTS FOR QUESTIONS INVOLVING 1985 FSA COMMODITY PROGRAMS

Dependent Variables: Q.1 Continue Annual Paid Land Diversion as an option available to the Secretary of Agriculture. (No=0, Yes=1, Not Sure=2).
Q.2 Extend the Marketing Loan to include wheat, feed grains and soybeans. (No=0, Yes=1, Not Sure=2).
Q.3 Continue PIK certificates as long as government-controlled stocks exist. (No=0, Yes=1, Not Sures=2).

	Q1			Q2			Q3		
	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.
INTERCEPT 1	.3734	(.903)		.6617	(1.650)		(.7793)	(1.850)*	
INTERCEPT 2	-.5079	(-1.227)		-.4197	(-1.049)		(.0964)	(.230)	
AGE 1	-.5211	(-1.263)	-.099	-.6708	(-1.753)*	-.156	(-.2632)	(-.698)	-.038
AGE 2	-.7222	(-1.811)*	-.137	-.3337	(-.899)	-.078	(-.6792)	(-1.859)*	-.097
AGE 3	-.5539	(-1.328)	-.105	-.2035	(-.506)	-.047	(.0276)	(.070)	.004
SALES 1	.5492	(1.908)*	.104	.0162	(.557)	.004	(.4623)	(1.577)	.066
SALES 2	1.2375	(4.059)***	.234	.2772	(.930)	.065	(.2549)	(.866)	.036
SALES 3	.3871	(1.096)	.073	.0997	(.283)	.023	(.0961)	(.277)	.014
SALES 4	.9698	(1.947)*	.183	.066	(.142)	.015	(.7476)	(1.602)	.107
ED 1	.0706	(.140)	.013	-.3344	(-.654)	-.078	(-2.1861)	(-3.805)***	-.311
ED 2	.3634	(.925)	.069	.0768	(.196)	.018	(-.2291)	(-.571)	-.033
ED 3	.2868	(.702)	.054	-.2262	(-.559)	-.053	(-.4849)	(-1.159)	-.069
ED 4	.2085	(.521)	.039	-.1932	(-.486)	-.044	(-.4634)	(-1.128)	-.066
NONFM 1	.3201	(.930)	.061	-.0465	(-.149)	-.012	(.2098)	(.642)	.030
NONFM 2	-.2969	(-.890)	-.056	.0871	(.267)	.020	(-.0651)	(-.201)	-.009
NONFM 3	.2346	(.652)	.044	-.3549	(-1.054)	-.083	(.4818)	(1.382)	.069
WHEAT	.46	(1.796)*	.087	-.7585	(2.933)***	.177	(.4957)	(1.950)*	.071
FEEDGR	.2148	(.920)	.041	.2329	(1.061)	.054	(-.3612)	(-1.625)	-.051
COTTON	.5398	(2.035)*	.102	.8198	(3.182)***	.191	(.309)	1.249	.044
CONRES	.2468	(.914)	.047	..685	(.664)	.039	(.3236)	1.231	.046
DISPGM	-.2922	(-1.319)	-.055	-.1357	(-.637)	-.032	(.4359)	2.006*	.062
Model Chi-Square		54.85***			44.61***			48.87***	
R-Square		.020			.010			.012	

* significant at the 10 percent level
** significant at the 5 percent level.
*** significant at the 1 percent level.

TABLE 25

MULTINOMIAL LOGIT RESULTS FOR QUESTIONS CONCERNING CONSERVATION, FEDERAL SPENDING AND OTHER ISSUES

Dependent Variables:

Q.4 Make soil conservation and water quality compliance a requirement before receiving farm program benefits. (No=0, Yes=1, Not Sure=2).
Q.5 Change future farm programs to help those with gross sales below $250,000. (SD=0, D=1, NS=2, A=3, SA=4).[1]
Q.6 Use government commodity programs to influence number and size of farms. (SD=0, D=1, NS=2, A=3, SA=4).
Q.7 Increase funding for rural development (SD=0, D=1, NS=2, A=3, SA=4).
Q.8 Reduce the federal deficit by reducing farm program expenditures (SD=0, D=1, NS=2, A=3, SA=4).

	Q4			Q5			Q6			Q7			Q8		
	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.
INTERCEPT 1	1.1686	(2.694)**		1.8120	(4.395)***		1.7390	(4.286)***		3.4463	(7.525)***		2.6929	(6.403)***	
INTERCEPT 2	.7770	(1.799)*		.4288	(1.084)		.2303	(.582)		1.7820	(4.267)***		.9946	(2.482)**	
INTERCEPT 3	--	--		-.1148	(-.2917)		-.8456	(-2.127)**		.9115	(2.215)**		.3992	(1.003)	
INTERCEPT 4	--	--		-1.7212	(-.4.268)***		2.7613	(-6.320)***		-.9539	(-2.321)**		-1.5340	(-3.734)***	
AGE 1	-.4551	(-1.120)	-.023	.3274	(.981)	-.009	-.2002	(-.591)	.032	.2142	(.623)	.045	-0.408	(-.122)	-.004
AGE 2	-1.0238	(-2.608)**	-.053	.2129	(.657)	-.006	.1349	(.404)	-.021	.3034	(.895)	.064	-.0670	(-.205)	-.006
AGE 3	-.5297	(-1.271)	-.027	.1088	(.306)	-.003	.636-.	(1.728)*	.100	.5201	(1.393)	.110	.2475	(-.701)	-.024
SALES 1	-.0647	(.212)	.003	.5921	(2.144)**	-.017	.0001	(.001)	-.001	-.2166	(-.796)	-.046	-.1355	(-.490)	-.013
SALES 2	.1757	(.574)	.009	-.2751	(-.994)	.007	-.1952	(-.704)	.031	-.2932	(-1.062)	-.062	-.2672	(-.976)	-.026
SALES 3	.2260	(.599)	.012	-1.2054	(-3.573)***	.034	-.7113	(-2.120)**	.112	-.7248	(-2.152)**	-.153	.2220	(.662)	.021
SALES 4	-.1170	(-.251)	-.006	-1.6810	(-3.931)***	.047	-.8050	(-1.876)*	.127	-.3927	(-.879)	-.083	-.3645	(-.803)	-.035
ED 1	-.1979	(-.389)	-.010	-.2140	(-.432)	.006	.2760	(.577)	--.044	-.2466	(-.472)	-.052	.2136	(.439)	.021
ED 2	-.1089	(-.285)	-.006	.3340	(.889)	-.009	.1883	(.511)	-.030	-.3910	(-.999)	-.083	-.2285	(-.612)	-.022
ED 3	.5300	(1.291)	.027	.1842	(.477)	-.005	.0308	(.081)	-.005	-.5155	(-1.266)	-.109	.0838	(.219)	.008
ED 4	.3545	(.902)	.018	-.1229	(-.325)	.003	-.4708	(-1.260)	-.074	-1.0356	(-2.597)**	-.219	.3045	(.819)	.029
NONFM 1	-.4723	(-1.514)	-.024	.7167	(2.416)**	-.020	.5017	(1.700)	.080	.4481	(1.514)	.095	-.1641	(-.566)	-.016
NONFM 2	.8167	(2.135)**	.042	0.2057	(-.718)	-.006	.2042	(.697)	.032	.4027	(1.347)	.085	-.3923	(-1.319)	-.038
NONFM 3	.5193	(1.449)	.027	.4928	(1.517)	-.014	-.3084	(-.979)	.049	-.4579	(-1.369)	-.097	.4305	(1.374)	.042
WHEAT	.0650	(.240)	.003	.3152	(1.294)	-.009	.0010	(.004)	-.001	.1020	(.414)	.022	-.4667	(-1.883)*	-.045
FEEDGR	.1382	(.606)	.007	.1648	(.798)	-.005	-.1143	(-.566)	.018	.1381	(.675)	.029	-.2012	(-.972)	-.019
COTTON	.2867	(1.138)	.015	-.0078	(-.033)	.001	-.0934	(-.407)	.015	-.1039	(-.448)	-.022	-.9104	(-3.784)***	-.088
CONRES	-.1031	(-.390)	-.005	-.4125	(-2.046)*	.012	-.1927	(-.787)	.030	.3782	(1.616)	.080	-.3120	(-1.327)	-.030
DISPGM	-.0166	(-.074)	-.001	-.0041	(-.019)	.001	-.0464	(-.231)	.007	.1583	(.787)	.033	.0281	(.138)	.003
Model Chi-Square		34.86**			69.12***			49.84***			37.52***			47.74***	
R-Square		.002			.023			.010			.010			.010	

* significant at the 10 percent level
** significant at the 5 percent level.
*** significant at the 1 percent level.
1 SD = storngly disgagree, D = disagree, NS = not sure, A = agree, SA = strongly agree.

TABLE 26

MULTINOMIAL RESULTS FOR QUESTIONS CONCERNING INTERNATIONAL TRADE AND DEVELOPMENT

Dependent Variables: Q.9 The U.S. should negotiate world wide reductions in trade barriers. (SD=0, D=1, NS=2, A=3, SA=4)[1]
Q.10 The U.S. should join with other major exporting countries to establish production and marketing controls. (SD=0, D=1, NS=2, A=3, SA=4)
Q.11 The U.S. should continue the export enhancement program and other government export subsidies. (SD=0, D=1, NS=2, A=3, SA=4)

	Q9			Q10			Q11		
	Coeffi-cient	tStat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.	Coeffi-cient	t-Stat	Change in Prob.
INTERCEPT 1	3.5359	(6.663)***		2.8360	(6.587)***		3.3242	(6.920)***	
INTERCEPT 2	2.4523	(5.256)***		1.2394	(3.039)***		1.9668	(4.516)***	
INTERCEPT 3	1.4127	(3.177)***		.3180	(.787)		.5501	(1.291)	
INTERCEPT 4	-1.0166	(-2.302)**		-1.5174	(-3.659)***		-1.6574	(-3.827)***	
AGE 1	-.2359	(-.638)	-.040	-.5310	(-1.511)	-.042	-.6866	(-1.849)*	-.085
AGE 2	.1348	(.371)	.023	-.3726	(-1.079)	-.030	-.6891	(-1.887)*	-.086
AGE 3	-.0083	(-.021)	-.001	.1206	(.323)	.010	-.3628	(-.919)	-.045
SALES 1	.5664	(1.944)*	.095	-.0957	(-.348)	-.008	.4259	(1.521)	.053
SALES 2	.9359	(3.167)***	.157	-.2542	(-.918)	-.020	.868	(3.050)***	.110
SALES 3	.8496	(2.439)**	.143	-.2729	(-.818)	-.022	1.0043	(2.967)***	.125
SALES 4	1.5426	(3.158)***	.259	.5341	(1.22)	.042	.8516	(1.814)*	.110
ED 1	-.1600	(-.309)	-.027	.0469	(.092)	.004	-.1605	(-.304)	-.020
ED 2	-.2514	(-.634)	-.042	-.4141	(-1.047)	-.033	-.4826	(-1.216)	-.060
ED 3	.0895	(.220)	.015	-.1359	(-.333)	-.012	-.6219	(-1.514)	-.077
ED 4	.2891	(.727)	.049	-.5982	(-1.500)	-.047	-.3179	(-.784)	-.040
NONFM 1	.674	(2.118)**	.113	-.0622	(-.205)	-.005	-.0625	(-.210)	-.008
NONFM 2	-.1424	(-.450)	-.024	.1705	(.576)	.014	.1654	(.534)	.021
NONFM 3	.0952	(.277)	.016	-.4941	(-1.575)	-.039	-.5820	(-1.804)*	-.072
WHEAT	-.7290	(-2.806)***	-.122	.4127	(1.650)	.033	.6844	(2.735)**	.085
FEEDGR	-.0190	(-.088)	-.003	-.1989	(-.954)	-.016	-.1707	(-.809)	-.021
COTTON	.4566	(1.867)*	.077	.1236	(.515)	.010	.1722	(.717)	.021
CONRES	.0787	(.319)	.013	.2784	(1.149)	.022	.0158	(.065)	.002
DISPGM	.467	(2.180)**	.078	.2464	(1.172)	.020	.0677	(.326)	.008
Model Chi-Square		41.91***			33.25**			47.96***	
R-Square		.010			.0003			.010	

* significant at the 10 percent level
** significant at the 5 percent level.
*** significant at the 1 percent level.
1 SD = stomgly disgagree, D = disagree, NS = not sure, A = agree, SA = strongly agree.

controls was also a proposal where coefficients moved in a positive direction with increases in age.

The variable representing participants between 50 and 64 years of age proved to be significant in the greatest number of cases. Results from this particular group (AGE2) showed these operators are more likely to dissaprove of a marketing loan extension, PIK certificate continuation, farm program changes designed to help those with gross sales below $250,000, and a continuation of the export enhancement program. Additional results showed those between 35 and 49 years of age are also more likely to support both a marketing loan extension and export enhancement program continuation (Q. 2 and 11). Furthermore, the probability of operators over 65 years old favoring the use of government commodity programs to influence number and size of farms was significant at the ten percent level (Q6).

Barkley and Flinchbaugh suggest that it is impossible to make predictions concerning the effects of age on operator attitudes, when using economic theory as a basis. It is difficult to determine why those producers between 50 and 64 years of age have more uniform opinions (as indicated by a greater number of significant coefficients) than participants in other age groups. Any attempt to explain this pattern would be absent of economic reason.

Gross Sales

Gross sales numbers confirmed earlier expectations by producing significant coefficients for several proposals. Sales variables also provided further verification that self-interest is a major determinant of operators' farm policy preferences. An example of this premise is the fact that producers in the largest sales classes ($250,000 and larger) are more likely to disagree with

proposals designed to help smaller farmers than are operators in lower sales classes (Q.5 and 6).

With the exception of those having gross sales over $500,000, the probability of supporting a continuation in the export enhancement program will increase in proportion with sales levels (Q.11). This pattern could be attributed to the fact that export programs are capable of reducing stocks, therefore benefiting producers in the form of higher prices. If such a trend were to occur, benefits of the export subsidy programs might be directly proportional to gross sales (Barkley and Flinchbaugh). Evidence of the previous statement is displayed by increasing logit regression coefficients for sales classes one through three. Although the probability of favoring the EEP and other export subsidy programs declined among participants having gross sales over $500,000, the SALES4 coefficient value (.8516) still exemplified a likelihood that members of this group would support such a proposal.

Other results show that producers with gross sales above $100,000 are more likely to favor U.S. negotiations to reduce world-wide trade barriers (Q.9). Once again, this could be attributed to the fact that gross sales may be directly proportional to the benefits of a free market. For this question, coefficient values steadily increased in proportion to gross sales levels with the exception of SALES3 (gross sales between $250,000 and $499,999) which, despite dropping in value from SALES2, still remained at a relatively high and positive level.

When compared to those in other sales classes, operators with gross sales between $100,000 and $249,999 (SALES2) are more likely to favor the continuation of annual paid land diversion (Q.1). This may be explained by the fact that both small and large classes are less likely to be enrolled in government programs than other producers. Smaller farms may find that costs

outweigh benefits when evaluating these programs, and the larger farms (with lower unit costs) may be unwilling to sacrifice greater returns for increased restrictions, such as $50,000 payment limits. Operators who are not currently involved in government programs (mainly those in small and large sales classes) are less likely to support programs that do not benefit from their participation, but add to their tax burden, particularly if they have high gross sales and/or off-farm income (Barkley and Flinchbaugh).

Additional SALES coefficients indicate that the probability of supporting a proposal to fund rural development decreases as sales levels increase (Q.7). An exception to this pattern occurred among those with gross sales over $500,000 who are still less likely to support rural development funding, even at a lower rate. It should be noted that only the SALES3 variable was significant in the previously discussed regression equation concerning rural development funding.

Education

Based on the idea that agricultural programs often require an understanding which is more prevalent among those with a higher educational level, earlier expectations were that education would have a positive influence on legislation. Logit regression results verified these expectations by revealing that those with "some high school" (ED4) are less likely to favor a PIK certificate continuation as long as government-controlled stocks exist (Q.3). However, when faced with a proposal to increase funding for rural development, participants with college degrees are more likely to object than those in other educational groups, thereby disproving another hypothesis that program participation would increase in accordance with education. If one were to

assume that gross sales are greater among those with a college degree, then this result would further support the theory of self-interest.

Nonfarm Income

It is expected that those producers with greater off-farm income are less dependent on government programs and because of this are more likely to prefer a free market system. This statement is supported by results from equation eleven in which operators with a nonfarm income of over $40,000 (NONFM3) were more likely to disagree with U.S. efforts to continue export subsidy programs. Furthermore, the positive effect of low off-farm income on the probability of favoring U.S. negotiations to reduce world-wide trade barriers went against expectations. However, these results supported earlier assumptions that those in small and large income classes are less likely to prefer government involvement in agriculture (Q.9).

As mentioned previously, operators were expected to act in their own self interest by favoring proposals which benefit them the most. This hypothesis was again supported by logit results in question 5, where it showed those in lower off-farm income classes (below $20,000, NONFM1) are more likely to prefer a proposal designed to help operators with gross sales below $250,000. Also, a significant NONFM2 coefficient demonstrated that operators with off-farm incomes between $20,000 and $40,000 are more likely to favor a proposal which would make soil conservation and water quality compliance a requirement before receiving farm program benefits (Q.4).

Previous Year Program Participation

According to logit results, Oklahoma wheat farmers, as a group, are more likely to prefer government intervention in agriculture. Variable coefficients confirm that these producers are more likely to favor a continuation of annual paid land diversion (Q.1) and the EEP (Q.11). Furthermore, the probability of accepting proposals to reduce both farm program expenditures and world-wide trade barriers is very low among the states' wheat producers. Additional analysis in this area implies that this group is less likely to agree with a marketing loan extension that would include wheat, feed grains and soybeans. As expected, proposals having some effect on the production and benefits of this crop had corresponding WHEAT coefficients which were significant in almost all cases (Q1,2,3,8,9 and 11).

Cotton producers are also more likely to favor government intervention in agriculture. Significant COTTON coefficients suggest these operators are more likely to prefer annual paid land diversion and a marketing loan extension but, less likely to prefer a proposal to reduce farm program expenditures (Q. 1,2 and 8),

CRP and DISPGM values were only significant in three logit equations. These values indicate two things. Conservation Reserve participants are less likely to help those with gross sales below $250,000, and those enrolled in the disaster program during the previous year are more likely to favor a continuation of PIK and EEP programs. Previous year feed grain program enrollment had no significant coefficients for any of the logit equations, as was expected.

Conclusions

The logit analysis can provide policy makers with unique information by determining the probability associated with an operator's preference, based on his or her characteristics. This is useful in allowing for predictions within the agricultural sector which may in turn aid in creating a more effective foundation for farm and food legislation by providing a stronger understanding of some of those affected by policy changes.

Based on multiple regression results from a sample of Oklahoma food producers, it is clear that gross sales are quite significant in determining the likelihood of a producer responding to policy alternatives in a certain manner. Information from logit analysis indicated producers in the largest sales classes are more likely to disagree with proposals designed to help smaller farmers and agree with U.S. negotiations to reduce world-wide trade barriers. Additional results from this characteristic demonstrated that the probability of supporting a continuation in the export enhancement program will increase in proportion with sales levels.

Previous year participation in wheat programs, age and nonfarm income also produced significant coefficients during multinomial analysis. According to logit results, Oklahoma wheat farmers are more likely to favor government intervention in agriculture, as shown by their preferences toward a continuation of both annual paid land diversion and the EEP. Furthermore, the probability of rejecting proposals to reduce farm program expenditures and world-wide trade barriers in very low among the states' wheat producers. Along these same lines, the probability of supporting government intervention, through agricultural programs, increased in proportion with age levels, especially for proposals

involving the marketing loan extension, PIK certificate continuation, funding for rural development and the establishment of production and marketing controls. Producers are also more likely to favor the use of government commodity programs to influence farm size and numbers as age levels increase. Nonfarm income coefficients indicated that operators will act in their own self-interest, which was supported by the fact that those with off-farm incomes below $20,00 were more likely to prefer government efforts to help smaller operators.

Results from the multinomial logit analysis proved previous aggregate expectations by verifying the assumption that economic self-interest is prevalent among Oklahoma food producers. This support of utility maximazation was exemplified by results which demonstrated that Oklahoma farm operators are more likely to favor those programs which will benefit them directly and oppose those which may benefit others or increase their own costs.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Farm operator opinions will help to dictate agricultural legislation in the future. Understanding charac-teristics which influence these producers' opinions and actions has proven to be a vital component in the economic analyses of farm program effects designed to further the effectiveness of agricultural legislation. With this understanding, policy makers have been provided with a foundation for creating legislation which could further enhance U.S. food producers' competitiveness in both domestic and world markets.

The primary purpose of this study is to determine if the estimation of probabilities associated with food producers' agricultural policy preferences is possible given their characteristics. In doing so, individual characteristics provided by a sample of Oklahoma food producers are examined in hopes of providing an idea of their thoughts concerning current and future agricultural legislation.

A multinomial logit model is hypothesized to be dependent upon survey participants' age, gross sales, education, nonfarm income and previous year enrollment in certain agricultural programs. In addition to the logit model, chi square analysis is implemented to determine if significant interaction exists between the previously mentioned characteristics and responses to policy alternatives concerning domestic and international policy, both current and future. Overall results of Oklahoma farmer preferences for agricultural and food policy are also presented in this study.

Conclusions and Implications

The purpose of this study is to present agricultural and food policy preferences held by a sample of Oklahoma farm operators and to analyze these preferences using an economic format. This procedure involved four primary objectives ranging from the presentation of overall opinions to empirical analysis. These objectives are restated and accompanied by their corresponding results in the following pages.

Objective one is to present the opinions held by a sample of Oklahoma food producers concerning current and future farm legislation. General results imply that a plurality of those responding to this survey preferred a continuation of the legislation enacted by the Food Security Act of 1985 when given other alternatives. More specifically, participant response rates reflected a desire to continue loan rates, annual paid land diversion, PIK certificates, the FOR and CRP programs, crop insurance and payment limits. However, there were also those who felt certain programs, such as acreage base and target prices, required modifications or even abolishment, in some cases, before they should be considered among the farm policies being implemented in the 1990s.

Objective two is to provide policy preferences in accordance with participants' age, gross sales, education , nonfarm income and previous year enrollment in certain agricultural programs in order to exhibit the thoughts of producers within each level of these attributes. Classification of individuals within each of these characteristics showed a contradictory pattern between the greatest percentage of respondents in three particular groups and overall survey results. Those with gross sales under $40,000, gross sales over $500,000 and participants with a nonfarm income over $40,000, all seemed to

favor the elimination of government involvement in agriculture. Eliminating commodity programs, target prices, loan rates and the PIK program was a prevalent response among the greatest number of respondents in each of these groups, as was reducing payment limits and trade barriers. The greatest number of those with either a grade school education or some high school education favored an increase in both payments to smaller farm operators and loan rates. Also, the largest percentage of respondents who participated in previous year wheat and cotton programs favored a reduction in trade barriers. Only the groups mentioned previously displayed any consistent patterns among responses to certain agricultural policy alternatives and individual characteristics.

The third objective is to determine which of the characteristics being tested has a significant influence upon survey responses concerning specific policy proposals. This analysis involved the implementation of chi square testing at one, five and ten percent significance levels. Results of this procedure indicated there were no particular patterns of significant correlation between any one characteristic and responses related to agricultural policy proposals. However, gross sales, previous year participation in wheat programs and previous year participation in cotton programs, all displayed a significant level of interaction with responses to at least twelve of the twenty policy questions being analyzed in this section. More specifically, operator policy opinions were significantly dependent upon gross sale levels and participated in previous year wheat and/or cotton programs. Gross sales had a significant chi square value for 14 of 20 questions, wheat participation for thirteen and cotton participation for twelve. Of these three groups, both gross sales and previous year wheat program participation produced eleven chi square values that proved to be significant at the one percent level.

Education was the only other characteristic, among the nine being tested, which displayed a significant level of interaction with responses to at least half of the questions comprising this section. Only six of these ten questions had chi square values which proved to be significant at a one percent confidence interval. Previous year participation in feed grain programs produced the next highest number of significant chi square values with six.

The final objective is to determine if survey data can be used to estimate the probabilities associated with food producers' policy preferences, given their characteristics. Based on multinomial logit results from a sample of Oklahoma food producers, it is clear that gross sales are quite significant in determining the likelihood of a producer responding to a policy proposal in a certain manner. Previous year participation in wheat programs, age and nonfarm income also produced significant coefficients during this testing.

Further results from this multiple regression analysis proved previous aggregate expectations by verifying the assumption that economic self-interest (i. e. utility maximization) is prevalent among Oklahoma food producers. The utility maximization theory was exemplified by results which demonstrated that Oklahoma farm operators are more likely to favor those programs which will benefit them directly and oppose those which may benefit others or increase their own costs. This self interest may involve the fallacy of composition, which is the inverse relationship between the pursuit of individual goals and overall group results (Knutson et al).

Suggestions for Further Research

Predicting behavior based on individual characteristics is somewhat complex. Lack of information from those unwilling to provide personal data and

preferences restrict this process to an even greater degree. Results of this analysis and similar studies suggest that additional data concerning food producers' attitudes toward agricultural legislation could aid in the establishment of effective agricultural and food policy. Also, as the world economy continues to change, and the agricultural sector follows, it will be necessary to solicit producers opinions as an ongoing means to a productive and competitive U.S. farm sector. Furthermore, the inclusion of other variables in similar analysis would also be quite useful. An example of these are sex, political affiliation and farm type. In addition to these inclusions, solicitation of public opinion concerning agricultural policy would provide policy makers and legislators with a more complete understanding of those they are representing.

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APPENDIX

OKLAHOMA FOOD PRODUCERS AGRICULTURAL AND FOOD POLICY PREFERENCE SURVEY WITH SUMMARY STATISTICS

SECTION A - FARM COMMODITY PROGRAMS

*1. What should be the policy toward production controls and associated price supports after the 1985 Food Security Act expires in 1990? (Check one)

a. Keep the present programs 35
b. Establish a mandatory supply control program with all farmers required to, participate if approved in a farmer, referendum 20
c. Separate govenment payments from production requirements. (Sometimes this is called decoupling.).. 13
d. Gradually eliminate commodity programs including set aside, price support, deficiency payments and government storage programs 29
e. Other _____ 3

*2. What should be the policy toward target prices? (Check one)

a. Keep target prices at the current levels 10
b. Raise target prices each year to match the rate of inflation 55
c. Lower target prices 2 to 4 percent each year to reduce federal deficiency payments and federal expenditures and to discourage over-production 7
d. Phase out target prices completely over a 5 to 10 year period 26
e. Other _____ 2

*3. What should be our commodity loan rate policy? (check one)

a. Base loan rate on the previous 5 year average market prices to keep prices competitive 37
b. Raise loan rates as a primary means to support prices... 31
c. Eliminate loan rates and commodity loans completely.. 32

@4. Should an annual paid land diversion program to control production be conitinued as an option available to the Secretary of Agriculture?

YES	NO	NOT SURE
58	25	17

@5. Should the marketing loan be extended to include wheat, feed grains and soybeans?

YES	NO	NOT SURE
49	28	23

*6. What type of acreage bases would you favor? (check one)

a. Continue the current policy of specific crio acreage bases 34
b. Assign each farm a total crop acreage base, excluding hay and pasture, and allow any crop to be grown on the permitted acreage 60
c. Other _____ 6

@7. Should generic (payment-in-kind) certificates continue to be part of price and income support programs as long as government-controlled stocks exist??

YES	NO	NOT SURE
50	35	15

*8. Should some form of farmer-owner grain reserve (FOR), with national minimum and maximum amounts to be stored, be continued?

YES	NO	NOT SURE
46	32	22

9. For a new farm bill, how much discretion should the Secretary of Agricuture have, compared to the present, in setting loan rates, set aside acreage and export subsidies?

YES	NO	NOT SURE
15	49	36

SECTION B - CONSERVATION PROGRAMS

@1. To be eligible for farm program benefits, the 1985 farm bill requires the development of conservation plans for farms with highly erodible land by 1990 and implementation by 1995. Should soil conservation and water quality compliance be a condition for receiving farm program benefits?

YES	NO	NOT SURE
59	33	8

*2. The 1985 Food Security Act authorized up to 45 million acres for the Conservation Reserve Program (CRP) which makes rental payments on a bid basis to farmers for long term land retirement. What should be the future policy? Check one)

a. Limit the CRP to the current level of about 30 million acres 18
b. Expand the CRP to 45 million acres as provided in the 1985 act 30
c. Further expand the CRP to around 60 million acres 27
d. Eliminate the CRP program 23
e. Other _____ 2

3. Which of the following approaches do you think would be most effective in achieving improvements in soil conservation and water quality? (Check any that you feel appropriate)

a. Regulation of farming practices 14
b. Taxing certain practices such as "high" levels of chemical and fertilizer use 9
c. Cost sharing only for conservation and water structures 58
d. Government payments to modify cultural practices or to remove land from commercial production 19

SECTION C - CROP INSURANCE

1. What should be our national policy to deal with farm production risks from natural disasters? (Check one)

a. Continue the present voluntary crop insurance program where producers pay about 70 percent and government pays about 30 percent of the cost 36
b. Have government provide limited disaster assistance in years of severe natural disturgances but have no federal crop insurance 29
c. Eliminate all disaster payments and federal crop insurance programs 10
d. Require all farmers to buy crop insurance to be eligible for government program benefits 11
e. Not sure 11
f. Other _____ 3

SECTION D - OTHER ISSUES

*1. There is now a $50,000 limit on direct price support payments to each farmer with certain exceptions. What recommendations would you make for the future? Check one)

a. Increase the limit 13
b. Make no change 44
c. Decrease the limit 23
d. Eliminate the limit completely 16
e. Other _____ 4

2. What should be the future price support program for milk producers? (check one whether you have milk cows or not)
   a. Continue the present program adjusting the support price up or down based on production and projected government purchases 19
   b. Set support prices based on average production costs and establish a production quota for each producer 16
   c. Phase out all dairy price supports over a period of several years 33
   d. Give the Secretary of Agriculture more authority to set the price support 3
   e. Not sure 29

*3. Should the government continue to loan money to farmers with limited capital who cannot get credit from other sources?

YES	NO	NOT SURE
47	39	14

Check your views on each question:

	Stongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
#4. Future farm programs shuold be changed to give a higher proportion of price and income support benefits to farms with gross annual sales under $250,000	24	33	11	20	12
#5. Government commodity programs should be used to and size of farms with allowance made for type of farm and geographic conditions	5	21	23	30	21
*6. Government should regulate certain farming practices and land uses to reduce pollution of underground and stream water	20	39	14	17	10
7. The $19 billion spent in 1987 to provide food assistance programs through food stamps, school lunches, and other targeted food assistance programs should be increased to more adequately meet the needs of those eligible	15	27	21	24	13
@8. The federal government should increase funding for rural development programs to expand employment and economic activity in low income rural areas	23	40	16	16	5

SECTION E - INTERNATIONAL AGRICULTURAL TRADE AND DEVELOPMENT

Check your views on each question:

1. The United States should	Stongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
@a. Negotiate world-wide reductions in trade barriers	37	48	9	4	2
#b. Rely more on separate trade agreements between the U.S. and individual countries	16	52	23	7	2
c. Negotiate reductions in domestic farm subsidies of major importing and exporting countries world-wide	18	40	83	10	4
#d. Join with other major exporting countries to establish production and marketing controls	13	34	21	23	9
#e. Provide more funds for food aid to hungry nations	11	32	23	26	9
f. Encourage additional farmer-financed foreign market development programs	13	44	21	16	6
@g. Continue the export enhancement program established by the 1985 farm bill and other government export subsidies	19	45	23	9	4
*h. Reduce our agricultural imort barriers to encourage more trade	10	25	22	29	14
*i. Assist developing countries to increase their agricultural productivity and trade potential	5	24	20	33	18
j. Give selected low income countries preferred entry to our U.S. agricultural market	7	27	28	26	12

SECTION F - FEDERAL SPENDING

1. Reducing the federal deficit has been one of the major policy goals in recent years. (Check your opinion on each proposal.)

The federal deficit should be reduced by:	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. Reducing every budget item by a set percentage	25	38	14	18	5
b. Reducing the defense budget	21	38	12	25	4
c. Reducing social programs (excluding social security).	20	41	13	18	7
d. Reducing social seurity payments	4	11	13	48	24
@e. Reducing farm program expenditures	10	32	14	30	14
f. Raising taxes	2	8	14	38	38
g. Increasing collection of taxes due the federal government	26	46	11	9	8
h. Increasing user fees for government services	12	36	11	20	11

*2. Farm commodity programs have recently cost $15 to $20 billion each year. If reductions were required because of the need to reduce federal spending, which would you favor? (Check one)

a. Make across the board percentage cuts as required	45
b. Cut some commodity programs more than others	9
c. Continue payments to operators of small to moderat e size farms (gross sales under $250,000) and reduce payments to large farm operators	37
d. Make payments only to farmers with the most severe financial need	7
e. Other	2

SECTION G - PERSONAL DATA

To help us analyze your answers, we would like to know more about you.

1. Your age: (Please check)

Under 35	6
35 - 49	33
50 - 64	41
65 or over	20

2. Approximate annual gross sales (including government payments) from your farm in recent years:

Under $40,000	18
$40,000 - $99,000	28
$100,000 - $249,000	34
$250,000 - $499,000	14
Over - $500,000	6

3. What was the last year of school you completed

Grade School	5
Some high school	5
High school graduate	30
Some college or technical school	22
Graduated from college	37

4. If you or members of your family were employed off the farm, check the approximate amount of family income in 1988 that came from off farm employment:

Under $10,000	45
$10,000 - $19,000	20
$20,000 - $40,000	28
Over - $40,000	17

5. What was your most important source of cash receipts in 1988? (check one)

Grain	24	Hogs, Beef, Sheep	25
Dairy	2	Mixed Grain and Livestock	33
Other	16	Specify	

6. Check below the programs that you participated in during 1988?

	Wheat	Feed Grain	Cotton	Rice
Price Support and Acreage Reduction	44	16	11	0.1
Conservation Reserve	10	1988 Disaster Program		16

7. Please check your membership in these organizations in 1988:

American Agr. Movement	1
Farm Bureau	24
Farmers Union	12
Grange	0.5
NFO	0
Cattlemen's Association	23
Corn Growers	1
Cotton Growers	6
Grain Sorghum Growers	2
Labor Union	0.6
Milk Producers	1
Pork Producers	0.9
Soybean Association	3
Wheat Growers	21
Other (Specify)	4

SECTION H-OTHER ISSUES

1. In the past year, have you grown any new crops or started any new livestock, poultry, or other enterprises?

11 YES 89 NO

a. If yes, what did you try?

b. If you answered yes above, will you produce any of these crops in 1989?

49 YES 37 NO 41 NOT SURE

2. If the federal government decided to separate government payments from acreage reduction and from other rules relating to production and base acres, what would be your most likely response, assuming your current farm size?

a. Increase acreage of your major program crop	23
b. Decrease acreage of your major program crop	8
c. Shift a portion of acreage to another program crop	21
d. Shift a portion of acreage to a non-program crop	12
e. Shift a portion of acreage to pasture/hay	29
f. Idle a portion of acreage	7

3. Depending on your answer to (1) in this section, would you likley change the use of any of the following in puts?
If your answer is "no", check "about same".

	MORE	LESS	ABOUT SAME
a. machinery/equipment investment	6	8	84
b. commercial fertilizer	12	10	78
c. agricultural chemicals	8	11	81
d. labor	8	11	81
e. farm size (acreage)	9	5	86
f. credit for operating	6	12	82
g. credit for longterm investments	7	14	79

4. Typically (in the past five years) what proportion of your harvested wheat acreage was grazed?

a.	none	20
b.	as much as 25 percent	20
c.	26 to 50 percent	16
d.	51 to 75 percent	13
e.	76 percent or more	31

5. If haying is permitted in a given year, do you typically (past five years) take advantage of that opportunity?

a.	yes	78
b.	no	22

6. ACRES OPERATED IN 1988

How many acres were in your total farm operation in 1988? 11

7. ACRES PLANTED IN 1988

Corn-all purposes (including silage)	
Soybeans (include doublecrop soybeans)	
Oats for grain	
All Wheat (for harvest in 1989)	
Cotton	
Peanuts	

Would you like a summary of the responses from this survey?

099 YES [ ] NO

Thank you for answering these questions. You are welcome to make any comments on a separate sheet if you want to write more.

* represents those questions used in chi square testing only

\# represents those questions used in multinomial logit testing only

@ represents those questions used in both the square and multinomial logit analysis

Response Code		SupEnum
2 Tel		098
3 Int	910	
7 TR		
8 IR		
9 Inac		

VITA

William Graham Chandler

Candidate for the Degree of

Master of Science

Thesis: AN ECONOMIC ANALYSIS OF CHARACTERISTICS AFFECTING OKLAHOMA FOOD PRODUCERS' FARM POLICY PREFERENCES.

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