

FREE-RIDERS IN COMMODITY  
RESEARCH AND PROMOTION  
PROGRAMS

By

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## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION .....	1
Problem Statement .....	1
Oklahoma Wheat Research and Promotion .....	1
Importance of Requests and Refunds .....	4
Objectives .....	6
Organization of the Thesis .....	6
II. CONCEPTUAL FRAMEWORK .....	8
Introduction .....	8
Loehman, Quesnal, and Babb Model .....	9
Revised Model .....	11
Hypotheses .....	16
III. PROCEDURES .....	17
Introduction .....	17
Description of Survey .....	17
Producer Characteristics .....	20
Check-off Program Effectiveness .....	22
Social Standing .....	25
Econometric Analysis .....	26
IV. RESULTS .....	29
Regression Analysis .....	29
Model Interpretation .....	32
V. IMPLICATION AND CONCLUSIONS .....	35
Conclusions .....	35
Implications for Program Managers and Commissioners .....	36
Suggestions for Further Research .....	37

Chapter	Page
BIBLIOGRAPHY .....	39
APPENDIXES .....	40
APPENDIX A - WHEAT PRODUCER QUESTIONNAIRE .....	41
APPENDIX B - MODIFICATIONS TO ANSWERS .....	47
APPENDIX C - COMMENTS .....	51
APPENDIX D - INSTITUTIONAL REVIEW BOARD APPROVAL .....	59

## LIST OF TABLES

Table	Page
I. Assessment and Refund Provisions of Wheat Commission Programs, by State, 1994-1995 .....	3
II. General Descriptive Information About Producers in Study .....	19
III. Wheat Check-off Program vs. Other Check-off Programs .....	21
IV. Percentage of Respondents in Agreement or Disagreement with Statements about Government Assistance and Program Effectiveness, Question 14. ....	22
V. Beliefs, Actual and Preferred Allocation of Wheat Commission Funds, Question 15. ....	23
VI. Results of Logit Model Estimation of the Probability of a Producer Requesting a Refund. ....	45
VII. Prediction Success for Logit Model of Wheat Producers' Requests for Refunds and Measures of Goodness of Fit. ....	45
VIII. Conditional Probabilities of Requesting a Refund .....	34
IX. Average Response or Percentage for Each Variable .....	48
X. Summary of Modifications Made to Answers for Logit Model .....	49

LIST OF FIGURES

Figure	Page
1. Wheat commission districts . . . . .	5
2. Location of questionnaire respondents . . . . .	19

## CHAPTER I

### INTRODUCTION

#### **Problem Statement**

In the U.S., financial support for commodity research and promotion programs frequently comes from production assessments or check-offs. These programs are designed to increase demand for products or improve production techniques and varieties. The benefits are generally non-excludable public goods that are available on an unrestricted basis to all producers.

Many marketing orders have provisions that allow producers to request a refund of their contributions. Producers who request refunds become free riders because they receive the non-excludable producer benefits from program expenditures but do not pay their share of the costs.

#### **Oklahoma Wheat Research and Promotion**

Fourteen states have wheat research and promotion programs and of those 14, nine states allow producers to request a refund of their contribution. Oklahoma has the highest percentage of refunds, at 11 percent. Although Oklahoma recently approved legislation to double the assessment, it still has a lower assessment than many of the other states (Table 1). Producers are also given a longer time to request refunds, 120 days.



Table I. Assessment and Refund Provisions of Wheat Commission Programs, by State, 1994-95.

State	Current Assessment	Refund Provision	Refund Time Limit	Refund Percentage
California	\$0.03/cwt.	Yes	90 days	8.00%
Colorado	0.01/bu.	Yes <sup>a</sup>	30	0.01
Idaho	0.02/bu.	No	n/a	n/a
Kansas	0.007/bu.	Yes	365	8.00
Minnesota	0.01/bu.	No	n/a	n/a
Montana	0.01/bu.	Yes	90	2.30
Nebraska	0.0125/bu.	No	n/a	n/a
North Dakota	0.005/bu.	Yes	60	3.97
Oklahoma <sup>b</sup>	0.015/bu.	Yes	120	11.00
Oregon	0.03/bu.	No	n/a	n/a
South Dakota	0.01/bu.	Yes	60	1.20
Texas	0.015/bu.	Yes	60	5.90
Wyoming	0.01/bu.	Yes	90	not reported
Washington	.5% of value	No	n/a	n/a

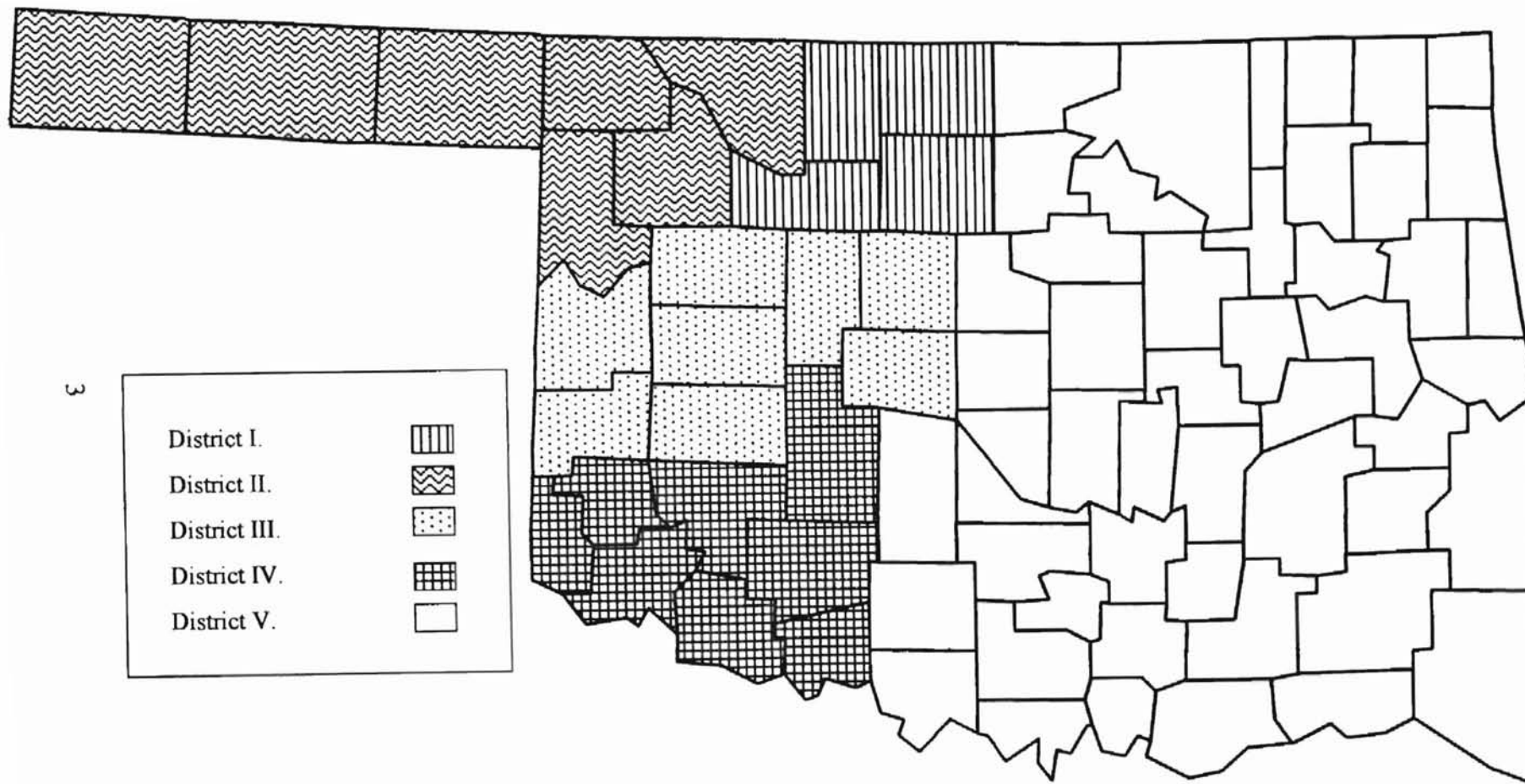
Source: Jim Christianson, Montana Wheat Commission.

a. Some small refunds are not allowed.

b. Shows the new assessment.

In April 1965, Oklahoma wheat producers put a wheat check-off program in place to help market the wheat surplus. The *Oklahoma Wheat Resources Act* established a quarter cent per bushel check-off and created the Oklahoma Wheat Commission to handle the funds (§2 O.S. Sec. 1022, 1023). The Oklahoma Wheat Commission consists of five producers representing districts across the state (Figure 1). Elections are held in one district each year for these board positions. Nominations come from area wheat producers and then are voted on by secret ballot. The top three are then submitted to the Governor, who in turn, appoints one of these producers to a five-year term.

Board members allocate funds generated by the check-off to research and promotion activities, hoping to provide the best opportunities for profitability. At least 20



3






- District I. 
- District II. 
- District III. 
- District IV. 
- District V. 

Figure 1. Wheat Commission Districts

percent of check-off funds, by law, are used to fund research (§2 O.S., Sec. 1030). The check-off is collected when wheat is sold to a buyer such as a grain elevator, food processing facility, feed lot, or other entity (Oklahoma Wheat Commission, 1997).

The check-off assessment was increased in 1979 and has currently been at three fourths cent per bushel until a change in the *Oklahoma Wheat Resources Act* was passed in February of 1998. The assessment was then increased to one and one-half cent per bushel. The amendment went into effect on July 1, 1998.

Wheat promotion programs are somewhat unique compared with those for other grains because: 1) wheat is consumed primarily by humans rather than being used for livestock feed or oil; 2) wheat is one of the world's most consumed grains; 3) wheat is graded and inspected differently from other grains; 4) freight rates are different for wheat; and 5) international agreements for wheat are developed separately from the other grains (Oklahoma Wheat Commission, 1997).

### **Importance of Requests for Refunds**

The effects of refund requests on research and promotion efforts are sometimes greater than the actual refund amount because check-off dollars are sometimes matched by other programs. For example, the Oklahoma Wheat Commission participates in the Wheat Foods Council where producer check-off dollars are matched by milling and baking industry support of the Council (Oklahoma Wheat Commission, 1997).

Commissions frequently spend a portion of their funds on producer communication and public relations tactics. These tactics are needed for general accountability and to

reduce refund rates. Refund request rates may be viewed as a measure of producer satisfaction with commission programs.

Wheat Commissioners in Oklahoma regularly review lists of producers that request refunds. Commissioners must decide how much time and money should be spent on producer communication and public relations tactics, some of which may help reduce refund rates. Using funds to report to producers, reduces funds available to support promotion and research efforts. If producers perceive that too much time and money are being spent communicating with producers, some producers may be less willing to support programs. At the same time, producers that do not know how the money they contribute generates benefits to them may be more likely to request a refund. These issues are particularly important in Oklahoma at the present time because of the recently changed assessment rate, historically low wheat prices, and Oklahoma producers generally having a higher propensity to become free-riders that benefit from the non-excludable public goods created by the programs.

No major studies have been done to find out why some wheat producers ask the wheat commissions for refunds and become free-riders. More important, there is little known about how well producers understand the programs and activities of the commissions. Free-riders may feel that others will contribute enough to fund the research and promotion. Some producers may not know about the benefits of the programs. Other producers who request refunds may believe that research and promotion are ineffective and that there are no non-excludable public goods created by the programs so that they do not perceive themselves to be free-riders.

Propensities to request a refund may also depend on group norms. Norms specify actions that are proper/correct or improper/incorrect. Norms are usually enforced by sanctions which are rewards for proper behavior or punishments for improper behavior (Coleman, p. 142). Decision makers evaluate norms and potential sanctions when making decisions (Coleman, p. 143). Sanctions may not be effective for wheat producers.

Analysis of the free-rider problem is of obvious interest to all voluntarily funded commodity research and promotion commissions. If free-riding becomes the norm, programs are likely to fail. If too much money must be spent encouraging participation, programs have fewer funds to generate benefits for producers.

### **Objectives**

The general objective of this research is to provide information that will help understand why refund requests are made by wheat producers. The information will be used to evaluate alternative strategies that commissioners may use to reduce refund request rates. The specific objective is to determine how economic and social factors, knowledge, attitudes, and beliefs are related to the requests for refunds.

### **Organization of the Thesis**

This study is divided into four remaining chapters. The following chapter is a presentation of background information and the theoretical model used. Chapter III contains a discussion of procedures followed, the mail survey used to obtain data, and the statistical analysis of that data. Results are presented in Chapter IV and Chapter V

summarizes the conclusions that address each objective, presents implications, and contains suggestions for additional research.

## CHAPTER II

### CONCEPTUAL FRAMEWORK

#### **Introduction**

Several studies have been done on free-riding, (Leuthold; Sandler, Sterbenz, and Posnett; and Malm) as well as preferences for public goods (Green and Laffont) and group size effects on support for provision of public goods (Isaac and Walker). Loehman, Quesnal, and Babb (1996) have presented a theory of effects of free-riding on rent-seeking competitors for public goods.

The economic studies have focused on whether expected benefits from participation in rent-seeking behavior exceed the costs. Sociologists would incorporate social sanctions as factors influencing decisions to participate in rent-seeking behavior. Sanctions can be either formal or informal. Informal social sanctions such as “expressions of slight disapproval or ostracism” (Coleman, 1990) might exist to enforce a norm of either approval or disapproval of wheat commission contributions. Sociologists have recognized that sanctions can be ineffective for people at both very high and very low social standing. People with very low social standing may not respond to sanctions because negative sanctions cannot cause them to lose social standing. On the other extreme, those with very high social standings may also not be affected by sanctions from people “beneath” them in social standing (Coleman, 1990).

The model presented in this chapter is a modified version of the model by Loehman, Quesnal, and Babb. The revised model incorporates norms, sanctions and the

costs of requesting refunds and is adapted to explain decisions to participate in funding commodity promotion and research programs. The Loehman, Quesnal, and Babb model will be reviewed first with the modified version following.

### **Loehman, Quesnal, and Babb Model**

The model presented by Loehman, Quesnal, and Babb (LQB) is for a competing group situation. It is similar to a traditional public good situation in that:

1. some individuals in a group must contribute positive amounts in order to obtain a positive amount of the public good;
2. if the public good is obtained, the individual benefit received by one individual does not diminish the amount available to others in the winning group; and
3. if a group wins, an individual is not excluded from receiving benefits regardless of the initial contribution (Loehman et al. 1996).

In the LQB model, a fixed reward level is provided for each person in the winning group. If the group does not win, there is no reward. Each individual has the option of contributing an amount  $B$  to the group in an attempt to win the good. This contribution will increase the probability that the group will win.

In most rent-seeking literature, a known form for probability of winning in relation to contributions is assumed. But the LQB model assumes that an individual has a subjective probability, or individual belief of the probability of the group winning and how their individual bid ( $B$ ) will influence the outcome. This may depend on group size ( $n$ ) and the reward level ( $R$ ). This subjective probability is shown as  $p(B;n,R)$ .

Because the reward may not be monetary, a function  $h(R)$  changes the reward into a money benefit,  $h(R) = R$ . Also added to this model is an incentive function  $g(B)$  that is



included in the returns if the group wins. For example:

$$\begin{aligned} g(B) &> 0 \text{ if } B > B^*, \\ g(B) &= 0 \text{ if } B = B^*, \\ g(B) &< 0 \text{ if } B < B^* \end{aligned}$$

where  $B^*$  is the average bid. This function gives an extra amount to those individuals who contribute more than average and a smaller benefit to those who contribute less than average. Utility, then (with  $M$  denoting the initial income) if the group wins, is  $u\{M+h(R)+g(B)-B\}$  and  $u(M-B)$  if the group does not win.

Utility is maximized to choose the optimum bid:

$$(1) \quad \text{Max } p(B; n, R)u[M + h(R) + g(B) - B] + [1 - p(B; n, R)]u(M - B).$$

The first-order condition for the optimum bid if  $B > 0$  is:

$$(2) \quad \frac{\partial p}{\partial B} [u(M + h(R) + g(B) - B) - u(M - B)] + p[u'(M + h(R) + g(B) - B)(g' - 1) + u' - 1] + u'(M - B) + u'(M - B)(-1) = 0 .$$

When equation (2) is solved, LQB found that the optimum bid varies according to “the nature of the subjective probability, reward level ( $R$ ), the type of public good ( $h$ ), group size ( $n$ ), income ( $M$ ), the nature of the incentive function ( $g$ ), and the nature of risk preferences measured by the Pratt-Arrow coefficient ( $-u''/u'$ ).”

Although a zero bid is normally associated with free-riding, in this model there are

conditions where a zero bid is the solution to equation (1). Because the optimum bid is influenced by a subjective probability, if an individual believes that the probability of winning is zero and that an increase in their bid will not change this probability ( $p'(B; n, R) = 0$ ) and from equation (2),  $u'(M - B) = 0$ , then the first-order condition will only be satisfied with a bid of zero. "Thus, a zero bid can be explained on the basis of subjective probability effects and optimal strategic behavior rather than traditional 'free-riding'." (Loehman, et al. 1996).

### Revised Model

A revised model, similar to the LQB model, is created to represent the decisions that voluntary participants in commodity research and promotion programs make. Every year that a producer markets a commodity, he or she must decide whether or not to contribute up to a maximum amount  $B$  to promotion and research programs. Changes required for our application include: 1) unlike LQB, we do not pose two discrete (win/lose) outcomes; 2) the incentive function  $g(B)$  is the monetarized value of social conscience (positive and negative) as evaluated by the decision maker; 3) the  $h(R, B, n)$  function (a combination of  $p(B; n, R)$  and  $h(R)$ ) is the decision maker's subjective appraisal of the expected rewards from program activities, and 4) since refunds must be requested, there is a cost associated with non-participation. Each of the four changes is discussed below.

The first change is necessary because the rewards are subjectively evaluated and continuous rather than discrete. The rewards may come from research that generates

increased yields, reduces production costs, and/or from promotion activities that increase demand.

The second change, treating the incentive function  $g(B)$  as the monetarized value of social sanctions evaluated by the decision maker, allows incorporation of norms and social sanctions to enforce norms in the analysis. The function can take on positive or negative values indicating the monetary value each decision maker assigns to approval (positive) or disapproval (negative) of their behavior. Social sanctions would not be effective if the identities of participants and nonparticipants are not widely known.

Here, the incentive function represents monetarized social conscience, including both positive and negative sanctions as well as personal conscience. Sanctions are hypothesized to work in many different ways. Positive sanctions could take on the form of bumper stickers for those producers who contribute or simply the satisfaction of supporting the commission. Negative sanctions could be disapproval of producers who are opposed to the commission and try to influence others and their actions. In addition, producers could also contribute, not because they care what others think of them, but because of what they think of themselves. Some producers may lose self esteem if they do not contribute.

In the LQB model, the subjective probability is the individual's assessment of the probability that the group would win. In this model,  $h(R,B,n)$  indicates the producer's attitudes and beliefs about both the probability that the commodity commission programs have positive effects and the size of the effect. In the LQB model, the incentive function was based on the average bid and each individual was either given a higher reward for a

larger bid or given a lower reward for a lower than average bid. Since  $R$  is no longer fixed, the third change simplifies the LQB model such that the  $h(R,B,n)$  function now incorporates the appraisal of the probability of whether rewards are positive as well as the value of the reward. Similar to LQB, this appraisal is a function of group size ( $n$ ) and the total amount of the producer's contribution ( $B$ ). Subjectively evaluated rewards ( $R$ ) are increased quantity demanded, increased prices, reduced production costs, and/or increased yields. In general, the value of the reward will vary directly with volume produced and/or acreage. Attitudes and beliefs about its size and probability of occurrence are incorporated into the function.

Fourth, the cost of requesting a refund is also potentially important and includes the cost of time to process the request and deposit the refund check. Cost is hypothesized to be positively related to  $B$  and  $F$ , the frequency of sales since refunds must be requested for each transaction. Marginal costs are expected to diminish as  $B$  increases because of the routine and learning associated with handling the transaction.

Amount  $B$  in the new model is the assessment per unit on the commodity marketed times the number of units marketed in a year. The total amount is contributed and a refund may be requested. Each producer, when making his or her decision, is actually selecting  $B$  that maximizes:

$$(1) \quad U[M + h(R,B,n) + g(B,n) - B - c(B,F)]$$

where  $M$  is expected income if the producer does not participate,  $h(R,B,n)$  is the expected

value of returns to producers,  $g(B,n)$  is the producer's social incentive function,  $B$  is the contribution, and  $c(B,F)$  is the cost of requesting a refund. Because most producers make multiple deliveries and refunds can be requested on each delivery,  $B$  can range from zero to the assessment times the number of units delivered.

The first-order condition for this model is:

$$(2) \frac{\partial U}{\partial B} = U'[M + h(R,B,n) + g(B,n) - B - c(B,F)] \left[ \frac{\partial h(B,R,n)}{\partial B} + \frac{\partial g(B,n)}{\partial B} - 1 - \frac{\partial c(B,F)}{\partial B} \right] \geq 0$$

Rewriting gives:

$$(3) \frac{\partial h(B,R,n)}{\partial B} + \frac{\partial g(B,n)}{\partial B} - \frac{\partial c(B,F)}{\partial B} \geq 1.$$

In words, the first-order condition suggests that the marginal impact of  $B$  on returns plus the marginal impact of  $B$  on social conscience minus the marginal cost of requesting a refund must be equal to or greater than the marginal utility of money contributed. The equilibrium conditions can easily be used to explain why producers do or do not participate. For example, a nonparticipating producer may not feel that their contribution ( $B$ ) has an impact on their returns,  $R$ . Producers may feel that either their contribution is insignificant and has little impact on  $R$  and/or that in general  $B$  has little impact (short or long run) on returns (programs are ineffective). That is:

$$(4) \frac{\partial h(R,B,n)}{\partial B} \leq 0.$$

Lack of pressure from social conscience can occur if the marginal utility of conscience is zero or if non-participation does not generate social sanctions which would be represented by:

$$(5) \frac{\partial g(B,n)}{\partial B} = 0 .$$

The first order condition also suggests that participants are people who believe the programs generate positive values of  $R$  and that their contributions help the program work. Participants may also value social conscience and believe that non-participation generates negative social sanctions or internally generates feelings of guilt. Participants may also not know how to request a refund and feel that the cost of requesting a refund is large, relative to the refund amount  $B$ .

The theory suggests clearly that programs may be supported in situations in which producers do not believe their monetary rewards are sufficient to justify the contribution but the support is the result of negative social sanctions or guilt associated with non-participation.

The theory can also show why people who consider themselves as leaders may participate. For our purposes, a leader is defined as a person whose contribution  $B$  is well known and may influence whether other producers participate. A leader may feel that the effect of their contribution is larger than for others who are not leaders, since their decision ( $B$ ) influences others. A leader who feels their impact is large will participate and perhaps publicly state their support. A leader, who believes programs are ineffective, may attempt to socially sanction those who do participate.

## Hypotheses

The hypotheses previously stated suggest that producers with specific characteristics, attitude and beliefs will be more or less inclined to support research and promotion programs. If we can measure attitudes and beliefs about program effectiveness and susceptibility to social sanctions, we will then be able to test whether support for research and promotion is primarily due to beliefs about program effectiveness, social conscience, and/or potential income.

Null hypotheses are derived directly from the first order conditions and include:

Ho: Participation is not related to susceptibility to social sanctions.

Ho: Participation is not related to beliefs about program effectiveness.

Ho: Participation is not related to other producer characteristics (gender, age, education, bushels harvested).

Given that we can reject one or more of the above hypotheses, we can then begin to characterize people who believe programs are ineffective, believe their contribution is not important to program success, and/or believe that program participation does not generate social sanctions. Methods used to test the hypotheses are in Chapter III.

## CHAPTER III

### PROCEDURES

#### **Introduction**

From the theoretical model in Chapter II, it is hypothesized that decisions to participate in funding commodity promotion and research programs are related to social sanctions, beliefs and knowledge about programs effects, income, and other producer characteristics. A cross-sectional survey of producers known to participate or not participate in funding decisions is used to generate data that can be used to test the hypotheses suggested in Chapter II.

#### **Description of Survey**

The questionnaire was administered by mail to 2500 wheat producers in Oklahoma. The sample was taken by the Oklahoma Agricultural Statistics Service. Of those 2500, 500 producers had requested a refund in the last year. The names of these 500 were obtained by the Oklahoma Wheat Commission and are public information.

The questionnaire was developed in conjunction with the Oklahoma Wheat Commission. It was then pretested with the Commissioners. The final version of the questionnaire consisted of 20 questions concerning producers' feelings about wheat commission activities. A draft copy of the questionnaire appears in Appendix A. The questionnaire includes questions on age, gender, economic background, and other demographic questions to represent producer characteristics. A section asks for



information on producers' knowledge and perceptions of the wheat commissions and their activities. Producers indicate if they are aware of, attend, or read about the activity. Then, they indicate how much funding should be allotted to each activity. Producers are also asked to agree or disagree with several statements on the wheat commission's responsibilities.

The first mailing of the questionnaire was sent out on April 8, 1998. Seven days later, a postcard reminder was mailed to all possible respondents. Questionnaires from 213 people who did not request a refund and 56 people who did request a refund were received. Figure 2 shows the location of all of the respondents to the survey. The distribution of the respondents resembles the distribution of wheat production in Oklahoma.

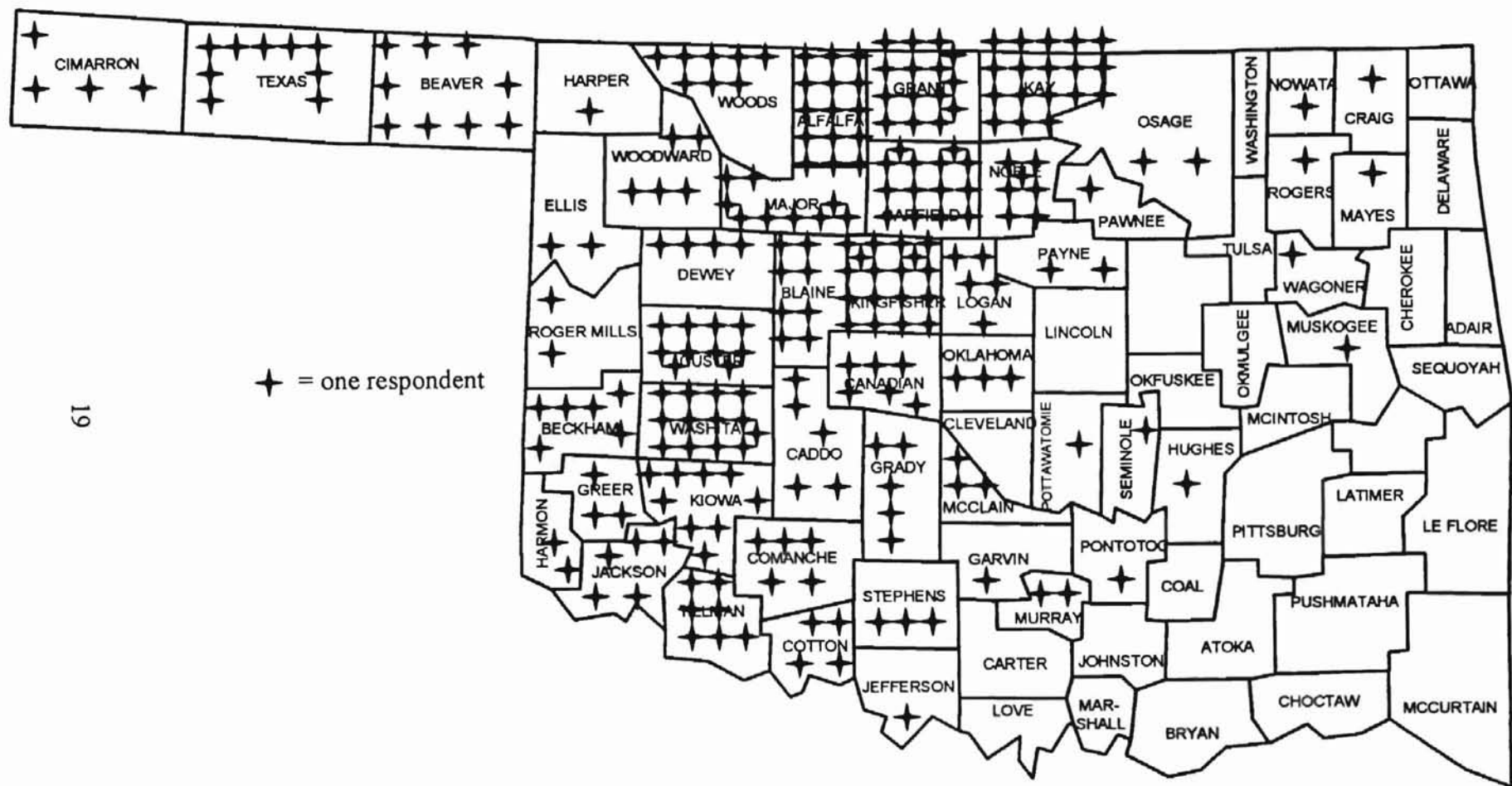


Figure 2. Location of questionnaire respondents

## Producer Characteristics

Producer characteristics for those who requested a refund and those who did not request a refund are shown in Table II.

Ninety-six percent of the respondents that requested a refund (group 1) were male while 93 percent were male that did not request a refund (group 2). The mean ages were very similar at around 57 years. The mean for education was also similar for both groups at about 14 years with 96 percent finishing high school and 40 and 49 percent finishing college, respectively, in the two groups. On the average, the second group had been farming a little longer than the first group 32.3 years to 29.9 years. The mean farm acreage mean for the first group was 1574 acres with 66 percent of that being in crops, while group two had a mean of 1426 acres with 72 percent of that being in crops. An average of 79 percent of those crop acres was planted to wheat (814 acres) for group one, with group two having an average of 65 percent in wheat (667 acres). Those producers who requested a refund harvested an average of 77 percent of their wheat acres (625 acres). Those producers who did not request a refund harvested an average of 71 percent of their wheat acres for grain (472 acres). The surprising and biggest difference is in the average bushels per acre for each group. Group 1 produced an average of 30,254 bushels while group 2 produced an average of only 16,895 bushels. At the current assessment, producers requesting refunds would contribute slightly more than \$451 while those who do not request refunds would contribute \$252 for programs.

**Table II. General Descriptive Information About Producers in Study.<sup>a</sup>**

Characteristic	Requested Refund	Did Not Request
Responses	56	213
Gender:		
Male	96 percent	93 percent
Female	4 percent	7 percent
Education:		
Average	14.3 years	14.6 years
Finished high school	96 percent	96 percent
Finished college	40 percent	49 percent
Average Age	56 years	57.1 years
Average Income (gross)	\$106,966.29	\$95,838.51
Percentage of income from wheat	41 percent	33 percent
Averages:		
Number of years farming	29.9 years	32.3 years
Acres	1574 acres	1426 acres
Acres of crop land	1035 acres	1024 acres
Acres of wheat	814 acres	667 acres
Wheat acres harvested for grain	625 acres	472 acres
Bushels of wheat produced in 1997	30,254 bushels	16,895 bushels

<sup>a</sup> Averages computed from responses only.

### **Check-off Program Effectiveness**

Producers were asked to indicate which check-off programs they participated in and then to rate the effectiveness of these programs with a one being much less effective than average through a five being much more effective than average. The wheat check-off program had a mean of 2.56 coming in at just below average effectiveness. Soybeans had the highest mean at 3.48 with pork coming in next at 3.44 (Table III).

To find out participants' beliefs and opinions about commission activities and related issues, producers were asked to agree or disagree with 13 statements ranging from program effectiveness to government aid. Table IV shows the response given most for each statement and its percentage of the total responses. Some of the results present interesting contrasts. The producers generally agree that milling and baking quality have been improved and yields have increased because of research (items c and d, Table IV). They are much less convinced that production costs have decreased or that prices have increased because of promotion efforts (items e and f, Table IV). They do not feel producers are well informed and a majority would like to have more information about wheat commission programs (items i and k, Table IV). They also do not agree with statements that suggest that commodity research and promotion programs should be eliminated (item l, Table IV).

Producers were asked to indicate how they feel the commission is spending money at the present time and also what their preferred allocation would be. Results of the questionnaire and actual allocations are shown in Table V. The number of responses to the question about how funds should be spent is lower than for many of the other

questions. However, responses to questions about how funds should be spent are consistent with their opinions about the effects of the programs. Producers would allocate more to research and less to market development efforts reflecting their relatively stronger belief that research has produced results, though some made specific written comments that suggested that market development is still very important (field notes reported in Appendix C). The averages showed public relations should be allocated about 15 percent of the funds while administrative issues and salaries should only use about 12 percent. Although some producers believed that salaries were taking most of the money (according to some responses and comments), when averaged in with other producer's beliefs, the result was at 27 percent.

Table III. Wheat Check-off Program Vs. Other Check-off Programs<sup>a</sup>

Program	Requested Refund		Did Not Request Refund	
	Average	Number of Responses	Average	Number of Responses
Beef	2.36	39	3.14	146
Soybeans	3.00	3	3.56	18
<b>Wheat</b>	<b>1.89</b>	<b>45</b>	<b>2.76</b>	<b>155</b>
Peanuts	1.00	1	2.90	10
Cotton	1.00	1	2.93	15
Pork	2.00	1	3.63	8
Pecans	1.00	2	2.40	5
Lamb	n/a	none	2.50	4

a. Range: much less effective than average 1, average effectiveness 3, much more effective than average 5.

Table IV. Percentage of Respondents in Agreement or Disagreement with Statements about Government Assistance and Program Effectiveness, Question 14.

	Statements	Disagree <sup>a</sup>	Uncertain	Agree
a.	The government should help farmers.	25	19	<b>56</b>
b.	The wheat check-off is like a contribution to a charity.	<b>49</b>	18	33
c.	Farmer-funded variety research has improved wheat milling and baking quality.	10	34	<b>56</b>
d.	Wheat yields have increased because of research.	12	12	<b>76</b>
e.	Wheat production costs have decreased because of research.	<b>47</b>	23	30
f.	Wheat prices have increased because of export promotion.	<b>48</b>	28	24
g.	Promotion efforts the OWC funds through the Wheat Foods Council are helping increase the consumption of grain based foods.	16	<b>64</b>	30
h.	The OWC represents state wheat producer's interests.	12	31	<b>58</b>
i.	Wheat producers are well-informed about Wheat Commission activities.	<b>41</b>	35	24
j.	Overall, the Oklahoma Wheat Commission programs make farmers better off.	21	<b>41</b>	38
k.	I would like more information about Wheat Commission activities.	16	29	<b>55</b>
l.	All commodity research and promotion programs should be eliminated.	<b>71</b>	20	8
m.	Contributions to wheat commodity research and promotion programs are voluntary.	24	31	<b>45</b>

a. Strongly disagree and disagree are combined. Agree and strongly agree are combined.

Table V. Beliefs, Actual and Preferred Allocation of Wheat Commission Funds, Question 15.

Area	Current Belief (%)	Preferred (%)	Actual (%)
a. Production research to improve varieties, pest control, production costs.	28	32	23
b. Market development that includes new product development, new uses of wheat, development of recipes, and international market developing efforts.	30	37	43
c. Producer information and public relations programs.	15	15	18
d. Administrative costs (salary, travel, board expenses).	27	12	16

### Social Standing

As stated earlier, informal sanctions such as “expressions of slight disapproval or ostracism” (Coleman, 1990) might exist to enforce a norm of either approval or disapproval of wheat commission contributions. Several producer characteristics like acreage farmed, age, and memberships in organizations are likely to be related to social standing. In addition, producers were asked to self-evaluate their social standing. They were asked to state where they felt their social standing was on a scale of 1-10 with 1 being the lowest social standing and 10 being the highest social standing. Of the respondents, 42% responded with either a 7 or an 8 which suggests the possibility that producers may not be affected by negative sanctions from those with a lower standing. Unfortunately, the low response rate to this question prevented use of this information in the model.



## Econometric Analysis

A logit regression was used to estimate the probability of a producer requesting a refund. The logit model creates an index which is a linear function of the right-hand side variables ( $I_t = X_t\beta$ ). The index has an infinite range and is then translated to a 0-1 range by using a cumulative density function.

Although the index is linear in  $X$ , the probabilities are not. Therefore, in the logit framework, an equivalent index can be defined using the logistic function:

$$P_t = F(I_t) = F(X_t\beta) = \frac{1}{1 + \exp(-X_t\beta)}$$

where

$P_t$  = probability that a producer will request a refund given the knowledge of various factors  $X_t$ ;

$I_t$  = the value of the cumulative logistic function associated with each possible value of the underlying index  $I_t$  or  $X_t\beta$ , and

$\beta$  = a vector of unknown parameters .

The logit model is estimated using the maximum likelihood procedure and measures of goodness of fit in SHAZAM (White, 1993).

The coefficients show only the change in the independent variable on the index and not the dependent variable. Therefore to compute the effect for coefficient  $k$  the derivative with respect to each  $X$  is taken and is represented by:

$$\frac{\partial P_t}{\partial X_{kt}} = \frac{\beta_t \exp(X_t \beta)}{[1 + \exp(X_t \beta)]^2}$$

After computing the above, the elasticity calculation for the  $k$ th coefficient is:

$$E_{kt} = \left( \frac{\partial P_t}{\partial X_{kt}} \right) \left( \frac{X_{kt}}{F(X_t \beta)} \right)$$

However in a logit model the elasticity is different for every observation. Therefore, in the SHAZAM Program used to estimate the function, the elasticity is computed at the mean values (White 1993, p. 253) as:

$$E_k = \left( \frac{\partial P_t}{\partial X_{kt}} \right) \left( \frac{\bar{X}_{kt}}{F(\bar{X}_t \beta)} \right)$$

SHAZAM also computes a weighted aggregate elasticity as:

$$\bar{E}_k = \frac{\sum_t P_t E_{kt}}{\sum_t P_t}$$

The logit output shows several different ways of computing  $R^2$ . The two most appealing ones are the Maddala R-square:

$$R^2 = 1 - \exp[2L(0) - L(B) / N]$$

and Cragg-Uhler R-Square:

$$R^2 = \frac{1 - \exp\{[2L(0) - L(B)]/N\}}{1 - \exp[2L(0)/N]}$$

Variables included in the empirical model are chosen to represent the hypotheses and to avoid questions to which the response rate was low. The empirical model is:

$$\text{Prob}_i = \beta_0 + \beta_1 \text{BUSHEL}S + \beta_2 \text{COMM} + \beta_3 \text{CLUB}S + \beta_4 \text{KNOW} + \beta_5 \text{ATTEND} + \\ \beta_6 \text{PUB} + \beta_7 \text{INFORMED} + \beta_8 \text{BENEFICIAL} + \beta_9 \text{ELIMINATE} + \beta_{10} \text{VOLUNTARY}$$

where:

$\text{Prob}_i = 1$  if a producer requests a refund, 0 otherwise;

*BUSHEL*S = number of bushels of wheat produced in 1997 ( a continuous variable);

*COMM* = 1 if producer knows a wheat commissioner, 0 otherwise;

*CLUB*S = number of activities producer is in ( a continuous variable);

*KNOW* = number of commission activities producer knows about;

*ATTEND* = number of meetings on activities producer has attended;

*PUB* = number of activities producer has read about;

*INFORMED*, *BENEFICIAL*, *ELIMINATE*, and *VOLUNTARY* = 1 if producer agrees with statement in questions 14i, 14j, 14 l, and 14m, (Table IV) respectively, -1 if producer disagrees, 0 otherwise.

## CHAPTER IV

### RESULTS

#### Regression Analysis

The results of the logit analysis to estimate the effects of producer characteristics, knowledge of commission activities, attitudes, and beliefs on the probability of a producer requesting a refund are shown in Table VI. Prediction success and measures of goodness of fit are shown in Table VII.

Table VI. Results of Logit model estimation of the probability of a producer requesting a refund.

Independent Variables	Estimated Coefficient	Standard Error	Asymptotic		Weighted Aggregate Elasticity
			T-Ratio	Elasticity at Means	
<i>BUSHEL</i> S	1.76E-05	6.19E-06	2.8422	0.3169	0.2208
<i>COMM</i>	-0.93256	0.47646	-1.9573	-0.2732	-0.1270
<i>CLUBS</i>	-7.63E-02	0.2141	-0.3563	-0.0077	-0.0040
<i>KNOW</i>	5.59E-03	6.66E-02	8.30E-02	3.02E-02	1.74E-02
<i>ATTEND</i>	-2.21E-02	0.11988	-0.1846	-2.10E-02	-1.06E-02
<i>PUB</i>	1.99E-02	6.81E-02	0.2916	7.98E-02	4.69E-02
<i>INFORMED</i>	0.3671	0.2875	1.2769	-4.94E-02	-4.21E-02
<i>BENEFICIAL</i>	-1.4113	0.33954	-4.1564	-0.15082	0.1473
<i>ELIMINATE</i>	0.72653	0.3117	2.3307	-0.4055	-0.1832
<i>VOLUNTARY</i>	0.5670	0.2640	2.1480	9.20E-02	8.73E-02
<i>CONSTANT</i>	-1.3087	0.45614	-2.8692	-1.1293	-0.6589

Table VII. Prediction Success for Logit Model of Wheat Producers' Requests for Refunds and Measures of Goodness of Fit

Predicted	Actual	
	0	1
0	166	33
1	8	11

Number of right predictions = 177

Percentage of right predictions = 85.9

Maddala R-square = 0.1998

Cragg-Uhler R-square = 0.31508

McFadden R-square = 0.22165

0 represents producers who did not request a refund and 1, producers who did request a refund.

Preliminary estimation revealed that the primary producer characteristic influencing request for a refund was number of bushels produced. Because of lower response rates and positive correlation among bushels produced and income, income was not included. Personal knowledge of a wheat commissioner and number of memberships in clubs are included to reflect social standing, a propensity to join groups, and potential impact of social sanctions. Because wheat commissioners review lists of producers that request refunds, knowing a commissioner may mean that a producer is more subject to social sanction or has more ability to influence commission activities and is less likely to request a refund. Membership in clubs is included to reflect a propensity to want to be included in groups, which could be related to social standing as well. Self-reported social standing is not included because of the low response rate.

Variables are included to indicate knowledge about commission-sponsored

activities (*KNOW*), attendance of a commission activity (*ATTEND*), and reading of articles or publications about commission activities (*PUB*). These variables represent specific actions which the commission could encourage.

Variables to indicate beliefs are shown as agreement or disagreement with the following statements: Wheat producers are well-informed about Wheat Commission activities (*INFORMED*); Overall, the Oklahoma Wheat Commission programs make farmers better off (*BENEFICIAL*); All commodity research and promotion programs should be eliminated (*ELIMINATE*) and; Contributions to wheat commodity research and promotion programs are voluntary (*VOLUNTARY*).

The results show that among the explanatory variables, probability of requesting a refund is positively related to *BUSHEL*, *ELIMINATE*, and *VOLUNTARY*. Producers who market more bushels are more likely to request a refund which suggests that refund problems may become greater if average farm size continues to increase. Large producers who know that programs are voluntary, and/or believe that commodity research and promotion programs should be eliminated have a higher probability of requesting a refund. Since the process of requesting a small refund is the same as the process for a large refund, the bushels effect could be due to the learning curve associated with knowing how to request refunds and the dollar amount of the refund relative to the cost.

Probability that a producer will request a refund is found to be negatively related to knowing a commissioner (*COMM*), and agreement with the statement that the Oklahoma Wheat Commission programs make farmers better off (*BENEFICIAL*). Clearly, the results suggest that one important role for commissioners is to become

acquainted with producers (particularly large producers) and for the commissions to create agreement with the belief that programs produce benefits.

However, the ways of creating positive beliefs about the commission and reducing negative beliefs about commission activities are less clear. Reading about, attending, and knowing about commission activities had very little impact on whether producers request refunds. The coefficient for *INFORMED* is positive but not significant. Unless these activities change beliefs and attitudes about commission effectiveness they are not likely to influence refund request rates. In addition, number of club memberships is also not significant.

To summarize, number of bushels sold, personal acquaintance with a commissioner, and producer's opinions and beliefs about wheat commission activities had the greatest influence on the decision to request a refund.

### **Model Interpretation**

Results in Table VIII give a summary of how the probability of requesting a refund is influenced by the discrete variables in the model. The mean responses were used for all variables in the model and then the discrete variables were assigned integer values. The conditional probability of requesting a refund with all of the variables at their means was 0.138 as shown in the first line of Table VIII.

The next four rows of the table show the effects of changing the five discrete variables one variable at a time. For example, when a producer knows a commissioner (*COMM* variable is changed from 0 to 1), the probability of requesting a refund decreases

by 9.7 percent. When producers agree that programs make producers better off as opposed to disagreeing that programs make farmers better off (*BENEFICIAL* variable from 1 to -1) the probability of requesting a refund decreases by 39.8 percent, the largest individual decrease in probability for the discrete variables. If producers disagree that all commodity research and promotion programs should be eliminated rather than agree that all commodity research and promotion programs should be eliminated (*ELIMINATED* variable from -1 to 1) the probability of requesting a refund is 22.9 percent less. The last row of the table shows the effect on probability of requesting a refund is 68.4 percent if both attitudes toward benefits and elimination of programs are changed (*BENEFICIAL* from -1 to 1 and *ELIMINATED* from 1 to -1).

Producers who agree that program contributions are voluntary (*VOLUNTARY* = 1) are 12.6 percent more likely to request a refund than are producers who disagree with that statement (*VOLUNTARY* = -1). Only 45 percent of the respondents agreed with the statement that contributions are voluntary (Table IV) which suggests that if producers become better informed about program provisions, refund request rates could increase.

The probability results are consistent with the regression model. If producers agree that they are made better off by commission programs and activities, then they are more likely to participate. However, the problem lies in identifying what makes producers feel that programs are not beneficial and how the commission can help combat this belief.



Table VIII. Conditional Probabilities of Requesting a Refund

Conditional probability or change in conditional probability	Descriptions of conditions or changes in conditions that affect the probability of requesting a refund
0.138	Conditional probability of requesting a refund with all variables in the model set at the mean values.
0.097	Difference in probability for a producer who does not know a commissioner, <i>COMM</i> = 0 (0.178) and a producer who knows a commissioner <i>COMM</i> = 1 (0.081) with all other variables at their mean values.
0.398	Difference in probability for a producer who agrees with, <i>BENEFICIAL</i> = 1 (0.443) and disagrees with <i>BENEFICIAL</i> = -1 (0.044) programs are beneficial, with all other variables at their mean values.
0.229	Difference in probability for a producer who agrees with, <i>ELIMINATED</i> = 1 (0.339) and disagrees with <i>ELIMINATED</i> = -1 (0.111) all programs should be eliminated, with all other variables at their mean values.
0.126	Difference in probability for a producer who agrees with, <i>VOLUNTARY</i> = 1, (0.202) and a producer who disagrees with program contributions are voluntary, <i>VOLUNTARY</i> = -1, (0.076), with all other variables at their mean values.
0.684	Difference in probability for a producer who agrees that programs should be eliminated ( <i>ELIMINATED</i> = 1) and disagrees that programs are beneficial ( <i>BENEFICIAL</i> = -1) (0.718) with a producer who disagrees that programs should be eliminated ( <i>ELIMINATED</i> = -1) and agrees that programs are beneficial ( <i>BENEFICIAL</i> = 1) (0.035).

## CHAPTER V

### IMPLICATIONS AND CONCLUSIONS

#### **Conclusions**

The general objective of this research was to provide information that would help reduce the number of refund requests made by wheat producers to the wheat commission of Oklahoma.

Based on the results of the survey and the logit regression model, the wheat commission will have a greater likelihood of reducing the number of refunds in the state of Oklahoma by targeting efforts at bettering the commission in the minds of the producers.

The specific objective was to determine how economic and social factors, knowledge, attitudes, and beliefs were related to the requests for refunds.

It was found that attitudes and beliefs about the effectiveness of the commission and about commodity programs in general, have the most influence on requests for refunds. Specific results for each hypothesis follow.

Hypothesis 1: Ho - Participation is not related to susceptibility to social sanctions.

Conclusion: The null hypothesis was not accepted to the extent that personal acquaintance with a wheat commissioner is a measure of susceptibility to social sanction.

Hypothesis 2: Ho - Participation is not related to beliefs about program effectiveness.

Conclusion: The null hypothesis was not accepted. If producers believe programs are beneficial they are less likely to request refunds and if they believe programs should be eliminated they are more likely to request a refund.

Hypothesis 3: Ho - Participation is not related to other producer characteristics

Conclusion: The null hypothesis was not accepted. Request for a refund was positively related to bushels produced.

Recall the theoretical model which suggested producers maximize

$$U[M + h(R,B,n) + g(B,n) - B - c(B,F)],$$

their utility. The research shows that producers who request refunds feel that  $h(R,B,n)$ , the reward function, is zero. Therefore if the social sanction function has little influence ( $g(B) = 0$ , i.e. they do not know a commissioner), producers are likely to request a refund as long as the refund amount  $B$  is greater than the perceived cost of requesting the refund  $c(B,F)$ . Many producers see rewards as being high wheat prices. Since at the time of the survey, the wheat price was historically low, producers requesting refunds may have felt that there was no reward for contributing to the wheat commission program efforts.

### **Implications for Program Managers and Commissioners**

Understanding why producers do or do not participate can influence whether program managers emphasize efforts to increase positive beliefs about program effectiveness and/or generate positive social sanctions for those who elect to participate in the program. Simply knowing about, attending or reading publications about programs does not appear to be enough to influence refund requests unless these activities influence producers' beliefs. Making personal contacts with large producers would appear to be the

best way that commissioners can influence refund requests. Commissioners need to be people who are well known by a large number of producers. Since the research shows that the producers' beliefs are a key factor in participation or no participation, in-depth analysis of the source of producers' negative and positive perceptions of the commission effectiveness is needed.

The main problem expressed by the producers is that of a low wheat price. Although the commission cannot directly influence the price, they must convince the producers that they are making a significant effort to alleviate the problem if they want continued and new support in the future.

A wheat commission's main goal is to create benefits for producers. To be effective in this endeavor, commissioners must understand why producers behave the way they do and conform their activities to meet the producers where they are. It is important for commissioners to communicate with their constituents in order to serve them in the most effective and efficient manner.

### **Suggestions for Further Research**

For future studies, first other states with voluntary check-off programs should be analyzed. By expanding to other states, not only can a greater understanding of wheat farmers be gained, but also commissions and check-off program managers can learn from each other how to better serve their constituents.

The survey may also be more effective if it were simplified to focus on producers beliefs about research and market development and the sources of their beliefs. Since this

was the factor that most greatly influenced producer's decisions to request a refund, a better understanding of these beliefs is critical in combating the problem of refunds.

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## APPENDIXES

APPENDIX A  
WHEAT PRODUCER QUESTIONNAIRE



Dear Wheat Producer:

Wheat producers throughout the U.S. participate in check-off programs to support research and marketing efforts through their state wheat commissions. The purpose of this questionnaire is to give you the opportunity to provide the Oklahoma Wheat Commissioners and staff with feedback about how well you understand and support the research and marketing efforts of the Commission. This study is not funded by the Oklahoma Wheat Commission and is an independent evaluation of their program.

The information you provide is confidential. Summaries of the responses and data provided will be presented to the Wheat Commission to help them plan activities and respond to producer suggestions.

Should you have questions about this research, please contact Dr. Daniel S. Tilley, Professor (405-744-6180), Dr. Shida R. Henneberry, Professor (405-744-6159), or Ms. Kelley Crowley, Graduate Research Assistant in Agricultural Economics (405-744-9806). Please return the completed questionnaire in the attached postage paid envelope. Thank you for your response.

Sincerely,

Daniel S. Tilley  
Professor

Shida R. Henneberry  
Professor

Kelley Crowley  
Graduate Research Assistant

1. Gender: \_\_\_\_\_ 2. Age: \_\_\_\_\_
- Education Level: (circle one)
- |                   |                    |                |                  |
|-------------------|--------------------|----------------|------------------|
| <u>Elementary</u> | <u>High School</u> | <u>College</u> | <u>Post Grad</u> |
| 1 2 3 4 5 6 7 8   | 9 10 11 12         | 13 14 15 16    | 17 18 19 20+     |
4. a. In what county is your farm located? (the majority) \_\_\_\_\_  
 b. How many years have you operated a farm? \_\_\_\_\_
5. How many bushels of wheat did you produce/harvest last year? \_\_\_\_\_
6. What type of organization best describes your farm business? (circle one)
- individually owned                  partnership                  corporation
7. What (if any) other enterprises are on your farm? (circle all that apply)
- soybeans    milo    com    cattle    peanuts    cotton    pecans    alfalfa  
 prairie hay                  other \_\_\_\_\_
8. a. What is your total farm acreage? \_\_\_\_\_ acres  
 b. What percentage of your farm is crop land? \_\_\_\_\_ %  
 c. What percentage of the land you farmed in 1997 was rented from others? \_\_\_\_\_ %  
     To others? \_\_\_\_\_ %  
 d. What percentage of the crop land was used for wheat production in 1997? \_\_\_\_\_ %  
 e. What percentage of those acres were harvested for grain in 1997? \_\_\_\_\_ %  
 f. Where did you market your grain in 1997? \_\_\_\_\_
9. Do you personally know anyone who has been or is an Oklahoma Wheat Commissioner?  
 yes    no
10. To what clubs, civic organizations, or activities do you belong? (circle all that apply)
- Lion's Club    Farm Bureau    OK Association of Wheat Growers    Rotary  
 Elk's Club    Moose Lodge    Kiwanis                  other \_\_\_\_\_
11. Have you ever been elected to an office? (i.e. school board, county commissioner)    yes    no
12. In which of the following (check-off programs) do you participate? Indicate your answer by circling either yes or no for each program. Please rate your impression of the overall effectiveness of the promotion and research programs listed. Circle a number from 1 to 5.

Program	Participate?		No opinion	Much less effective than average	Average effectiveness			Much more effective than average
	Yes	No			1	2	3	
Beef	Yes	No	___	1	2	3	4	5
Soybeans	Yes	No	___	1	2	3	4	5
Wheat	Yes	No	___	1	2	3	4	5
Peanuts	Yes	No	___	1	2	3	4	5
Cotton	Yes	No	___	1	2	3	4	5
Pork	Yes	No	___	1	2	3	4	5
Pecans	Yes	No	___	1	2	3	4	5
Lamb	Yes	No	___	1	2	3	4	5

13. The following are activities of the Oklahoma Wheat Commission. (Please circle yes or no for every question in the following table).

Wheat Commission Activity	Do you know about this activity?		Have you attended a meeting about this activity?		Have you read a publication or article about this activity?	
	Yes	No	Yes	No	Yes	No
a. Producer funding has developed varieties such as Century, Chickasha, Tonkawa, Custer, and 2174.	Yes	No	Yes	No	Yes	No
b. Breeding for insect pest and disease resistance.	Yes	No	Yes	No	Yes	No
c. Wheat quality testing.	Yes	No	Yes	No	Yes	No
d. Improving wheat genetics.	Yes	No	Yes	No	Yes	No
e. Developing alternative uses for wheat, such as strawboards or packaging peanuts.	Yes	No	Yes	No	Yes	No
f. Hosting 50+ international visitors in trade teams that include millers and bakers.	Yes	No	Yes	No	Yes	No
g. Sponsoring overseas milling and baking seminars/trade servicing in 140 countries.	Yes	No	Yes	No	Yes	No
h. Participating in quality seminars overseas- showing buyers the quality of U.S. hard red winter wheat.	Yes	No	Yes	No	Yes	No
i. Sponsoring Oklahoma Wheatheart Bread Baking contests.	Yes	No	Yes	No	Yes	No
j. Promoting the Food Guide Pyramid and the Check Your Six program, to encourage Americans to consume more grain-based foods.	Yes	No	Yes	No	Yes	No
k. Helping School Food Service personnel add more grain based foods to their school lunches.	Yes	No	Yes	No	Yes	No
l. Regional promotion through events such as farm shows and Ag Day at the Capital.	Yes	No	Yes	No	Yes	No
m. Presenting information on bread baking machines.	Yes	No	Yes	No	Yes	No

14. To what extent do you agree or disagree with each of the following statements? (place the corresponding number for each statement.)

Strongly disagree - 1    Disagree - 2    Uncertain - 3    Agree - 4    Strongly Agree - 5

- a. The government should help farmers. \_\_\_\_\_
- b. The wheat check-off is like a contribution to a charity. \_\_\_\_\_
- c. Farmer-funded variety research has improved wheat milling and baking quality. \_\_\_\_\_
- d. Wheat yields have increased because of research. \_\_\_\_\_
- e. Wheat production costs have decreased because of research. \_\_\_\_\_
- f. Wheat prices have increased because of export promotion. \_\_\_\_\_
- g. Promotion efforts the OWC funds through the Wheat Foods Council are helping increase the consumption of grain based foods. \_\_\_\_\_
- h. The OWC represents state wheat producers' interests. \_\_\_\_\_
- I. Wheat producers are well-informed about Wheat Commission activities. \_\_\_\_\_
- j. Overall, the Oklahoma Wheat Commission programs make farmers better off. \_\_\_\_\_
- k. I would like more information about Wheat Commission activities. \_\_\_\_\_
- l. All commodity research and promotion programs should be eliminated. \_\_\_\_\_
- m. Contributions to wheat commodity research and promotion programs are voluntary. \_\_\_\_\_

15. We would like your perception about how Wheat Commission funds are spent. Please indicate the percentage of funds you think are allocated across the four categories shown in the first column of the table below.

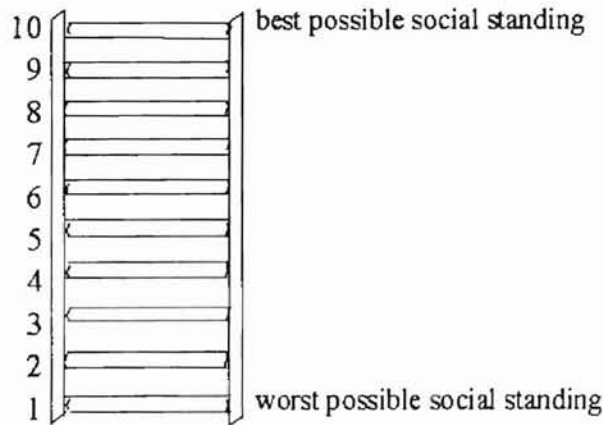
In the second column, please indicate how you would prefer that the funds be allocated across the four categories:

	Current thinking or Perception	Preferred Allocation
a. Production research to improve varieties, pest control, production costs.	_____	_____
b. Market development that includes new product development, new uses of wheat, development of recipes and international market developing efforts.	_____	_____
c. Producer information and public relations programs.	_____	_____
d. Administrative costs (salaries, travel, board expenses).	_____	_____
Total	100 percent	100 percent

16. If you were an Oklahoma Wheat Commissioner, of the funding spent on wheat production research, what percentage would you allot to each of the following activities?

Research Activity	Percentage
a. Wheat variety field testing.	_____
b. Development of insect pest and disease-resistant wheat varieties.	_____
c. Quality testing of wheat varieties.	_____
d. Development of improved weed control methods.	_____
e. Development of hard white wheat for Oklahoma production.	_____
f. Cooperator-farmer usage of new research technologies.	_____
g. Improving wheat germplasm through wheat genetics to develop better varieties.	_____
h. Other (please specify) _____	_____
	100 Percent of Production Research

17. This ladder represents social standing. Place a X on the ladder rung where you perceive yourself to be.



18. a. What is your total income, all sources? \_\_\_\_\_  
 b. Of your income, what percentage comes from wheat farming? \_\_\_\_\_%

19. Did you request a refund in the last year?    yes    no    If yes, why? \_\_\_\_\_

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20. Do you have additional comments? \_\_\_\_\_

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APPENDIX B  
MODIFICATIONS TO ANSWERS

Table IX. Average Response or Percentage for Each Variable.<sup>a</sup>

Questions	Mean	Questions	Mean	Questions	Mean
Gender	87%-male	A14	3.47	D16	13.30%
Age	56.84	B14	2.77	E16	10.45%
School	14.02	C14	3.53	F16	10.03%
Bushels	19497.87	D14	3.88	G16	14.32%
Soybeans	18%	E14	2.67	H16	28.32%
Milo	26%	F14	2.58	Ladder	6.94
Corn	4%	G14	3.13	Income	\$98,170.54
Cattle	74%	H14	3.51	Income2	34.17%
Peanuts	3%	I14	2.73		
Cotton	6%	J14	3.15		
Pecans	3%	K14	3.38		
Alfalfa	35%	L14	2.11		
Hay	25%	M14	3.28		
Acres	1461.13	Cur15A	27.18%		
Crop	70.39%	Pre15A	34.53%		
From	43.58%	Cur15B	29.15%		
To	5.29%	Pre15B	36.27%		
Wht	67.91%	Cur15C	15.16%		
Har	72%	Pre15C	14.61%		
Comm	34%	Cur15D	28.11%		
Clubs	1.16	Pre15D	11.91%		
Know	6.3	A16	16.50%		
Attend	1.03	B16	19.25%		
Pub	4.56	C16	11.12%		

<sup>a</sup> Averages reflect all responses including no answer.

Table X. Summary of Modifications Made to Answers for Logit Model

Question	Response	Changed in Program to:
1. Gender	male or female	1 male, -1 female, 0 otherwise
2. Age	continuous	not included
3. Education Level	years of school completed 1-20+	not included
4. a. county farm is located in	written response	not included
b. number of years farming	continuous	not included
5. Number of bushels produced	continuous	unchanged
6. Type of farm organization	individual, partnership, corp.	not included
7. Other enterprises on farm	yes or no for each one	not included
8. a. total farm acreage	continuous	not included
b. percent that is cropland	1-100%	not included
c. percent of land rented from others	1-100%	not included
d. percent of cropland that is wheat	1-100%	not included
e. percent of wheat harvested	1-100%	not included
f. where grain was marketed	written response	not included
9. Know a commissioner	yes or no	1 yes, 0 otherwise
10. Belong to what clubs	yes or no for each one	total number of clubs entered in as a continuous variable
11. Elected to an office	yes or no	not included
12. Participation in check-off program; rate effectiveness	yes or no participation 1-5 rate of effectiveness	not included
13. Knowledge of activity	yes or no	total number of yes's entered
Attended meeting	yes or no	total number of yes's entered
Read about activity	yes or no	total number of yes's entered
14. Opinion statements	1-5 strongly disagree to strongly agree	-1 strongly disagree or disagree, 0 uncertain, 1 agree or strongly agree



15. Funds disbursement:		
currently	percentage	not included
preferred	percentage	not included
16. Funding for research	percentage	not included
17. Social standing ladder	1-10 rate	not included
18. a. total income	continuous	not included
b. percentage of income from wheat	1-100%	not included
19. Request for refund	yes or no	1 yes, 0 otherwise (dependent variable)
20. Comments	written response	see Appendix C

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APPENDIX C

COMMENTS

## COMMENTS

Comments made by producers who requested refunds:

I don't see where it has done any good. We are at mercy of traders who are going to sell our wheat as cheap as possible and wheat commission has done no good. I have farmed for over 40 years and prices now are the lowest in all that time. Things cannot continue as at present as I just as well quit as lose what equity I have at present in the farm. Then somebody speaks to National WG convention once said we need 12 million acres more wheat to keep our share of world market. For what so we can give it away and traders and handlers make more.

I believe all the money the farmers send just goes into somebody's pocket. They do not help that much that I have seen. The price of wheat right now at my local co-op is \$2.84/bu. Now you tell me what good are these people doing to help the farmers.

I don't like your wheat tax that is automatically taken from our check. If someone wants to donate on their own, that's fine. All I read is where you folks had your last convention. All the wheat tax goes to wages and fun. We still have \$2.80-3.00 wheat here in the panhandle. This is 1998 with 1958 prices. Do something about this and I will join you.

Only in the last few years have I requested a refund. The refund to be used to support the Okla. Wheat Growers Assoc. Bad government policy can undercut all good promotional efforts by the commission-case in point- Iran was a good wheat customer until the White House invoked trade restrictions. We need representation at the gov. level which the commission by law cannot do. The wheat growers with a very small budget have been effective. It seems like bad timing to double the assessment when wheat prices have fallen in the "tank." Doubling the assessment will most likely prompt me to double my request for a refund. The commission needs to see if they can live within their budget just like the average wheat farmer has to. To whom is the commission accountable? Has anyone ever seen a financial statement from the commission?

No point in building markets as government(President Nixon, Ford, Carter) will embargo food as a weapon as it has in the past.

Something needs to be done about the wheat price. The farmers are going broke. Wheat price goes down and the expenses rise. Machinery get more expensive.

The wheat commission has been around for about 30 years and hasn't helped the Oklahoma or the United States farmer - price wise - any at all. Outlaw the checkoff program. People world wide know what wheat is. Why should the farmers pay the wheat commission members expenses to travel the world sight-seeing and enjoying nice banquets?

I do not feel that progress has been made. I am selling wheat for the same price that it was 40 years ago.

Until the free to farm bill, we had a floor under basic farm crops, i.e. target prices, EDP, and loan rates. Now we have nothing but the right to go broke! Wheat presently (4/10/98) is below \$3.00/bu on CBT. This is deplorable to say the least. Nobody in our U.S. is working for what they received 40 years ago.

There should be a voluntary contribution to the wheat commission and not automatically taken out of our wheat sales check. That removes the voluntary part of it.

I think it should be voluntary. I don't think they should take your money and then you have to sign forms and request to get "your" money back. That is wrong!

If you are going to take the money from the farmer when they sell wheat then call it a tax and accept the role of the IRS. The wheat tax is unfair so is the beef tax of \$1.00/hd. The tax is always put on the farmer! ie. - wheat tax, beef tax, school tax, ad valorem and so on. Also we never set the price for our product like most producers in the U.S.

Seems to be a wheat farmer subsidized social organization.

I do not like my hard-earned dollar taken from me by a group of people I did not vote for or against. It's another tax.

Last year the crop was very bad and all I heard from the OWC was that they were not going to get as much money as always so let's raise the limit and they did! They did not care if the farmer went broke as long as they kept getting their money. It's the same with beef comm.

Took out FSA loan and was deducted then. My understanding was it would be

deducted again when I sold wheat on market.

Wheat at \$3.00. You really think you're helping me. You should be fired.

What would help is a massive campaign about how cheap wheat is. People don't understand what a gift Pillsbury, Post, Kelloggs, etc. have had. Reckon they made a little money.

Comments made by producers who did not request a refund:

Most of #16 could be researched by chemical manufacturers and land grant colleges. (Only colleges should receive \$ from OWC for this research.)

In years past, the United States has went to other countries to show them how to be self sufficient with crop production. I believe we should show them how to make money so they can buy our commodities and pay for them instead of loans that are eventually written off.

If we don't improve our status in the world-wide wheat market, there will not be a need for the Oklahoma Wheat Commission or the National Wheat Growers. There is a serious danger that the family farm will no longer exist in this country. The basic reason is that the farmer has absolutely no control over prices received for products sold. You cannot name another business in the United States with less control of its prices.

Please continue to help wheat production on the high plains.

What a sad deal for wheat farmers \$2.82/bu. If their research on marketing was successful, the price should be better. I'm not totally sold on OK wheat commission.

Research and promotion are important to the future of or survival of wheat as grain to be used world-wide and survival on the world market area.

Why can't co-op market direct to overseas customers. Direct market could improve quality to customer, and improve return to wheat farmer.

Wheat producers cannot keep producing wheat for \$3.00/bu. A combine new costs \$150,000 and new 4 wheel drive tractor is \$150,000. The only alternative I see is to grow something other than hard red winter wheat. I am growing more milo (grain sorghum each year). It matures in four months - wheat takes 10 months. This is what helps my cash flow and return on my investment. Wheat farmers are currently doomed with low prices and high costs.

Most of the farmers plus myself are trying to figure out what we can plant besides wheat. We have the same amount of alfalfa as wheat. I wonder why I even plant wheat,

by the time all cost is put in, we're not making any money on wheat.

You can't see the forest because the trees are in the way. A few bushels of wheat doesn't make any difference. We are losing. Look at the old farmers, the abandoned farms, towns closing up. There's nothing left and who cares.

The idea of the U.S. govt. to settle the great plains started good. But by the 30's farmers were leaving. I'm 45 and I've seen farmers dying, going bankrupt, and divorcing. Leaving for whatever reason whole sections of counties were nobody's living anymore because the roads are so bad, you can't use them when its wet. Many farmers are tired. They see a small bridge not 10 foot long closed on a county road 1 mile from their house. And then you pick up the paper and a new 14 million \$ six lane is around OKC or they've just finished new Perkins Road. So you see farmers just don't have time worry about the OWC.

It's hard for me to understand why wheat is selling for the same price as of was during the late 40's. Tractors, combines, and equipment has went up 50 times what they were selling for in the late 40's. This is the biggest problem wheat producers have not better varieties. Parity is a must if we are ever going to get the farmer back on track.

After visiting several European countries and talking with some of their farmers, I concluded that the quality of wheat that we take to the elevator is not the same quality that their millers receive because of sub-standard exporting regulations. This alone could be hurting our ability to compete in a world market.

Stop big grain companies from shipping and adding foreign material to wheat exported to other countries.

Wheat commission should spend money on marketing wheat - price is too cheap. If they have been working on this, then they are failing.

We cannot compete with cheap labor and land in other countries.

Need to influence Washington policies more.

I don't think doubling the checkoff is a wise move.

Wheat farming in my operation is for pasture #1, grain #2. Cost of production has been \$6.00/bu for last 5 years. Because of low yields from freeze damage and disease can't stay in this business with expenses exceeding income. In my opinion Okla wheat commission has not had positive affect on wheat prices.

I feel the wheat checkoff should be voluntary not collected and then ask for a refund. As it is now the checkoff is an added tax.

The "world market" drives the price of wheat, not what you or anyone else does.

I can't believe that you are so worried about your org. You need to take our funds and get some legislation bought in Congress while we still have a little money to give you, or when the price of grain is low enough it won't make a what you do

I am hard pressed to agree on additional checkoff that is a higher percentage. I think the only people that know about OWC are the members themselves. I went to one meeting a few years ago and vowed never to waste my time doing that again, especially when I saw how cut and dried everything was.

Income from 2 professional careers (teacher, attorney(farming)). We would be glad to work with OSU on the Wheat Commission.

Elevators are reluctant to fill out forms if you market wheat more than once a year. Every farmer requesting refund has their names passed around the county and state.

Too much is spent on trips and parties for staff such as Anna Bell, that is political and does not sell any wheat.

Pretty depressing to think about \$3.00/bu wheat in 1998.

I think the OWC should be concentrating more on what we are going to do with all our wheat we produce and especially the price as of now. We can produce more and more wheat each year but what are we going to do with it except to pay storage to an elevator.

Two eighty-six wheat. What are they doing to promote higher price sales? Giving whet away for pennies is getting old.

Everyone has to eat. Let them pay for it. Set minimum price or dump in ocean.



Farmers get #\*\$& little percent of cash flow.

I am very concerned about corporate pig farming coming into our area. I am concerned about my property values and the air pollution. I am already faced with it in Texas Co. I have signed up my land Texas Co. into CRP.

I sold my first wheat crop in 1952 for \$2.34. I sold wheat 3 days ago for \$2.91. Production costs have increased at least 10 times in that period. This doesn't speak too well for the wheat commission.

APPENDIX D

Institutional Review Board Approval

OKLAHOMA STATE UNIVERSITY  
INSTITUTIONAL REVIEW BOARD  
HUMAN SUBJECTS REVIEW

Date: August 27, 1997

IRB #: AG-98-005

Proposal Title: FREE-RIDERS IN COMMODITY RESEARCH AND PROMOTION PROGRAMS

Principal Investigator(s): Daniel S. Tilley, Shida Henneberry, Kelley Crowley

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

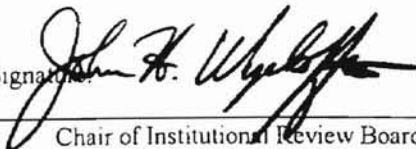
ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.

APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

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Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature: 

Chair of Institutional Review Board

Cc: Kelley Crowley

Shida Henneberry

Date: February 18, 1998

VITA

Kelley R. Crowley

Candidate for the Degree of

Master of Science

Thesis: FREE-RIDERS IN COMMODITY RESEARCH AND PROMOTION PROGRAMS

Major field: Agricultural Economics

Biographical:

Personal Data: Born in Joplin, Missouri on November 19, 1973, the daughter of Steve and Karen Crowley.

Education: Graduated from Wyandotte High School in May, 1992; received Associate of Arts degree from Northeastern Oklahoma A & M College in Miami, Oklahoma in May, 1994; received Bachelor of Science degree in agricultural economics from Oklahoma State University in Stillwater, Oklahoma in May, 1996; completed requirements for the Master of Science degree at Oklahoma State University in December, 1998.

Experience: Raised in an agricultural setting in rural Wyandotte, Oklahoma; employed as a salesperson for the NEO Bookstore at Northeastern Oklahoma A & M College; employed as a technical para-professional for the department of agricultural economics at Oklahoma State University as an undergraduate and as a graduate research assistant 1996 to 1998.