Surveying The Feasibility of a Voluntary Beef Checkoff

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The constitutionality of the beef checkoff program has recently been questioned. The Eighth U.S. Court of Appeals upheld a lower court ruling that the beef checkoff is unconstitutional. In 2001, the U.S. Supreme Court ruled the mushroom order unconstitutional. Since the beef checkoff has provisions very similar to the mushroom order, it is likely the beef checkoff will be deemed unconstitutional as well. This would be unfortunate for the large number of cattlemen who support it, and given the evidence of its positive effect on consumer demand for beef.

With the end of the mandatory checkoff in sight, some states have proceeded to develop plans for a voluntary checkoff. Oklahoma is currently developing a bill that would allow the creation of a voluntary beef checkoff where producers are assessed a checkoff fee just as they are now, but their fees will be refunded if requested within 45 days. On May 1, 2004 Tennessee passed a similar bill that would allow a refundable state-level beef checkoff. If state-level checkoffs seek to conduct large-scale advertisement campaigns, they will likely want to pool their resources to prevent one state from free-riding on another state's promotion activities. This would resemble a nationwide voluntary program.

Is a voluntary beef checkoff program feasible at the state or national level? This study seeks to address this question using a survey-based choice experiment. Surveys were mailed to Oklahoma cattlemen where each respondent was asked if she would donate to a nationwide and to a state voluntary checkoff. The attributes of the checkoff varied across surveys by the size of the requested donation, how the checkoff funds are allocated and a minimum participation rate.

The survey data can be used to estimate a random utility model that can predict the level of checkoff donations under various checkoff designs. The next section describes this survey,

and the third section develops a conceptual model for analyzing survey responses. The fourth section interprets the survey responses with particular attention to checkoff design, and the last section provides concluding comments.

Survey Description

In the beginning of January, 2004 a total of 2,950 surveys were mailed to Oklahoma cattlemen, providing 670 usable surveys. The mailing list was a stratified sample obtained through the National Agricultural Statistics Service database. The survey first provided a brief description of the beef checkoff program and the recent court rulings concerning the program. Next, the respondents were told that we are interested in what type of voluntary program they would support, should the mandatory program be ruled unconstitutional.

A hypothetical voluntary checkoff program was then described, similar to the refundable checkoff that Oklahoma and Tennessee are developing. Producers were told that checkoff fees would be collected as a fee per head sold, just as they are now. If they wish, producers can then request their checkoff fees be refunded in full. Remaining funds would then be spent on checkoff programs. However, if a minimum participation rate is not met, all fees will be refunded, even if a refund was not requested. The minimum participation rate is defined as a certain percent of producers who do not request a refund, and is a tool used to control free-riders, and is referred to as a provision points mechanism.

Next, producers were presented with two hypothetical checkoffs that differed in the checkoff fee, minimum participation rate, and the allocation of funds across advertising / promotion, research and other activities. Producers were asked to which checkoff they would most prefer to donate. If they would not donate to either checkoff, they could indicate they would request a refund. We asked producers to make this choice if the checkoff was a national

program and if it was a state program. By varying the fee, minimum participation rate and funding allocation across surveys we can estimate a random utility model for donations to a national and state level voluntary beef checkoff.

See Figure 1 illustrating the current beef checkoff budget allocation. In the choice experiment for the nationwide checkoff, producers are given an option between donating to two hypothetical checkoffs and an option not to donate. In all surveys, the percent of funds spent on promotion, research and other in one of the hypothetical checkoffs is allocated according to Figure 1, and the alternative checkoff contains a different budget randomly generated to ensure the percents sum to one. A similar question was posed for state-level checkoffs, but the budget allocations for both hypothetical checkoffs were randomly generated. The range of values for the voluntary fee, budget allocations and the minimum participation rate were randomly chosen for each survey (see Table 1), and were chosen to maximize the D-efficiency score.

A voluntary beef checkoff would be subject to free-riders. Some producers will elect not to donate money, but will reap rewards of the program anyway. This has the potential for a voluntary checkoff to be under-funded from a pareto optimal viewpoint. However, the use of a money back guarantee if the minimum participation rate is not met should reduce free-riding and improve demand revelation (Poe et al.).

The survey is also subject to a hypothetical bias. In hypothetical questions, cattle producers will be more willing support a voluntary checkoff than they would if real money was involved. Two tools are employed to reduce this bias. First, a cheap talk script is included which informs respondents of the hypothetical bias. This has been shown to reduce stated willingness-to-pay (Lusk). Second, a confidence question is used to calibrate stated donations. If a producer indicates she will make a donation to the voluntary checkoff, we ask her to express

how confident she is on a scale of one to ten she will actually make the donation if given the opportunity. Experiments have shown that if you assume those who indicate a confidence level of 8 or less will not donate any money, stated donations are often statistically indistinguishable from actual donations (Blumenschein et al.; Champ and Bishop). This process is referred to as the certainty calibration. If a producer indicates she would donate to a checkoff, but indicates her certainty is less than eight, we recode her answer to indicate she would not donate. Setting the threshold to eight was shown to be optimal in two experiments (Champ and Bishop).

Conceptual Model

Producer preferences are assumed to follow the random utility model shown below

(1) $U_i = \alpha_1 Fee_i + \alpha_2 Advertising_i + \alpha_3 Research_i + \alpha_4 Other_i + \alpha_5 MPR_i + \varepsilon_i = X_i\alpha + \varepsilon_i$

where Fee_i is the voluntary fee per head sold; $Advertising_i$, $Research_i$ and $Other_i$ is the percent of checkoff funds spent in each respective activity; MPR_i is the minimum participation rate and ε_i is an identically and independently distributed random variable following the extreme-value distribution. The subscript *i* refers to a particular hypothetical checkoff where the utility from not donating to the checkoff is set to zero. The sign of α_1 would normally be expected to be negative, but in this case the good represents an investment and it is possible that the value of α_1 could be zero or positive. A priori, the signs of α_2, α_3 and α_4 are ambiguous as they reflect producer preferences for different budget allocations. However, we expect α_2 to be larger for the nationwide checkoff than the state checkoff, as producers will recognize that the benefits of using state level checkoff funds for promotion will be accrued to producers outside the state. The sign of α_5 is expected to be positive, as a higher value provides stricter control of free-riders, but if producers are concerned that a minimum participation rate which is set too high will not be met, it could be zero or negative over some range of *MPR*.

The probability of a respondent choosing to donate to checkoff $i = 1, 2$ is given by the formula

$$(2)\quad \Pr_i = \frac{\exp\{X_i\alpha\}}{\exp\{X_1\alpha\} + \exp\{X_2\alpha\} + 1}.$$

The parameter vector α can be estimated as a standard multinomial logit model. It is likely that the estimated utility from a checkoff is overestimated from the survey because people tend to overestimate their willingness to pay in hypothetical situations (List and Gallet). The certainty calibration is used to recode answers, providing a calibrated utility function that can be compared to the uncalibrated utility function.

The random utility function can be used to identify the set of feasible voluntary checkoffs. A feasible voluntary checkoff is defined here as a checkoff whose participation rate (the percent of producers donating) exceeds the minimum participation rate. Under the assumption of extreme-value errors, the participation rate for a checkoff described by the vector X_i is given by

$$(3)\quad \text{Participation Rate}_{\text{i}} = \frac{\exp\{X_i\alpha\}}{1 + \exp\{X_i\alpha\}}.$$

The set of feasible checkoffs can then be estimated by determining the values of X_i for which (3) exceeds the minimum participation rate value contained in X_i. The next section describes the estimate results and what they imply about the structure of voluntary checkoffs.

Results

The multinomial logit estimates for the nationwide voluntary checkoff are shown in Table 2. Separate estimates are given for when the data are calibrated using the certainty question and when they are not calibrated. The sign on *Fee* is significantly negative, and is smaller in value in the calibrated model. Producers overwhelmingly prefer to spend checkoff

funds on advertising, as the coefficient on *Advertising* is significantly positive, while the coefficients on *Research* and *Other* are not significant in the uncalibrated model. The calibrated model also indicates a preference for a focus on advertising. This suggests, on average, the utility producers receive from funding a checkoff is due to producers' desire to conduct beef advertising and promotion on a large scale.

Next, we use these results to determine what type of nationwide voluntary checkoff is feasible. First, it is apparent that focusing checkoff funds on advertising is key to the program's success. See Figure 2 where the predicted participation rate is graphed in relation to the minimum participation rate. A feasible checkoff is one where the predicted participation rate line lies above the 45^0 ray. The slope of the participation rate line is less than one, meaning that an increase in the minimum participation rate of 1% increases the predicted participation rate by less than 1%. This implies there is some minimum participation rate for which the checkoff will become infeasible and all donations must be refunded in full. The voluntary checkoffs currently being constructed do not contain provision points mechanisms. Expected contributions to these checkoffs can be calculated by setting $MPR = 0$.

Figure 1 shows that a provision points mechanism is not necessary for the nationwide voluntary checkoff to operate. In fact, some readers may interpret the results to suggest that a provision points mechanism should not be employed. If fees are reduced from their current $1.00 level and most of the funds are funneled towards the promotion of beef, close to 50% of all producers will contribute to the checkoff. This would still provide a substantial financial base for large-scale advertisement campaigns. Moreover, if a provision point mechanism were included the chance of having to refund all donations increases. Given that the utility estimates

can only approximate producer preferences, the beef board can play it safe by not trying to control for free-riding using the provision points tool.

Next, producer preferences for a state-level checkoff are analyzed. See the random utility estimates in Table 3. Utility for a nationwide checkoff is more responsive to how the money is spent, is more responsive to the minimum participation rate and is less responsive to higher fees compared to utility for a state-level checkoff. Producer preferences for state-level budget allocations are vague. Using uncalibrated, data producers appear to prefer focusing on advertising and avoiding research, but the calibrated data suggests producers wish to focus on advertising and/or research (as opposed to "other" funding opportunities), but are indifferent between the two. The significance of the coefficient on the minimum participation rate also depends on whether the data are calibrated, perhaps suggesting that free-riding is less of a concern when the checkoff is conducted at a state-level.

While the random utility parameters differ between the state and federal level checkoffs, their implications for checkoff design are similar. See Figure 3 where the state-level participation rates are graphed. The striking similarity between Figures 2 and 3 suggest similar guidelines for constructing federal and state-level checkoffs. Focusing on advertising and lowering the fee per head sold will result in a sustainable state-level checkoff, and provision point mechanisms should only be used with careful attention to how they are set.

Summary and Implications

High levels of producer support, the development of several state programs, evidence of checkoff success, and the likely finality of the 8th circuit court's claim of unconstitutionality against the beef checkoff create a need to assess the feasibility of a voluntary replacement checkoff. The success of other programs, such as the voluntary wheat checkoff in Oklahoma,

suggests that a voluntary beef checkoff could be successful. Additionally, past studies have shown promise predicting accurate levels of participation in public good provision. However, little is known about the level at which a voluntary beef checkoff might be supported and what factors might contribute to a producer's decision to participate.

Random utility models were estimated for both state and national checkoffs based upon survey data from 670 Oklahoma cattle producers. Calibrating the data to reflect respondent certainty did not affect the implications or interpretation of the models significantly. Results from this study suggest that participation in a voluntary national program could be maximized by a lower fee and higher expenditure on promotion / advertising as compared to current levels. Although there is no active state program to compare against, a checkoff with a low fee and a majority of expenditure devoted to advertising / promotion or research (rather than "other" activities) is expected to generate the highest level of participation.

A provision points tool that could help control free-riding was considered. This tool would refund all donations if a minimum participation rate was not met. Survey responses to various minimum participation rates suggest that it contributes little to producer participation, indicating it may not be worth the risk of having to refund all donations.

This study sought to clarify what type of voluntary checkoff would be feasible. Other checkoff characteristics may be introduced and cause differences between these results and actual participation. For example, the Oklahoma program includes a deadline of 45 days, after which producers will not receive a refund. This trait introduces the possibility that producers who desire refunds may fail to collect them because they miss the deadline.

Results suggest that a voluntary checkoff may be feasible at the state or federal level. However, producers may behave differently than they indicate in the survey, either due to the

survey's hypothetical nature or as an attempt to free ride. Moreover, producers attitudes may change throughout the life of the checkoff as they become more aware of free-riders. This would be consistent with experiments which show that donations to public goods tend to decline as the number of donation opportunities increases. Administrators of a successful voluntary checkoff will be aided greatly by research into the reasons that an individual chooses to free-ride under a checkoff, and what if any, incentives may be provided to discourage this behavior.

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Table 1
Value of Checkoff Attributes Across Surveys

	Minimum	Maximum
Checkoff Fee	$0.20 / head sold	$2.00 / head sold
Percent of Funds Spent On Advertising	10%	85%
Percent of Funds Spent on Research	10%	75%
Percent of Funds Spent on Other	5%	80%
Minimum Participation Rate	5%	90%

Table 2
Random Utility Estimates For Nationwide Voluntary Checkoff

	Uncalibrated Utility	Calibrated Utility
	Parameter Estimates (Asymptotic T-Statistic)	
Checkoff Fee	-0.8257 (-5.92)	-0.6776 (-4.16)
Percent of Funds Spent On Advertising	1.5678 (5.51)	0.5082 (1.59)
Percent of Funds Spent on Research	-0.3756 (-1.08)	-1.6159 (-3.94)
Percent of Funds Spent on Other	-0.6495 (-1.82)	-1.4143 (-3.35)
Minimum Participation Rate	0.6956 (2.55)	0.6933 (2.28)

Table 3
Random Utility Estimates For State-Level Voluntary Checkoff

	Uncalibrated Utility	Calibrated Utility
	Parameter Estimates (Asymptotic T-Statistic)	
Checkoff Fee	-1.2488 (-8.05)	-0.9181 (-5.03)
Percent of Funds Spent On Advertising	1.7552 (5.95)	0.4316 (1.31)
Percent of Funds Spent on Research	-0.7383 (-2.43)	-0.5328 (-1.59)
Percent of Funds Spent on Other	-0.3280 (-1.18)	-1.8353 (-5.45)
Minimum Participation Rate	0.3920 (1.44)	0.7368 (2.40)

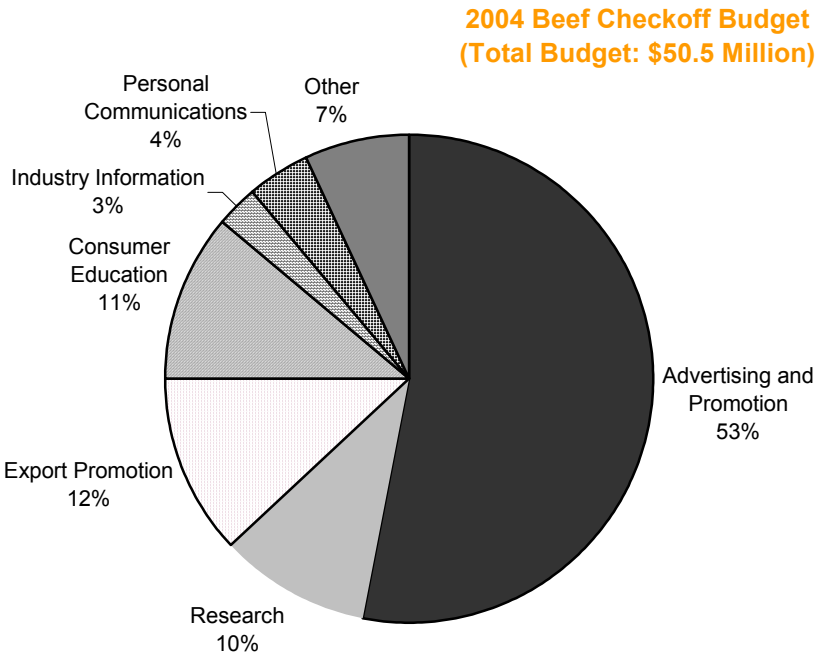


Figure 1. 2004 Beef Checkoff Budget Allocation

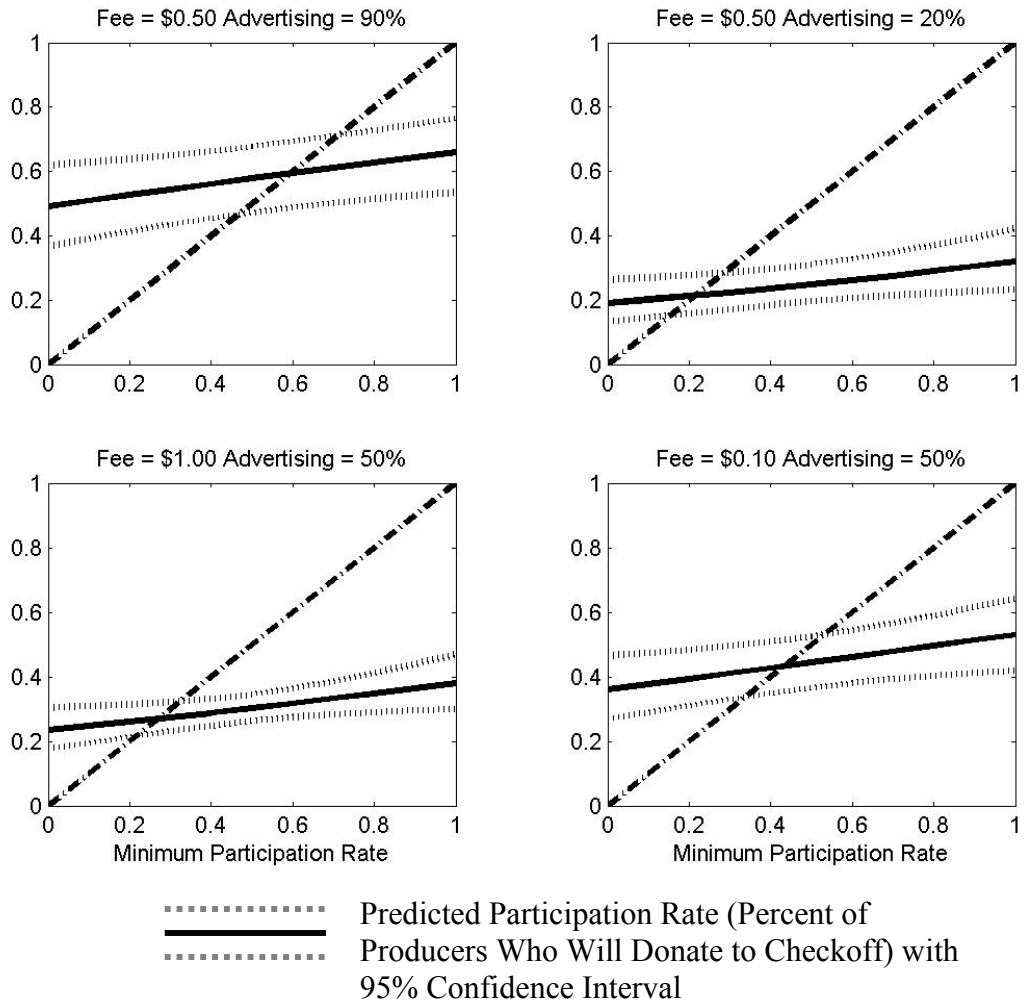
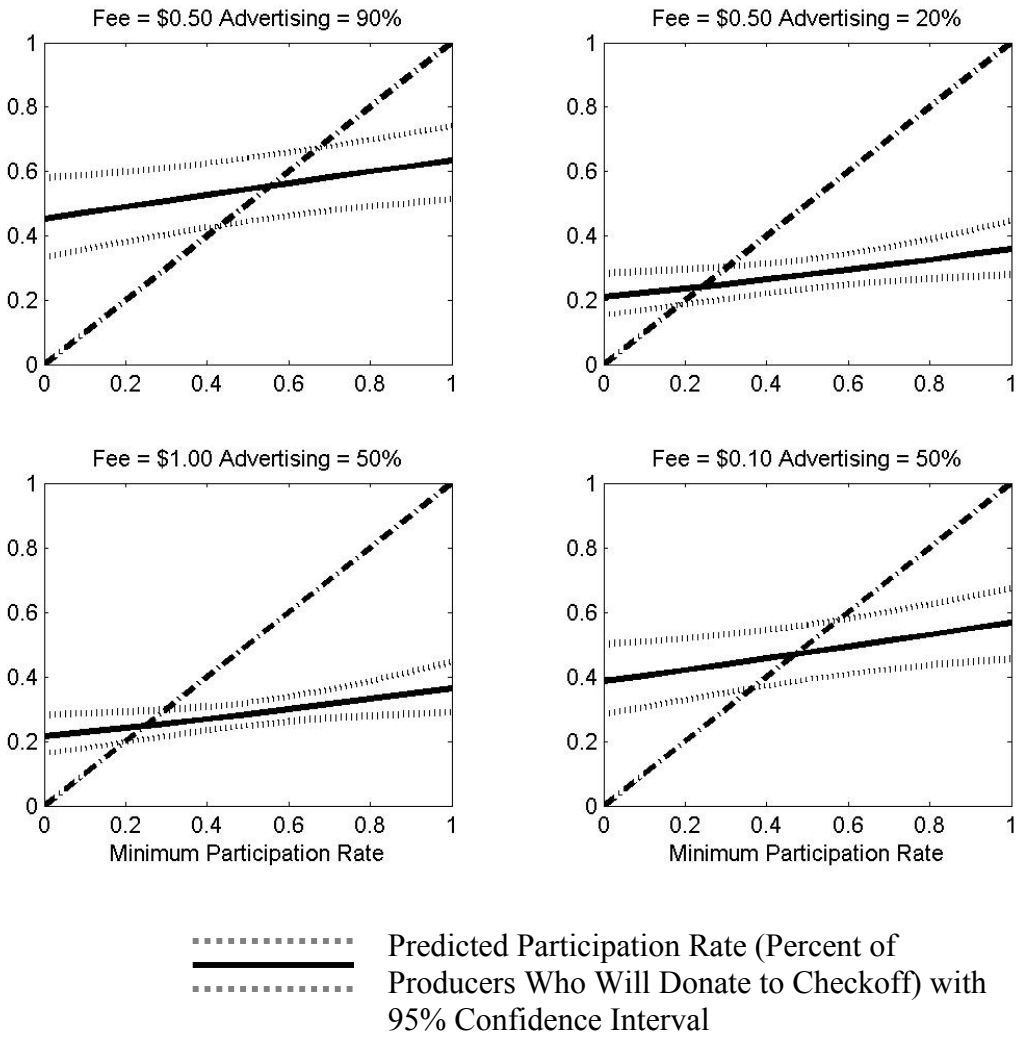


Figure 2. Feasibility of Hypothetical Checkoffs For Nationwide Voluntary Checkoff Using Calibrated Data



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