National Institute for Commodity Promotion Research & Evaluation

February 2004
NICPRE 04-03
R.B. 2004-03

Status Quo Bias and Voluntary Contributions: Can Lab Experiments Parallel Real World Outcomes for Generic Advertising?

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- Enhance both public and private policy maker's understanding of the economics of commodity promotion programs.
- Facilitate the development of new theory and research methodology.

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February 18, 2004

Abstract

This paper exploits a unique opportunity to test parallelism between the field and laboratory for the Voluntary Contribution Mechanism (VCM). Most commodities in the United States have checkoff programs assessing producers for generic advertising and promotion, a public good for producers. Examples include: Got Milk? and the Incredible Edible Egg. Originally, participation in many of these programs used the VCM and the free-riding observed follows a similar pattern to that seen in the laboratory by experimental economists. For example, a substantial amount of historical information is available for the egg industry's generic advertising program. We simulate both the economic and psychological details of this industry in a parallelism experiment. The results over eleven rounds of the VCM conducted in the laboratory are strikingly similar to the real-world results for the American Egg Board's program from 1977 to 1988. We also replicate the positive vote in favor of a mandatory program to replace the VCM that occurred in 1988. All commodity checkoff programs today are mandatory. Yet the constitutionality of mandatory checkoff programs has recently been challenged on the grounds that mandatory programs violate individual producer's free speech rights under the First Amendment. In light of this legal uncertainty, this paper explores the feasibility of using a voluntary provision point mechanism (PPM) which closely follows the institutional design of the VCM and mandatory programs used by the egg industry. Our results suggest that although the PPM performs better than the VCM, both mechanisms in this institutional setting yield far higher levels of contributions than those obtained in prior research. Thus, the research next explores why the levels of giving observed for generic advertising are higher than traditionally observed in the lab. Our results suggest that the institutional design employed by the American Egg Board and others where assessments were collected first and then having producers request refunds afterwards, established a social norm, or reference point, which leads to higher levels of contributions through status quo bias. This bias appears to increase contributions in both the VCM and PPM. However, this effect decreases over rounds as contributions still appear to converge to the Nash equilibrium of zero contributions in the case of the VCM and to the particular Nash equilibrium of just covering costs of the provision point in the PPM.

Status Quo Bias and Voluntary Contributions:

Can Lab Experiments Parallel Real World Outcomes for Generic Advertising?

Most commodities in the United States have checkoff programs assessing producers for generic advertising and promotion, a public good for producers.[1] Examples of the more popular programs include: Got Milk?; Beef, It's What's For Dinner; Pork the Other White Meat; Dancing Raisins; and the Incredible Edible Egg. The budgets for these programs total almost $1 billion annually in the agricultural sector alone (Forker and Ward, 1993), not including generic advertising for such other products as newspapers, plastics, steel, life insurance, pharmaceuticals and natural gas. Originally, participation in many of these programs was strictly voluntary in that all revenue came from donations from willing participants using the Voluntary Contributions Mechanism (VCM). As might be expected, free-riding increased dramatically over time as contributions to the programs decreased substantially.

The free-riding observed with generic advertising follows a pattern very similar to that seen in the laboratory by experimental economists. For example, in the lab, Issac, McCue, and Plott (1985) have shown declines in average contributions from 39% of the maximum possible contribution in the initial round to 9% in the final round. However, contributions to generic advertising programs have typically started at a much higher level. For example, producer contribution to the American Egg Board started at 90.7% in the first year of its voluntary program and declined to 49.0% after 11 years. It is possible that the

[1] Designed to increase the overall market demand for all firms within an industry, generic advertising and promotion programs are usually found in industries producing a relatively homogenous commodity with little potential for product differentiation.

relatively high contributions resulted from the peculiar version of the VCM used to fund generic advertising. For example, the American Egg Board and other associations employed a version of the VCM in which all producers were assessed a per-unit amount but producers could request their money back by submitting a monthly refund application. The contextual shift of requiring a refund-by-request shifts the status quo from not contributing, as in the standard VCM, to contributing. Status quo bias suggests that the contribution rate should be increased by this contextual shift since decision makers are reluctant to leave the status quo, even in the face of economic incentives (Samuelson and Zeckhauser, 1988; Kahneman, Knetsch, and Thaler, 1990, 1991). A number of additional studies have demonstrated status quo bias in insurance choice (Johnson et al., 1993), pension savings (Madrian and Shea, 2001), internet privacy (Johnson, Bellman, and Lohse, 2002), and organ donation (Johnson and Goldstein, 2003),

The eventual failure of the refund-by-request version of the VCM to provide a sufficient level of support for generic advertising led to a majority vote by egg producers in favor of a mandatory program. For similar reasons, nearly all programs in operation today are mandatory and contain no refund provisions. Currently, there are 13 federal programs and numerous state checkoff programs in existence (more than 50 in California alone). It should be noted that the vast majority of economic studies evaluating commodity checkoff programs show substantial net benefits, with many showing rates of return in excess of four-to-one, as shown in Table 1.

The existence of an extraordinary amount of information on the egg industry and its generic advertising program makes for a unique opportunity to test parallelism between the field and laboratory. This paper describes experiments designed and conducted in an attempt

to replicate the high initial level of contributions obtained in the field. Because the goal is to achieve parallelism, the experimental design is based on detailed data and market analysis of the national checkoff program for eggs, including information on the net own price elasticity of demand and elasticity of demand with respect to generic advertising. In addition, the experiment carefully attempts to capture the institutional details of the program from both an economic and a psychological perspective. This careful calibration, to match the field as closely as possible, allows for an assessment of the degree to which parallelism holds, by testing whether an experiment can replicate both participation rates over time (rounds) in a voluntary checkoff program and voting for or against a subsequent mandatory contribution (assessment) program. Data on actual participation rates and voting in the field can be compared to laboratory participation rates and voting across sessions. Thus, the first question raised is, can the high level of contributions for generic advertising programs and support for mandatory programs be replicated in the laboratory?

Even though they benefit producers, the constitutionality of mandatory checkoff programs has recently been challenged on the grounds that they violate the individual producer's free speech rights under the First Amendment. For example, producers of organic, hormone-free milk may object to being forced to fund generic advertising for milk, because generic advertising does not differentiate between products. Two cases have gone as far as the U.S. Supreme Court. In 1997, the Court ruled in Glickman v. Wileman that the federally mandated checkoff program for California peaches, plums, and nectarines did not violate the First Amendment. However, in 2001, the Court ruled that the mandatory checkoff mushroom program did violate the First Amendment.[2] Hence, there is uncertainty as to the

[2] See Crespi, 2003, for an excellent analysis of the history of legal challenges to mandatory checkoff programs.

future constitutional validity of these programs, and because of this, there are numerous legal challenges to existing mandatory programs. Indeed, advertising for Washington's apple program and the national Mushroom Council have been abolished because of negative court decisions. This raises a second question for experimentation: what, if any, types of program should replace the current mandatory ones? The dilemma is that mandatory programs generally are highly effective in generating positive net benefits to producers, but voluntary programs using the VCM have been plagued by free-riding.

One obvious alternative is the provision point mechanism (PPM), which has been extensively in the laboratory and in the field (Dawes et al., 1986; Isaac et al., 1989, Bagnoli and McKee, 1991; Marks and Crosson, 1998, 1999; Rondeau et al., 1999; Krishnamurthy 2001; Rose et al., 2002; and Rondeau et al., forthcoming). Under this mechanism, checkoff programs would still be voluntary, but the advertising program would exist only if at least a certain percentage of producers (the provision point) made contributions to it. If the percentage of producers making contributions were less than the provision point, all participants would receive a complete refund (money back guarantee) and no advertising program would be implemented. PPMs have been shown to significantly lessen free-riding compared to voluntary contributions, in laboratory experiments (Isaac et al., 1989, Rondeau et al., forthcoming) as well as in the field (Rondeau et al., forthcoming). Using the provision point mechanism for voluntary checkoff programs may be advantageous because this funding mechanism would not be subject to the current legal challenges, and it could reduce the degree of free-riding seen in previous voluntary programs. Thus, the second objective of the research is to develop and test a suitable provision point mechanism, one that would retain the refund-by-request feature that may have helped increase contributions in VCM programs

for generic advertising. If the experimental design can produce results that successfully parallel field behavior with the VCM and voting on a mandatory program, the hope is that laboratory results for the PPM will have predictive power for real-world applications.

The third question examined is whether status quo bias is a reliable source of increased contributions for both the VCM and the PPM. In other words, does creating a status quo of giving significantly increase voluntary contributions? This hypothesis is tested separately for the VCM and the PPM by replicating both the VCM and the PPM portions of the parallelism experiment with a status quo of not contributing. If changing the status quo to giving significantly increases contributions in one or both mechanisms, this modification may be worth implementing in the field.

Experimental Design

Three separate treatments were designed. The first sought to answer both the first question of whether the high level of contributions for generic advertising programs and support for mandatory programs can be replicated in the laboratory and the second question of whether a PPM can successfully replace the current mandatory program. The other two treatments tested whether status quo bias is a reliable source of increased contributions for the VCM and the PPM.

Parallelism Treatment

In this treatment, each session involved four separate parts that differed with respect to the funding mechanism for the advertising program. Subjects participated in these parts in the same order to simulate the relevant real-world experience. Part A of the experiment did

not involve an advertising program. Part B included an advertising program whose funding was provided through a version of the VCM in which subjects could request refunds of assessments taken from their revenue (refund-by-request). Part C had subjects determine, via a majority vote, whether they preferred to have no advertising program or have an advertising program that everyone was required to fund. Part 4 had an advertising program with funding provided voluntarily through a PPM that also featured a refund-by-request provision. Each experimental session involved 20 subjects as producers/sellers of a fictitious commodity.

Part A – No Advertising Program. To familiarize subjects with the experiment's procedures, the first part of the experiment consisted of five rounds and did not include the advertising checkoff program. Subjects were randomly assigned to a computer that had a spreadsheet informing them of their costs for producing up to three units of the commodity. Each of the 20 subjects had two units that cost the same and a more costly third unit; third unit costs differed for each subject. Subjects incurred the cost of producing the units only if the units were sold. Subjects received written instructions (Appendix A), and the administrator provided a verbal description of the experiment and answered any questions.

Using Excel spreadsheets programmed with Visual Basic for Applications, subjects submitted their offers to sell their units to the experiment administrator. These offers were stored in an Access database. The administrative computer calculated the market price and the number of units sold by each subject. This information was also stored in the Access database. When notified by the administrator, the subjects retrieved this information and their spreadsheets calculated the profit in each round.

The administrator acted as the buyer in the market, where demand was stochastic, ranging from 40 to 46 units. For each round, demand was determined by a subject randomly drawing one ball, with replacement, from a bag containing sixteen labeled bingo balls. The number on the drawn ball was the number of units demanded in that round. The numbers of the balls were based on a triangle distribution where the average demand (43 units) was represented by four balls, while the extremes (40 units and 46 units) were each represented by only one ball.

For simplicity, demand in the experiment was assumed to be perfectly price inelastic and the supply elasticity was set at 0.25. Previous estimated demand elasticities for eggs have all been close to perfectly price inelastic [e.g., Schmit and Kaiser (2003) estimated the price elasticities to be -0.04 and not statistically different from zero; Brown and Schrader (1990) estimated the price elasticity to be between -0.02 and -0.17]. Consequently, a perfectly price inelastic assumption here is plausible. The own price elasticity of supply is based on Schmit and Kaiser's (2003) estimated elasticity. Additionally, the stochastic demand created price fluctuations that mimic the price fluctuations observed in commodity markets.

A uniform price auction determined the market price for each round by setting the price for all units sold at the *first rejected offer*. The uniform price auction is common in experimental settings because of its incentive-compatible characteristics, transparency, and ease of administration (Cox, Smith, and Walker, 1985). For example, if demand is 43 units, the price for all units sold would be set by the offer for the 44^{th} unit. Subjects were informed that in a competitive situation such as this, where the market price is set by the first rejected

offer, it is in their best interest to submit bids equal to their costs, because otherwise they might miss an opportunity to make a profitable trade.

Part B – Generic Advertising Funded by VCM with Refund-by-Request. The second part of the experiment was conducted in much the same manner as the first, as subjects had the same costs and the uniform price market was used to determine the market price. The primary difference was that sellers in Part B were assessed $0.25 for each unit sold and the assessments collected were used to fund an advertising program that increased demand in the subsequent round. The assessment rate was set so as to parallel the high return on investment, roughly four-to-one, for eggs.[3] This high return is frequently found with generic commodity advertising (Table 1).

Subjects were informed that "in previous experiments" the advertising program not only increased demand, but that the higher demand would also result in higher prices and higher profits for sellers. In fact, checkoff programs traditionally inform producers of all the benefits of generic advertising prior to the implementation of the program. Specifically, the advertising program increased the quantity demanded by:

$$Q_{D\_Increase} = \frac{2}{3} * \sum_{i=1}^{n} C_i$$

where C_i is the assessment collected for each subject, i=1,…,20. The advertising program increased demand above the initial range described earlier. Subjects were informed of the expected price that could result from different amounts of money given to the advertising

[3] The cost, assessment, and price parameters used in the experiment were not designed to mimic every aspect of the egg market, but instead were designed to contextualize the producer's decision of whether to contribute to the generic advertising programs.

program. Subjects were also informed that whatever assessments were collected in the last round of Part B affected demand in an identical manner for the first round of Part C.

As in the voluntary checkoff program for generic advertising, subjects in this experiment could request a refund of part or all of their assessment. To request a refund, subjects submitted, via instant messaging, a confidential one-sentence request to the administrator stating the amount of the refund they requested, if any. An example is "Subject #5 requests a refund of $0.25 for Round 8. Sincerely, Jane Doe."

All refund requests were granted and refunds were added back to the subject's profits. In each round, the administrator announced the total assessments possible, the total assessments actually collected, and the corresponding increase in demand. Note, that as with other VCM settings where the Marginal Per Capita Rate of Return (MPCR) is significantly less than one, the Nash Equilibrium for a subject is to request a refund of their assessments. Subjects always have the financial incentive to request a refund (free-ride), as it would provide them with the highest possible earnings in any particular round.

To simulate the discussions among producers that typically occur as part of the political process related to generic advertising programs, subjects were given up to five minutes prior to the start of Part B to discuss the advertising program as a group, and they were permitted to discuss strategy regarding the advertising program. The administrator facilitated the conversation (commonly referred to as "cheap talk").

To replicate the experience of the American Egg Board, which funded its advertising program for eleven years (1977-1987) using the VCM with refunds, the second part of the experiment lasted eleven rounds. Though producers in the American Egg Board program were given the option to request refunds on a monthly basis, the experiment was designed to

simulate the decision whether to request a refund as an annual decision. This design choice was made a priori based on the common business practice of reviewing programmatic financial decisions annually.

Part C – Vote: Mandatory Program or No Program. After participating in a voluntary checkoff program for 11 years, the American Egg Board held a referendum in 1988 on whether to create a mandatory program or to have no checkoff program at all. To simulate this, subjects in the experiment were asked to vote on whether they wanted a mandatory checkoff program with no option of a refund, or no advertising program and no assessments. If the subjects elected the mandatory program, then in Part C sellers were again assessed $0.25 for every unit sold and the total assessments were used to fund the advertising program, since subjects were not able to request a refund. If the subjects elected the no advertising program option, then Part C operated identically to Part A.

Subjects were again given up to five minutes to discuss the vote with the entire group. A majority vote determined the outcome and Part C consisted of five rounds. Again, subjects were informed that whatever assessments were collected in the last round of Part C affected demand in the first round of Part D.

After tabulating the confidential votes, the administrator announced the election results and directed the subjects to the part of their spreadsheet that corresponded to the election outcome. If the mandatory program was elected, then in each round the administrator announced the total assessments collected and the increase in demand, as well as the uniform market price and the number of units sold. If no advertising program was elected, the administrator announced the uniform market price and the number of units sold.

Part D – Generic Advertising Funded by PPM with Refund-by-Request. To simulate the potential transition that could result if a mandatory generic advertising program were replaced by a voluntary PPM funding mechanism, the fourth and final part of the experiment involved twelve rounds that were identical to Part B, except that a PPM with refunds was employed. Again, subjects were assessed $0.25 for each unit sold and could submit confidential requests for refunds of their assessments. However, in this part, the advertising program was implemented only if at least 70% of the subjects *did not request* refunds. If more than seven of the 20 subjects in each experimental session requested refunds, the advertising program was not implemented and *everyone* received a complete refund of their assessments, whether they initially requested a refund or not.

Note that the provision point of 70% was based on the number of subjects *not requesting refunds* instead of applying the provision point to the total possible contributions. The advantage of tying the provision point to the number of subjects was its transparency, as the number of subjects in the experiment remained constant while the total possible contributions could potentially change in each round. Additionally, for practical policy purposes, a PPM based on the percentage of producers participating would likely be preferred because of its being perceived as more democratic.

If the 70% provision point was met, the advertising program operated identically to Part B, where the amount of money actually collected and the corresponding increase in demand was announced. In addition, in each round the number of subjects *not* requesting a refund was announced to the subjects. If the provision point was not met, the round operated identically to Part A and subjects were given the opportunity to reach the provision point in

the subsequent round. After receiving written and oral instructions, subjects were again given up to five minutes to discuss their opinions and strategies regarding the advertising program.

Status Quo Treatments

These treatments exactly duplicate the parallelism treatment but with a status quo of not contributing rather than contributing.

Status Quo Bias #1: VCM with Contributions. The first status quo experiment focused on the role of status quo bias in the VCM (Appendix B). Consequently, the design consisted of two parts: Part A, five rounds without the advertising program, and Part B', twelve rounds in which the funds for the advertising campaign were raised by contributions given by subjects. None of the experiment parameters were changed, except that subjects were no longer automatically assessed $0.25 for every unit sold and subsequently given the opportunity to request a refund of these assessments. Instead, after the market price and number of units sold were determined, subjects were given an opportunity to contribute a maximum of $0.25 for each unit they sold. To make a contribution, subjects entered their amount into their spreadsheet and completed a one-sentence instant message stating their intent. A sample message is "Subject # contributes $0.25 for Round 8. Sincerely, Jane Doe." All contributions were accepted and the amounts were deduced from the seller's profits.

Status Quo Bias #2: PPM with Contributions. The second experimental design focused on the role of status quo bias in the PPM (Appendix C). Consequently, the first three parts of the experiment design did not change from the parallelism design (Part A – No Program, Part

B – Advertising Program funded by VCM with Refund-by-Request, Part C – Vote on Mandatory Program). In Part D', the advertising campaign was implemented if 70% or more of the subjects gave "complete contributions," where their contributions were $0.25 for each unit sold. This design mirrors the original Part D, in which the advertising campaign was implemented if 70% or more of the subjects *"did not request a refund"* of any amount. Part D was again run for twelve rounds.

Results

The results of eight experimental sessions (n=160) are reported here. The experiments were conducted at the Laboratory for Experimental Economic and Decision Research at Cornell University and the subjects were recruited from introductory economics courses at Cornell University. The four-part experiments lasted two hours and, on average, subjects earned $35; the status quo test of the VCM with contributions lasted one hour and subjects earned approximately $18. The results of the parallelism experiments will be described first, and then the tests of status quo bias for the VCM and PPM will be presented.

Parallelism Experiment

Part A - No Advertising Program. Part A was designed to familiarize subjects with the experiment and to give them experience with the uniform price auction. Over these five rounds, subjects also learn through experience that, in a competitive situation, it is to their advantage to submit offers equal to cost. On average, the producer surplus was $25.93 (Table 2).

Part B - Advertising Program Funded by VCM with Rebate-by-Request. The most striking result of Part B is that the percentage of the total possible given to the advertising campaign in the lab parallels the percentage of total possible given to the advertising program of the American Egg Board from 1977 to 1987 (Figure 1). In the first round, subjects gave 86.2% of the total possible to fund the advertising program. This percentage is nearly identical to the field result of 90.7% in the first year that the American Egg Board used the VCM with rebates to fund its advertising program. The percentage of contributions gradually declined and reached only 50.8% of total possible assessments by Round 11. Again, this decline is almost identical to the America Egg Board results, where 49% of the possible contributions to the advertising campaign were made by egg producers in 1987.

The introduction of the advertising program significantly raised producer surplus (Table 2). However, producer surplus declined after early rounds because of free-riding on contributions for the advertising campaign. After the peak of $90.36 in Round 4 of Part B, producer surplus decreased by 48% to $47.08 by Round 11 of Part B (Figure 2).

Part C - Vote and Mandatory Funding. In each of the four experimental sessions, subjects overwhelmingly voted to implement the advertising program with mandatory funding (no option of refund request). On average, 92.5% of the subjects voted for the mandatory program, which again is close to the result in the field, where 84% of egg producers voted in favor of a mandatory program in 1988. The producer surplus with the mandatory program part of the experiment was the highest of all four parts, averaging $79.63 (Table 2).

The results from the first three parts suggest that the experiment design produces results that mimic the field results remarkably well. That is, the lab results were able to

reproduce the high initial level of contribution observed in the field, the pattern of deterioration in contributions, and the subsequent landslide vote for the mandatory program. Given the degree of parallelism obtained, it appears reasonable to address the second question regarding what type of program should replace the current mandatory one.

Part D – Advertising Program Funded by PPM with Refund-by-Request. The PPM with refund-by-request offers slightly lower producer surplus ($73.25) than the mandatory program does ($79.63), though this decrease is not statistically significant at the $\alpha = 0.05$ level ($t = .92$, $p = 0.183$) (Table 2). More importantly, however, producer surplus does not experience the sharp decline observed in the VCM with refund-by-request (Figure 2).

The percentages of contributions collected for the advertising campaign in the first rounds of the VCM and PPM are virtually identical (Table 3). In the first round of Part D (PPM-Refunds), 82.5% of the subjects did not request refunds, resulting in 83.6% of the possible money being given to the advertising campaign. These levels are statistically indistinguishable from the 85.0% of the subjects that did not request refunds in Part B (VCM-Refunds), resulting in 88.9% of the total possible contribution going to the advertising campaign. While there was significant deterioration in the level of contributions in the VCM-Refunds with refund-by-request, there was no deterioration in the PPM-Refunds (Figure 3). By the eleventh round of the PPM, 78.8% of subjects were not requesting refunds, resulting in 79.6% of the total possible being contributed, both statistically insignificant changes ($z = 0.60$, $p = 0.548$; $t = 0.65$, $p = 0.514$, respectively). In contrast, in the VCM, only 50.0% of the subjects were not requesting refunds in the eleventh round, resulting in only 51.5% of the total possible being contributed ($t = 4.03$, $p = 0.000$; $z = 4.09$,

p = 0.000, respectively). Not surprisingly, this 35.0% decrease in percentage of subjects not requesting refunds and corresponding 33.4% drop in contributions between the first and eleventh rounds is significant at the $\alpha < 0.01$ level.

As in other experiments involving repeated PPM rounds (Issac, Schmitdz, and Walker, 1989, Marks and Crosson, 1998, 1999, and others), in some of the rounds sellers did not reach the provision point because less than 70% of the subjects did not request refunds. In the experimental sessions, the provision point was achieved 90.9% of the time (40 out of 44), which is again higher than the percent achieved in previous PPM experiments. This result further supports the hypothesis that having to request a refund by submitting a simple message helps establish a social norm, or reference point, which leads to higher levels of contribution for the public good, consistent with status quo bias.

Status Quo Bias Experiments

Part B' – VCM-Contribution. To test whether status quo bias resulted in increased contributions to the VCM, two additional experimental sessions (n = 40) were conducted. These sessions consisted of two parts. The first part was identical to the original Part A. In the second part (referred to as Part B'), subjects funded the advertising campaign using a VCM by making *contributions* (referred to as VCM-Contribution), instead of not requesting refunds of assessments that had automatically been deduced from their profits (VCM-Refund).

Even though there was no financial difference between this design and the parallelism design, this change of status quo led to dramatically lower giving to the advertising campaign (Figure 4). As shown in Table 4, in the first round only 50.0% of the total possible was actually contributed to the advertising campaign, 38.9% less than the percentage of first

round giving (88.9%) in the VCM-Rebate design (t = -5.25, p = 0.000). By the eleventh round, subjects in the VCM-Contribute design contributed only 15.1% of the total possible, which again was much lower than the 51.5% of total possible contributed in VCM-Rebate (t = 4.03, p = 0.000). Interestingly, the pattern of deterioration of giving in the VCM-Contribution design was quite similar to that observed in the VCM-Refund design. Contributions in the VCM-Contribution design dropped by 34.9% over the eleven rounds, while contributions in the VCM-Refund design dropped by 37.4% (t = -0.28, p = 0.776).

Part D' – PPM-Contribution. The impact of status quo bias on the PPM also appears to be significant, though less dramatic. The largest impact appears to be in initial rounds (Table 5). For example, in the first round, 62.5% of subjects in the PPM-Contribution design gave "complete contributions," in contrast to the 82.5% of subjects in the PPM-Rebate design who "did not request refunds," a difference of 20.0% (z = -2.41, p = 0.016) (Figure 5). But by the eleventh round, this difference narrowed to 11.3% and was no longer statistically significant, as subjects in both designs appear to be converging to the Nash equilibrium (to make "complete contributions" or "not to request refunds" 70% of the time). Averages across all eleven rounds suggest that status quo bias affects the PPM, especially with regard to the number of "complete contributions," which was 16.3% lower in the PPM-Contribution than the number of "no refund requests" in the PPM-Refunds (z = 1.96, p = 0.050).

The results additionally suggest that the efficiency of the policy would be greatly increased if the PPM could be implemented with refunds. In the PPM-Refund design, the threshold of 70% or more of subjects not requesting a refund was achieved 90.9% of the time, while in the PPM-Contribute design, the 70% threshold was achieved only 40.9% of the time (z = 5.04, p = 0.000)

Conclusions

The results of the parallelism experiment over both the eleven rounds of the VCM and the follow-up vote on a mandatory generic advertising program are strikingly similar to the real-world results for the American Egg Board's program from 1977 to 1988. This outcome suggests that it is at least possible that the laboratory can be used as an inexpensive way to test mechanism details that may predict outcomes if the mechanism is implemented in the field. It is also likely that both the economic and psychological context of decisions must be carefully replicated if the goal is prediction of field behavior rather than testing economic theory.

It also appears that the version of the PPM tested can yield far higher levels of contributions than the VCM for generic advertising in repeated settings, which is consistent with prior research. In the case of generic commodity advertising, the advantages of the PPM are two-fold: it is voluntary, and therefore potentially avoids the legal challenges noted above that mandatory programs currently face, and in this setting it has the potential for a high level of success, since the 70% participation threshold was met 90.9% of the time. If parallelism holds, such programs are likely to be highly successful and popular, since higher levels of funding for generic advertising can lead to higher levels of demand, price, and profits for producers.

Finally, a status quo of giving appears to significantly increase contributions in both the VCM and PPM. The process of collecting assessments first and having producers request refunds afterwards establishes a social norm or reference point that leads to higher levels of contributions through status quo bias. In addition, any transactions costs of withdrawing may also support the status quo of giving. Thus, the efficiency of both the VCM and PPM can be

enhanced through status quo bias wherever establishing a status quo of contributing is feasible. However, it appears that the effect of a status quo of giving decreases over rounds, since there still appears to be a convergence to the Nash equilibrium of zero contributions in the case of the VCM (albeit from a higher initial level), and to the particular Nash equilibrium of just covering costs of the provision point in the PPM. If subjects are attempting to just reach the provision point, failure rates will logically be about 50% rather than the 90% obtained initially with a status quo of contributing. Thus, single shot applications, or applications with a limited number of repetitions of either the VCM or PPM, will likely show the greatest benefit from status quo bias.

Table 1. Estimated Rate of Return on Investment in Generic Advertising for Various Commodities

Commodity	Study	Return on Investment
Eggs	Kaiser and Schmit (2000)	1.8 to 6.7
Dairy	Kaiser (1997)	3.4
Beef	Ward (1998)	4.9 to 6.7
Cotton	Nichols,J.P., et al (1997)	3.2 to 3.5
Orange juice	Capps et al. (2003)	2.9 to 6.1
Pork	Davis, et al. (2001)	4.8 to 26.2
Soybeans	Williams et al. (1998)	8.3
Almonds	Crespi and Sexton (2000)	4.5 to 6.9
Walnuts	Kaiser (2002)	4.0

Table 2. Producer Surplus in Each Part of the Experiment

	Part A	Part B	Part C	Part D
Producer Surplus	**$ 25.93**	**$ 63.58**	**$ 79.96**	**$ 73.25**
Difference from Part A		$ 37.65 **	$ 54.03 **	$ 47.32 **
Difference from Part B			$ 16.38 *	$ 9.67 *
Difference from Part C				$ (6.71)

* $\alpha < 0.05$

** $\alpha < 0.01$

Table 3. PPM-Refund and VCM-Refund

		n	Percent of Total Possible	Diff.	T-Stat.	*P-value*
1st Round	**PPM-Refund**	80	83.6%			
	VCM-Refund	80	86.2%	-2.6%	-0.46	0.646
11th Round	**PPM-Refund**	80	79.6%			
	VCM-Refund	80	50.8%	28.8%	3.82	0.000
Difference between	**PPM-Refund**	80	-4.0%			
1st and 11th Round	**VCM-Refund**	80	-35.4%	31.4%	-4.99	0.000
		# Not Requesting Refunds / Obs.	**Percentage**	**Diff.**	**Z-Stat.**	***P-value***
1st Round	**PPM-Refund**	66 / 80	82.5%			
	VCM-Refund	65 / 80	81.3%	1.2%	0.21	0.837
11th Round	**PPM-Refund**	63 / 80	78.8%			
	VCM-Refund	40 / 80	50.0%	28.8%	3.80	0.000
Difference between	**PPM-Refund**	3 / 80	-3.7%			
1st and 11th Round	**VCM-Refund**	25 / 80	-31.3%	27.6%	-4.58	0.000

Table 4. VCM-Refunds and VCM-Contributions

		n	Percent of Total Possible	Diff.	T-Stat.	*P-value*
1st Round	**VCM-Contribution**	40	50.0%			
	VCM-Refund	80	86.2%	-36.2%	-4.27	0.000
11th Round	**VCM-Contribution**	40	15.1%			
	VCM-Refund	80	50.8%	-35.7%	-3.78	0.000
Difference between	**VCM-Contribution**	40	-34.9%			
1st and 11th Round	**VCM-Refund**	80	-35.4%	0.5%	-0.05	0.957
		# of "Complete Contributions" or "No Refund Request" / Obs.	**Percentage**	**Diff.**	**Z-Stat.**	***P-value***
1st Round	**VCM-Contribution**	16 / 40	40.0%			
	VCM-Refund	65 / 80	81.3%	-41.3%	-4.55	0.000
11th Round	**VCM-Contribution**	2 / 40	5.0%			
	VCM-Refund	40 / 80	50.0%	-45.0%	-5.06	0.000
Difference between	**VCM-Contribution**	14 / 40	-35.0%			
1st and 11th Round	**VCM-Refund**	25 / 80	-31.3%	-3.7%	0.41	0.679

Table 5. PPM-Rebate and PPM-Contributions

		n	Percent of Total Possible	Diff.	T-Stat.	*P-value*
1st Round	**PPM-Contribution**	40	67.3%			
	PPM-Refund	80	83.6%	-16.3%	-2.04	0.042
11th Round	**PPM-Contribution**	40	73.9%			
	PPM-Refund	80	79.6%	-5.7%	-0.71	0.480
Average	**PPM-Contribution**	40	69.0%			
	PPM-Refund	80	81.5%	-12.5%	-1.54	0.123
		# of "Complete Contributions" or "Not Requesting Refunds" / Obs.	**Percentage**	**Diff.**	**Z-Stat.**	***P-value***
1st Round	**PPM-Contribution**	25 / 40	62.5%			
	PPM-Refund	66 / 80	82.5%	-20.0%	-2.41	0.016
11th Round	**PPM-Contribution**	27 / 40	67.5%			
	PPM-Refund	63 / 80	78.8%	-11.3%	-1.34	0.180
Average	**PPM-Contribution**	26 / 40	65.0%			
	PPM-Refund	65 / 80	81.3%	-16.3%	1.96	0.050

Figure 1. Percentage of Total Possible Contributions: VCM-Refund and Field Results

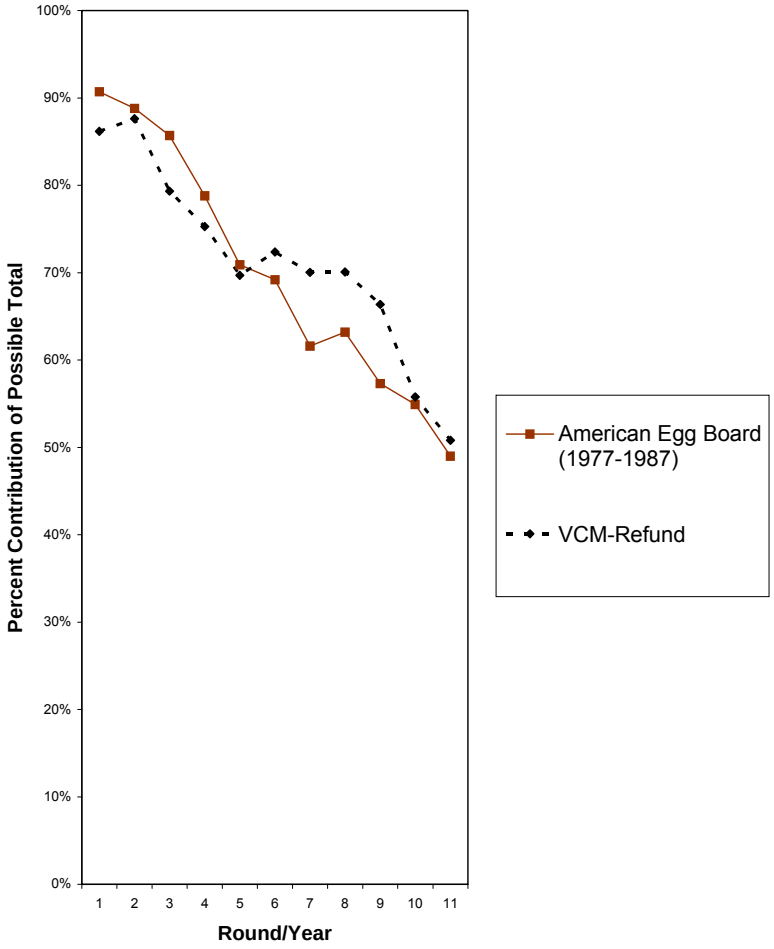


Figure 2. Experimental Results: Percent Contributions to the Advertising Campaign and Producer Surplus.

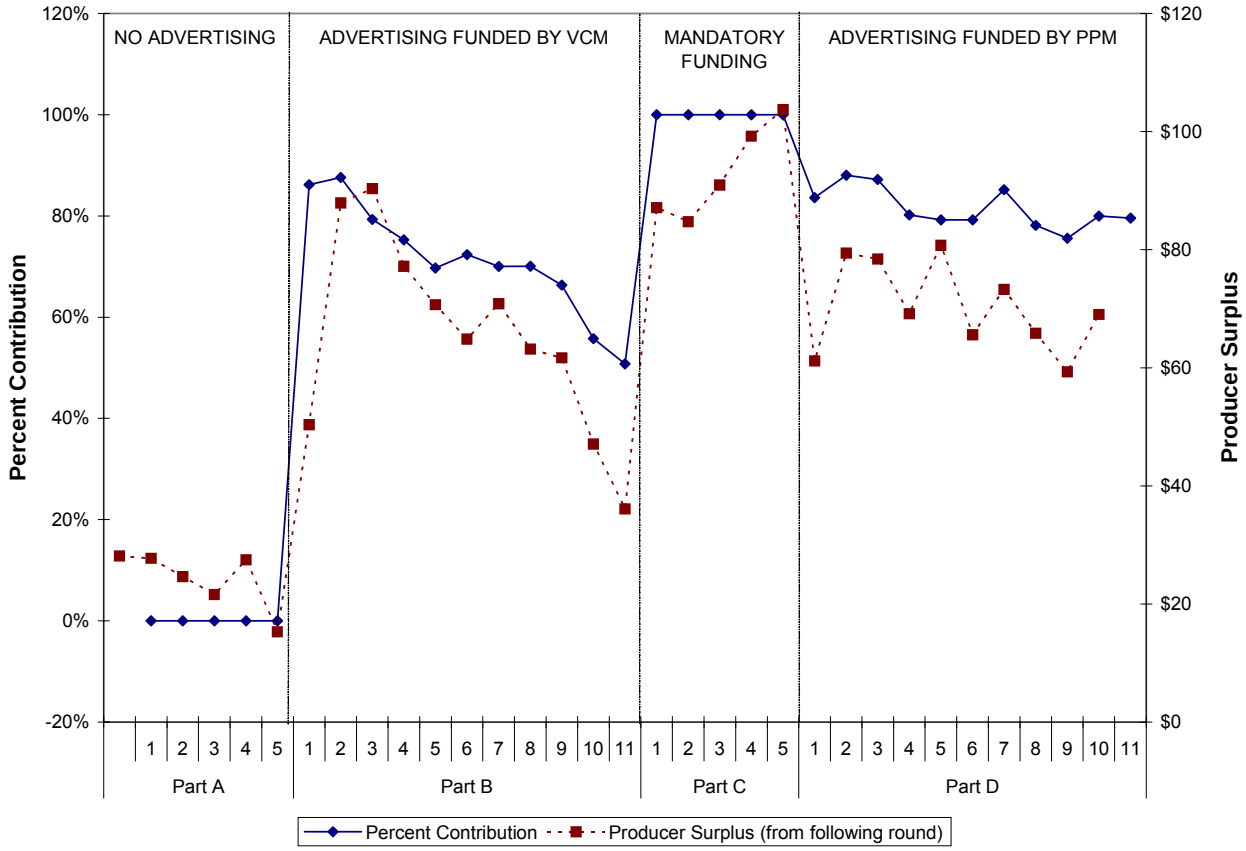


Figure 3. Percentage of Total Possible Contributions: VCM-Refund and PPM-Refund

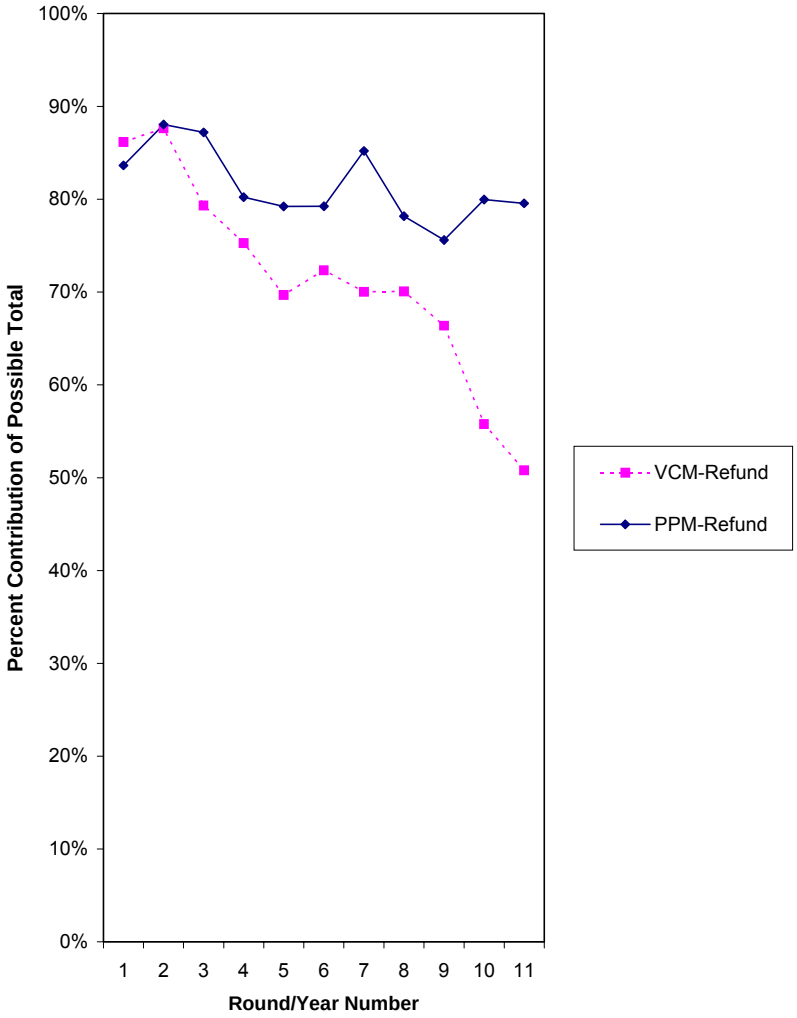


Figure 4. Percentage of Total Possible Contribution: VCM-Refund and VCM-Contribution.

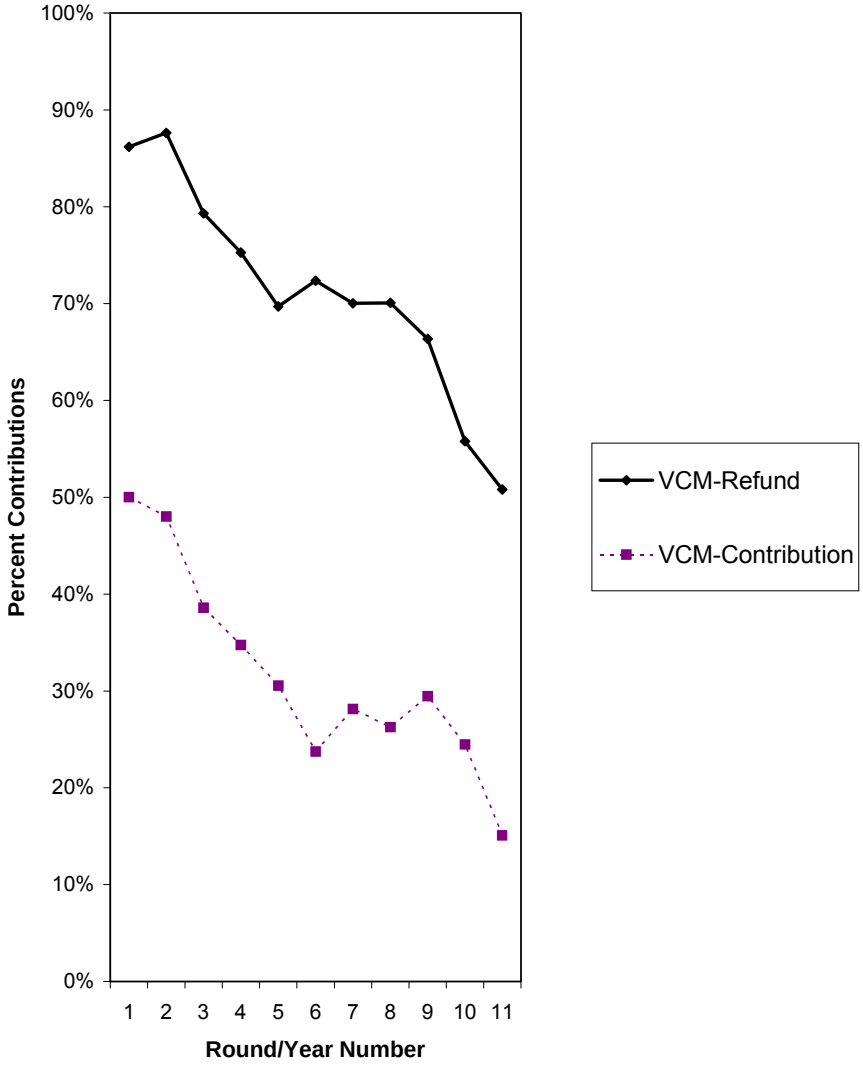
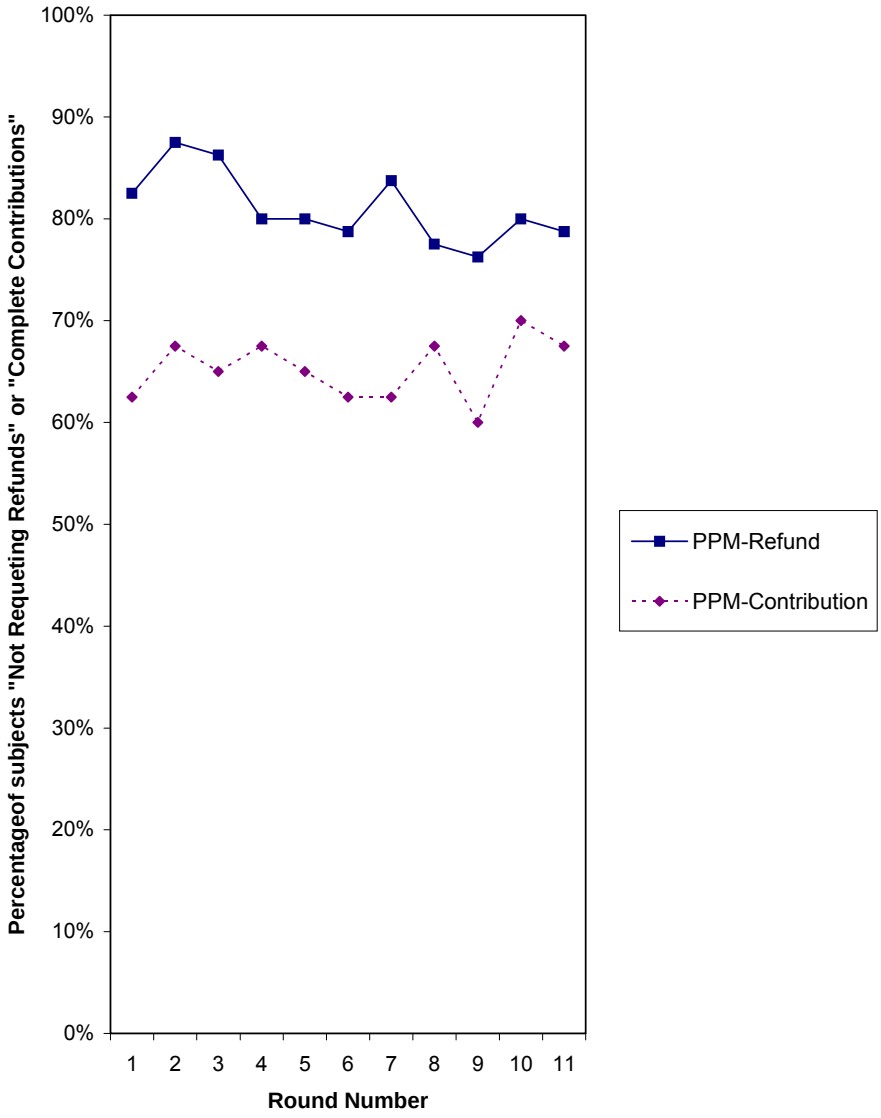


Figure 5. Percent of "Complete Contributions" in PPM-Contributions and "No Refund Request" in PPM-Refund



References

Bagnoli, M. and M. McKee. 1991. "Voluntary Contributions Games: Efficient Private Provision of Public Goods." *Economic Inquiry* 29:351-366.

Brown, D.J. and L.F. Schrader. 1990. "Cholesterol Information and Shell Egg Consumption." *American Journal of Agricultural Economics* 72:548-555.

Capps, O., Jr., D.A. Bessler, and G.W. Williams. 2003. "Evaluating the Economic Impacts Associated With the Advertising Effort by the Florida Department of Citrus: Final Report." Unpublished Report. Forecasting and Business Analytics. L.L.C. May.

Cox, J., V. Smith, and J. Walker. 1985. "Expected Revenue in Discriminative and Uniform Price Sealed Bid Auctions." in V. L. Smith (ed.), Research in Experimental Economics, Vol. 3. JAI Press: Greenwich, CT.

Crespi, John M. 2003. "The Generic Advertising Controversy: How Did We Get Here and Where are We Going?" *Review of Agricultural Economics* 25:294-315.

Crespi, J.M. and R.J. Sexton. 2000. "Have Expenditures to Advertise Almonds Been Effective?" *NICPRE Bulletin*. Department of Applied Economics and Management. Cornell University. Third Quarter. 1-4.

Davis, G.C., O. Capps, Jr., D.A. Bessler, J.H. Leigh, J.P. Nichols, and E. Goddard. 2001 "An Economic Evaluation of the Pork Checkoff Program." *Departmental Technical Report No. 01-1*. Department of Agricultural Economics. Texas A&M University. January.

Dawes, R., J. Orbell, R. Simmons, and A. van de Kragt. 1986. "Organizing groups for collective action." *American Political Science Review* 8:1171-85.

Forker, O.D. and R.W. Ward. 1993. Commodity Advertising: The Economics and Measurement of Generic Programs. New York: Lexington Books.

Isaac, R. M., K. F. McCue, and C. Plott. 1985. "Public Goods Provision in an Experimental Environment." *Journal of Public Economics* 26:51-74.

Isaac, R.M., D. Schmidtz, and J. Walker. 1989. "The Assurance Problem in Laboratory Markets." *Public Choice* 62:217-236.

Johnson, E.J. and D. Goldstein. 2003. "Do Defaults Save Lives?" *Science* 302:1338-1339.

Johnson, E.J., S. Bellman, and G. L. Lohse. 2002. "Defaults, Framing and Privacy: Way Opting In-Opting Out," *Marketing Letters* 13(1): 5-15.

Johnson, E. J., J. Hershey, J. Meszaros, and H. Kunreuther. 1993. "Framing, Probability Distortions, and Insurance Decisions." *Journal of Risk and Uncertainty* 7:35-53.

Kahneman, Daniel, J.L. Knetsch, and R. Thaler. 1990. "Experimental Tests on the Endowment Effect, and the Coase Theorem." *Journal of Political Economy* 98: 1325-1348.

Kahneman, Daniel, J.L. Knetsch, and R. Thaler. 1991. "The Endowment Effect, Loss Aversion, and Status Quo Bias." *Journal of Economic Perspectives* 5:193-206.

Kaiser, H.M. 1997. "Impact of National Dairy Advertising on Dairy Markets, 1984-95." *Journal of Agricultural and Applied Economics* 29:303-14.

Kaiser, H.M. 2002. "The Domestic Impacts of the Walnut Marketing Board's Marketing Activities." *NICPRE Quarterly*. Department of Applied Economics and Management. Cornell University. First Quarter. 1-4.

Kaiser, H.M. and T.M. Schmit. 2000. "An Economic Evaluation of Generic Egg Advertising by the American Egg Board." Unpublished report. Department of Applied Economics and Management. Cornell University.

Krishnamurthy, Sandeep. 2001. "The Effect of Provision Points on Generic Advertising Funding." *Marketing Letters* 12(4): 315-325.

Madrian, B. C. and D. Shea. 2001. "The Power of Suggestion: An Analysis of 401(k) Participation and Saving Behavior." *Quarterly Journal of Economics* 116(1): 1149-1187.

Marks, M.B. and R. Croson. 1998. "Alternative Rebate Rules in the Provision of a Threshold Public Good: An Experimental Investigation." *Journal of Public Economics* 67:195-220.

Marks, M.B. and R. Croson. 1999. "The Effect of Incomplete Information in a Threshold Public Goods Experiment." *Public Choice* 99: 103-118.

Nichols, J.P., O. Capps, Jr., G.C. Davis, and D.A. Bessler. 1997. "Evaluating Returns to the Cotton Checkoff Program." *NICPRE Bulletin.* Department of Applied Economics and Management. Cornell University. Second Quarter. 1-4.

Poe, G.L., J.E. Clark, D. Rondeau. and W.D. Schulze. 2002. "Provision Point Mechanisms and Field Validity Tests of Contingent Valuation." *Environmental and Resource Economics* 23:105-131.

Rondeau, D., G.L. Poe, and W.D. Schulze. *Forthcoming.* "VCM or PPM? A Comparison of the Performance of Two Voluntary Public Goods Mechanisms." *Journal of Public Economics.*

Rose, S.K., J. Clark, G.L. Poe, D. Rondeau, and W.D. Schulze. 2002. "The Private Provision of Public Goods: Test of a Provision Point Mechanism for Funding Green Power Programs." *Resource and Energy Economics* 24:131-155.

Samuelson, William and R. Zeckhauser. 1988. "Status Quo Bias in Decision Making." *Journal of Risk and Uncertainty* 1: 7-59.

Schmit, Todd M. and H.M. Kaiser. 2003. "The Impact of Dietary Cholesterol Concerns on Consumer Demand for Eggs." in Effects of Health Information on the Demand for Food--EU and US Experiences. Wen Chern and Kyrre Rickertsen (editors). CAB International Publishing. 203-222.

Ward, R.W. 1998. "Evaluating the Beef Promotion Checkoff." *NICPRE Bulletin*. Department of Applied Economics and Management. Cornell University. Fourth Quarter. 1-4.

Williams, G.W., C.R. Shumway, H.A. Love, and J.B. Ward. 1998. "Effectiveness of the Soybean Checkoff Program." *Texas Agricultural Market Research Center Report.* Department of Agricultural Economics. Texas A&M University. May.

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