

**CHECK-OFF PROGRAM EVALUATION:  
WHY, WHAT, HOW, WHEN, AND WHO?**

Gary W. Williams  
George Davis  
John P. Nichols\*

*TAMRC Commodity Market  
Research Report No. CM 2-00  
September 2000*

\* The authors are Professor, Associate Professor, and Professor, respectively, in the Department of Agricultural Economics, Texas A&M University, College Station, Texas. In addition, Dr. Williams is Director, Texas Agricultural Market Research Center.

---

## CHECK-OFF PROGRAM EVALUATION: WHY, WHAT, HOW, WHEN, AND WHO?

---

A Texas Agricultural Research Market Research Center (TAMRC) report, number CM 2-00, by Gary Williams, George Davis, and John Nichols, Department of Agricultural Economics, Texas A&M University, College Station, Texas, September 2000.

**Abstract:** As check-off programs have grown in size and complexity over time, program managers have demanded increasingly accurate and detailed evaluations of the effectiveness of past promotional investments to guide fund allocation decisions. Stakeholders have also increasingly demanded an accounting of how the funds they have contributed are being used and how profitable their investments in promotional efforts have been, particularly as their voluntary contributions to such programs have become mandatory. This paper draws on the long experience of the TAMRC in designing evaluation plans and conducting program evaluation to identify and describe the key components of successful check-off program evaluation – that is, the “Why, What, How, When, and Who” of program evaluation.

*The Texas Agricultural Market Research Center (TAMRC) has been providing timely, unique, and professional research on a wide range of issues relating to agricultural markets and commodities of importance to Texas and the nation for thirty years. TAMRC is a market research service of the Texas Agricultural Experiment Station and the Texas Agricultural Extension Service. The main TAMRC objective is to conduct research leading to expanded and more efficient markets for Texas and U.S. agricultural products. Major TAMRC research divisions include International Market Research, Consumer and Product Market Research, Commodity Market Research, Information Systems Research, and Contemporary Market Issues Research.*

---

## CHECK-OFF PROGRAM EVALUATION: WHY, WHAT, HOW, WHEN, AND WHO?

---

### Executive Summary

This paper identifies and describes the key components of successful check-off program evaluation – that is, the “Why, What, How, When, and Who” of program evaluation. Evaluation begins with understanding its critical role in program management. Evaluation provides the necessary feedback to: (1) improve the efficiency and effectiveness of the program, (2) design and adjust the program’s long-run strategic plan, (3) serve the information needs of stakeholders, and (4) provide the information required by enabling legislation.

The evaluation processes of the various check-off programs differ in the details of their structure and management but are all comprised of at least 5 main components: (1) evaluation of mission area funding priorities; (2) review of project proposals for funding; (3) evaluation of individual project results; (4) evaluation of the impacts and returns from the overall check-off program; and (5) review of program administration.

Evaluation is not a stand-alone process. The most effective evaluation plans integrate these evaluation components into the check-off fund management process. The first three components focus on whether or not specific projects have met their goals. The fourth objective, however, focuses on whether all funded projects have jointly achieved the goals of the program. The final evaluation component is intended to determine whether the member board is allocating funds to those general types of activities or mission areas that will maximize returns.

Because evaluation of overall check-off program impact is perhaps the most difficult but also the most useful of the various check-off program evaluation components, the remaining discussion on the “How,” “When,” and “Who” of program evaluation focuses on program impact evaluation.

The first step in the “How” of check-off program impact evaluation is to define precise objectives against which the performance of the program can be measured. Typically, check-off program objectives include increasing industry sales, price, market share, and/or profit as well as increasing consumer awareness of positive product attributes.

The next step is to develop a mathematical representation of the how the product market functions in order to disentangle the effects of program activities from those of other factors that impact the market. Once the market for the product has been accurately modeled and the relative roles of check-off activities and other market forces are incorporated into the model, the process of measuring the impact of the program is done through scenario analysis with the model. To determine the impact that check-off investments have had over the life of the program, the level of

check-off expenditures in the model can be set to zero over the history of the program and the levels of price, production, consumption, and other market variables that would have existed in the absence of the program can be calculated. Differences between the actual, historical levels of the market variables and what the model says they would have been in the absence of the program provide direct measures of the contribution of the check-off program to the change in sales, revenues, prices, profits, market shares, etc. that have occurred over time.

Even if the scenario results indicate a positive impact of the program on the market objectives, the important question is whether the impact has been positive enough. Thus, a benefit-cost ratio (BCR) is usually calculated to indicate if a check-off program is successful. Usually calculated as the increase in industry profits as a result of the program (from the scenario analysis results) divided by the total value of the check-off investments over the history of the program, the BCR gives the additional industry profit generated by the program per dollar invested in the program.

Data on a large number of variables over a sufficiently long period of time are critical prerequisites to the analysis of the impact of check-off programs. Reliable evaluations of program impact require a great deal of advance planning, data gathering and organizing, and record keeping. Failure to put in place an appropriate system of data collection early in the life of a check-off program can make later analysis of the impact of the program impossible.

Expectations by stakeholders for the impact of check-off programs on program objectives like industry sales and profits are generally quite high. With a few exceptions, research has found that the BCRs for most programs have been positive and average about from about \$2 to \$12 per dollar spent. Unfortunately, a high calculated BCR says nothing about the absolute impact of the program on the market. Because the value of the investment in research and promotion activities is usually extremely small in comparison to the total value of industry sales, the absolute impact of a check-off program on production, prices, sales, and market share could hardly be expected to be highly significant in a practical sense even if the impact could be said to be statistically significant.

Clearly, evaluation is a continuous process with strong linkages at various points to the process of managing check-off program funds and activities. Also clear is the need for an evaluation plan to guide the evaluation process and facilitate the analysis of program impact. The evaluation plan should also provide a design and administrative guidance for the development and maintenance of the database needed to support the evaluation process, particularly the analysis of program impact.

The evaluation of proposed projects as well as the results of funded projects can usually be handled as “in-house” efforts with assistance from an outside panel of experts. The analysis of program impact, however, can only be done by skilled and experienced professionals with expertise in statistical analysis, market modeling, and scenario analysis as they apply to check-off program evaluation. The selection of the appropriate professionals to conduct the analysis should emphasize the importance of objectivity to enhance the confidence that stakeholders and others can place in the results. Peer review of the program impact analysis results is also imperative to help insure the objectivity, credibility, and professional quality of the work.

## Table of Contents

Abstract .....	i
Executive Summary .....	ii
Introduction .....	1
Why Evaluate Check-off Programs? .....	2
What is the Check-off Program Evaluation Process? .....	3
Evaluation of Mission Area Funding Priorities .....	3
Evaluation of Project Proposals for Funding .....	5
Evaluation of Individual Project Results .....	5
Evaluation of Overall Check-off Program Impact .....	6
Evaluation of the Administration of the Check-off Program .....	7
The Feedback Mechanism .....	8
Other Uses of Evaluation Results .....	8
How Is the Impact of a Check-off Program Evaluated? .....	8
Identifying Program Objectives .....	8
Modeling the Relationship between the Program and the Product Markets .....	11
Measurement Challenges .....	11
Measuring the Impact of the Program .....	14
Alternative Impact Measures .....	14
Data Requirements and Issues .....	15
What Can Reasonably be Expected From an Analysis of Program Impact? .....	17
Market Characteristics Affecting Likelihood of Success of Check-off Programs .....	19
When Should Evaluation Be Done? .....	21
Who Should Do Evaluation? .....	22
Summing Up .....	22
References .....	24

**List of Figures**

Figure 1. Integration of Program Funding Management and Evaluation. . . . . 4  
Figure 2. World Soybean Market Model Structure. . . . . 12

**List of Tables**

Table 1. Returns to Generic Commodity Promotion: Summary of Research . . . . . 18

---

## CHECK-OFF PROGRAM EVALUATION: WHY, WHAT, HOW, WHEN, AND WHO?

---

The earliest check-off programs were voluntary cooperative efforts among farmers and/or processors to finance the promotion of generic agricultural commodities. Among the oldest of the still existing agricultural check-off programs are the National Dairy Council, the Florida citrus program, and the soybean check-off program originally managed by the American Soybean Association. Lacking any legislative authority, these programs were plagued by the problem of free riders which motivated their supporters to pressure state and later federal legislators to provide them with legislative authority for mandatory check-offs.

Agricultural check-off programs have typically focused on increasing sales of their commodities and increasing the net returns and prices received by producers. Consequently, these programs have tended to finance projects not only to increase sales and shift out the demand for their commodities (demand-enhancing promotion) but also to improve efficiency and reduce the costs of production (cost-reducing promotion). Demand enhancing promotions have included a wide variety of programs from advertising to merchandising, new product, process, and utilization research and development, and public relations. Cost-reducing promotions have typically included funding for research to develop new production technologies or to otherwise increase production efficiency.

As agricultural check-off programs have grown in size and complexity over time (currently a total of about \$750 million annually), the program managers have demanded increasingly accurate and detailed information on the effectiveness of past promotional investments to guide fund allocation decisions. At the same time, producer members and other stakeholders have increasingly demanded an accounting of how their funds are being used and how profitable their investments in promotional efforts have been, particularly as their voluntary contributions to such programs have become mandatory.

Early efforts to evaluate check-off programs relied largely on anecdotal evidence and simple comparisons of gross investments in promotion and gross changes in sales. During the 1970s when agricultural markets were expanding rapidly and prices soaring, this approach to evaluation yielded some persuasive stories and even more impressive upward-sloping graphical relationships between promotion expenditures and sales.

The problem with simply comparing the trends in sales and promotion expenditures to measure program effectiveness is that many factors other than the check-off program affect the volume and value of commodity sales, including relative price changes, international markets, agricultural policies, changes in incomes, business cycles, population growth, competition from other products, and federal reserve policies just to name a few. This became rather apparent in the early 1980s with a sharp downturn in the agricultural economy, plunging prices, and disappearing markets. Combined with growing federal deficits and intensifying scrutiny of federal programs, the farm crisis of the

1980s underscored the need to devise better means of isolating and measuring the unique contribution of check-off programs to the performance of commodity sales and the profitability of the farm sector.

Since at least the late 1960s when the Texas Agricultural Market Research Center (TAMRC) was established, researchers at Texas A&M University have been actively involved in developing techniques for evaluating promotion and marketing programs and in applying those techniques to evaluate the programs of a number of agricultural commodity check-off organizations, including the American Soybean Association and later the United Soybean Board, the National Cotton Council, the National Pork Producers Council, the National Honey Board and various other smaller programs for apples, tobacco, poultry, various horticultural commodities, and even propane.

This paper draws on the long experience of the TAMRC in designing evaluation plans and conducting program evaluation to identify and describe the key components of successful check-off program evaluation – that is, the “Why, What, How, When, and Who” of program evaluation.

### **Why Evaluate Check-off Programs?**

The evaluation of check-off programs begins with understanding the importance of evaluation and its critical role in management of the program. Over the years, research has shown that evaluation provides the necessary feedback to: (1) improve the efficiency and effectiveness of the program, (2) design and adjust the program’s long-run strategic plan, (3) serve the information needs of contributors, industry, and other stakeholders, and (4) provide the information required by the legislation establishing the program.

An on-going evaluation of projects funded can indicate how efficient fund allocation decisions have been, that is, how much “bang for the buck” has been generated by the projects that have been funded, and what adjustments may be needed in the future allocation of funds. At the same time, program evaluation indicates whether the program has been effective in meeting its goals, that is, whether the program has been effective in “doing the right things” and not just whether the program is efficient in “doing things right.” The development and periodic adjustment of the long-run strategic plan of the program can benefit greatly from the insights that program evaluation can provide. The longevity of a check-off program can depend critically on communicating the benefits of the program to the contributors to the program and other stakeholders. A number of commodity check-off programs have failed in recent years primarily because the producers have not felt that the program provides sufficient benefits over costs.

Finally, the mandatory commodity check-off programs are legislatively required to provide an evaluation of their programs at least every 5 years. Section 12 of the Propane Education and Research Act of 1996 essentially requires Congress and the Secretary of Commerce to evaluate the effects of the new propane check-off program at least every two years. An appropriate and ongoing



evaluation process can provide the information needed to meet the legislative requirements for program evaluation.

### **What is the Check-off Program Evaluation Process?**

The evaluation process adopted by the various check-off programs differs in the details of their structure and management but are all comprised of at least 5 main components: (1) evaluation of mission area funding priorities; (2) review of project proposals for funding; (3) evaluation of individual project results; (4) evaluation of the impacts and returns from the overall check-off program; and (5) review of the efficiency and effectiveness of the program administration.

Evaluation, however, is not a stand-alone process. The most effective evaluation plans integrate evaluation into the process of managing the check-off funds. Figure 1 lays out the evaluation process and how it can be effectively integrated into the funding management process.

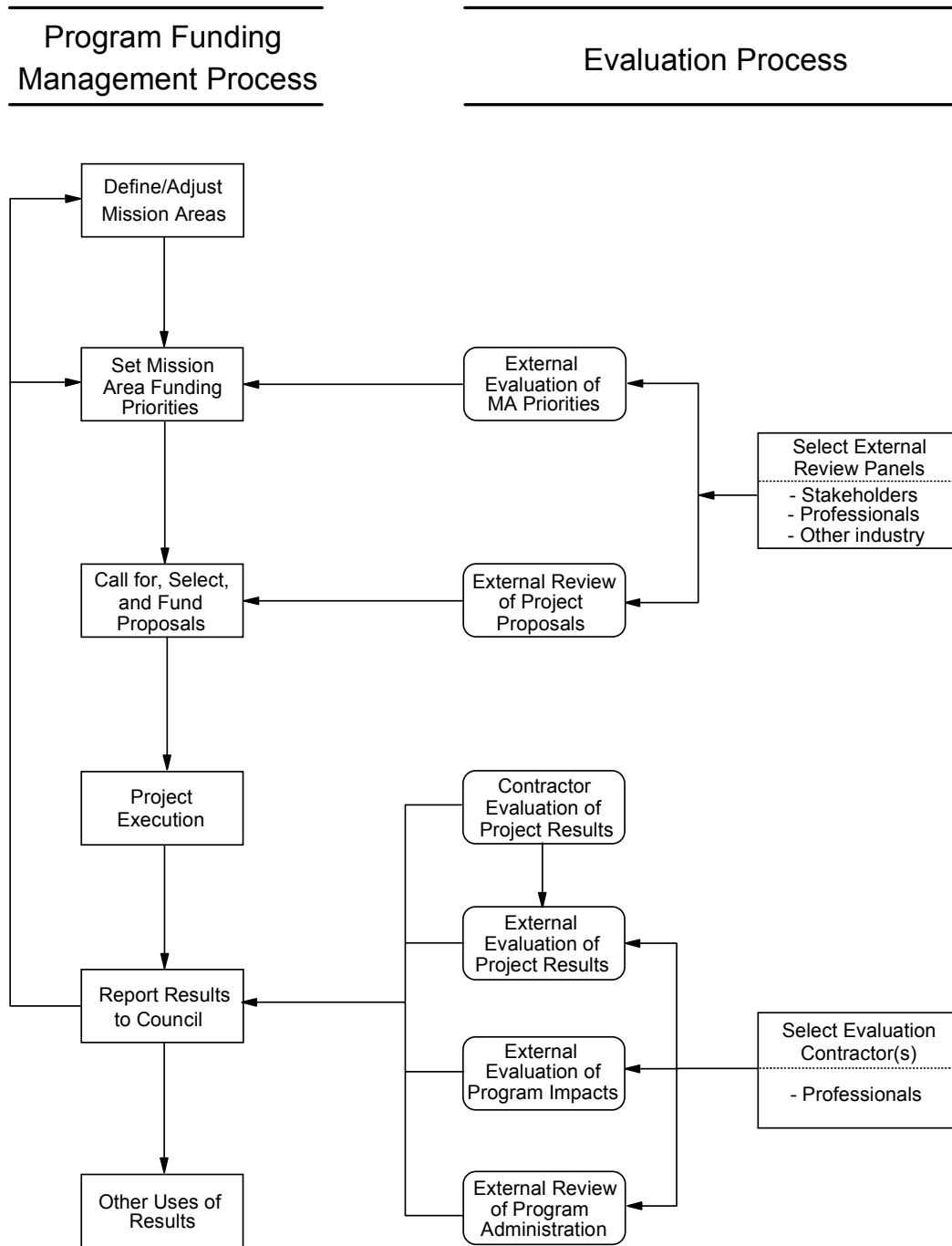
The left hand column of Figure 1 represents the process by which a check-off organization makes decisions each year about the use of the funds it collects for research and promotional activities. The principal steps in the funding management process include (from top to bottom on the left side of Figure 1): (1) determining and making adjustments in the primary mission areas to which funds will be allocated each year to achieve the objectives of the check-off organization; (2) setting the funding priorities in each of the mission areas; (3) calling for, selecting, and funding project proposals; (4) project execution; and (5) the reporting of project results to the program member board or council.

The right hand side of Figure 1 is the Evaluation Process with linkages at appropriate points to the program funding management process. The signal to begin the process of program evaluation comes when the check-off organization member board completes the process of setting the objectives of the check-off program, defining the mission areas to be funded in pursuit of those objectives, and allocating funds to each mission area defined. Evaluation at some level is required at every subsequent step of the process of managing the program check-off funds, beginning with the process of setting the priority areas for funding in each mission area.

#### *Evaluation of Mission Area Funding Priorities*

At the beginning of each fiscal year, the general types of activities to be given priority for funding in each mission area must be determined. The priority-setting and funding allocation process, however, is often inward-looking and can suffer from lack of objectivity, particularly over a period of years. An annual evaluation of the priorities in each mission area by a panel of outside experts

**Figure 1. Integration of Program Funding Management and Evaluation.**



can help insure objectivity and focus priorities on the most critically needed activities to achieve the objectives in each mission area. The panel of experts could appropriately include technical specialists, industry experts, government analysts and administrators, as well as producers and processors. The evaluation process could include a periodic industry-wide symposium to discuss mission areas and priority activities.

### *Evaluation of Project Proposals for Funding*

After funding priorities for each mission area are set each year, calls for project proposals (or pre-proposals followed by full proposals) in each of the mission areas are issued and projects are selected and funded. In this process of selecting projects for funding, the major difficulty is determining which of the alternative proposed projects is likely to best achieve the objectives of their respective mission areas. What is wanted, of course, is some sense of the return on investment (ROI) that might be achieved with each proposed project. The problem is that any ROI calculation will have to be based on some assumptions about what the impact of the program will be - assumptions that the project proposers will have a tendency to make as generous as possible. A few years ago, the United Soybean Board experimented with requiring each project proposal to include an estimate of the likely market impact and ROI. The results were less than useless as each proposal boasted often laughably excessive potential returns on investment.

Given the near impossibility of accurately and objectively calculating a likely ROI for each specific project proposed, the most reliable procedure to evaluate and select project proposals in each mission area is to impanel a group of experts in each area whose collective technical knowledge, insights, and experience will provide as accurate a prioritization of projects for funding as possible. The panel in each mission area can be charged not only with ranking the respective proposals but also with developing or adjusting the criteria by which the projects will be ranked. The proposal ranking criteria must be consistent with the criteria provided to the potential contractors in the calls issued to elicit their proposals.

### *Evaluation of Individual Project Results*

At the conclusion of each project, the results must be evaluated to determine the extent to which the stated objectives of the project were achieved. This evaluation should be done in two parts. First, the contractors should be tasked with the responsibility of providing a sound, defensible evaluation of the extent to which the stated objectives have been achieved. To facilitate the project evaluations by the contractors, the call for proposals should require that all proposals submitted include a detailed plan for evaluating the success of the proposed projects, including the methodology, timetable, etc. Where possible, goals should be given in quantifiable terms along with the plans for monitoring and tracking data to assess goal achievement.

At the same time, the appropriateness and quality of the proposed evaluation plans and methodology should be given appropriate weight in the selection of the proposed projects for funding. Knowing that they will have to provide evidence that the stated goals have been achieved encourages contractors to be careful about the claims they make for what the proposed projects might accomplish. Because self-evaluations may be understandably biased, an outside group of experts can be used to evaluate the project results as a way of double-checking or auditing the project result evaluations done by the project contractors. The results of all projects may not need to be evaluated by an outside team of evaluation experts. The knowledge that outside evaluations of unspecified, selected projects will be done each year should be sufficient to maintain the quality and integrity of the evaluations done by the project contractors.

Annual evaluations of funded projects results, however, face many difficulties. Most importantly, research and market promotion activities attempt to create streams of revenues over time. Consequently, the returns to the investment in a given project to develop a particular market in a particular way in a given year, for example, may only be realized slowly over time. Also, sustained investment in the activities of that project over time may be needed to create the stream of revenues that will hopefully continue over the ensuing years. Thus, it is often highly inappropriate for many projects to expect any significant ROI within the year in which the investment in the project is made.

A related problem for the evaluation of specific project results is that even if the project generates a positive return on the investment over time, our ability to isolate the contribution of that specific activity on commodity sales is often severely limited. For example, if the objective of a project is to increase commodity sales by some given percent, the only way to know how much credit our promotion activity can take for any subsequent increase in sales is if our project were in fact a controlled experiment. Otherwise, statistically isolating the effects of the promotional program on sales will be nearly impossible. What happens if sales actually drop during the promotional period? Can the promotional activity be appropriately termed “unsuccessful” as a result or might it be the case that sales would have been even worse if it had not been for the efforts of the check-off organization?

In the case of individual projects, therefore, evaluations of effectiveness must rely primarily on judgements of an outside panel as to whether the stated goals have been achieved and anecdotal evidence rather than on any objective measurement of the ROI. Often, a case study approach is about the best one can do to determine the effectiveness of the project.

### *Evaluation of Overall Check-off Program Impact*

While it is important to determine whether or not specific projects have met their goals, it is probably more important to determine the extent to which all funded projects have jointly achieved the goals of the check-off program. And while it is nearly impossible to determine statistically if individual projects have contributed positively to industry profits, interestingly enough it is more feasible to

statistically measure the impact of the overall check-off program on industry sales and profits. Often referred to as Return on Investment (ROI) studies, such program impact evaluations have been done for all the major agricultural commodity check-off programs by professionals skilled in the use of statistical, econometric, market modeling, and simulation procedures. Such studies are generally backward looking and are intended to measure whether past projects and activities have collectively generated a positive ROI and achieved the objectives of increased sales, increased market share, etc.

Evaluations of overall program impact, however, face a number of challenges, the most important of which is the extensive set of data covering an extended period of time that is required for the analysis. This means that a great deal of forward planning is required so that necessary data are in place when the analysis begins. And because the impacts of check-off programs in a given year can be spread over a long period of time, several years of program experience and data gathering after a new check-off program is established may be required before a serious evaluation of the impact of the overall program can be attempted. Because this type of evaluation of check-off programs is both the most common as well as the most statistically objective and defensible, this paper takes a closer look at the procedures and data needs involved as well as the role that the Board must play in the process.

### *Evaluation of the Administration of the Check-off Program*

A good funding management process requires an evaluation of not only whether the check-off program is "doing things right," i.e., efficiently allocating funds among projects but also whether the member board or council is "doing the right things," i.e., allocating funds to those general types of activities or mission areas that will maximize returns. In other words, beyond evaluating the extent to which the objectives that have been set for the check-off program have been reached, there needs to be a periodic evaluation of whether the appropriate mission areas have been defined or need adjustment.

While evaluations of overall program impact are generally backward looking, evaluations of program administration are more forward looking, intended to determine whether changes are needed in the focus of the program as defined by the mission areas to maintain or improve the success of the program. Evaluations of program administration recognize that the market and technical conditions that prevailed in the past may not continue into the future suggesting potentially needed changes in program focus and direction. Although a great deal of work has been done to develop objective measures of program impact and program ROI, there has been little work to develop reliable procedures to guide decisions on effective program administration. Consequently, while evaluations of the past performance of the check-off program can be helpful, evaluations of program administration must still rely heavily on the experience and knowledge of industry experts, management audits, and procedure and process reviews.

### *The Feedback Mechanism*

A critical feature of the integration of the Program Funding Management Process and the Evaluation Process is the feedback of the results of the various evaluations from the check-off program member board or council at the end of the process to the beginning of the process where mission areas are defined or re-defined and the funding priorities in each mission area are set each year (Figure 1). Both the effectiveness of the program in obtaining the desired objectives and the efficiency of the investments made with the check-off funds in generating returns to stakeholders will be enhanced if the program's member board or council will analyze the evaluation results and incorporate what they learn into annual decisions on program direction and funding priorities.

### *Other Uses of Evaluation Results*

Evaluation results can also be used for other critical needs, including providing stakeholders with scientific, peer-reviewed evidence of program benefits as part of campaigns to maintain or build their support for the program. Experience has clearly shown that check-off programs rise and fall with the support or opposition of the stakeholders. Providing them with independent, unbiased evidence of the success of the program on regular basis is key to maintaining their support for the program. Unfortunately, just about any information on the successfulness of the program they receive from the Board will be seen as biased or unfounded, at best. Also, the results of the evaluation process can be provided to the federal government in response to a legislative mandate to evaluate the effects of the check-off program periodically.

### **How Is the Impact of a Check-off Program Evaluated?**

Evaluation of the overall check-off program impact is perhaps the most difficult but also the most useful of the various components of the check-off program evaluation process. At the same time, this is the only evaluation component that lends itself well to statistical measurement and, for that reason, is the most objective and defensible type of evaluation.

### *Identifying Program Objectives*

The first step in the process of evaluating the impact of a check-off program is to define precise objectives against which the performance of the program can be measured. That is, whether or not a check-off program can be judged to be successful depends on what the objectives of the program are. Typically, check-off program objectives include one or more of the following: (1) increase

industry sales, (2) increase industry price, (3) increase the industry market share, (4) increase industry profit, or (5) increase consumer awareness of positive product attributes. If the objective of the program is to increase market share but instead the industry price increases, the program may not be considered to be successful. Also, some objectives may be more attainable for some industries than others.

Normally, check-off programs define multiple objectives. The challenge in this case is that the various objectives defined may be *competitive*, *complementary*, or *independent* in their effects. Despite whether or not it is set as an explicit objective, the mechanism or instrument by which the check-off program impacts the market often begins with a change in consumer awareness which is followed by a change in a consumer behavior which only then translates into a change in product purchases or prices. In schematic terms:

*Program Activity* → *Consumer Awareness* → *Behavioral Response*

Consequently, the first four objectives are considered to be complementary with the fifth objective.

Unfortunately, consumer awareness of a product's attributes may be positive or negative and, therefore, may not always lead to desired behavior. Growing consumer awareness of the product's attributes in a negative direction will have a negative impact on sales, market share, and industry profit. For example, consumer awareness of the attributes of Firestone tires is currently quite high. Unfortunately, the growth has been in a negative direction because consumers are primarily aware that some Firestone tires have experienced problems. Nevertheless, increases in consumer awareness in a positive direction still may not translate into increased sales or higher offer prices. Obviously, a fundamental difference between the first four objectives and the fifth objective (consumer awareness) is that the former are related to product quantities or price movements whereas the latter is not.

While complementary to the objective of consumer awareness, the first four objectives are often seen as competing. For example, suppose that the objective of a check-off program is to increase *sales revenues* (calculated as price x quantity sold). Then activities to increase price might be expected to increase sales revenues except that a price increase will also signal a decline in the quantity sold, a market response known as the law of demand. Consequently, the only way that revenue can increase with a price increase is if the price increases by more than the decline in quantity sold due to the price increase. By the same token, sales revenue could increase by decreasing price if the increase in quantity sold more than offsets the decrease in price. Thus, depending on the market conditions, the multiple objectives of increasing industry sales revenue and increasing industry price may or may not be obtainable at the same time. That is, the objectives of increasing price and increasing sales revenues may be either competing or complementary depending on market characteristics.

A similar situation applies to the objective of increasing market share. Because the market share is just the sales of a particular product divided by total product category sales (e.g., U.S. soybean

exports divided by world soybean exports or pork sales divided by total meat sales), market share can be increased in two ways - either increase product sales faster than total product category sales or reduce product sales slower than total product category sales. Again, the point is that the objective of increasing market share may be at odds (competitive) with the objective of increasing individual product sales.

Check-off program stakeholders are usually most concerned about their bottom line. They want to know if the money they contribute to the check-off program increases their profits. To determine how this may occur, it is useful to look at exactly how profit is defined. Profit is calculated as simply the difference between revenues and costs. Since revenue is calculated as price times quantity, then profit is calculated like this:

$$\text{Profit} = \text{price} \times \text{quantity sold} - \text{total cost of producing the product.}$$

Of course, the price received will be reduced by the amount of the check-off paid and all three components of profit (price, quantity, and cost) are affected by both *uncontrolled market factors (U)* and *controlled check-off factors (C)*. Examples of *U* may be the quality of the product and of competing products, the price of competitors' products, competitor advertisement campaigns, characteristics of consumers (e.g., income, age, gender, etc.), characteristics of the market (e.g., weather conditions, government regulations, production technologies), and so on. Examples of *C* may be consumer targeted advertising campaigns, promotion campaigns for wholesalers, investments in research and technology development, etc.

The check-off expenditures (*C*), thus, could lead to higher profits in a variety of ways, including: (1) increasing the price consumers are willing to pay for the product, (2) increasing the quantity sold of the product, (3) decreasing the cost of producing the product, or (4) various combinations of (1) - (3). Programs that are designed to enhance the revenue side of the market are usually referred to as *demand-enhancing programs* whereas programs that are designed to reduce the cost of production are often referred to as *supply-enhancing or cost-reducing programs*.

Demand-enhancing activities are usually thought to have a positive impact on individual and industry level profits as long as you can assume that these activities do not affect the cost of producing products. The extent of the impact, however, depends on the characteristics and structure of the market. The picture is even less clear with respect to supply-enhancing activities. Research has shown that whether industry profits increase or decrease as a result of supply-enhancing activities also depends critically on the market structure in terms of demand and cost. Consequently, understanding as much as possible about the market structure is essential to determine what types of programs will and will not likely be successful.



### *Modeling the Relationship between the Program and the Product Markets*

The next step in measuring the impact of a check-off program is to develop a mathematical representation of the how the product market functions. Of particular interest in constructing such a model is the roles of the various market forces on market behavior, including both check-off program activities (*C*) and the numerous other factors (*U*) that impact the market. The market modeling process requires an in-depth understanding of how the market works and large quantities of data on all aspects of the market.

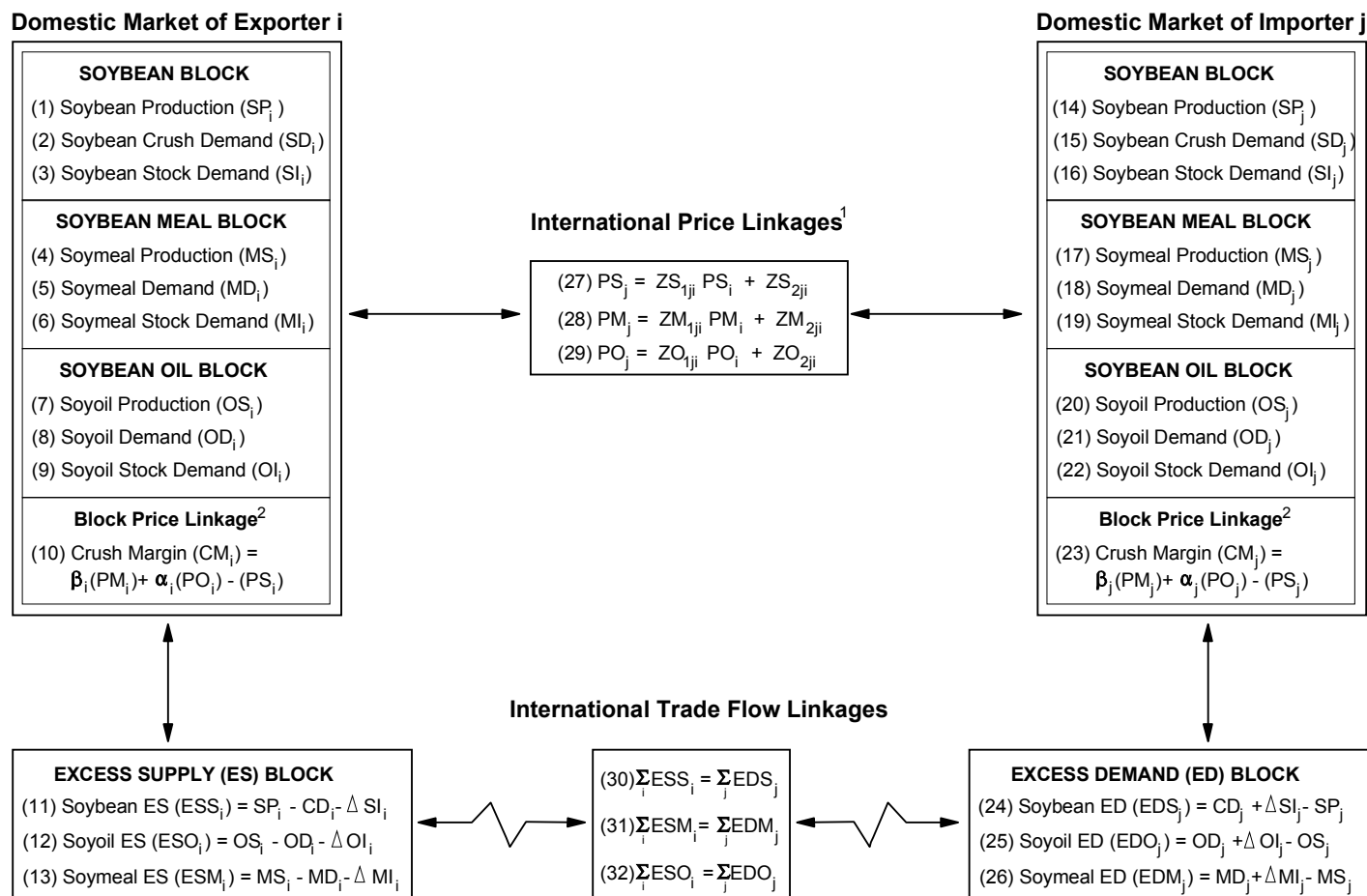
The statistical model of the market must accurately quantify the price and program activity responsiveness of the supply and demand for the product. Among other things, the model must accurately depict: (1) the responsiveness of market supply to changes in the market price (the supply price elasticity) and other supply factors as well as to check-off program investments in supply-enhancing activities (the supply-enhancing activity elasticity) and (2) the responsiveness of market demand to a change in the market price (the demand price elasticity) and other demand factors as well as to a change in demand-enhancing check-off activities (the demand-enhancing activity elasticity).

In essence, the modeling process is an exercise in statistically disentangling the market effects of check-off program activities (*C*) from those of the other market forces (*U*), many of which have a considerably larger influence on market behavior than check-off activities. Figure 2 is a schematic representation of the statistical model used for the analysis of the impact of the soybean check-off program. Because the soybean program investments in international promotion of soybeans and products, the model had to include a detailed international component with linkages among countries in the model through trade and linkages among the markets of soybeans and its two joint products, soybean meal and soybean oil in each country.

### *Measurement Challenges*

Modeling market behavior and disentangling the effects of program activities from other factors that affect supply and demand is a complicated and usually time-consuming process for a number of reasons. One major challenge is that interrelationships between the product market and those of other products are often extensive and complicated. Most products pass through several stages of processing before reaching the final consumer. Thus, the markets associated with these different stages are interrelated at some level. In *vertically related markets*, what happens in one market or processing stage affects all other markets or stages. Furthermore, product processing often results in bi-products or joint products that sell in entirely different markets. In *horizontally related markets*, products that are not directly in a processing chain may be considered close substitutes for products in the chain. The intricacy of the interrelationships between markets means that myriad factors can affect the sales and profits of a particular product and not just those in its own markets.

**Figure 2. World Soybean Market Model Structure.**



Note:  $i$  = any exporter  $i=1, \dots, n$ ; and  $j$  = any importer  $j=1, \dots, k$ . Also  $\Delta$  should be read "change in."

<sup>1</sup> The  $Z_1$  and  $Z_2$  include all multiplicative (e.g. exchange rates and *ad valorem* subsidies) and additive (transportation costs, specific tariffs, etc.) measures that come between prices of country  $i$  and  $j$ .

<sup>2</sup>  $\beta$  and  $\alpha$  are meal and oil extraction rates; PS, PM, and PO are soybean, soyoil, soymeal prices.

The measurement process is further complicated if the market supply and demand for a product include foreign components. Market supply may include imports and market demand may consist of both domestic and export demand. With imports and exports, a whole set of additional factors related to the behavior of foreign markets are thrown into the mix and must be disentangled from all the others to isolate the effects of the check-off program. Research has demonstrated that if the foreign sector of the market is ignored in the analysis, then there is a tendency to overestimate research, promotion, and price impacts and to underestimate quantity impacts (e.g., Kinnucan 1996).

Another factor that must be considered in accurately modeling market behavior is that the relationship between the check-off activities and market behavior is not necessarily straight forward. For example, some minimum threshold level of research and promotion expenditures may be required for the expenditures to even begin to have any effect. Below that level, expenditures may be simply unable to generate sufficient research interest or recall and awareness to motivate consumers. Thus, activities that may be effective at a high level of expenditure may have no impact if expenditures fall below some threshold level. The threshold level is likely different for each product, time period, and world location.

At the same time, even when threshold levels are met, the research and promotion investments generally have life cycles of at least three distinct phases: (1) a “delayed effect” stage during which the expenditures initially do not impact the market, (2) a “carryover effect” stage in which expenditures in a previous period continue to impact the market in the future, and (3) a “decay effect” stage during which past expenditures gradually lose their impact on the market. The life cycle problem is especially prominent in responses to advertising-type activities. The “delay effect” can occur because several exposures to an advertising message over time may be required before an individual decides to buy (Lee, Brown, and Fairchild). Once the advertisement has registered with consumers, they tend to remember the advertising for a while. This “carryover effect” has been reported to last from one month up to two or more years depending on the commodity and the type of promotion activity (Jensen, et. al).

Some types of advertising activities are intended to have little or no carryover effect because they involve temporary specials or product attributes that will not continue. For that type of advertising, the objective is an immediate response without any intent to gain consumer loyalty to the product. Generic promotion activities are generally directed toward longer-term responses and, therefore, have often been found to generate lengthy carryover effects (Forker and Ward). While the effects of promotion activities often persist beyond the period in which the expenditures are made, they do not last forever. A decay in those effects is expected after some period of time. Research has shown that the promotion message will be forgotten if the potential users are not continuously exposed to it (Zielske). Krugman concludes that continued investments in promotion are necessary because users filter messages and only respond when they are ready to make a purchase. When the user is interested, relatively few exposures to the promotion message are necessary for an effect. Also, without repeated exposure to the message, the number of recalls decreases.

### *Measuring the Impact of the Program*

Once the market for the product has been accurately modeled and the relative roles of check-off activities and other market forces are incorporated into the model, the process of measuring the impact of the program, i.e., the extent to which the program has achieved its avowed objectives, is done through scenario analysis with the model. If the model accurately represents market relationships and behavior, then the model can be used to calculate what would happen to market variables like prices, production, consumption, profits, market share, etc. in various situations or scenarios.

To measure the impact of the check-off program, the level of check-off expenditures can be changed to see what happens to the variables in the model. To determine the impact that check-off investments have had over the life of the program, the level of check-off expenditures in the model can be set to zero over the history of the program and the levels of price, production, consumption, and other market variables that would have existed in the absence of the program can be calculated. Measuring the difference between the actual, historical levels of the market variables and what the model says they would have been in the absence of the program provides a direct measure of the contribution of the check-off program to the change in prices, profits, etc. that have occurred over time.

### *Alternative Impact Measures*

The final step in the process is to use the scenario results to determine the extent to which the program has achieved the objectives. The results themselves indicate whether the program has increased the volume of industry sales and industry prices. A few calculations with the results indicate whether industry sales revenues, profits, or market share have increased as a result of the program. However, even if the scenario results indicate that the program has had a positive impact on all these market variable objectives, the question remains as to whether the impact has been positive enough. For that reason, program impacts are generally cast in terms of benefit-cost ratios (BCRs) which indicate the dollar benefit of the program per dollar invested in the program.

The most direct and meaningful measure of the benefit of a check-off program and, therefore, the most commonly used, is the change in industry profit that is attributable to the check-off program. Consequently, whether or not a check-off program is successful is usually measured by the increase in industry profits (after subtracting out the total check-off assessment) as a result of the program as calculated from the scenario analysis results divided by the total value of the investments made in check-off activities over the history of the program. The result is the BCR of the program in terms of the additional industry profit generated by the program per dollar invested in the program. Similar BCRs can be calculated using other measure of benefits, such as the value of additional domestic,

foreign, or total market sales, and then again dividing by the total check-off investment to calculate the benefit in terms of the additional sales generated per dollar of investment.

Because check-off program investments occur over time and have different effects over their life cycles, the increase in industry profits generated by the program over time are often discounted to present value to account for the time value of money. The net present value of the increased industry profits due to the program (NPV) can then be divided by total check-off investments also discounted to present value which gives the net benefit-cost ratio (NBCR), the discounted benefits per dollar of discounted cost. If the calculated BCR or NBCR is greater than zero (assuming that the assessment has been netted out of returns), the project is considered successful (Bussey; Sassone and Schaffer). On the other hand, if the calculated BCR or NBCR is less than zero, the program is deemed unsuccessful. For example, a calculated NBCR of 0.25 actually implies that for every discounted dollar of investment the discounted net return is 1.25. Note that since the BCR and NBCR are ratios, if the denominator gets smaller with no change in the numerator, the ratio will increase. Thus, if two different check-off programs have the same effect on returns but one requires less investment than the other, then the lower cost program provides a larger “bang for the buck.”

Many studies report a “return on investment” (ROI) rather than a BCR as a measure of the effectiveness of advertising and promotion expenditures. Often referred to as the “marginal rate of return” (MRR), an ROI is usually calculated as the percentage increase in sales revenues or industry profits from a 1% increase in check-off program investments. The market model can also be used to generate a program ROI through scenario analysis. In this case, the scenario would be some percent increase in check-off expenditures in a given year to generate the percentage change in market variables like price, profits, and sales.

A closely associated measure of program impact is the internal rate of return (IRR) which measures the change in the future value of industry sales or profits over time resulting from a single, one-period change in promotion investment expressed in percentage terms. So while the NBCR represents the average discounted return to investments in check-off program activities over time (i.e., the returns per dollar invested), the IRR expresses the marginal return to such investments (i.e., the percentage change in returns from a one percent change in investment).

### *Data Requirements and Issues*

As should now be apparent, data on a large number of variables over a sufficiently long period of time are critical prerequisites to the analysis of the impact of check-off programs. The need to collect and organize a database for the analysis of program impact raises at least three interrelated issues that are at the heart of the program evaluation process.

First, the process of statistically isolating the effects of a check-off program on market variables like industry sales and profits must control for the effects of other factors that may affect the market

besides the check-off program. Thus, a critical step in the evaluation of any check-off program is first to identify what the other important factors are that affect the market and then to obtain data related to those factors over many years. Obvious other market factors include the prices of substitutes and complements for the product under investigation, the prices of inputs used in the production of the product, demand variables such as consumer income and promotion programs pursued by competitors, to name a few.

Second, the frequency of the data collected is also important. As discussed earlier, most check-off program activities affect industry sales and profits only with some lag in time. The best data for identifying the length of these lags are generally monthly data. Thus, the ideal would be to generate an industry database of monthly data on all important factors that influence market behavior. Quarterly data can also be used but is less preferred. If nothing else is available, annual data might be useable if the check-off program activities tend to be funded on an annual basis and continue over a period of many months or quarters each year. Monthly or quarterly data is more appropriate if the majority of the check-off activities are media advertising and other short-term events. On the other hand, annual data may be more appropriate for long-run program activities intended to build markets over time.

A third data issue is that the more periods of data available (monthly, quarterly, or annual as appropriate), the greater the statistical confidence in the impact measurement results. The rule of thumb in doing this type of analysis is to utilize data for at least 40 periods. Thus, if the data are monthly, then about four years of data are required. If the data are only quarterly or annual, then a decade or even 40 years of data or more would be ideally needed.

Clearly the implication is that reliable evaluations of program impact require a great deal of advance planning, data gathering and organizing, and record keeping. Failure to put in place an appropriate system of data collection early in the life of a check-off program can make later analysis of the impact of the program impossible. For example, the United Soybean Board (USB) recently requested TAMRC to do an analysis of the return to their investments in their domestic promotion program since 1990 when the majority of those programs were launched. After a year of interviewing and working with both national and state soybean organizations, TAMRC researchers were forced to conclude that “the failure or inability of many states and even the national organization to systematically maintain detailed historical information in a consistent format across organizations on their annual funding of domestic promotion programs and utilization research renders even the most recent data virtually useless at least for program evaluation purposes” (Williams 1998). Even if the USB establishes an acceptable data collection system for domestic programs this year, it will be some time before enough data are available to support meaningful analysis of the impact of those programs.

### *What Can Reasonably be Expected From an Analysis of Program Impact?*

Expectations by stakeholders for the impact of check-off programs on industry sales and profits are generally quite high. Research on the impact of agricultural product check-off programs has grown rapidly in recent years and, with a few noteworthy exceptions, has found that the BCRs for most of those programs are positive and fall in the range of about \$2 to \$12 per dollar spent (Table 1). However, the reported BCRs often vary widely, even for the same product. For fluid milk, for example, depending on the market and time period, the reported BCRs range from \$1.40 to as high as nearly \$23 per dollar spent.

Unfortunately, a high calculated BCR says nothing about the absolute impact of the program on the market. A high BCR results if you divide a small industry profit benefit by an even smaller level of investment. For most check-off programs, the value of the investment in research and promotion activities is extremely small in comparison to the total value of industry sales. For example, the soybean check-off program is among the largest of the agricultural commodity check-off programs. Soybean farmers have invested millions of check-off dollars in production research, domestic market promotion, and foreign market development since the 1970s (Williams 1998). Even so, the total funds invested have been quite meager compared to the revenues (cash receipts) earned by soybean farmers each year. Between 1978 and 1995, total soybean check-off investments amounted to only 0.08% to 0.20% of total soybean farm cash receipts each year. With such a low check-off investment intensity, i.e., the level of investment compared to sales, the overall impact of a check-off program could hardly be expected to be highly significant in a practical sense in its effects on production, prices, sales, and market share even if the impact could be said to be statistically significant.

Also, even though the primary objective of a check-off program may be to increase industry sales or industry profit, individuals contributing to the program will expect that the funds will be spent in such a way that they are individually better off than they would have been without the check-off program. However, because different producers have different cost structures and face perhaps different demand conditions, a subset of producers in the industry may benefit from a check-off program while the industry as a whole loses or vice versa. All boats do not necessarily rise to the same level with the tide – some float, some take on water but stay afloat, and some sink.

The same problem faces those who expect that check-off programs will necessarily raise the prices they receive for the product they sell. While profits might be expected to increase as a result of a check-off program, profits can increase while prices are declining if sales increase even faster.

This is particularly a problem for industries like soybeans and other agricultural products where supply tends to respond quickly to any upward pressure on price. In such industries, any increase in profit is usually the result more of a sales increase than a price increase. For producers or processors whose capacity remains fixed in this situation, the benefits of the check-off program are not clear. Even if the program is successful in maintaining the industry's market share and

**Table 1. Returns to Generic Commodity Promotion: Summary of Research**

Commodity/Region	Return per \$ Invested	Commodity/Region	Return per \$ Invested
	dollars		dollars
<b>Milk</b>			
<b>Fluid</b>			
U.S. (Liu, <i>et al.</i> 1989)	7.04	<b>Eggs</b>	
U.S. (Ward and McDonald)	1.85	California (Schmit, <i>et al.</i> )	7.00
U.S. (NYC) (Forker and Liu)	1.40	U.S. (Reberte, <i>et al.</i> )	6.00
U.S. (NYC) (Kinnucan 1986)	6.00	<b>Butter</b>	
U.S. (Buffalo) (Kinnucan 1983)	16.85-22.52	Canada (Goddard and Amuah)	1.11
U.S. (Kaiser and Liu.)	1.53-1.65	<b>Margarine</b>	
U.S. (Blisard, <i>et al.</i> )	5.33	Canada (Goddard and Amuah)	1.31
U.S. (Kaiser 1997)	5.27	<b>Soybeans &amp; Products</b>	
U.S. (Kaiser 1998)	4.00	U.S. (Williams 1999)	5.00
U.S. (NY State) (Lenz, <i>et al.</i> )	1.84	<b>Orange Juice</b>	
Canada (Goddard and Tielu)	8.00	U.S. (Lee and Fairchild)	2.28
Canada (Venkateswaran and Kinnucan)	10.00-24.00	<b>Grapefruit Juice</b>	
<b>Manufactured Only</b>		U.S. (Lee)	10.44
U.S. (Liu, <i>et al.</i> )	0.00	<b>Catfish</b>	
<b>Fluid and Manufactured</b>		U.S. (Kinnucan, <i>et al.</i> 1995)	0.57-1.30 (short run) 0.17-0.57 (long run)
U.S. (Liu, <i>et al.</i> 1989)	4.77	<b>Apples</b>	
U.S. (Kaiser, <i>et al.</i> 1992)	2.04	U.S. (Ward and Forker)	12.00
<b>Milk and Cheese</b>		Canada (Goddard)	6.74
U.S. (Kinnucan and Forker)	11.29	U.S. Exports (Rosson, <i>et al.</i> )	60.00
<b>Beef</b>		U.S. Exports (Richards, <i>et al.</i> )	
U.S. (Ward and Lambert)	5.74	Singapore	27.84
Australia (Alston, <i>et al.</i> )	1.53 (short run)	U.K.	24.72
	1.2-1.5 (long run)	<b>Australian Wool</b>	
<b>Red Meat</b>		U.S. (Dewbre, Richardson, Beare)	1.94
Australia (Alston, <i>et al.</i> )	0.29 (short run)	<b>Cotton</b>	
	1.3 (long run)	U.S. (Capps, <i>et al.</i> )	1.57-3.49 (producers) 3.63-5.59 (importers)
<b>Pork</b>		<b>Tobacco</b>	
Canada (Sellen, <i>et al.</i> )	2.37	U.S. Exports (Rosson, <i>et al.</i> )	31.00
Canada (Duffy and Goddard)			
All	11.83		
Fresh	13.74		
Ham	16.68		
Bacon	1.18		
Sausage & Wieners	3.73		
U.S. (Sellen, <i>et al.</i> )	6.12		
(Davis, <i>et al.</i> )	4.79		

defending the competitiveness of the industry's product, the results may not be obvious to all individual producers and processors if price has not also increased.



Thus, even though one may reasonably expect that a check-off program impact analysis will find a positive benefit relative to cost from the program, the analysis is not likely to demonstrate a large absolute impact on the market nor an even distribution of any benefits of the program among stakeholders. At the same time, the results of a program impact analysis cannot be expected to provide entirely reliable guidance for future allocations of check-off funds among competing potential check-off activities for several reasons. First, what is true of the program as a whole may not be true of individual activities or even groups of activities. Even though the program as a whole may be effective in meeting the program objectives, certainly some individual activities may make little or no contribution. Second, as mentioned earlier, program impact evaluations are generally backward looking. That is, they use historical data to measure market relationships over some historical period and attempt to measure the impact the program has had in the past. There is no guarantee that the market will behave in the future as it has in the past. Government policies change. Trade negotiations liberalize the flow of goods and service among nations. Consumer preferences and habits shift. Technological innovations improve production efficiencies and enhance competitiveness. Check-off programs vary in their effectiveness over time. At the same time, any revisions in the way check-off funds are allocated among activities is likely to affect the measured returns and impacts of those activities in the future.

#### *Market Characteristics Affecting Likelihood of Success of Check-off Programs*

Whether a check-off program can be expected to be effective in attaining the program objectives, and, thus whether a program impact evaluation can be expected to show a positive BCR and impact of the program on the market depend critically on the characteristics of both the product being promoted and the market in which the product is sold. Forker and Ward suggest that several product and market characteristics contribute to the success of a check-off program for a generic product:

- **Product homogeneity**  
The greater the degree of product homogeneity the more likely a check-off program will benefit all producers that are supporting the cost of the programs.
- **Product identity maintenance**  
If the product totally loses its identity in market channels (such as through combinations with other products in manufacturing), the potential gains from check-off program activities may become diluted with the benefits being distributed to all involved in the value-adding process and an increasing share going to those not contributing to the cost of the check-off programs. It becomes more difficult to communicate about product attributes when the consumer cannot directly purchase the good except as an ingredient.
- **Clear product standards**  
Consumers and market agents must perceive that the product has clear standards that are reasonably consistent from purchase to purchase. Check-off programs are often intended to

make buyers aware of significant product attributes that they can expect with each purchase. If buyers experience a high degree of quality variation in the product being promoted, they may heavily discount the quality and attribute claims of the check-off program activities. The need for product quality uniformity emphasizes the need for a coordinated, industry marketing effort of which the check-off program would be one important component.

- **Acceptable product availability**  
If the product being promoted is not generally available within the geographic area of the program activities, the program will be limited in encouraging long-term repeat purchases.
- **Relatively few good substitutes**  
If the commodity has many good substitutes, a check-off program could lead to increases in sales of the substitutes and a smaller increase in sales of the product itself than otherwise. The check-off program, thus, will need to focus on not only increasing use of the product but also enticing consumers to switch from substitutes. As a consequence, a generally slower and likely smaller response of sales to check-off program activities should be expected.
- **Reasonable consumption potential**  
Clear potential for a significant increase in consumption of the product must exist or check-off program activities will have little effect on sales.
- **A variety of potential uses**  
The wider the range of possible uses of the product, the larger the potential clientele to which check-off activities may be successfully directed.
- **Common objectives of producers**  
Check-off programs are usually designed around meeting common objectives and assuring a reasonable degree of equity to all who contribute to the funding of the program activities.
- **Competition in production**  
If the production of the product is monopolized by one or a few large firms, the check-off program benefits may be more easily captured by the large firms than by the small firms.
- **Geographic concentration of producers**  
Program coordination problems are likely to increase exponentially with increasing geographic dispersion of production.
- **High barriers to entry**  
Ease of entrance of potential competitors into the industry can reduce the long-range returns of a check-off program to those funding the program.
- **Supply controls**

Check-off programs work best in industries where supply is controlled. The more responsive supply is to rising prices, the more likely the potential returns from check-off program activities will be at least partially if not totally eroded from increases in supply that offset any increases in average revenues. Also, as a general rule, imports must be subject to the same check-off assessments as domestic producers to avoid the possibility of "free riders" and resulting inequities.

- **An efficient administrative structure**

Check-off program operation requires central coordination. Maximization of investments and returns to promotion, however, requires minimization of administrative expenditures.

- **Adequate funding levels**

Funding must be adequate and consistently available to insure both a sufficient level of activities and program continuity over time. Because of the characteristic decay in the effect of generic promotion efforts, a consistent program of promotion expenditures is necessary to generate a stream of new revenues from promotion over time. Interruptions in expenditures in any period can have negative consequences for sales far into the future.

### **When Should Evaluation Be Done?**

Clearly, evaluation is a continuous process with strong linkages at various points to the process of managing check-off program funds and activities with feedback from the evaluation results to the beginning of the program management process. Also clear should be the need to develop an evaluation plan to guide the evaluation process, ensure the proper feedback of evaluation results through the program management process, and facilitate the analysis of program impact.

Ideally, the evaluation plan will include a coordinated mechanism and appropriate criteria to facilitate annual evaluations of project proposals, evaluations of the results of individual completed projects, a review of the efficiency and effectiveness of the program administration every 3-5 years at least, and an evaluation of program impact every 5-7 years or more frequently once baseline data and the initial baseline models are developed and ready for use.

The evaluation plan should also provide a design and administrative guidance for the development and maintenance of the large database needed to support the evaluation process, particularly the analysis of program impact. Finally, the evaluation plan should clearly define who should conduct the various evaluations required.

## **Who Should Do Evaluation?**

Obviously, different types of expertise are needed for the different types of evaluations. The evaluation of proposed projects can be handled as an “in-house” effort with assistance from an outside panel of experts representing the broad interests of the industry. Rotating membership on a panel representing the diversity of the industry from consumers to producers, government analysts, and independent scientists from universities and laboratories will insure that the most relevant projects with the highest potential returns to the industry will be funded. The outside panel can also help formulate the criteria to be used in evaluating the proposed projects.

The extent to which completed projects have achieved their objectives should be evaluated by both the contractor as well as an outside panel of experts. The evaluation plan should require that all proposals include a plan for demonstrating that the objectives have been achieved. In fact, such a requirement will encourage project proposers to take care in their claims of what the projects they propose can be expected to achieve. Knowledge that outside experts will review the results of the projects funded likewise will encourage an appropriate proposed plan for evaluating project results by project proposers.

In contrast to the other types of evaluation, the analysis of program impact can only be done by skilled and experienced professionals with expertise not only in statistical analysis, market modeling, and scenario analysis but also in evaluating check-off programs. The evaluation plan should call for the establishment of a long-term relationship with some qualified group of professionals who can not only help develop the necessary database but also construct the necessary market model which can be updated and utilized at regular intervals to analyze the impact of the program over time. The selection of the appropriate group of professionals to conduct the analysis should emphasize the importance of objectivity to enhance the confidence that stakeholders and others can place in the results. In this process, peer review of the program impact analysis results is imperative to help insure the objectivity, credibility, and professional quality of the work.

## **Summing Up**

Efficient and effective management of the funds available through a check-off program requires information not only on which projects should be funded and which have achieved their avowed objects but also whether, taken as a whole, the activities funded generate returns in excess of the expenditures and whether the overall objectives of the program are being met. Evaluation, however, is not a stand-alone process. The most effective evaluation plans integrate evaluation into the process of managing the check-off funds. In that process, the evaluation of both project proposals and the results of projects funded by check-off programs are often done quite competently by internal or “in-house” committees with assistance from outside panels of experts. The evaluation of the impact of check-off programs on market objectives and the measurement of the returns to

stakeholders generated by the programs, however, require complex statistical procedures which, in turn, require professional researchers with training and experience in such procedures. The evaluation of project proposals and results is generally done annually or more often depending on the structure of the check-off program funding management process. Because of the extensive data required over generally long periods of time, however, evaluations of program impact are usually done only periodically or as enabling legislation may require. For the same reason, program impact evaluation of new check-off programs must wait until a sufficiently large database of projects and program expenditures has been built up over time. Thus, the first critical tasks for a new check-off program are to identify the data that will be needed for an eventual evaluation of program impact, design the needed database and corresponding data collection plan, and then consistently collect the needed data over time.

## References

- Alston, J.M., J.A. Chalfant, and N.B. Piggott, "Demand Response and Returns to Incremental Advertising in the Australian Meat Industry," Chapter 5 in H.W. Kinnucan, J.E. Lenz, and C.R. Clary, eds., *Economic Analysis of Meat Promotion*, Proceedings from the NEC-63 Conference, Denver, Colorado, June 1995.
- Blisard, *et al.*, "Evaluation of Fluid Milk and Cheese Advertising, 1984-96," Technical Bulletin No. 1860, Economic Research Service, U.S. Department of Agriculture, Washington, D.C., December 1997.
- Bussey, L.E. *The Economic Analysis of Industrial Projects*. Englewood Cliffs, NJ: Prentice-Hall, 1978.
- Capps, O., Jr., D.A. Bessler, G.C. Davis, J.P. Nichols, C.G. Anderson, and E.G. Smith, "Economic Evaluation of the Cotton Checkoff Program," Department of Agricultural Economics, Texas A&M University, College Station, Texas, November 1996.
- Davis, G.C., O. Capps, Jr., D.A. Bessler, J.H. Leigh, J.P. Nichols, and E. Goddard, "An Economic Evaluation of the Pork Checkoff Program," A Report to the National Pork Board, Department of Agricultural Economics, Texas A&M University, June 2000.
- Dewbre, J., B. Richardson, and S. Beare, "Returns from Wool Promotion in the United States," Occasional Paper #100, Australian Government Publishing Service, Canberra, Australia, 1987.
- Duffy, R. and E. Goddard, "The Benefits to Canadian Hog Producers of Generic vs. Brand Advertising of Pork," Chapter 10 in H.W. Kinnucan, J.E. Lenz, and C.R. Clary, eds., *Economic Analysis of Meat Promotion*, Proceedings from the NEC-63 Conference, Denver, Colorado, June 1995.
- Forker, O.D. and D.J. Liu, "An Empirical Evaluation of the Effectiveness of Generic Advertising: The Case of Fluid Milk in New York City," A.E. Research 86-12, Department of Agricultural Economics, Cornell University, Ithaca, New York, 1986.
- Forker, O.D. and R.W. Ward, *Commodity Advertising: The Economics and Measurement of Generic Programs*. New York: Lexington Books, 1993.
- Goddard, E.W., "Demand for Fruit in Ontario: A Case Study of Apple Advertising Effectiveness," Working Paper WP90/24, Department of Agricultural Economics and Business, University of Guelph, Guelph, Ontario, 1990.

- Goddard, E.W. and A.K. Amuah, "The Demand for Canadian Fats and Oils: A Case Study of Advertising Effectiveness," *American Journal of Agricultural Economics* 71(3):741-749, 1989.
- Goddard, E.W. and A. Tielu, "Assessing the Effectiveness of Fluid Milk Advertising in Ontario," *Canadian Journal of Agricultural Economics* 36(2):261-278, 1988.
- Jensen, H.H., S.R. Johnson, K. Skold, and E. Grundmeier, "Impacts of Promotion in the Livestock Sector: Simulations of Supply Response and Effects on Producer Returns." Chapter 10 in H.W. Kinnucan, S.R. Thompson, and H. Chant, eds., *Commodity Advertising and Promotion*, Ames, IA: Iowa State University Press, 1992.
- Kaiser, H.M., "Impact of National Dairy Advertising on Dairy Markets, 1984-96," NICPRE Research Bulletin 97-11, National Institute for Commodity Promotion Research and Evaluation, Department of Agricultural, Resource, and Managerial Economics, Cornell University, Ithaca, New York, July 1997.
- Kaiser, H.M., "Impact of National Dairy Advertising on Dairy Markets, 1984-97," NICPRE Research Bulletin 98-01, National Institute for Commodity Promotion Research and Evaluation, Department of Agricultural, Resource, and Managerial Economics, Cornell University, Ithaca, New York, June 1998.
- Kaiser, H.M. and D.J. Liu, "The Effectiveness of Generic vs Branded Advertising: The Case of U.S. Dairy Promotion," *Review of Agricultural Economics* 20:69-79, Spring/Summer 1998.
- Kaiser, H.M., D.J. Liu, T.D. Mount, and O.D. Forker, "Impacts of Dairy Promotion from Consumer Demand to Farm Supply," Chapter 3 in H.W. Kinnucan, S.R. Thompson, and H. Chant, eds., *Commodity Advertising and Promotion*, Ames, IA: Iowa State University Press, 1992.
- Kinnucan, H.W., "A Note on Measuring Returns to Generic Advertising in Interrelated Markets," *Journal of Agricultural Economics* 47:261-67, 1996.
- Kinnucan, H.W., "Demographic Versus Media Advertising Effects on Milk Demand: The Case of the New York City Market," *Northeastern Journal of Agriculture and Resource Economics* 15(1):66-74, 1986.
- Kinnucan, H.W., "Media Advertising Effects on Milk Demand: The Case of the Buffalo, New York Market," A.E. Research 83-13, Department of Agricultural Economics, Cornell University, Ithaca, New York, 1983.
- Kinnucan, H.W. and O.D. Forker, "Allocation of Generic Advertising Funds Among Products: A Sales Maximization Approach," *Northeastern Journal of Agricultural and Resource Economics* 17(1):64-71, 1988.

- Kinnucan, H.W., R.G. Nelson, and H. Xiao, "Cooperative Advertising Rent Dissipation," *Marine Resource Economics* 10:373-384, 1995.
- Krugman, H.E., "Why Three Exposures May Be Enough," *Journal of Advertising Research* 12:11-14, 1972.
- Lee, J.-Y., "Generic Advertising, FOB Price Promotion, and FOB Revenue: A Case Study of the Florida Grapefruit Juice Industry," *Southern Journal of Agricultural Economics* 13:69-78, 1981.
- Lee, J., M.G. Brown, and G.F. Fairchild, "Some Observations on the Impact of Advertising on Demand," *Agribusiness* 5(6):607-618, November 1989.
- Lenz, J., H.M. Kaiser, and C. Chung, "An Economic Analysis of Generic Milk Advertising Impacts on Markets in New York State," *Agribusiness: An International Journal*, 1998.
- Liu, D.J., H.M. Kaiser, O.D. Forker, and T.D. Mount, "The Economic Implications of the U.S. Generic Advertising Program: An Industry Model Approach," *Northeastern Journal of Agriculture and Resource Economics* 19(1):37-48, 1989.
- Reberte, J.C., T.M. Schmit, and H.M. Kaiser, "An Ex Post Evaluation of Generic Egg Advertising in the U.S.," NICPRE Research Bulletin 96-15, National Institute for Commodity Promotion Research and Evaluation, Department of Agricultural, Resource, and Managerial Economics, Cornell University, Ithaca, New York, October 1996.
- Richards, T.J., P. Van Ispelen, and A. Kagan, "A Two-Stage Analysis of the Effectiveness of Promotion Programs for U.S. Apples," *American Journal of Agricultural Economics* 79(3):825-827, 1997.
- Rosson, C.P. III, M.D. Hammig, and J.W. Jones, "Foreign Market Promotion Programs: An Analysis of Promotion Response for Apples, Poultry, and Tobacco," *Agribusiness: An International Journal* 2(1):33-42, 1986.
- Sassone, P.G. and W.A. Schaffer. *Cost-Benefit Analysis: A Handbook*. San Diego, CA: Academic Press, Inc. 1978.
- Schmit, T.M., J.C. Reberte, and H.M. Kaiser, "An Economic Analysis of Generic Egg Advertising in California," NICPRE Research Bulletin 96-14, National Institute for Commodity Promotion Research and Evaluation, Department of Agricultural, Resource, and Managerial Economics, Cornell University, Ithaca, NY, October 1996.
- Sellen, D., E. Goddard, S. Duff, "Returns from Research and Advertising in the North American Hog and Pork Industry," in J. Ferrero and C. Clary, eds., *Economic Analysis of Research and*



- Promotion*, Proceedings from a joint NC-208 and NEC-63 Conference, New Orleans, La., March 1997.
- Venkateswaran, M. and H.W. Kinnucan, "Evaluating Fluid Milk Advertising in Ontario: The Importance of Functional Form," *Canadian Journal of Agricultural Economics* 38:471-488, 1990.
- Ward, R.W. and C. Lambert, "Generic Promotion of Beef: Measuring the Impact of the U.S. Beef Checkoff," *Journal of Agricultural Economics* 44:456-465, September 1993.
- Ward, R.W. and O.D. Forker, "Washington Apple Advertising: An Economic Model of Its Impact," Washington Apple Commission, WAC 91:1, University of Florida, Gainesville, 1991.
- Ward, R.W. and W.F. McDonald, "Effectiveness of Generic Milk Advertising: A Ten-Region Study," *Agribusiness Industry Journal* 2(1):77-89, 1986.
- Williams, G.W., "Commodity Checkoff Programs as Alternative Producer Investment Opportunities: The Case of Soybeans," *Agribusiness* 15(4): 539-552, Fall 1999.
- Williams, G.W., "Effectiveness of the Soybean Checkoff Program," Texas Agricultural Market Research Center Commodity Market Research Report No. CM-2-98, Texas A&M University, College Station, Texas, May 1998.
- Williams, G.W. and J.P. Nichols, "Effectiveness of Commodity Promotion," Texas Agricultural Market Research Center Consumer and Product Research Report No. CP-1-98, Texas A&M University, College Station, Texas, May 1998.
- Zielske, H.A., "The Remembering and Forgetting of Advertising," *Journal of Marketing* 14:239-43, 1959.