



## Distributional Effects of Generic Dairy Advertising

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Both dairy farmers and fluid milk processors have national mandatory checkoff programs that are used, in part, to sponsor generic advertising activity aimed at increasing demand and prices for their products. The dairy farmer program assesses dairy farmers \$0.15 per hundredweight on all milk sold, raising roughly \$250 million each year for generic fluid milk and cheese advertising and promotion. Fluid milk processors assess themselves \$0.20 per hundredweight on all milk sold, raising over \$100 million each year for generic advertising and promotion of fluid milk products. Cheese processors, however, do not have their own promotion program, but are indirectly affected by the generic promotion of the farmer and milk processor programs. While there have been numerous studies evaluating the economic impacts of generic dairy product advertising, few have looked at the distributional impacts of advertising and the economic welfare among multiple participants in the market. This study addresses two such issues with respect to generic advertising activity in the dairy industry.

The first issue examines how milk and cheese processors are impacted by generic fluid milk and cheese advertising funded by dairy farmers. If generic dairy advertising is effective in increasing the overall demand for dairy products, then there are two main impacts that fluid

milk and cheese processors may experience. First, the increase in demand for dairy products will boost the output price processors receive for their product and positively impact processor economic welfare. Second, the increase in demand will also result in an increase in processors' main input cost, i.e., raw milk, which would negatively impact processor welfare. Whether or not the positive effect of an increased own-price outweighs the negative effect of a higher input price for raw milk is an empirical issue and is the focus of this research.

The second issue examines how dairy farmers and cheese processors are impacted by fluid milk advertising funded by fluid milk processors. Under an effective fluid milk advertising program, farmers are likely better off since there will be an increase in the derived demand for farm milk and an associated price enhancement; however, cheese processors are likely worse off since they compete with fluid processors for the farm milk supply and will likely have to pay higher prices to farmers to obtain milk for cheese processing. We estimate the relative sizes of these welfare impacts here.

The economic impacts across market groups are simulated using an industry model of the national dairy market, incorporating branded and

## DIRECTOR'S COLUMN

We economists have done a lot of research on the impacts of generic advertising on commodity markets. The sheer volume of research that has been conducted by the limited number of economists interested in this area has greatly helped us all better understand the economic consequences of collective advertising by various industries.

However, we are now faced with the reality that non-advertising, promotion activities are being used more over time at the expense of advertising. There are various reasons for this, but perhaps the most important is that the costs of media advertising are escalating faster than the growth in checkoff budgets. At the same time, we do not understand the economic impacts of non-advertising promotion activities as well as we understand advertising. Consequently, this line of inquiry is needed for future research directions.

*-Harry M. Kaiser*



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generic advertising for fluid milk and cheese products. The model disaggregates the industry into retail, processor, and farm sectors for fluid milk and cheese. Hence, the effects of advertising at the retail level can be explicitly traced back to the processor and farm sectors. We derive the economic impact on processor welfare using alternative advertising scenarios designed to address the issues raised above. The first scenario generates baseline levels, where generic advertising is set equal to actual levels for the dairy farmer and fluid milk processor programs. The model is simulated over the most recent five-year time period, 1997-2001.

The second scenario sets generic cheese and fluid milk advertising under the dairy farmer program to levels that existed prior to passage of the national mandatory program, but maintains fluid milk process or generic advertising at historic levels. This translates into an average annual reduction in real generic advertising expenditures of approximately \$71.5 million per year from 1997-2001; \$40.2 million from fluid milk advertising, and \$31.3 million from cheese advertising. Some generic advertising existed in states prior to initiation of the national program (circa 1984). As such, this scenario reflects advertising levels prior to when the 15-cent checkoff was enacted -- levels equivalent to a 6.3 cents per hundredweight. A comparison between the first and second scenario provides evidence on the impacts to fluid milk and cheese processors from generic advertising funded by dairy farmers.

The third scenario retains the actual fluid milk and cheese advertising levels by dairy farmers, but removes the generic

fluid milk advertising conducted by milk processors. This translates into an average annual reduction in real generic fluid milk advertising expenditures of approximately \$79.8 million per year from 1997-2001. A comparison between this and the base scenario will highlight the impact of fluid milk processor funded advertising on dairy farmers and cheese processors.

### **Distributional Impacts of Dairy Farmer Advertising**

We can begin to ascertain processor impacts of generic advertising conducted by dairy farmers, which includes both fluid milk and cheese product advertising, by comparing Scenario 1 and Scenario 2 in Table 1. Changes in producer surplus measures clearly indicate that both fluid milk and cheese processors are better off due to the generic advertising campaigns funded by dairy farmers. Note: scenarios 2 & 3 reflect *reductions* in advertising levels, therefore *negative* producer surplus changes imply a positive relationship between economic welfare of dairy farmers and the level of advertising. Generic advertising by dairy farmers has had a positive impact on fluid milk and cheese supplies at the processor level. From 1997-2001, fluid milk processor equilibrium quantity would have been 1.2% lower, on average, had there not been a national mandatory advertising program by dairy farmers. Likewise, the cheese processor equilibrium quantity would have been 1.4% lower, on average, over this period.

While both types of processors benefited from the farmer checkoff program, it appears that fluid milk processors

benefited relatively more than their cheese processor counterparts. For instance, on average, the price received by fluid milk processors would have been almost 5% lower in the absence of farmer advertising. The cheese processors' price would have been 2.1% lower, on average. This makes sense given that a relatively larger share of generic advertising expenditures was devoted to fluid milk rather than cheese products over the time period evaluated.

While generic cheese and fluid milk advertising on the one hand impacts the output price received for processor products, it also impacts the input price for raw milk paid by processors and, thereby, has a negative impact on processor profitability. For instance, the average Class III price paid to farmers by cheese processors was 2.8% higher in the baseline scenario than in Scenario 2, while the average Class I price paid to farmers by fluid milk processors was 2.2% higher. In terms of gross price margins (own price minus class price), the benefits to milk processors due to the 15-cent checkoff program were higher relative to cheese processors. In fact, while fluid milk processor margins increased by 10%, cheese processor margins actually fell by 2%. In other words, the relatively fluid-milk-dominant dairy farmer advertising positively contributed to the output-input price ratio for fluid milk processors, but had a small, but negative impact on the price ratio for cheese processors.

In order to determine the net impact of dairy farmer advertising on processors welfare, one needs to examine the change in producer surplus, which accounts for both price

and quantity adjustments. Producer surplus is a measure of economic welfare used by economists that is similar to profitability. From this analysis, it is clear that both fluid milk processors (+\$488 mil.) and cheese processors (+\$336 mil.) benefit from the farmer advertising programs. In addition, while the dollar values indicate a larger gain for fluid milk processors as a whole, relative to industry gross revenues the gains are very similar across processor groups. Thus, while dairy farmers themselves have benefited from their advertising programs, additional benefits from market expansion and price enhancement are carried over to both fluid milk and cheese processors.

### **Distributional Impacts of Fluid Milk Processor Advertising**

In addition to generic dairy advertising funded by dairy farmers, fluid milk processors also fund generic advertising of fluid milk products. Thus, similar to the issue raised above, another distributional issue surrounds the indirect welfare effects to dairy farmers and cheese processors from milk processor advertising. We can begin to evaluate this issue by comparing Scenario 1 and Scenario 3 in Table 1. As milk processors benefited from the dairy farmer advertising, so do dairy farmers benefit from milk processor advertising. In fact, the relative producer surplus changes across scenarios are quite similar, with differences largely reflective of a relatively larger change in fluid milk advertising of Scenario 3 versus Scenario 2.

Fluid milk processor advertising resulted in an average increase in fluid milk equilibrium quantity of 1.2%, with only a marginal decrease (0.1%) in cheese

quantity, and translated into an increase in the derived demand for farm milk. The increase in derived milk demand resulted in higher prices for dairy farmers. On average, the fluid milk processor program had the impact of increasing the Class I and Class III price by 1.5% and 1.8%, respectively from 1997-2001. Put differently, without fluid milk processor advertising, the average milk price received by dairy farmers would have been \$0.25 per hundredweight lower than it actually was over this time period.

Computed changes in producer surplus, indicate that the fluid milk processor advertising program had a significant impact on improving the economic welfare of dairy farmers. Had there not been advertising conducted by fluid milk processors from 1997-2001, the producer surplus of dairy farmers would have decreased, on average, \$410.1 million per year, or the equivalent of 1.5% of gross farm revenue from the base scenario.

While the economic welfare of dairy farmers was improved due to generic milk advertising by fluid processors, the same was not true for cheese processors. This result is due to the fact that processor generic milk advertising increased the demand for farm milk, and consequently bid up the price paid for milk by both fluid and cheese processors. Equilibrium conditions indicate only a slight decrease in cheese supply, but relatively strong changes in input and output prices. For instance, from 1997-2001, the cost of acquiring milk from farmers by cheese processors (i.e., Class III price) would have been 1.8% lower

had there not been generic milk advertising by milk processors. At the same time, the output price received by cheese processors would have been 1.8% lower had there not been a fluid milk advertising program, resulting in a relatively small change in relative prices.

While the welfare change is necessarily negative to cheese processors from the advertising activity of fluid milk processors, the ultimate changes in processor cheese supplies and relative prices result in a relatively minor reduction in cheese processor welfare. Had there not been advertising conducted by fluid milk processors from 1997-2001, producer surplus of cheese processors would have been \$30.4 million more, representing only a 0.3% change relative to gross cheese processor revenues.

### **Conclusions**

Distributional impacts of generic advertising activity are important to identify when evaluating current and future operation of the promotion programs funded by the market participants. Market expansion and price enhancement from dairy farmer advertising clearly benefits both fluid milk and cheese processors. In a similar fashion, dairy farmers benefit from the advertising activities by fluid milk processors, suggesting, mutual benefits to both parties from each others' promotion activity. While cheese processors are negatively impacted by milk processor advertising, the ultimate welfare losses are minimal relative to the strong gains realized from dairy farmer promotion that includes a significant component addressing cheese products.

**Table 1. Average annual values for prices and quantities by scenario, 1997-2001.**

Variable	Scenario 1 Actual values (Base scenario)	Scenario 2* (percent change)	Scenario 3** (percent change)
Fluid processor supply (bil lbs milk equivalent)	55.2	-1.2%	-1.2%
Cheese processor supply (bil lbs milk equivalent)	64.6	-1.4%	0.1%
Fluid milk processor price (\$/cwt milk equivalent)	24.7	-4.9%	-6.4%
Cheese processor price (\$/cwt milk equivalent)	13.9	-2.1%	-1.8%
Class I farm price (\$/cwt)	15.6	-2.2%	-1.5%
Class III farm price (\$/cwt)	12.3	-2.8%	-1.8%
Farm blend price (\$/cwt)	14.56	-2.0%	-1.7%
Fluid processor margin (\$/cwt milk equivalent)	9.0	-10.0%	-15.5%
Cheese processor margin (\$/cwt milk equivalent)	1.9	2.1%	-1.7%
Farm producer surplus change (\$ mil)		-690.6	-410.1
Percent of base scenario gross revenue		-2.9%	-1.5%
Fluid milk processor producer surplus change (\$mil)		-488.1	-541.8
Percent of base scenario gross revenue		-3.5%	-3.6%
Cheese processor producer surplus change (\$mil)		-335.8	30.4
Percent of base scenario gross revenue		-3.7%	0.3%
Total processor producer surplus change (\$mil)		-823.9	-511.4
Percent of base scenario total gross revenues		3.5%	-2%

\* Generic cheese and fluid milk advertising under the dairy farmer program is reduced to levels that existed prior to passage of the national mandatory program, but maintains milk processor generic advertising at historic levels.

\*\* Generic fluid milk advertising under the fluid milk processor program is eliminated, but maintains dairy farmer generic advertising at historic levels.

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