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**THE EFFECT OF NASDA'S "MEAT
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THE EFFECT OF NASDA'S "MEAT THE NEED PROPOSAL" ON LIVESTOCK AND DAIRY MARKETS

At the request of Senators Bob Bennett of Utah and Kay Hagan of North Carolina and Representative Larry Kissell of North Carolina, the Food and Agricultural Policy Research Institute at the University of Missouri (FAPRI-MU) has provided quantitative analysis to the National Association of State Departments of Agriculture (NASDA) regarding the short term effects on market prices of purchasing meat and dairy products to be donated under domestic programs.

Many of these sectors have been at or near record-low levels of returns. There have been many policy option discussions focused on helping these industries recover. In general, the NASDA proposal would require USDA to purchase meat and dairy products that would be given to domestic food assistance programs. Changes in the timing and level of purchases will affect the exact outcome that results.

In order to better capture the short term effects of the proposed program, a quarterly modeling system of livestock and dairy markets maintained at FAPRI-MU is employed in this analysis. This quarterly system is similar in structure to the traditional annual modeling framework that FAPRI maintains but it is not identical in structure. The quarterly baseline used is similar to the annual update published in August, 2009 (see http://www.fapri.missouri.edu/outreach/publications/2009/FAPRI_MU_Report_06_09.pdf).

Displacement of commercial sales is an important concept to consider when analyzing government food purchases and subsequent donations. While the program specifies quantities of food to be purchased, the market effect of the program depends upon the net additional demand that is created. The extent to which the recipients of food donations reduce the quantity of food they purchase must be considered. While much literature documents the phenomenon of commercial displacement, few papers estimate how much additional demand is created by a program such as this.

A technical bulletin from the United States Department of Agriculture's Economic Research Service (<http://www.ers.usda.gov/publications/aib750/aib750p.pdf>) provides a few specific examples of the demand additionality of past programs, including one of particular interest involving a distribution of surplus cheese in the early 1980s. In that particular case, one dollar of donated cheese was estimated to lead to an additional 65 cents of cheese demand. A paper from Christopher Barrett at Cornell University (aem.cornell.edu/faculty_sites/cbb2/Papers/BarrettOECDReportMar2002.pdf) notes that on average, food aid results in a demand increase that is 30 to 60 percent of the amount of the food aid, but that the amount of additional demand largely depends upon how well targeted the aid program is.

This analysis assumes that the net additionality of these meat and dairy purchases is 70 percent. That is, for each pound of product purchased from the market and donated, the net effect on total consumption will be 0.7 pounds since 0.3 pounds of commercial sales is displaced by the donation. Of course, assuming a different level of additionality would provide different results than those shown here.

Assumptions

The specific changes requested by NASDA staff for this analysis are:

- 1) 225 million pounds of cheese purchased over four months in three equal stages
- 2) A one-time purchase of 25 million pounds of nonfat dry milk
- 3) 300 million pounds of pork purchased over six months in three equal stages
- 4) A one-time purchase of 100 million pounds of turkey with 40%, 30%, and 30% for whole bird, white meat and dark meat, respectively.

In the FAPRI-MU model, it is assumed that purchases begin in the fourth quarter of 2009. Market effects are estimated through the third quarter of 2010.

Results

The purchase of pork, turkey and dairy products increases prices for all of these commodities. The relative changes in the different livestock and product prices relate to the quantity of product purchased relative to overall market supplies, as well as to the short-term reaction of producers and consumers to the resulting price increases. Turkey prices increase the most in percentage terms (9.2 percent, see table 1) in the initial quarter of the analysis because the 100 million pound turkey purchase represents a larger percentage of production than any of the other commodities being purchased under the NASDA proposal.

The results show that by the first quarter of 2010, milk prices rise the most in percentage terms (9.4 percent). Cheese purchases are still occurring in that quarter and the minimum pricing mechanism of federal milk marketing orders increases minimum prices for both class I and class III milk. Pork prices increase by 8.2 percent as purchases of pork also continue. However, turkey prices rise by a smaller percentage in the first quarter of 2010 relative to the fourth quarter of 2009 because all turkey purchases occurred in the fourth quarter of 2009.

The positive price effects of the NASDA proposal only last for the periods in which purchases occur. While purchases continue, higher market prices cause supplies of all of these products to increase relative to the baseline. As a result of the increase in market supplies relative to the baseline, market prices fall marginally below baseline levels for all of these sectors by the third quarter of 2010. If this analysis were conducted for a longer period, the prices would eventually return to baseline levels.

Other sectors that do not have direct purchases occurring also benefit as cross commodity substitution increases their prices relative to baseline levels. For example, fed cattle prices rise by 1.7 percent in the fourth quarter of 2009 as a result of the pork and turkey purchases. Here it is important to reconsider the assumption made earlier about the net effect of food aid programs. This analysis does not assume that any purchases of beef (or other products) are displaced by the program purchases of pork, turkey, cheese, and nonfat dry milk. If donated pork and turkey were to displace beef in the school lunch program, for example, the effect on the beef market could be different than shown here.

Although this analysis only examines livestock and dairy markets, other agricultural sectors would also see marginal benefits from the NASDA proposal. The increase in livestock and dairy production would increase feed prices. To provide some indication of the relationship between feed prices and livestock production, a 10 percent decrease in feed use of corn and soybean meal results in a \$0.35 per bushel

reduction in corn prices, a \$26 per ton decline in soybean meal prices and a \$0.35 per bushel decline in soybean prices in the short term before acreage is allowed to adjust. The NASDA scenario results in less than a one percent change in meat and dairy supplies.

The cost of these purchases is an important component of the NASDA proposal. Assuming that USDA purchased these products from wholesale channels and there was a 20 percent per unit cost to get the products to the point of donation, the cost of purchasing pork was calculated at \$1.33 per pound, turkey at \$1.13 per pound, cheese at \$1.68 per pound and nonfat dry milk at \$1.02 per pound. The total budgetary cost of the NASDA proposal at these prices is slightly more than \$900 million.

Sensitivity of Results and Summary

The results of this analysis depend on a number of factors. While the NASDA scenario levels of purchases are clearly important, the relative supply and demand responses within the different market sectors also play a role in the outcomes shown. Results also depend heavily on the assumption made regarding the additonicity of purchasing meat and dairy products to be used in domestic donations programs. If a lower assumption of demand additonicity was employed in this analysis, the results would be moderated from what is reported here.

Purchasing products from the market will increase prices for these products in the short run. However, in the long run, these programs will have little to no effect.

Table 1. Effects of NASDA's "Meat the Need" Proposal

	QIV - 2009	QI - 2010	QII - 2010	QIII - 2010
All Milk Price				
				(\$/cwt.)
Baseline	12.75	15.25	15.00	16.75
Scenario	13.19	16.69	16.29	16.72
Change	0.44	1.44	1.29	-0.03
% Change	3.5%	9.4%	8.6%	-0.2%
Fed Cattle Price				
Baseline	87.50	88.00	92.50	92.00
Scenario	89.03	88.81	92.11	91.86
Change	1.53	0.81	-0.39	-0.14
% Change	1.7%	0.9%	-0.4%	-0.2%
Boxed Beef Price				
Baseline	148.50	152.00	159.00	157.00
Scenario	151.66	153.55	158.23	156.65
Change	3.16	1.55	-0.77	-0.35
% Change	2.1%	1.0%	-0.5%	-0.2%
Barrow and Gilt Price				
Baseline	41.00	43.00	47.50	52.00
Scenario	44.06	46.53	47.14	51.84
Change	3.06	3.53	-0.36	-0.16
% Change	7.5%	8.2%	-0.8%	-0.3%
Pork Cutout Value				
Baseline	60.50	66.00	72.00	73.00
Scenario	64.12	70.11	71.56	72.79
Change	3.62	4.11	-0.44	-0.21
% Change	6.0%	6.2%	-0.6%	-0.3%
Wholesale Turkey Price				
Baseline	85.00	76.00	82.00	88.00
Scenario	92.79	79.03	79.83	86.54
Change	7.79	3.03	-2.17	-1.46
% Change	9.2%	4.0%	-2.6%	-1.7%