Dairy Farmer Preferences for 2012 Farm Bill

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Abstract: Dairy policy is a contentious part of farm bill negotiations. The dairy title of the next farm bill has been discussed since 2009 with many novel policy proposals considered. This research utilizes best-worst scenario analysis to analyze dairy farmer preferences for policy options including eliminating existing dairy policies, implementing new dairy policies related to income support and growth management, ending ethanol subsidies and ending all dairy policy programs. Results indicate that large and small herds had differing preferences with large herds overwhelmingly preferring to end ethanol subsidies while small herds preferred to implement support for income over feed costs.

The government has a long history in U.S. dairy policy. Milk shortages and generally chaotic milk marketing at the beginning of the 20th century led to a set of policies to enable dairy cooperatives to collectively bargain, pool milk revenues based on minimum prices, and support milk prices. In addition to these other policies were later added to promote dairy exports, limit dairy imports, and pay milk deficiency payments. The dairy title of the Farm Bill in recent decades has been particularly contentious as dairy interests have been split based on regional interests, farm size, and processor versus cooperative perspectives.

Discussion on the dairy title of the next Farm Bill—scheduled for 2012—began in 2009 spurred by a disastrous year when dairy farmers across the country lost large amounts of money with historically high feed prices and low farm milk prices. The desperate financial situation of 2009 coupled with the realization that the volatility of feed and milk prices had fundamentally changed the risk situation for dairy farms led to dairy producer groups, cooperatives and processors to propose significant changes for the next farm bill. These proposals include government protection of income over feed margins, supply control, ending ethanol subsidies, and changing the method for deriving minimum prices in federal milk marketing orders.

The recognition that current dairy policies are antiquated was further brought into focus by two recent developments: the increased volatility of feed prices as corn price is closely linked to world energy prices and the increased importance of exports as a market for US dairy products. Ethanol mandates, credits and subsidies have led to a direct connection between corn and oil prices (Tyner 2010). Corn and other feed product prices are increasingly reflecting the volatility in energy prices. With corn being the primary feed to supply energy to dairy cows and corn planting decisions affecting production and value of other feedstuffs, the cost of producing milk has reflected this input price volatility. Historically, the US has not been a major player in world dairy markets with about five percent of production—mostly bulk commodities—exported (Dobson, Wagner and Hintz 2001). The US dairy export situation changed dramatically since 2005 as supply difficulties in other major dairy exporting countries and efficient US milk production led to market opportunities for US dairy products. US dairy exports grew steadily totaling 11 percent of milk production in 2008 and, following a drop during the world-wide economic troubles of 2009, back up to 13 percent of total milk production in 2011.

One aspect of dairy policy that has not changed in the on-going policy debate is the animosity and disparate views across farmers, cooperatives and processors both by region and size. While the internet and dairy industry press is rife with opinions, the preferences of dairy farmers regarding alternative policies have not been examined in any objective or representative way. This research aims to fill that gap and improve the broader policy discussion.

There is a literature that considers farmer policy preferences with most previous studies in the 1980's and 1990's. Zulauf, Guither, and Henderson (1987) examined Illinois and Ohio farm and agribusiness association farm policy views in 1984 and compared the responses of the provisions in the Food Security Act of 1985. They found the agribusiness associations were

more inclined to support enhanced free trade policies than farm operators. Further, agribusiness associations were more likely to support a reduction in government involvement than were farm operators. Zulauf, Guither and Henderson concluded that the 1985 Farm Bill was more in line with the views of medium-to-large size farms than small-to-medium size farms.

Orazem, Otto and Edelman (1989) examined Iowa farmers' policy preferences where the options included continuing current programs, imposing supply controls, move to a market oriented system, and targeting support to financially stressed farmers. Results indicated that financial situation, farms size and type, operator education and experience influenced preferences. Kastens and Goodwin (1994) examined Kansas farmer preferences for free trade. They found that support for free trade decreased with education, experience, and government payments received by the operation and increased with relatively more rented land and total farm wealth. Barkley and Flinchbaugh (1990) surveyed Kansas farm operators regarding opinions on farm policy including the then-current commodity programs, conservation and environmental policies, production risk and crop insurance, and international trade. They found that operator and operation characteristics were related to policy views. Self-interest was a primary determinant of operator opinion with large farms favoring the current programs that benefited them directly and opposed to targeting programs to smaller farms. Livestock producers were opposed to commodity programs that increased their cost of feed.

These past studies used traditional methods such as Likert-scale or approve/disapprove type questions to assess policy preferences. The methods utilized in past studies did not allow for cardinal ranking of policy preferences or trade-offs that exist in policy questions especially in the current budget constrained environment. More recently a method called best-worst scaling (also referred to as maximum-difference scaling) has been utilized to examine preferences and

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values (Finn and Louviere 1992; Lusk and Briggeman 2009). This research examines the preferences of Michigan dairy farmers during the policy debate and discussions leading up to the "2012" Farm Bill using a survey from May and June of 2011. We utilize best-worst scaling to examine several dairy related policies that are a part of the current 2012 Farm Bill discussion. Results indicate that large dairy farms very much preferred an end to ethanol subsidies rather than any change in dairy policy while smaller herds preferred support for income over feed cost.

The paper proceeds with a brief description of current dairy policies and novel proposals for the 2012 Farm Bill to set the context. The following section describes the survey instrument, sample, and procedures. Summary statistics of respondents are presented. The best-worst scenario analysis statistical models and results are presented. The paper concludes with a discussion of policy implications and potential future research issues.

Current dairy policies and proposals

Current dairy policies include federal milk marketing orders (and some state orders), a price support program, the Milk Income Loss Contract program (MILC)—a deficiency payment for dairy farms, as well as trade instruments including export incentives and import tariffs. In addition, the major dairy cooperatives have operated a program entitled Cooperatives Working Together (CWT) since 2003 which held several herd buyouts and subsidized exports.

Milk marketing orders define minimum farm prices for grade A milk based on end use. That is, wholesale cheese, butter, nonfat dry milk and dry whey prices less an allowance for manufacturing costs are used to set protein and fat prices for four classes of milk (in Federal Orders). The relative use of milk by class in each of the ten Federal Orders is used to weight a minimum blend price that all farmers must be paid. The use of wholesale product prices has been controversial in recent years with concerns that the wholesale prices can be manipulated.

One of the proposals on the table for the current policy discussion is to end the use of product prices in setting farm price and instead move to, for example, a survey of plant pay prices in areas that are not under a milk marketing order. This price would be similar in some respects to the way that minimum order prices were set under what was called the "Minnesota-Wisconsin" (M-W) price which was in effect from 1961 to 1995. The M-W surveyed grade B cheese plants in Minnesota and Wisconsin, plants outside the order, and used this "competitive" price to set minimum prices.

The Price Support Program, formally named the Dairy Product Price Support Program in 2008 Farm Bill and formerly the Milk Price Support Program from 1949-2007, is an open offer to purchase butter, cheese, and nonfat dry milk at set product prices. Under the Milk Price Support program the formal intention was to support farm milk prices at a floor—$9.80 per hundredweight at 3.5 percent butterfat in recent years. This sometimes proved difficult and controversial to implement. For example, how high should butter versus nonfat milk powder prices should be set to achieve the farm milk price floor. The program name change to "Product" price support reflects the movement to support the product with the implication that this will indirectly support farm milk price but without specific targets. The Price Support Program has been criticized in recent years for curbing product innovation, supporting world dairy product prices, and being generally insufficient for US farm prices at current feed costs.

Trade policies include the Dairy Export Incentive Program (DEIP) which subsidizes exports of dairy products. These export subsidies were crucial to moving excess dairy products in past decades but US product prices have been very competitive in recent years. Dairy programs also include the promotion programs where dairy producers pay 15 cents for each

hundredweight of milk produced which is used for commercials (e.g., Got Milk? and the milk mustache program) and other promotional activities.[1]

While not directly dairy policy, the existence of ethanol subsidies—defined broadly here as blending and other subsidies—has been opposed by all dairy and livestock groups. The amount to which these policies has increased feed price level and volatility is perhaps debatable but the direction is unambiguously negative for farms that use more corn than they produce.[2]

There are several factors that relate to the current debate including farm size and regional conditions. Some policies, such as the MILC program, have an explicit size bias. Others are perceived to be biased to large herds. Historically, the traditional dairy producing states in the Northeast and Upper Midwest have had smaller, older herds while the Southwest and Pacific states have had newer and much larger herds (Sumner and Wolf 2003). While average herd sizes have converged to an extent in recent years, that pattern generally holds and influences regional attitudes toward policies.

Dairy proposals for the 2012 Farm Bill began in earnest with the release of a set of policies put forth by the National Milk Producers Federation (NMPF) entitled "Foundation for the Future" in 2009. This proposal included four main components: a government subsidized margin protection program, a supply control program (called growth management), revisions to price discovery mechanisms in federal milk marketing orders, and elimination of the price support and MILC programs. NMPF is a national organization composed of dairy cooperative members. The Foundation for the Future proposal reflected the diversity of opinions from across the country as well as some recognition that budget constraints would require some trade-offs. The dairy policy debate has evolved some since then but Foundation for the Future underpins the conversation. The supply control program, called the Dairy Market Stabilization program,

proposes to withhold a portion of the milk check from farmers when the milk – feed margin falls below trigger levels. Essentially, the program proposes to shift supply back to maintain a milk price less feed price margin regardless of what factor is causing a low margin. This program in particular has been controversial. Analyses have revealed that it might indeed result in more milk price stability but it is likely to come at the cost of a lower average milk price (Nicholson and Stephenson 2010; FAPRI 2010). Recently many of the dairy policy proposals examined in this research have been formally introduced as the Dairy Security Act in September 2011.[3]

Survey and summary statistics

A list of operations with a license to ship Grade A milk was obtained from the Michigan Department of Agriculture in April 2011. The list contained the names and addresses of 2,156 operations from which 50% (1,128) were randomly selected. The survey method followed Dillman's method with surveys mailed in May, a reminder postcard three weeks later and a second survey to non-respondents three weeks after the postcard (Dillman, Smyth, and Christian 2009). Nine surveys were returned as undeliverable and 17 responded that they were no longer farming for an adjusted sample of 1,102 operations. Ultimately 226 useable surveys were returned for a 20.5 percent response rate.

The survey collected information about the operator and operation including acres operated, the size of crop, livestock, and dairy enterprises, operator age, education and experience, farm business organization, farm sales and whether they were currently (or previously) members of dairy cooperative members. A brief summary of pertinent summary statistics are contained in Table 1. Respondent herd size varied from eight to 5,400 milk cows. Average respondent herd size was approximately 300 milk cows which was larger than the average operation with milk cows according to NASS but consistent with typical size of a

commercial dairy farm in Michigan. The survey also collected information about the dairy farmer respondent views on current dairy policy programs using a series of questions with Likert-scale responses. Finally, the survey examined the opinions about the major dairy policy proposals that are currently discussed as potentially part of the 2012 Farm Bill. The importance of these dairy policy proposals were examined utilizing a best-worst scenario framework.

The policy options considered and the description provided to respondents were:

1. _End the Dairy Price Support Program:_ *End the open government offer to purchase butter, nonfat dry milk and cheese.*

2. _End the Milk Income Loss Contract Program:_ *End deficiency payments triggered by Class I Boston milk prices and feed prices.*

3. _Implement a government margin over feed cost program:_ *Create a program that pays dairy farmers if the margin between milk price and feed prices falls below a trigger level.*

4. _Implement a growth management program:_ *Create a program that withholds payment on a percent of milk marketed for each producer if the margin between milk and feed price falls below a trigger level.*

5. _Replace product pricing in Milk Marketing Orders:_ *Replace wholesale product prices used to set minimum milk class prices with a competitive pay price (i.e., end product pricing).*

6. _Phase out ethanol subsidies:_ *Gradually eliminate ethanol blending credits and tariffs on imported ethanol.*

7. _End all US government dairy policies:_ *Get the US government completely out of the dairy industry by eliminating all dairy specific programs (Price Support Program,*

Federal Milk Marketing Orders, Milk Income Loss Contract program, Dairy Export

Incentive Program).

This set of policies was informed by existing legislation and proposals by National Milk

Producers Federation (NMPF) and other dairy producer groups. An example scenario presented

is displayed in Figure 1.

Best-Worst scenarios and dairy policy preferences

Best-worst scaling, also referred to as maximum difference scaling, is a technique where

respondents are shown a set of at least three possible options (policy changes in this case) and

asked to indicate the best and worst. Benefits of best-worst questions are that they are relatively

easy for most respondents to understand, free of scale bias since the responses involve choices

rather than strength of preference, and they require trade-offs not facilitated by traditional

Likert-scale questions. Accordingly, best-worst scaling has increasingly been applied by

economists as an alternative to traditional Likert-scale questions to evaluate preferences.

Example applications, consistent with our analysis, include Lusk and Briggeman (2009)

examining food values and Flynn, et al. (2007) examining health care preferences. While the use

of best-worst scaling is increasing, existing applications have been nearly entirely focused on

consumer views and preferences.

In our application, farmer respondents were shown sets of dairy policies and asked to

indicate which potential policy action would be most and least important to their business. The

farmers responding were shown eight sets of best-worst choices with the policies varying. The

eight scenarios presented respondents with varying combinations from the set of seven policy

changes that would affect dairy farmers if enacted in the 2012 Farm Bill (Table1). The scenarios

were derived using a main-effects, fractional design consistent with more common, discrete choice conjoint analyses. Responses to the questions were used to measure each policy's position on a continuum.

Best-worst scaling assumes that respondents evaluate all possible pairs of items within the displayed subset and choose the pair that reflects the maximum difference in preference or importance (Louviere 1993). If a choice has J items, policies in this case, then there are $J(J - 1)$ possible best-worst combinations. The pair of policies chosen represents the one that maximizes the difference in importance. Following Lusk and Briggeman, let τ_j represent the location of policy j on the underlying preference scale and let the true (latent) unobserved level of importance for individual i be given by $I_{ij} = \tau_j + \varepsilon_{ij}$, where ε_{ij} is a random error term. The probability that a farmer chooses policy j and policy k as the best and worst out of J policies is the probability that the difference in I_{ij} and I_{ik} is greater than all the other $J(J -1) -1$ possible differences in the choice set. If the ε_{ij} are distributed i.i.d type I extreme value, then this probability takes the multinomial logit (MNL) form:

$$(1)\ \text{Prob}(j \text{ is chosen best and } k \text{ chosen worst}) = \frac{e^{\tau_j - \tau_k}}{\sum_{l=1}^{J} \sum_{m=1}^{J} e^{\tau_l - \tau_m - J}}.$$

The parameters τ_j can be estimated by maximization of the log-likelihood function based on the probability statement in (1). The dependent variable takes the value one for the pair of policies chosen by the farmer as best and worst, and zero for the remaining $J(J - 1) -1$ pairs of policies not chosen. The estimated τ_j represents the importance of policy j relative to some policy that was normalized to zero to prevent the dummy variable trap.

Given the preceding discussion regarding diverse views underlying the ongoing dairy policy debate, we anticipated preference heterogeneity to underlie the best-worst scenario responses. Accordingly, we explored the existence and possible drivers of dairy producer

heterogeneity regarding direction of dairy policy. Latent class models specify preference

heterogeneity to occur discretely (Train 2003). Latent class models assume that individuals can

be intrinsically sorted into a number of classes (also called segments or clusters) characterized by

homogeneous preferences within each class while preferences are heterogeneous across classes

(Boxall and Adamowicz 2002). Latent class model estimation simultaneously assigns

individuals to latent classes probabilistically while also identifying parameters for each class.

Within a class, individual choices from one policy to another are assumed to be independent and

choice probabilities are assumed to be generated by the logit model (Greene 2006). The

conditional probability of selections given a respondent belongs to latent class s is given by:

$$(2) \ \text{Prob}(j \text{ is chosen best and } k \text{ chosen worst}|s) = \frac{e^{\tau_{js} - \tau_{ks}}}{\sum_{l=1}^{J} \sum_{m=1}^{J} e^{\tau_{ls} - \tau_{ms} - J}},$$

where the parameters τ_{js} are now class-specific (Ouma, Abdulai, and Drucker 2007). Since the

classes are not observable, the probability of class membership is specified in the typical

multinomial logit format:

$$(3) \ \text{Prob}(s) = \frac{e^{(\theta_{s} Z_k)}}{\sum_{s=1}^{S} e^{(\theta_{s} Z_k)}},$$

where Zk is a set of observable characteristics that enter the model as candidate drivers of class

membership and θs is a parameter vector, normalized to zero, describing the impact of these

characteristics on the probability of a respondent belonging to a given class (Ouma, Abdulai, and

Drucker 2007).

     With latent class modeling we are able to derive a maximum likelihood based statistical

model that allows us to classify subtypes of related cases based on unobserved (latent)

heterogeneity, and include exogenous variables to enable simultaneous segment classification

and description (Coltman, Devinney, and Keating 2011). We examined LCM models with two

to five classes. Based upon the Bayesian information criterion (BIC) that is widely used to

evaluate fit of these models, a three class model would have been selected (Boxall and

Adamowicz 2002). However, in the three class model, one of the classes was very small (3.3%)

and the membership probability functions were imprecisely identified. Coupling this with

finding a likelihood ratio test to indicate the two segment model provided a substantial

improvement over the base multinomial logit model led to choosing a two class model as the

most appropriate.

Several covariates were introduced into the segmentation analysis as candidates in

characterizing the class domains. The variables considered include: (1) milking herd size, (2)

acres operated, (3) percent of feed purchased, (4) operator age, (5) operator education, (6)

solvency position, and (7) business organization. Only herd size accounted for significant

differences across segments. Examining the estimated class membership coefficients and

segment size estimates (Table 3), class 1 can be characterized as being composed of larger herds

(53% of herd respondents) while class 2 is comprised of smaller herds (47% of herd

respondents).

Given the potential to confound with scale and the need to convey results in a more

intuitive format than provided solely by coefficient estimates, we calculate a "share of

preference" for each policy for both the multinomial logit and latent class models. The

preference share is the forecasted probability that each policy is picked as most important:

$$(4) \text{ share of preference for policy } j = \frac{e^{\hat{\tau}_j}}{\sum_{k=1}^{J} e^{\hat{\tau}_k}}.$$

These shares of preferences must sum to one across all seven policies. Equation (3) calculates

the importance of the policy j on a ratio scale, meaning that if one policy has a share twice that of

another policy, it can be said that the former policy is twice as preferred as the latter. The

calculated share of preference for a policy reflects both the true importance of the policy as well

as the relative uncertainty in the importance that farmers place on the policy. The share of preference conveys the probability that a policy is picked as more important than another.

Farmer preferences for policy proposals

When utilizing the multinomial logit and imposing an assumption of homogeneous producer preferences, the estimated preference shares were fairly uniform ranging from the least preferred (10.5%) option being to end all policies to the most preferred option (19.7%) of eliminating ethanol subsidies (Table 3). Given the background discussion on dynamic and divisive views on dairy policy, this level of suggested indifference was surprising. In fact, this observation highlights the likely inappropriate assumption of homogeneous preferences imposed by the multinomial logit and further motivates our use of a latent class logit.

Considering the latent class model results "larger" herds (class1) wanted to get rid of ethanol subsidies more than all the other options combined. Narrowly, about 54% of respondents in class 1 would consider ending ethanol subsidies as the best policy action presented. Given the normalization facilitated by focusing on preference shares, it is interesting to express the magnitude of this preference in another context. This preference of class 1 respondents to end ethanol subsidies is estimated to be six times the magnitude of the next most preferred option of ending price supports (top choice of 9%). With the US Congress ending ethanol subsidies in December 2011 (Shepardson 2011), these producers may have gotten their wish (although the ethanol mandate remains). The other policy options considered were not statistically different than ending all dairy policies while those herds ranked growth management as the least desired option.

Amongst "smaller" herds (class 2) the most preferred option was support for the income over feed margin. With volatile feed costs in recent years, dairy farmers have become acutely

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aware that simply hedging or supporting milk price may not be adequate to protect dairy farm income. Dairy farmers can utilize futures contracts or options to protect the margin between Class III milk price and energy and protein prices as captured by corn and soybean (or soybean meal) contracts. These contracts are too large for some producers to utilize; particularly for many of the producers underlying the stated preferences in class 2. Dairy producers can also utilize forward contracts for milk or feed through their milk marketing cooperative or local elevator. These tools are often considered too expensive or the basis (relation to cash prices) too variable for farmers to utilize. The smaller herds ranked the growth management plan and replacing product pricing with a competitive pay price as the second and third best options available. Further, these dairy producers with relatively smaller herds ranked ending the Price Support Program as the fourth best option and ending MILC fifth. All five of these actions are contained in the National Milk Producers Federation "Foundation for the Future" plan which underlies the current legislation. Thus, it seems safe to conclude that producers in class 2— "smaller herds"—are on-board with Foundation for the Future while class 1 herd owners were very much focused on ethanol subsidies—and resulting feed cost implications—more than any specific dairy policy proposal.

These results considered dairy farmer preferences but did not consider the broader benefit-cost aspects of the evaluated proposals. In the current climate with federal budgetary uncertainties and considerations, one may increasingly argue that one or more of these evaluated policy actions may materialize. The unique contribution of this study in such an environment is the provision of important insights on the relative attractiveness dairy producers hold for alterative policy actions. Given that all of these options are likely not feasible (either politically or economically) to implement the suggested willingness of producers to "trade away" different

policy options should be noted. With this in mind, and with ethanol subsidies eliminated (perhaps largely appeasing producers belonging to class 1 in the latent class analysis), the clear preference of Michigan dairy farmers is to implement a program to support the margin over feed cost. The current Price Support Program has a support price that is too low to be relevant today and does not reflect volatile feed costs. The MILC deficiency payment program does reflect feed costs to some extent but the payment limit of 2.4 million pounds (or 2.985 million pounds depending on the year) annually makes it not useful for large herds as reflected by the preference heterogeneity underlying our latent class model. The MILC program by skewing benefits to small producers—and by reducing market prices—penalizes larger herds (Balagtas and Sumner 2012). The popular proposal now under consideration would be available to all herds at a base level with the option to buy more coverage at a subsidized rate. It appears from this analysis that smaller herds that benefit from the MILC would prefer the NMPF proposal to protect income over feed costs rather either PSP or MILC but prefer the current combination rather than the income margin protection program. Perhaps future efforts should focus on the "savings" which would come from reallocating resources from the current PSP or MILC programs to this new alternative proposal. The possibility exists for budgetary savings to be feasibly obtained, to appease the majority of dairy producers, and to ultimately reduce the negative societal impact of dairy producers.

Summary and Conclusions

This research examined Michigan dairy farmer preferences for policy options as discussions related to the next Farm Bill consider ending long-standing policies and implementing novel alternatives. Dairy farm managers were surveyed in the spring of 2011. Using best-worst scaling respondents we examined seven policy options that have the potential to affect dairy farmers.

Unlike Likert scale type questions, best-worst scaling is cardinal and allows us to determine how much policies are preferred in addition to the preference ordering. The most preferred option across all dairy producers responding was to eliminate ethanol subsidies. This policy change was actually accomplished (at least in part) in December 2011. The next most preferred option was implementing a program that would pay dairy farmers when the margin between milk price and feed price falls below a trigger level. The least popular option was to end all dairy policies.

Estimating a latent class model allowed us to determine that preferences were split based on herd size. The larger herds overwhelmingly preferred to end ethanol subsidies and were largely indifferent amongst the other options—including ending all dairy policies. The smaller herds preferred protection for the milk-feed price margin the most but also preferred all other options more than ending all policies or ethanol subsidies. If these results are representative of the broader US dairy farmer population, then the long-standing disagreement on policy across herd size remained in 2011. The cardinal nature of the preference shares allows not only ranking of policy proposals but assessment of trade-offs. Larger herds preferred ending ethanol subsidies to all the other policy options combined. Meanwhile, smaller herds preferred margin protection for income over feed cost but there are certainly other combinations which might outweigh that preference in the likely event that politics and budget constraints necessitate choosing among alternatives.

Endnotes

1. In addition to these formal government policies NMPF has operated a voluntary program called Cooperatives Working Together (CWT) which has include several rounds of herd buyouts, and subsidized dairy product exports. The program began with about 75 percent of all milk production paying into the fund but over the years free-riding has increased. The program seems to have been successful in elevating farm milk price but has neared the end of its useful life. While CWT is not a formal dairy policy, its existence adds context to the current dairy policy debate.

2. Note that while the ethanol subsidies (but not the mandate) were recently ended, they were in effect when the survey was administered. Most analysts agree that ending these subsidies is unlikely to affect corn prices in the near term given the existence of the ethanol mandate.

3. The Dairy Security Act of 2011 included many of the proposals examined in this research with a few modifications. One major difference is that the growth management program (called the "stabilization" program in the legislation) has voluntary participation. However, if farmers participate in the margin protection program will be automatically enrolled in the growth management program. The Act as introduced also ends the Dairy Export Incentive Program.

References

Balagtas, Joseph V. and Daniel A. Sumner. 2012. Evaluation of U.S. Policies and the Supply
Management Proposals for Managing Milk Margin Variability. *American Journal of Agricultural Economics* 94: 522-527.

Barkley, Andrew P., and Barry L. Flinchbaugh. 1990. Farm Operator Opinion and Agricultural
Policy: Kansas Survey Results. *North Central Journal of Agricultural Economics* 12:223-239.

Boxall, P.C. and W.L. Adamowicz. 2002. Understanding Heterogeneous Preferences
in Random Utility Models: A Latent Class Approach. *Environmental and Resource Economics* 23:421-446.

Coltman, T.R., T.M. Devinney, and B.W. Keating. 2011. Best-Worst Scaling Approach to
Predict Customer Choice for 3PL. *Journal of Business Logistics* 32:139-152.

Dillman, D.A., J.D. Smyth, and L.M. Christian. 2009. *Internet, Mail and Mixed-Mode Surveys:
The Tailored Design Method.* John Wiley & Sons, Inc., Hoboken, NJ.

Dobson, W.D., J. Wagner, and R. Hintz. 2001. When will US firms become major dairy
exporters and bigger direct investors in foreign dairy-food businesses? Babcock Institute
Discussion Paper N0. 2001-3. University of Wisconsin-Madison.

Finn, Adam, and Jordan J. Louviere. 1992. Determining the Appropriate Response to Evidence
of Public Concern: The Case of Food Safety. *Journal of Public Policy and Marketing* 11:12-25.

Flynn, Terry N., Jordan J. Louviere, Tim J. Peters, and Joanna Coast. 2007. Best-worst scaling:
What it can do for health care research and how to do it. *Journal of Health Economics* 26:171-189.

Food and Agricultural Policy Research Institute (FAPRI). 2010. *Analysis of NMPF's Foundation*

for the Future Program. FAPRI-MU Report #05-10. Available online:
http://www.futurefordairy.com/resources/expert-analysis/FAPRI-analysis.html
Accessed November 17, 2011.

Greene, W. 2002. NLOGIT Version 3.0 Reference Guide. Econometric Software, Inc.

Kastens, Terry L. and Barry K. Goodwin. 1994. An Analysis of Farmers' Policy Attitudes and
Preferences for Free Trade. *Journal of Agricultural and Applied Economics* 26:497-505.

Louviere, J.J. 1993. The Best-Worst or Maximum Difference Measurement Model: Applications
to Behavioral Research in Marketing, The American Marketing Association's 1993
Behavioral Research Conference, Phoenix, Arizona.

Lusk, Jayson L., and Brian C. Briggeman. 2009. Food Values. *American Journal of Agricultural
Economics* 91:184-196

Nicholson, C.F. and M.W. Stephenson. 2010. Analysis of Proposed Programs to Mitigate Price
Volatility in the U.S. Dairy Industry. Available online:
http://www.futurefordairy.com/pdfs/Nicholson-and-Stephenson-Analysis.pdf
Accessed November 17, 2011.

Orazem, Peter F., Daniel M. Otto, and Mark A. Edelman. 1989. An Analysis of Farmers'
Agricultural Policy Preferences. *American Journal of Agricultural Economics* 71:837-
846.

Ouma, E., A. Abdulai, and A. Drucker. 2007. Measuring Heterogeneous Preferences for Cattle
Traits among Cattle-Keeping Households in East Africa. *American Journal of
Agricultural Economics*. 89:1005-1019.

Shephardson, D. 2011. Congress Ends Corn Ethanol Subsidy. *The Detroit News* December 24,
2011. Online: http://www.detroitnews.com/article/20111224/AUTO01/112240320
Accessed February 22, 2012.

Sumner, D. and C. Wolf. 2002. Diversification, Vertical Integration and the Regional Pattern of
Dairy Farm Size. *Review of Agricultural Economics* 24:442-457.

Train, K. E. 2003. Discrete Choice Methods with Simulation. Cambridge, MA: Cambridge
University Press.

Tyner, W. E. 2010. The integration of energy and agricultural markets. *Agricultural Economics*
41:193–201

Zulauf, Carl R., Harold D. Guither, and Dennis R. Henderson. 1987. Government and
Agriculture: Views of Agribusiness and Farm Operators concerning Selected Issues of
the 1985 Farm Bill Debate. *North Central Journal of Agricultural Economics* 9:85-97.

Which of the following policy actions is most important and which is least important for your dairy farm business? (check only <u>one</u> as the most important and <u>one</u> as the least important)

Most Important		Least Important
☐	Implement government margin over feed cost program	☐
☐	Replace product pricing in Federal Milk Marketing Orders	☐
☐	End all US government dairy policies	☐

Figure 1. Example best-worst scenario presented to dairy farmer respondents

Table 1. Summary statistics of survey respondents

Variable	Unit	Mean	St. Dev.
Operator Age	years	51.4	10.4
Operator Education	years	13.1	1.7
Herd Size	milk cows	297	561
Acres Operated	acres	728	843
Homegrown feed	%	74	22

Table 2. Dairy Policy Options and Descriptions

Option Name	Policy Option	Policy Description
Support	End price support program	End the open government offer to purchase butter, nonfat dry milk and cheese.
MILC	End MILC	End deficiency payments triggered by Class I Boston milk prices and feed prices.
Income	Income over feed margin	Implement a program that pays farmers if milk-feed margin is below trigger.
Growth	Growth management	Implement a program that withholds payment on portion of milk if milk-feed margin is below trigger.
Product	End product pricing	Replace wholesale product prices used to set minimum milk class prices with a competitive pay price.
Ethanol	End ethanol subsidies	Eliminate ethanol blending credits and tariffs on imported ethanol.
End All	End all dairy policies	Eliminate all programs (marketing orders, price support, DEIP, MILC, promotion).

Table 3. Coefficient estimates and preference shares

Policy		Coefficients			Share of Preference		
	MNL	LCM	LCM		Class 1 "Larger	Class 2 "Smaller
Option	All Herds	Class 1	Class 2	All Herds	Herds"	Herds"
Support	0.272***[a] (0.001)[b]	0.099 (0.122)	0.530*** (0.084)	0.138	0.090	0.133
MILC	0.134* (0.080)	-0.090 (0.122)	0.416*** (0.073)	0.120	0.075	0.118
Income	0.496*** (0.081)	-0.012 (0.122)	1.195*** (0.070)	0.172	0.081	0.258
Growth	0.191** (0.003)	-0.343*** (0.129)	0.816*** (0.070)	0.127	0.058	0.176
Product	0.297*** (0.080)	-0.090 (0.122)	0.795*** (0.075)	0.141	0.075	0.173
Ethanol	0.628*** (0.082)	1.884*** (0.186)	-0.199*** (0.076)	0.197	0.539	0.064
End All	0.000	0.000	0.000	0.105	0.082	0.078

Class Membership Coefficients

Constant		-0.107 (0.229)				
Herd size[c]		0.001* (0.0006)				
Class Probability		0.532	0.468			

[a] Single (*), double (**) and triple (***) asterisks denote that the mean preference is statistically different from "All" at 10%, 5% and 1% levels, respectively.
[b] Values in parentheses ( ) are standard errors.
[c] Herd size is the class membership variable.
Policy options are defined in table 2.