

Program on Dairy Markets and Policy

Information Letter

Dairy Provisions of the Senate Agriculture Reform, Food, and Jobs Act of 2012— An Estimation of Farm-Level Impacts

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Introduction

On 26 April 2012, the U.S. Senate Committee on Agriculture, Nutrition and Forestry completed the committee print of the Agriculture Reform, Food, and Jobs Act of 2012 (the Act).¹ A previous Information Letter² summarizes these provisions. When the Dairy Security Act (DSA) was introduced last summer, papers were also published with analyses of the market³ and farm-level⁴ impacts. Although the Act is qualitatively similar to the DSA, there are a few subtle changes which have the potential to make significant differences to outcomes.

This paper reports results to a simple question, what might have been the results for a spectrum of US farm sizes had the Act been in force during the last five years. Simple questions can have complicated answers. This analysis should be thought of as suggestive, not definitive. Had the Act been in place, farmers may have made different production decisions and markets may have responded differently. This analysis does not attempt to estimate the impacts of changes in strategies, indemnity payments, or milk marketings on prices over that time. While this sort of retrospective analysis has limitations, it can be a useful way to examine whether the outcomes match with our expectations and to compare possible implications over a range of variables, such as farm size or the severity of weak margins. The results should challenge our thinking, especially if they differ from our general expectations.

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¹ <http://www.ag.senate.gov/issues/farm-bill>

² <http://dairy.wisc.edu/PubPod/Pubs/IL12-03.pdf>

³ <http://dairy.wisc.edu/PubPod/Pubs/DSA%20Market.pdf>

⁴ <http://dairy.wisc.edu/PubPod/Pubs/DSA%20Farm.pdf>

Differences Between the Act and the DSA

One difference between the House and Senate versions is that the Dairy Production Margin Protection Program (DPMPP) has two tiers of pricing in the Senate version. Tier 1, for the first 4 million pounds of annual production (approximately a 250 cow farm), sets premiums at a significantly lower price. The much higher prices in tier 2 apply to a farm's marketings above 4 million pounds. This change has very significant implications for the cost of margin insurance on farms that are well above the 4 million pounds per year break point.

A second change affects the cost and benefit of the margin insurance plan for all farmers. The formula for calculating feed ration costs was changed by lowering the feed parameters to 90 percent of the DSA levels. This seemingly small change increases the value of the margin calculation by a bit more than a dollar per hundredweight when feed prices are at levels that have prevailed over the last four years.

The change in the ration calculation, and thus the margin, has two impacts. One is that to actually provide the same approximate level of DPMPP coverage, a producer now needs to buy an additional dollar's worth of supplemental coverage when compared to the DSA. A \$6 margin using the House formula is equivalent to a \$7 margin under the Senate formula. This means that if a farmer wants to protect against the kind of low that occurred in 2006, he would need \$7.50 coverage, not \$6.50 coverage, and pay a considerably higher premium to get it. In 2009, the House formula would have provided two more months of coverage at the \$4 level.

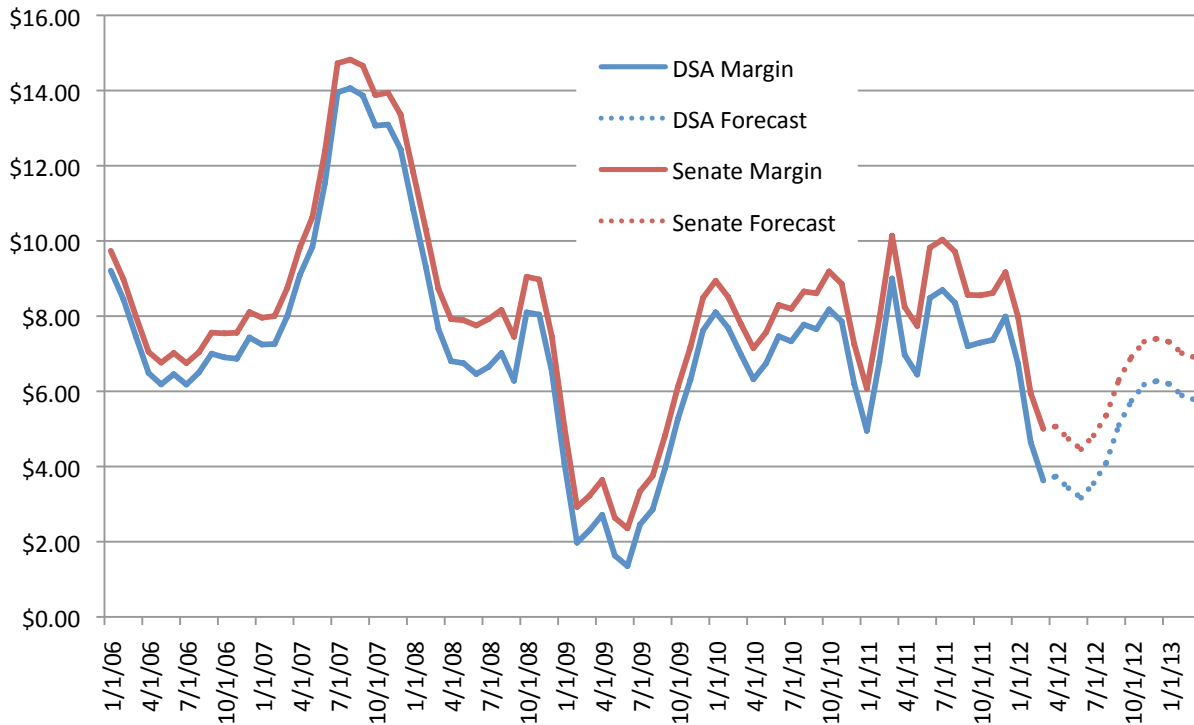
The second, and somewhat offsetting impact, is that the larger margin calculation does not trigger the Dairy Market Stabilization Program (DMSP) as often. It is \$1 harder to hit the \$6 2-month trigger or \$4 1-month trigger.

Figure 1 shows the DSA and the Senate Act's Margin calculation from 2006 through 2012. The March 2012 through February 2013 values are forecast from futures market values for milk, corn and soybean meal with estimates for hay prices from the corn and soybean meal values.

Different from the DSA, the Senate Act also allows producers to make annual decisions on the level of supplemental insurance, and what had been an optional growth provision in the historic production base of the DSA is now an automatically updated annual production history.

The DSA had a "relief valve" or "exit trigger" which would suspend the DMSP allowing milk prices to fall to market clearing levels if the U.S. price of cheddar cheese or nonfat dry milk was more than 20% above international levels for comparable products. The Senate version also has a world price exit trigger, but the magnitude of the difference with world prices is smaller and varies with the depth of the margin (0%, 5% or 7%).

Figure 1. Calculated Margins Under the Senate Act and the DSA.



What is Modeled

Four different farm sizes are modeled:

1. a small farm with beginning farm size of 100 cows
2. a medium farm with beginning farm size of 250 cows
3. a large farm with beginning farm size of 500 cows
4. an extra large farm with beginning farm size of 1,000 cows

These farms are modeled from January 2007 through December of 2012. Historic base milk production is simulated for these farms at the 2006 average level of 19,500 pounds of milk per cow. (For this illustration, we assume marketings equals production.) Individual farm milk production grows over the years at the observed, US average, compound annual growth rate of 5.21% per year. Each year, a new annual production history is calculated equal to the previous year's level of milk production for supplemental margin insurance purchases. Although the Senate version would allow producers to make an annual decision about the level of supplemental insurance, a simplifying assumption is made that the same level is purchased each year.

Coverage Levels, Stabilization Reductions, and Frequency

During the January 2007 through December 2012 time period, there would have been 16 months in which the stabilization program would have been invoked: 9 months at the level below \$4, 5 months between \$4 and \$5, and 2 months between the \$5 and \$6 level. However, for 2 months in 2009, the DMSP could have been suspended because of the difference in international prices. The DMSP would have been active about 19% of the time.

Table 1 summarizes the coverage levels from basic (the \$4.00 level) and the supplemental insurance levels in 50 cent increments up to an \$8.00 margin. It also shows the percent of months that an indemnity payment would have been made from January 2007 through December 2012.

The free \$4.00 coverage is only provided at one amount - 80% of a producer's Basic Production History (BPH) which is the highest annual average production of the 3 years prior to enactment of the bill. For supplemental coverage levels, producers choose a margin level to cover and the percent of the Annual Production History (APH) which is the average of the previous calendar year's production. The choice may be made between 25% to 90% of the APH. So, for example, if a producer elects \$5.50 supplemental insurance at the 50% level, then the APH is multiplied by 50% and he would pay a premium of 3.5¢ per cwt. on the first 4 million pounds of the covered APH and 10¢ on any covered APH above 4 million.

Table 1. Margin Protection Levels, Premiums and Indemnities.

Margin Covered	1st Tier Premium	2nd Tier Premium	Frequency of Indemnity Payments
\$4.00	\$0.000	\$0.000	9.46%
\$4.50	\$0.010	\$0.020	10.81%
\$5.00	\$0.020	\$0.040	14.86%
\$5.50	\$0.035	\$0.100	20.27%
\$6.00	\$0.045	\$0.150	21.62%
\$6.50	\$0.090	\$0.290	22.97%
\$7.00	\$0.400	\$0.620	28.38%
\$7.50	\$0.600	\$0.830	36.49%
\$8.00	\$0.950	\$1.060	48.65%

Table 2 shows the coverage levels and the amount of indemnity that would have been paid in each month over that period. Indemnities are paid on 80% of Basic Production History and the percentage of Annual Production History that is elected each year. The table also shows in which months the DMSP program would have triggered and at which levels of reduction.

Table 2. Monthly Indemnity Payments at Various Coverage Levels and DMSP Reductions.

Coverage:	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	Reduced Payment
Jan-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.17	0%
Feb-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Mar-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.02	0%
Apr-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
May-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jun-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jul-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Aug-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Sep-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Oct-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Nov-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Dec-07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jan-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Feb-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Mar-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Apr-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
May-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jun-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.09	0%
Jul-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.18	0%
Aug-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.16	0%
Sep-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Oct-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.19	0%
Nov-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Dec-08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jan-09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Feb-09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.24	\$0.74	\$1.24	\$1.74	0%
Mar-09	\$0.01	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	4%
Apr-09	\$0.92	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	4%
May-09	\$0.57	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	0% *
Jun-09	\$0.86	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	0% *
Jul-09	\$1.50	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	4%
Aug-09	\$1.15	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	4%
Sep-09	\$0.45	\$0.50	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	4%
Oct-09	\$0.00	\$0.20	\$0.70	\$1.20	\$1.70	\$2.20	\$2.70	\$3.20	\$3.70	4%
Nov-09	\$0.00	\$0.00	\$0.00	\$0.02	\$0.52	\$1.02	\$1.52	\$2.02	\$2.52	4%
Dec-09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.35	\$0.85	\$1.35	0%
Jan-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.17	0%
Feb-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Mar-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Apr-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
May-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.03	\$0.53	0%
Jun-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.14	\$0.64	0%
Jul-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.07	0%
Aug-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Sep-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Oct-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Nov-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Dec-10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%

* DMSP suspended because the domestic cheese price is more than 7% above the AMS Market News reported international price for Oceania.

Table 2. Monthly Indemnity Payments at Various Coverage Levels and DMSP Reductions.
(cont.)

Coverage:	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	Reduced Payment
Jan-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Feb-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.34	\$0.84	\$1.34	0%
Mar-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.49	\$0.99	0%
Apr-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
May-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jun-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	0%
Jul-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Aug-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Sep-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Oct-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Nov-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Dec-11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Jan-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Feb-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%
Mar-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.04	\$0.54	\$1.04	0%
Apr-12	\$0.00	\$0.00	\$0.00	\$0.02	\$0.52	\$1.02	\$1.52	\$2.02	\$2.52	2%
May-12	\$0.00	\$0.00	\$0.00	\$0.46	\$0.96	\$1.46	\$1.96	\$2.46	\$2.96	2%
Jun-12	\$0.00	\$0.00	\$0.10	\$0.60	\$1.10	\$1.60	\$2.10	\$2.60	\$3.10	3%
Jul-12	\$0.00	\$0.00	\$0.40	\$0.90	\$1.40	\$1.90	\$2.40	\$2.90	\$3.40	3%
Aug-12	\$0.00	\$0.00	\$0.36	\$0.86	\$1.36	\$1.86	\$2.36	\$2.86	\$3.36	3%
Sep-12	\$0.00	\$0.00	\$0.00	\$0.40	\$0.90	\$1.40	\$1.90	\$2.40	\$2.90	3%
Oct-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.16	\$0.66	\$1.16	\$1.66	\$2.16	3%
Nov-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.39	\$0.89	\$1.39	0%
Dec-12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.38	\$0.88	0%
Jan-13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.14	\$0.64	0%
Feb-13	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.14	\$0.64	0%

Over the study time period, the Basic, \$4 level of coverage was only triggered during the downturn in 2009. It would have paid as much as \$1.50 per hundredweight in July 2009. This level of coverage can be truly described as catastrophic coverage, an event that is severe, widespread, and infrequent. In a recent analysis by Brown,⁵ the Senate margin was calculated going back to January 1980. In this 32 year period, the only time it fell below \$5 per cwt was in 2009.

For supplemental coverage levels, producers choose a margin level to cover and a percent between 25% to 90% of the APH. So, for example, if a producer had elected for \$5.50 supplemental insurance on 50% of his APH, then in September, 2009, the producer would have been paid 45¢ per hundredweight on 80% of their BPH and an additional \$1.50 on 50% of his APH. Under the forecast for September 2012, he would be paid 40¢ per hundredweight on 50% of his APH.

⁵ Scott Brown, *The Effects of a Modified Dairy Security Act of 2011 on Dairy Markets*, Food and Agricultural Policy Research Institute, University of Missouri, April 2012

Table 3. Summary of Representative Farm Sizes at Various Margin Protection, 25% of SPH Coverage.

	Senate Coverage	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00
	1st tier Premium	\$0.000	\$0.010	\$0.020	\$0.035	\$0.045	\$0.090	\$0.400	\$0.600	\$0.950
	2nd tier Premium	\$0.000	\$0.020	\$0.040	\$0.100	\$0.150	\$0.290	\$0.620	\$0.830	\$1.060
Premiums	Small Farm	\$0	\$361	\$723	\$1,265	\$1,627	\$3,253	\$14,459	\$21,689	\$34,340
	Medium Farm	\$0	\$904	\$1,807	\$3,163	\$4,067	\$8,133	\$36,148	\$54,222	\$85,851
	Large Farm	\$0	\$1,807	\$3,615	\$6,326	\$8,133	\$16,266	\$72,295	\$108,443	\$171,701
	Xlarge Farm	\$0	\$4,763	\$9,526	\$20,114	\$28,322	\$55,495	\$169,849	\$243,292	\$356,032
Indemnities	Small Farm	\$10,042	\$9,207	\$11,570	\$14,790	\$18,663	\$22,836	\$27,708	\$33,761	\$41,176
	Medium Farm	\$25,106	\$23,017	\$28,926	\$36,976	\$46,657	\$57,091	\$69,270	\$84,402	\$102,941
	Large Farm	\$50,212	\$46,034	\$57,851	\$73,952	\$93,314	\$114,181	\$138,539	\$168,803	\$205,882
	Xlarge Farm	\$100,424	\$92,068	\$115,703	\$147,903	\$186,629	\$228,362	\$277,078	\$337,607	\$411,764
Net Payments	Small Farm	\$10,042	\$8,845	\$10,847	\$13,525	\$17,036	\$19,583	\$13,249	\$12,072	\$6,836
	Medium Farm	\$25,106	\$22,113	\$27,118	\$33,813	\$42,591	\$48,957	\$33,122	\$30,180	\$17,090
	Large Farm	\$50,212	\$44,227	\$54,237	\$67,626	\$85,181	\$97,915	\$66,244	\$60,360	\$34,181
	Xlarge Farm	\$100,424	\$87,305	\$106,177	\$127,789	\$158,307	\$172,867	\$107,229	\$94,314	\$55,732
Milk Loss	Small Farm	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746
	Medium Farm	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366
	Large Farm	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732
	Xlarge Farm	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465
Net Revenue	Small Farm	-\$3,704	-\$4,901	-\$2,899	-\$221	\$3,290	\$5,836	-\$498	-\$1,674	-\$6,910
	Medium Farm	-\$9,260	-\$12,253	-\$7,248	-\$553	\$8,224	\$14,591	-\$1,244	-\$4,186	-\$17,276
	Large Farm	-\$18,520	-\$24,506	-\$14,496	-\$1,106	\$16,449	\$29,182	-\$2,489	-\$8,372	-\$34,552
	Xlarge Farm	-\$37,041	-\$50,159	-\$31,288	-\$9,675	\$20,843	\$35,403	-\$30,235	-\$43,150	-\$81,732
Net Revenue / cwt	Small Farm	-\$0.02	-\$0.03	-\$0.02	\$0.00	\$0.02	\$0.04	\$0.00	-\$0.01	-\$0.05
	Medium Farm	-\$0.02	-\$0.03	-\$0.02	\$0.00	\$0.02	\$0.04	\$0.00	-\$0.01	-\$0.05
	Large Farm	-\$0.02	-\$0.03	-\$0.02	\$0.00	\$0.02	\$0.04	\$0.00	-\$0.01	-\$0.05
	Xlarge Farm	-\$0.02	-\$0.03	-\$0.02	-\$0.01	\$0.01	\$0.02	-\$0.02	-\$0.03	-\$0.05
Feed Savings	Small Farm	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014
	Medium Farm	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536
	Large Farm	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071
	Xlarge Farm	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143
Net Total	Small Farm	\$5,310	\$4,113	\$6,115	\$8,793	\$12,304	\$14,851	\$8,517	\$7,340	\$2,104
	Medium Farm	\$13,276	\$10,283	\$15,288	\$21,983	\$30,760	\$37,127	\$21,291	\$18,350	\$5,260
	Large Farm	\$26,551	\$20,566	\$30,576	\$43,965	\$61,520	\$74,254	\$42,583	\$36,700	\$10,520
	Xlarge Farm	\$53,102	\$39,984	\$58,855	\$80,467	\$110,986	\$125,546	\$59,908	\$46,993	\$8,411
Net Total / cwt	Small Farm	\$0.03	\$0.03	\$0.04	\$0.06	\$0.08	\$0.10	\$0.06	\$0.05	\$0.01
	Medium Farm	\$0.03	\$0.03	\$0.04	\$0.06	\$0.08	\$0.10	\$0.06	\$0.05	\$0.01
	Large Farm	\$0.03	\$0.03	\$0.04	\$0.06	\$0.08	\$0.10	\$0.06	\$0.05	\$0.01
	Xlarge Farm	\$0.03	\$0.03	\$0.04	\$0.05	\$0.07	\$0.08	\$0.04	\$0.03	\$0.01

Table 4. Summary of Representative Farm Sizes at Various Margin Protection, 90% of SPH Coverage.

	Senate Coverage	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00
	1st tier Premium	\$0.000	\$0.010	\$0.020	\$0.035	\$0.045	\$0.090	\$0.400	\$0.600	\$0.950
	2nd tier Premium	\$0.000	\$0.020	\$0.040	\$0.100	\$0.150	\$0.290	\$0.620	\$0.830	\$1.060
Premiums	Small Farm	\$0	\$1,301	\$2,603	\$4,555	\$5,856	\$11,712	\$52,053	\$78,079	\$123,625
	Medium Farm	\$0	\$4,040	\$8,080	\$16,500	\$22,899	\$45,012	\$147,437	\$213,290	\$317,715
	Large Farm	\$0	\$10,546	\$21,093	\$49,032	\$71,699	\$139,358	\$349,141	\$483,313	\$662,564
	Xlarge Farm	\$0	\$23,560	\$47,119	\$114,098	\$169,297	\$328,048	\$752,549	\$1,023,359	\$1,352,262
Indemnities	Small Farm	\$16,765	\$13,757	\$22,265	\$33,858	\$47,799	\$62,823	\$80,360	\$102,151	\$128,848
	Medium Farm	\$41,912	\$34,392	\$55,663	\$84,644	\$119,497	\$157,057	\$200,901	\$255,377	\$322,119
	Large Farm	\$83,824	\$68,785	\$111,327	\$169,288	\$238,993	\$314,114	\$401,802	\$510,754	\$644,238
	Xlarge Farm	\$167,649	\$137,569	\$222,653	\$338,576	\$477,987	\$628,228	\$803,605	\$1,021,508	\$1,288,475
Net Payments	Small Farm	\$16,765	\$12,456	\$19,663	\$29,303	\$41,943	\$51,111	\$28,308	\$24,072	\$5,223
	Medium Farm	\$41,912	\$30,352	\$47,583	\$68,144	\$96,597	\$112,045	\$53,464	\$42,087	\$4,403
	Large Farm	\$83,824	\$58,238	\$90,234	\$120,256	\$167,295	\$174,756	\$52,661	\$27,441	-\$18,326
	Xlarge Farm	\$167,649	\$114,010	\$175,534	\$224,478	\$308,690	\$300,180	\$51,055	-\$1,851	-\$63,786
Milk Loss	Small Farm	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746	-\$13,746
	Medium Farm	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366	-\$34,366
	Large Farm	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732	-\$68,732
	Xlarge Farm	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465	-\$137,465
Net Revenue	Small Farm	\$3,018	-\$1,291	\$5,916	\$15,557	\$28,196	\$37,364	\$14,561	\$10,325	-\$8,524
	Medium Farm	\$7,546	-\$4,014	\$13,217	\$33,778	\$62,231	\$77,679	\$19,098	\$7,721	-\$29,963
	Large Farm	\$15,092	-\$10,494	\$21,501	\$51,523	\$98,562	\$106,024	-\$16,071	-\$41,291	-\$87,059
	Xlarge Farm	\$30,184	-\$23,455	\$38,069	\$87,013	\$171,225	\$162,715	-\$86,409	-\$139,316	-\$201,251
Net Revenue / cwt	Small Farm	\$0.02	-\$0.01	\$0.04	\$0.10	\$0.18	\$0.25	\$0.10	\$0.07	-\$0.06
	Medium Farm	\$0.02	-\$0.01	\$0.03	\$0.09	\$0.16	\$0.20	\$0.05	\$0.02	-\$0.08
	Large Farm	\$0.02	-\$0.01	\$0.03	\$0.07	\$0.13	\$0.14	-\$0.02	-\$0.05	-\$0.11
	Xlarge Farm	\$0.02	-\$0.02	\$0.02	\$0.06	\$0.11	\$0.11	-\$0.06	-\$0.09	-\$0.13
Feed Savings	Small Farm	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014	\$9,014
	Medium Farm	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536	\$22,536
	Large Farm	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071	\$45,071
	Xlarge Farm	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143	\$90,143
Net Total	Small Farm	\$12,033	\$7,723	\$14,931	\$24,571	\$37,211	\$46,379	\$23,576	\$19,340	\$490
	Medium Farm	\$30,082	\$18,522	\$35,753	\$56,314	\$84,767	\$100,214	\$41,633	\$30,257	-\$7,427
	Large Farm	\$60,164	\$34,577	\$66,573	\$96,595	\$143,634	\$151,096	\$29,000	\$3,780	-\$41,987
	Xlarge Farm	\$120,327	\$66,688	\$128,212	\$177,156	\$261,368	\$252,858	\$3,734	-\$49,173	-\$111,108
Net Total / cwt	Small Farm	\$0.08	\$0.05	\$0.10	\$0.16	\$0.24	\$0.30	\$0.15	\$0.13	\$0.00
	Medium Farm	\$0.08	\$0.05	\$0.09	\$0.15	\$0.22	\$0.26	\$0.11	\$0.08	-\$0.02
	Large Farm	\$0.08	\$0.05	\$0.09	\$0.13	\$0.19	\$0.20	\$0.04	\$0.00	-\$0.06
	Xlarge Farm	\$0.08	\$0.04	\$0.08	\$0.12	\$0.17	\$0.17	\$0.00	-\$0.03	-\$0.07

Tables 3 and 4 are summary tables for the four farm sizes at the 9 margin levels and at a 25% APH and 90% APH respectively. Remember, the percent of coverage can be at any level between 25-90% of APH; so these two extreme levels are shown for comparison of the minimum and the maximum.

Tables 3 and 4 display information blocks with totals or per hundredweight averages over the 5 years from 2007 through 2012. The first block shows the DPMPP premiums that would have been paid over the 5 years. The premiums include the first tier of premiums up to 4 million pounds of APH and the second tier premiums paid above that level.

The second block shows the total indemnity payments that would have been received at the various margin protections. The months and levels of those payments can be seen in Table 2. The third block shows net payments, that is the indemnities received minus the premiums paid.

Because participation in the DPMPP obligates farms to the DMSP, the fourth block shows the revenue foregone by the reduced payment percentages also shown in Table 2. The hundredweight of foregone milk sales are multiplied by the average all milk price in the same month as the reduction occurs. The Net Revenue block is the Net Payments minus the Milk Loss. The Net Revenue / cwt. is the Net Revenue block divided by the total milk production.

Farms may continue marketing all of their milk. The penalty of the DMSP is to limit the amount of milk for which a handler must pay a producer. Any milk that a producer delivers above that amount may be received by the handler, who in turn can use it as she sees fit. Payment for that overage, or “penalty milk” is made to the USDA at a value equal to the value paid by the handler for non-penalty milk.⁶

The Feed Savings block recognizes that farmers may choose to reduce production and thereby reduce their variable costs. They might cull cows from their herd; they might dry cows off earlier or reduce feed on end of lactation cows to reduce milk production. If they follow one of the milk reduction strategies they would save some of their variable costs of production—at least the feed costs. The Feed Savings block takes the value of the ration used in calculating the margin for that month multiplied by the hundredweight of milk reduced.

The Net Total is the Net Revenue minus the Feed Savings and this value is shown in the final block on a per hundredweight basis.

⁶ *Farmers will not receive payment on more than 94-98% of their stabilization program base, unless their actual marketings are about 4.3% more than their base. In this case, the foregone revenue calculated above could be even greater*

Observations

Because the premium levels are so high, it is unlikely that farms will purchase supplemental insurance at the \$7.00, \$7.50 or \$8.00 levels of margin protection. The net payments (indemnities minus premiums paid) are less, or even negative, at these levels than at \$6.00 to \$6.50 levels of coverage. When considering the lost revenue from milk not sold, the no-cost basic and lowest levels of supplemental insurance are probably not rational choices for the producer. The \$6.00 to \$6.50 levels of protection probably represent the “sweet spot” for participating producers – the best combination of cost and benefit.

It is important to understand that opting for a \$6.50 level of coverage does not put a \$6.50 floor under each producer’s margin, for several reasons. First of all, the margin calculation is designed to be a national indicator of farm performance under various market conditions. Every individual farm will have a different margin due to their unique incomes and costs of production. It is expected that these different margins will go up and down more or less similarly, but there is no guarantee that this is always true or true for every farm situation.

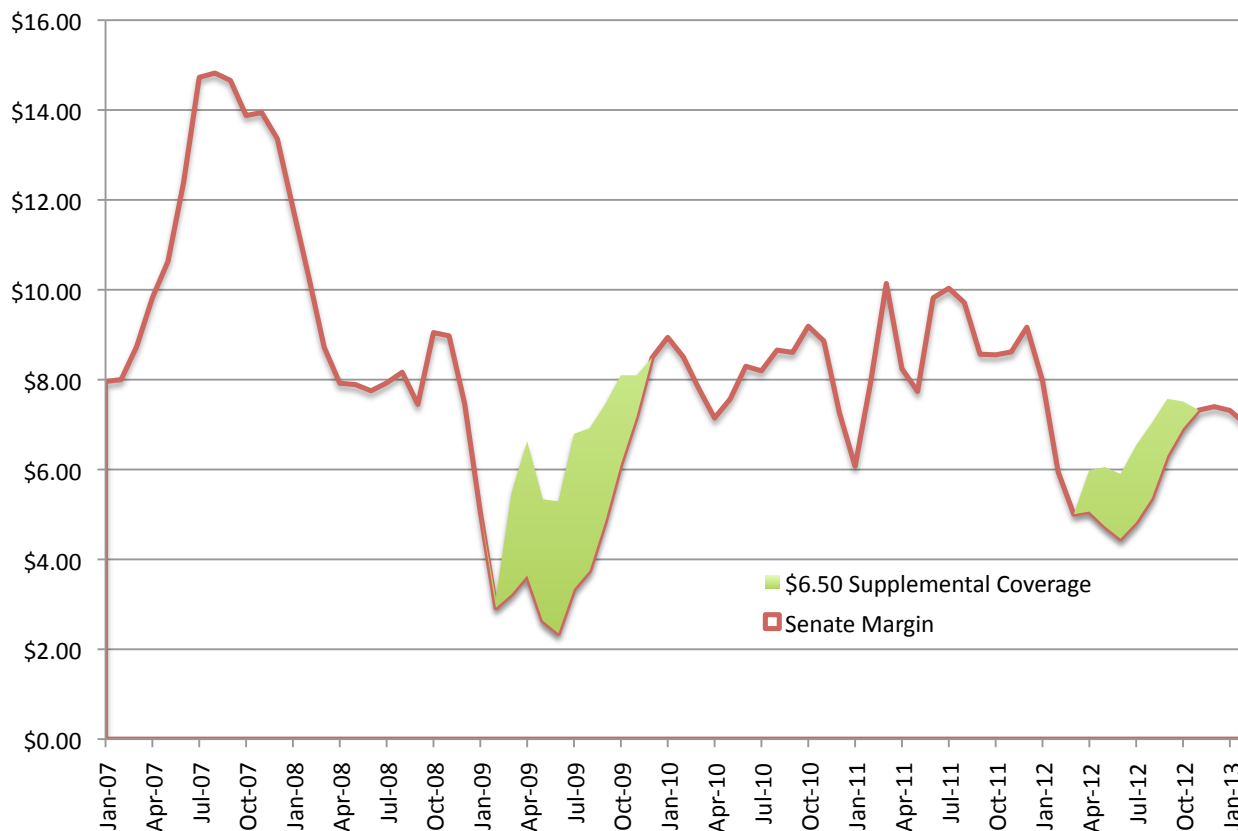
Second, a producer can only protect a portion of his actual milk marketings. Unless a farm has a very odd pattern of milk marketings, 80% of the Basic Production History will be less than actual current marketings. It’s a bit more likely that some farms may have actual marketings at or near 90% of their Annual Production History, but even that is more likely to be the exception than the norm.

Third, there are lags between when margins can be calculated, indemnities paid and when producers actually experience the margin reduction.

And fourth, the value of lost sales of milk, even with the feed savings, must be factored into the calculations.

Figure 2 shows the net total contributions to the calculated Senate Act margins at the \$6.50 level of coverage. It is clear that there is a notable impact during the catastrophic events of 2009. In 2012, which is shaping up to be the second worst year of the young century, the magnitude of the net benefit for farmers who buy up to the \$6.50 level is more subtle.

Figure 2. Senate Margin Calculations and Net Total Contributions. with a \$6.50 Supplemental Coverage on 90% of Annual Production History.



Conclusions

These calculations show what might have been from 2007 to 2012 had the Senate Act been in place and there were no changes in producer marketings or milk prices. Arguably, this presents the impacts of this policy under a favorable scenario. Earlier modeling of the DSA shows that participation rates make a significant difference.⁷ Low levels of participation would have generated margins very much like those calculated in this paper. However, the reductions in payments would have fallen on the few producers who did choose to participate. With 100% participation, earlier modeling shows a large reduction of margin volatility and little impact on long-run average prices. Under higher levels of participation, perhaps as much as 50% of production, the previous modeling suggests even more reduction in margin volatility but a lower average milk price as non-participants take more complete advantage of growth opportunities.

Whether one judges new dairy policy as “good or bad” for the industry, it is unavoidably true that they will impact producers differently. Dairy farmers, processors and policy makers should thoughtfully consider expected outcomes and recognize that different farmers will have different experiences and that there will be both intended and unintended consequences.

⁷ Nicholson and Stephenson