



Dairy Outlook

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Market Psychology

The Class III market has taken a beating lately as cheese prices have drifted down and dry whey prices remain in the doldrums. Block cheese futures are 6.5% lower than a month ago at \$1.58/lb. and dry whey is up little, but still less than half its value of a year ago. Class IV is doing better with butter up 5.5%, although skim milk powder is down 6.6%. Butter was above \$2.90 for a while, but has dropped to \$2.84 in the past week. Of course, the holiday season is underway, but anything that will be purchased for the holidays is now in the stores or in transit, so the seasonal surge is mostly behind us. New Zealand's milk production is about the same as last year, but its dairy export markets are weak. The U.S. dollar has fallen slightly compared to the currencies of competing dairy exporters, but the dollar is still strong enough to make our products relatively more expensive on world markets. The biggest challenge on the export front is fewer purchases by buyers by some traditional big customers, especially China and Russia. The continuing high currency values make U.S. dairy exports less competitive with the other dairy exporting countries. Skim milk powder exports have been good in volume, but not in value. Cheese exports and especially butter exports are well below last year. Overall, the volume of exports has held up better than the value because milk prices have fallen so far.

Table 1 lists some past and estimated future milk prices. I estimate the Pennsylvania November all-milk price to be \$19.40/cwt, unchanged from October and the December price to be \$18.59. The dairy futures market prices show considerably lower prices for Class III for the next few months, before rising a bit in late spring. They average \$15.05/cwt. from December 2015 until June 2016. The Class IV futures prices average is expected to drop in January and then rise somewhat in 2016, although not very much. The November Class IV price was up



\$0.56/cwt. from October at \$16.89/cwt., reflecting the butter rally. My forecast for the average Pennsylvania all-milk price for the next seven months is \$18.36/cwt., up somewhat from most of 2015.

Corn and Soybean Markets

Soybean markets have increased a little with the EPA increasing the renewable fuel mandate for biodiesel. The corn market has dropped a bit. The EPA ruling on ethanol in fuel was insignificant, and these days corn production has increased enough that ethanol no longer drives corn prices.

Income over Feed Costs (IOFC)

Penn State's measure of income over feed costs fell by 5.2% in November, as feed prices rose and milk prices stayed the same. Figure 1 shows how these values compare to recent years. November's feed cost is 39¢/cow/day more than in September. November's value for IOFC of \$7.13/cow/day is the lowest since summer. Income over feed cost reflects daily gross milk income less feed costs for an average cow producing 65 pounds of milk per day. Table 2 and Figure 1 showing the monthly data follow.

The allocation of the revenue per hundred pounds of milk (milk margin) is shown in Table 3. The milk margin is the estimated amount of the Pennsylvania all milk price that remains after feed costs per hundredweight of milk production are paid. Like income over feed cost, this measure shows that the November PA milk margin was 5.2% lower than in October.

Milk Production

The latest milk production report showed September milk production up 0.08% from a year earlier, and down from last month, as is typical for late autumn (Figure 2). This increase in milk production is minimal and the smallest increase of 2015. The Midwest continues to have substantial increases in milk production, while California continues to decrease production with its drought, and the Northeast is unchanged. The monthly cow numbers are shown in Figure 3. The October cow numbers rose by 0.3%, the smallest change of the year.

A Longer-run View: Chinese Milk Production

China has rapidly transformed its dairy industry. Historically, China produced very little milk and consumed very few dairy products. The population was traditionally lactose intolerant. In the mid 1990s, the Chinese government pursued a policy of increasing milk production. Recently, children have consumed more milk and they can tolerate lactose better than their parents. Increased consumption led to increased production, with many farms, including a few very large ones. Nevertheless, most farms had only a few cows. The smaller farms had higher costs. After the 2008 melamine scandal undermined confidence in the domestic industry, the market opened to international players. Large scale investment has led to an industry with a few very large farms, and many fewer small farms. The industry is mainly in the north and consumption is mainly in the south. Powdered products are much more important than in the United States or Europe. China is now the world's third largest milk producer, with some enormous farms. Its future as the world's largest dairy import market is certainly going to change. Figure 4 shows the growth in milk production.



Table 1. Milk Prices and Milk Futures Prices for 2015 and 2016
(Based on futures prices of December 7, 2015)

2015	Class III \$/cwt	Class IV \$/cwt	PA All Milk \$/cwt	2016	Class III \$/cwt	Class IV \$/cwt	PA All Milk \$/cwt
Jan	\$16.18	\$13.23	\$19.20	Jan	\$14.35	\$14.44	\$17.67
Feb	\$15.46	\$13.82	\$18.30	Feb	\$14.51	\$14.42	\$17.74
Mar	\$15.56	\$13.80	\$17.70	Mar	\$14.93	\$14.74	\$18.11
Apr	\$15.81	\$13.51	\$17.60	Apr	\$15.32	\$15.20	\$18.51
May	\$16.19	\$13.91	\$17.80	May	\$15.65	\$15.41	\$18.78
Jun	\$16.33	\$13.15	\$18.10	Jun	\$15.95	\$15.90	\$19.15
Jul	\$16.33	\$13.15	\$17.60	Jul			
Aug	\$16.27	\$12.90	\$17.60	Aug			
Sep	\$15.82	\$15.08	\$18.90	Sep			
Oct	\$15.46	\$16.43	\$19.40	Oct			
Nov	\$15.63	\$16.89	\$19.40	Nov			
Dec	\$14.62	\$16.34	\$18.59	Dec			
Annual	\$15.81	\$14.35	\$18.35	Annual	\$15.12	\$15.02	\$18.33
Annual change	-\$ 6.54	-\$ 7.74	-\$ 7.29	Annual change	-\$ 0.69	\$ 0.67	-\$ 0.02
% change	-29.3%	-35.0%	-28.4%	% change	-4.3%	4.7%	-0.1%

Table 2: PA Income over Feed Costs

Month	All Milk Price	Feed Cost per 65 lbs. Milk	Income over feed cost
Jan-14	\$24.90	\$4.90	\$11.29
Feb-14	\$25.90	\$5.00	\$11.84
Mar-14	\$26.70	\$5.15	\$12.20
Apr-14	\$26.80	\$5.62	\$11.80
May-14	\$26.20	\$5.60	\$11.43
Jun-14	\$25.10	\$5.34	\$10.97
Jul-14	\$25.40	\$4.75	\$11.76
Aug-14	\$26.30	\$4.54	\$12.56
Sep-14	\$27.40	\$4.80	\$13.01
Oct-14	\$26.10	\$4.84	\$12.13

Nov-14	\$24.30	\$4.91	\$10.89
Dec-14	\$22.60	\$5.14	\$9.55
Jan-15	\$19.20	\$5.24	\$7.24
Feb-15	\$18.30	\$5.12	\$6.78
Mar-15	\$17.70	\$5.17	\$6.34
Apr-15	\$17.60	\$5.15	\$6.29
May-15	\$17.80	\$4.90	\$6.67
Jun-15	18.100	\$5.10	\$6.67
Jul-15	\$17.60	\$5.14	\$6.30
Aug-15	\$17.60	\$4.67	\$6.77
Sep-15	\$18.90	\$4.77	\$7.52
Oct-15	\$19.40	\$5.09	\$7.52
Nov-15	\$19.40	\$5.48	\$7.13

Table 3: PA Milk Margin

	All milk price per cwt.	Feed cost per cwt.	Milk margin per cwt.
Jan-14	\$24.90	\$7.53	\$17.37
Feb-14	\$25.90	\$7.68	\$18.22
Mar-14	\$26.70	\$7.93	\$18.77
Apr-14	\$26.80	\$8.65	\$18.15
May-14	\$26.20	\$8.62	\$17.58
Jun-14	\$25.10	\$8.22	\$16.88
Jul-14	\$25.40	\$7.31	\$18.09
Aug-14	\$26.30	\$6.98	\$19.32
Sep-14	\$27.40	\$7.38	\$20.02
Oct-14	\$26.10	\$7.44	\$18.66
Nov-14	\$24.30	\$7.55	\$16.75
Dec-14	\$22.60	\$8.06	\$13.54
Jan-15	\$19.20	\$8.20	\$11.00
Feb-15	\$18.30	\$7.88	\$10.42
Mar-15	\$17.70	\$8.23	\$9.47
Apr-15	\$17.60	\$7.93	\$9.67
May-15	\$17.80	\$7.53	\$10.27
Jun-15	\$18.10	\$7.84	\$10.26
Jul-15	\$17.60	\$7.90	\$9.70
Aug-15	\$17.60	\$7.18	\$10.42
Sep-15	\$18.90	\$7.34	\$11.56
Oct-15	\$19.40	\$7.84	\$11.56
Nov-15	\$19.40	\$8.44	\$10.96

Figure 1: PA Dairy Income over feed cost

PA Dairy Income over Feed Cost

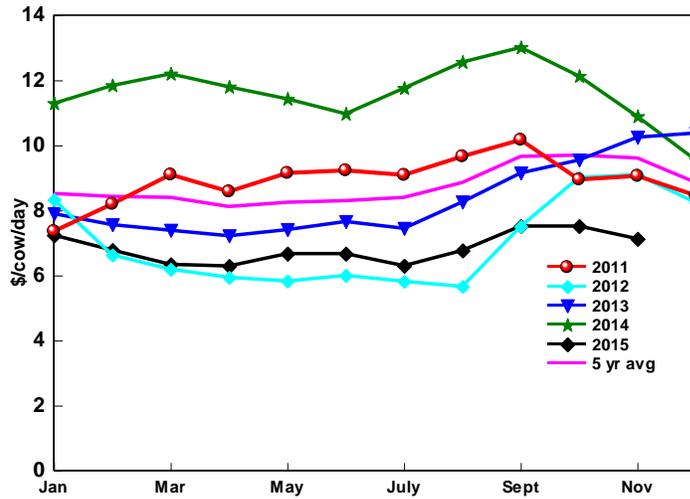


Figure 2: Milk Production

Monthly Milk Production 30 Day months

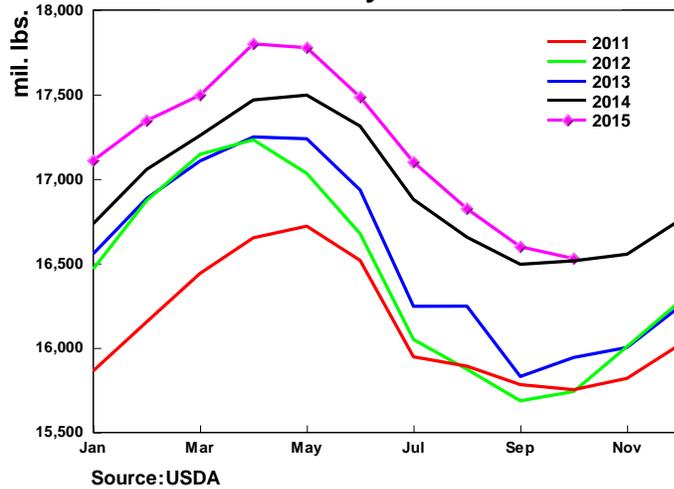


Figure 3: Dairy Cows

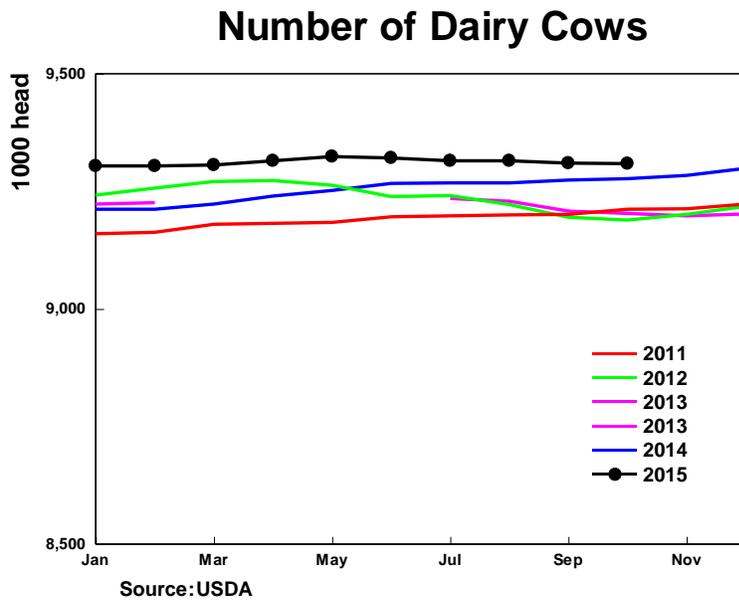


Figure 4: Chinese Milk Production Growth

