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The Changing Landscape of US Dairy

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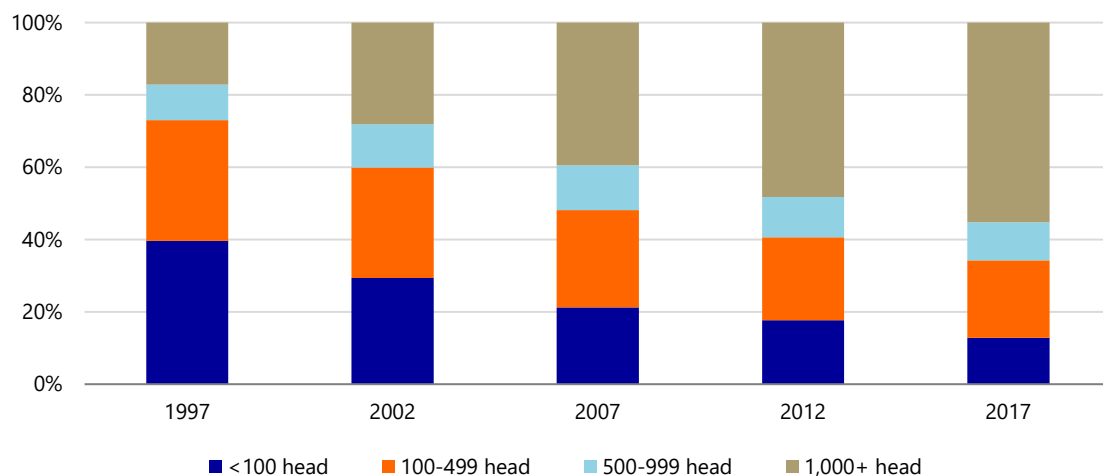
Introduction

Economies of scale are driving consolidation and expansion across the US dairy sector. A growing percentage of US milk is produced by larger farms in non-traditional dairy regions, and the way farms are managed is changing as the average farm size grows. However, the growing reliance on large-scale dairy production presents its own risks.

The US dairy industry continues to shift towards large-scale operations, improving its competitiveness in global commodity markets. Large-scale farms are also driving production increases in different areas than what might have once been considered the traditional dairy regions of the country. This has divided the industry along geographical lines and across various farm sizes, and will challenge smaller farms to alter their businesses to differentiate and to find innovative ways to manage costs.

According to the USDA's 2017 Census of Agriculture report, which is published every five years, most US milk cows (55%) reside on farms that milk over 1,000 cows. This is in contrast to twenty years earlier, when these operations accounted for less than 20% of the US dairy herd (see Figure 1). With limited opportunity to improve milk revenues during extended periods of subdued milk prices, farms have looked for opportunities to better their cost management to improve margins. Expanding to a larger scale has been one of the ways that farms have attempted to do that.

Figure 1: Percent of US milk cow inventory by farm size, 1997-2017



Source: USDA - NASS 2019

Several cost factors are impacted as scale increases. Large farms with 2,000 or more cows face reduced costs per hundredweight across the board when compared to smaller farms with 100 to 200 cows, according to USDA cost of production estimates. On a per hundredweight basis, large farms face 12% lower feed costs, 20% lower operating costs, and 45% lower allocated overhead than smaller operations.

Within these categories, purchased feed and hired labor are higher on large farms, by 48% and 36% respectively. However, the hired labor on large-scale farms would generally yield higher returns, with those salaries going toward more specialized roles and management. The heavier reliance on purchased feed among large-scale farms can reduce margin volatility when feed costs are contracted over long periods. Meanwhile, the savings that small farms realize on lower hired labor costs (USD 1.45/cwt vs. USD 1.97/cwt on large farms) are more than offset by the opportunity cost of unpaid labor (USD 4.15/cwt on small farms vs. USD 0.11/cwt on large farms). In addition to these cost reductions, large farms experience a 17% higher yield of milk per cow.

The majority of milk (58%) is produced on farms with more than 1,000 cows. As output shifts to larger farms, the average cost of production in the US is reduced. Since a greater share of total milk production has a lower breakeven cost and less sensitivity to low milk prices, lower prices are able to be sustained for longer periods of time without triggering a reduction in supply. Longer periods of low prices have led to increased pressure on smaller-scale dairies. In some cases, the added margin pressure on smaller farms in traditional dairy regions of the US, like the Upper Midwest and the Northeast, has fueled animosity toward large-scale farms, who may be viewed as forcing change on smaller multi-generation farms.

As the scale of milk production has shifted, so have the locations of milk production centers in the US. According to the USDA, there were 189 US dairy farms with over 5,000 cows in 2017. The average herd size among these operations is 7,400 cows, with the largest concentration in California and Idaho, each with 35 dairies in this size category, followed by Texas with 25 (see Table 1).

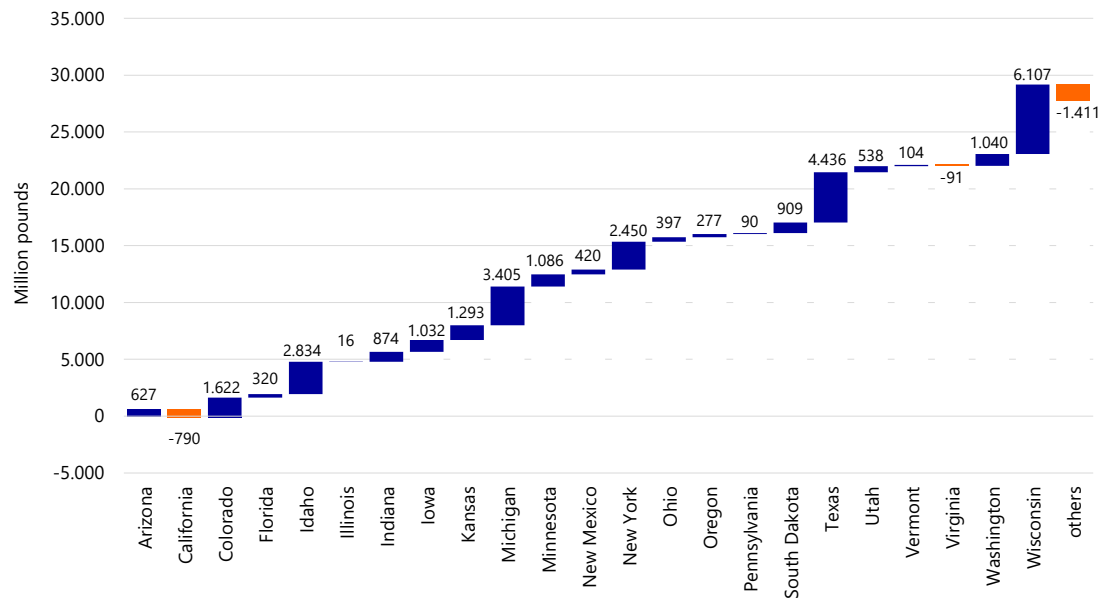
Table 1: Number of farms by milking herd size in select states

Milking Herd Size	20-99	100-499	500-999	1,000-2,500	2,500-4,999	5,000+
US	21060	10587	1511	1239	525	189
Arizona	7	8	9	23	17	12
California	52	311	296	390	163	35
Colorado	16	21	19	26	11	10
Idaho	110	141	58	61	27	35
Kansas	187	69	4	4	12	9
Minnesota	1960	887	63	41	3	8
Michigan	691	573	102	51	31	4
New Mexico	2	6	10	31	57	12
New York	2426	731	141	119	22	1
Texas	82	132	51	61	47	25
Utah	83	92	24	11	5	4
Washington	34	164	52	50	21	7
Wisconsin	4756	2459	281	133	30	9

Source: USDA - NASS 2019

Idaho and Texas both experienced substantial growth in milk production between 2008 and 2018, due in part to the expansion of large farms. California, meanwhile, experienced significant growth in the decade prior (1998 to 2008) but saw a decline over the most recent ten years – the result of a combination of water availability concerns and heightened labor regulations (see Figure 2).

Figure 2: Change in milk production, 2008-2018



Source: USDA - NASS 2019

The growth in reliance on large-scale dairy production is not without additional risks of its own. Recent activities by animal rights activists have heightened the awareness of the risks of relying too heavily on large-scale agriculture or too few suppliers. If there is consumer backlash against large-scale production in general, entire supply chains would face pressure to adjust. This could raise opportunities for smaller-scale specialty products to differentiate and obtain premium pricing, but such premiums would be at risk during a downturn in the domestic economy.

Regardless of the risks producers face, the way farms are managed will change as the average farm size grows. The technologies that are adopted to allow farms of various sizes to compete and optimize their margins will develop as well. Some of these technologies include robotics, which will help manage labor costs, and genomics, which will help optimize multiple revenue streams and manage heifer inventory. Regions that are more favorable to larger farms, whether due to land values, local regulations, or water availability, will continue to attract dairy operations and will be a determining factor in where processors build manufacturing plants in the years ahead.

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