Dairy Farms: Cost of Production

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CENTER FOR DAIRY PROFITABILITY

Outline

What are the cost of production ...

- Trends
- Comparing across states and sources
- Comparison across herd sizes
- Economies of scale
- Looking at drivers of profitability
- Income over feed cost(IOFC) and KPIs

Trends

Cost of production per hundredweight

Trends among large-scale dairies

Source: K. Minegishi, S. Lim, and S. Jette-Nantel
Data source: Genske, Mulder & Company

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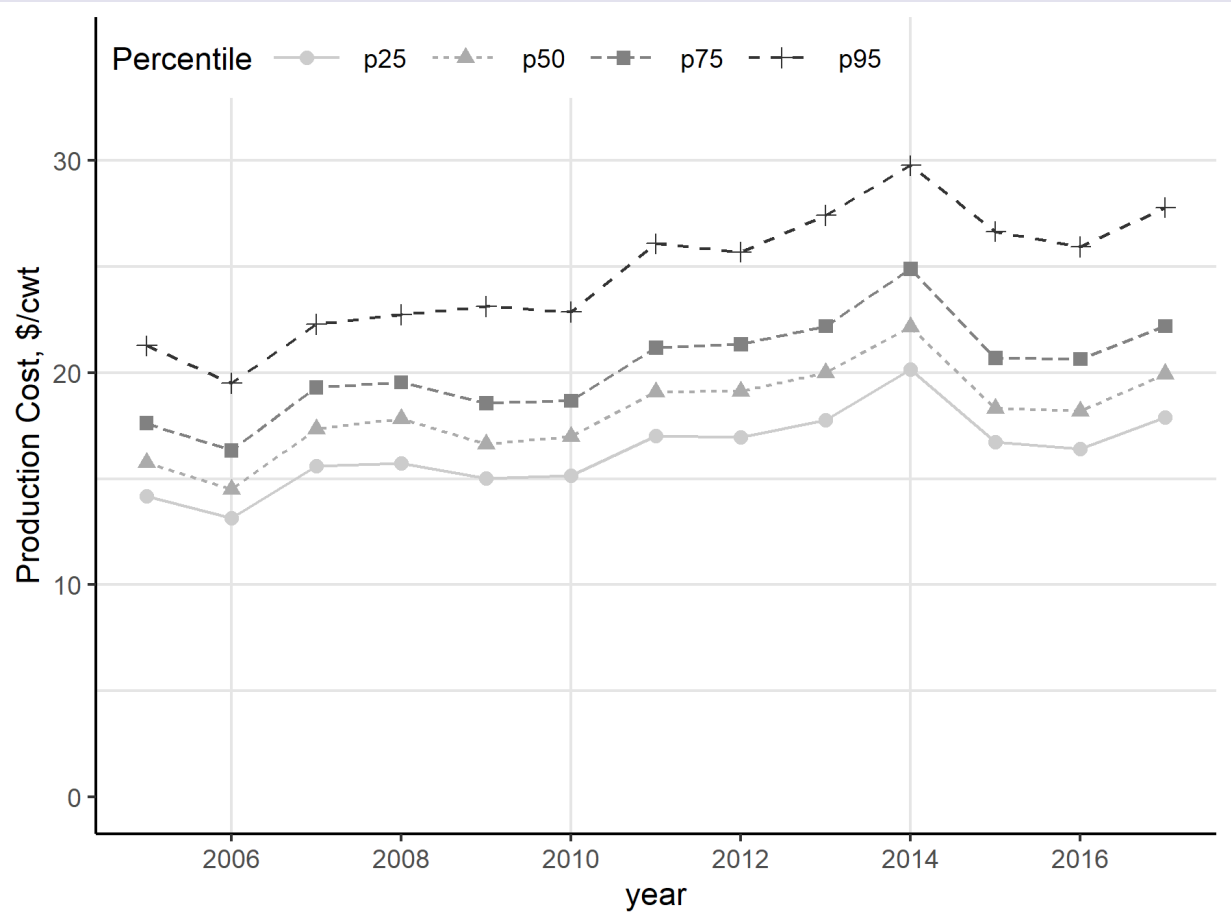
Cost per hundredweight - Wisconsin

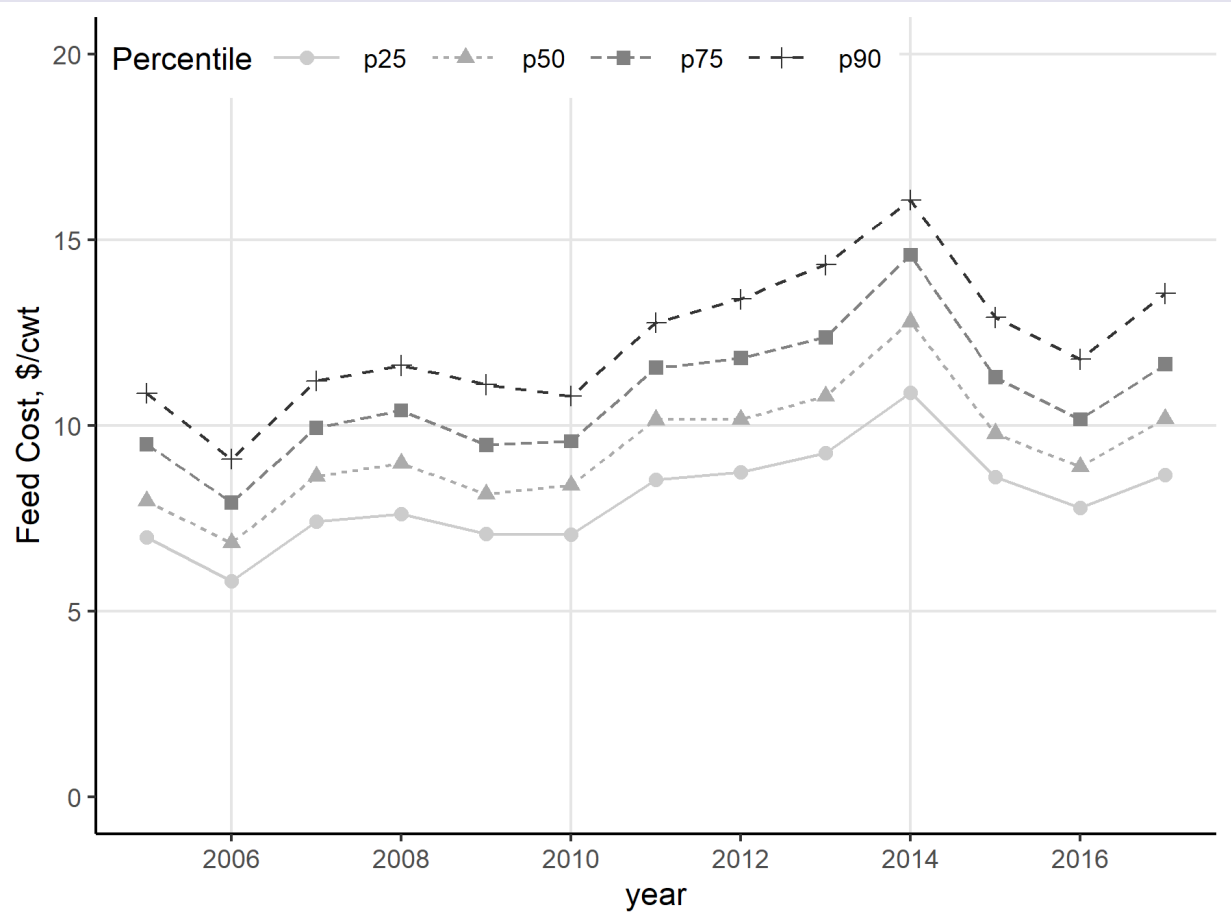
Total cost - WI dairy farms



Data source: UW-Center for Dairy Profitability

Breaking down cost structure

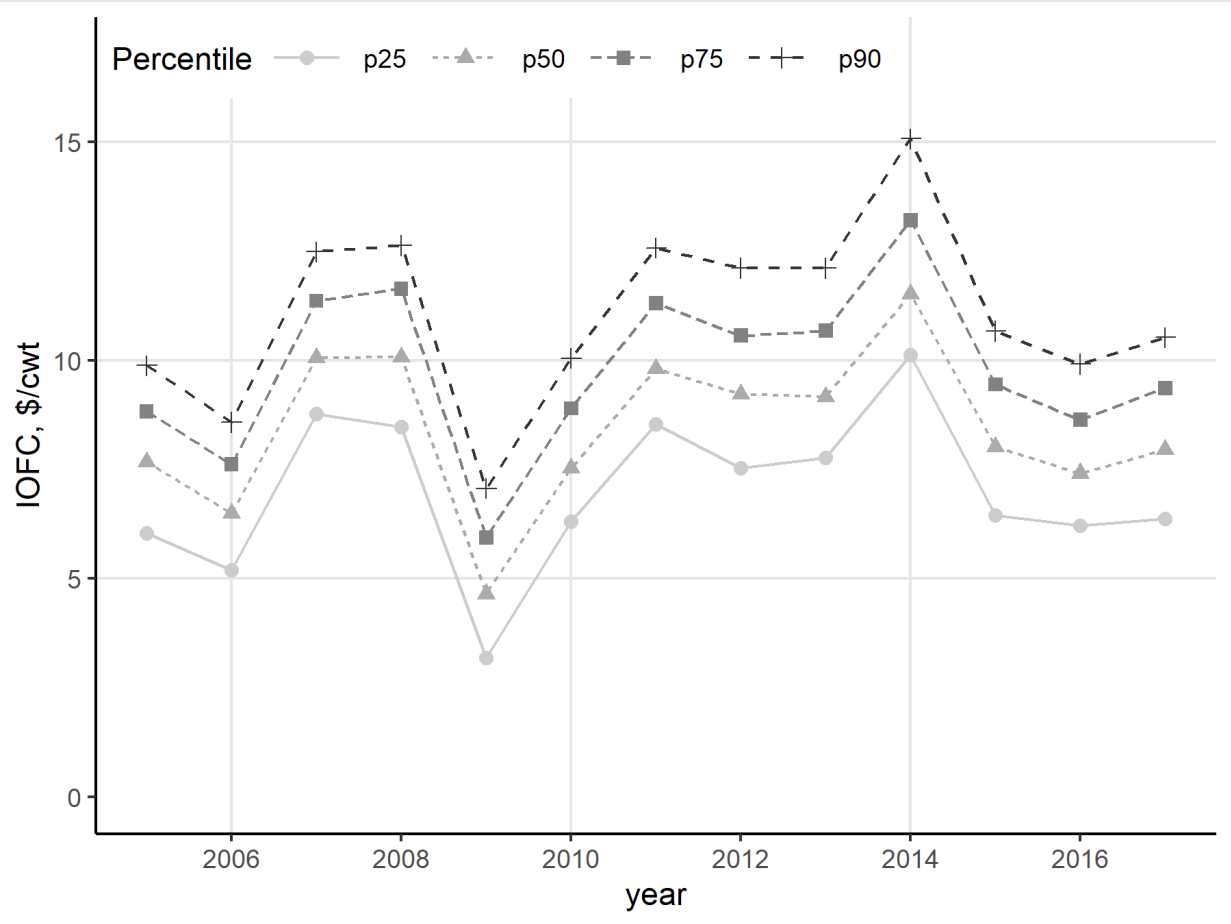
Feed cost - WI dairy farms



Data source: UW-Center for Dairy Profitability

Breaking down cost structure

Income over feed cost - WI dairy farms



Data source: UW-Center for Dairy Profitability

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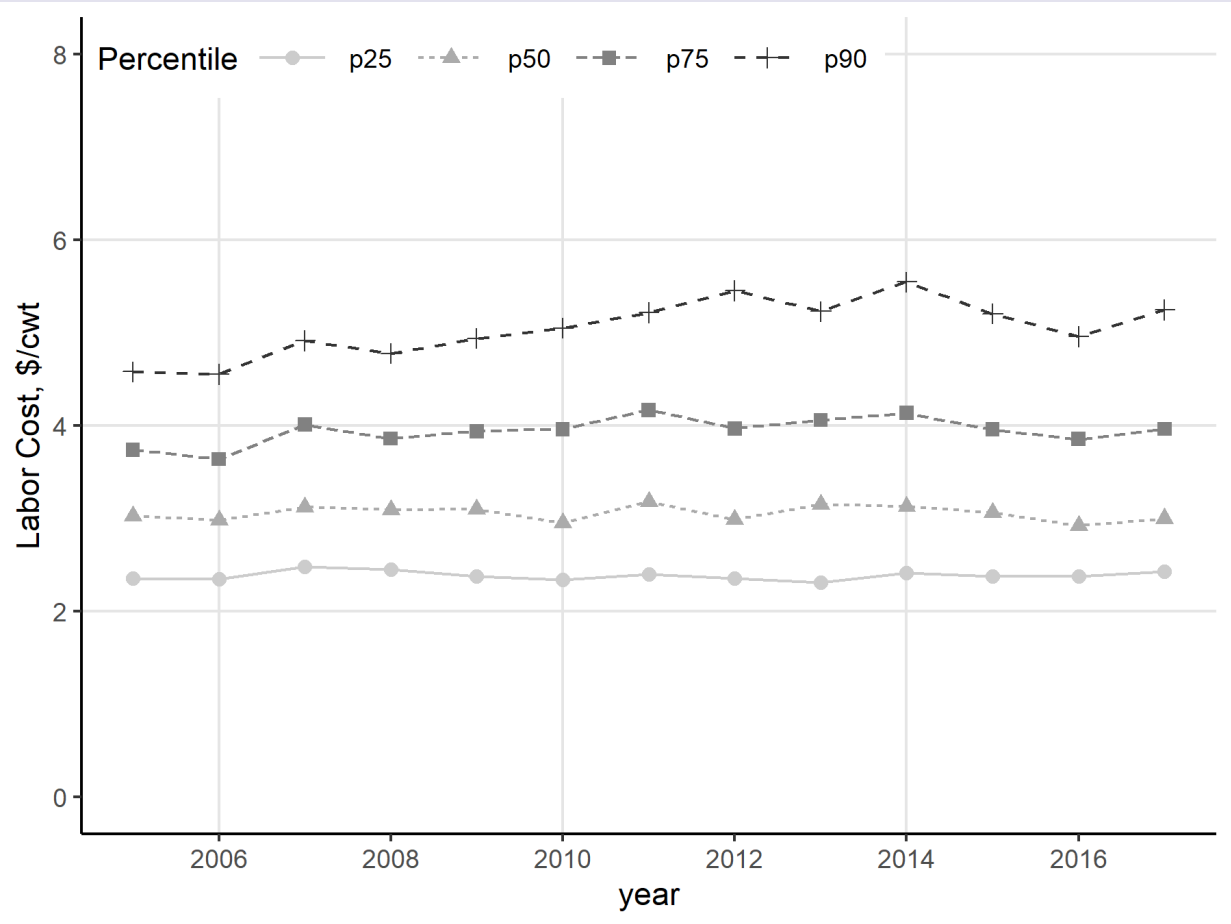
Breaking down cost structure

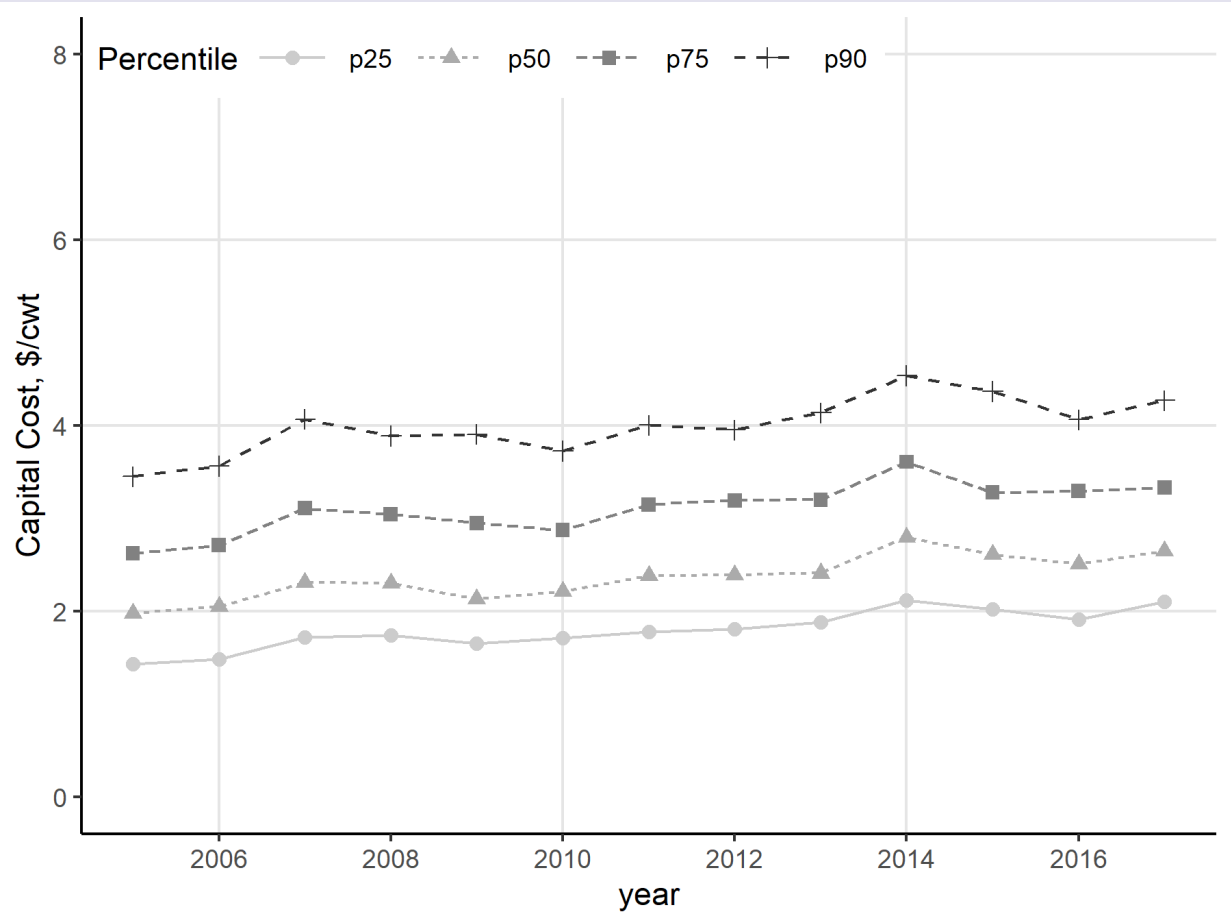
Labor cost - WI dairy farms



Data source: UW-Center for Dairy Profitability

Breaking down cost structure

Capital cost - WI dairy farms



Data source: UW-Center for Dairy Profitability

Comparisons by state and sources

Cost of production per hundredweight

Cost for various farm samples, 2017

	(1) CA	(2) ID	(3) WA	(4) TX	(5) Upper Midwest	(6) MN	(7) Top 20% MN[5]
Per hundredweight basis							
Income Over Feed Cost	7.99	8.41	9.26	9.12	10.14	9.92	10.98
Milk sales	16.51	17.21	17.83	17.26	18.31	17.62	18.09
Feed cost	8.52	8.80	8.57	8.14	8.17	7.79	7.20
Cost of dairy production[2]	15.43	16.18	16.31	15.72	17.56	16.33	14.36
Cost plus debt & draws[3]	16.91	17.23	17.16	16.42	18.84	-	-
Cost plus mgt charges[4]	-	-	-	-	-	17.08	15.23
Herd size	2,291	2,266	3,189	2,501	2,039	208	246
Milk, lb/cow/day	76	76	78	72	77	75	77
Butterfat	3.78%	3.81%	3.62%	3.78%	3.85%	-	-
Protein	-	3.11%	3.24%	3.24%	3.19%	-	-
Number of farms in sample	71	10	11	30	43	388	78

[1] Sources: Genske Mulder & Company, columns (1) - (5). FINBIN Livestock Report, columns (6) - (7)

Source: K. Minegishi, S. Lim, and S. Jette-Nantel

Cost of production per hundredweight

Cost for various herd sizes, Wisconsin - 2017

	Herd size group							
	20-49	50-99	100-199	200-499	500-999	1000+	Sample	Top 25%[5]
Per hundredweight basis								
Income Over Feed Cost	6.23	7.53	7.21	8.05	8.61	9.99	7.67	9.34
Milk sales	18.6	17.8	18.0	18.2	18.3	19.2	18.1	18.0
Feed cost[2]	12.3	10.3	10.8	10.1	9.71	9.24	10.5	8.68
Cost of dairy production[2]	24.0	20.5	20.4	19.6	19.5	19.6	20.5	16.5
Cost plus opp. cost of labor[3]	31.5	24.2	22.3	20.5	20.1	19.9	23.0	17.8
Herd size	38	70	134	325	679	1,629	273	468
Milk, lb/cow/day	58	65	68	78	79	80	70	78
Butterfat (%)	3.76	3.80	3.79	3.76	3.81	4.05	3.8	3.76
Protein (%)	2.99	3.07	3.07	3.04	3.05	3.18	3.06	3.03
Number of farms in sample	21	55	45	51	22	8	202	51

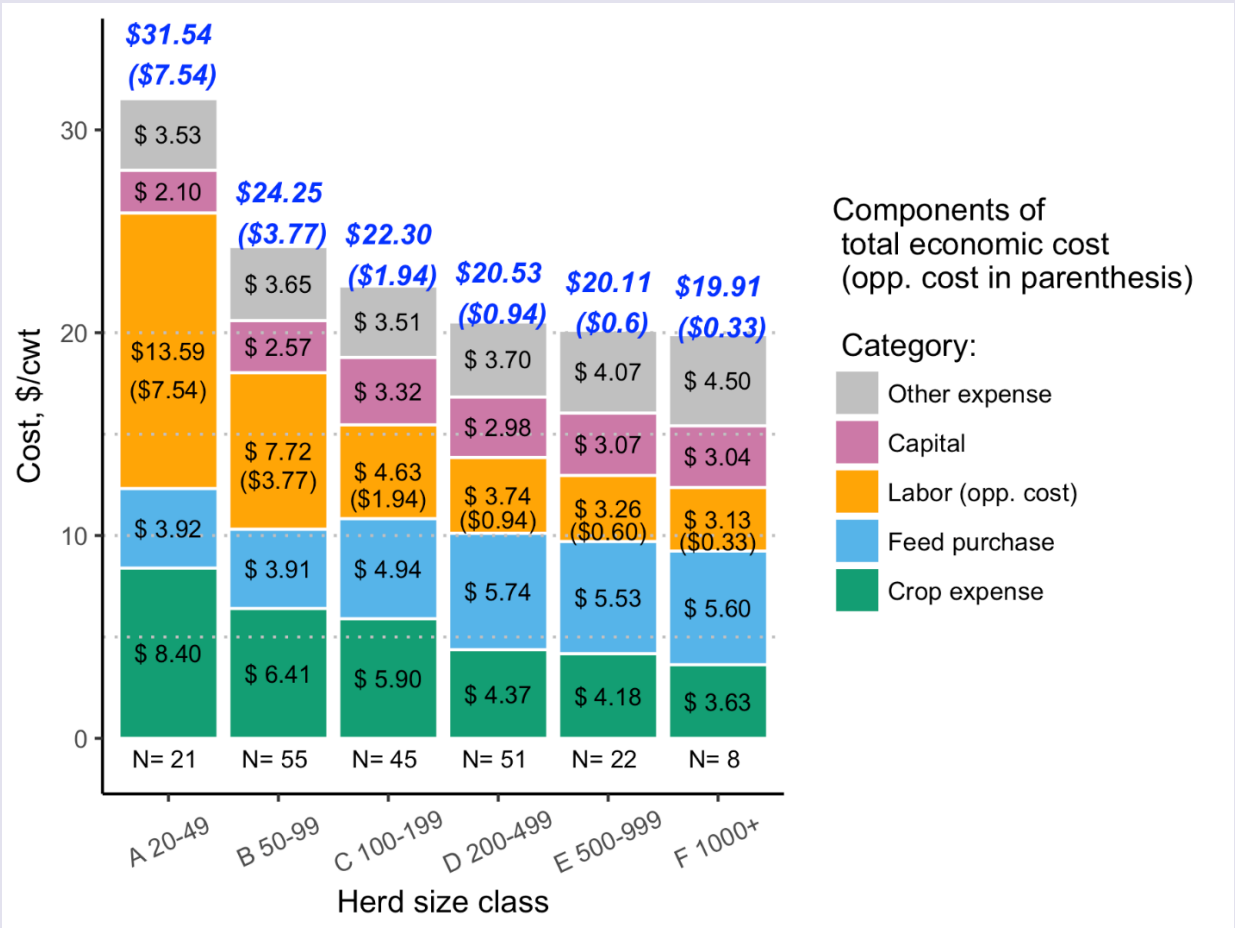
[1] Sources: Agricultural Financial Advisor (AgFA) data on Wisconsin dairy farms. Calculations by authors.

Source: K. Minegishi, S. Lim, and S. Jette-Nantel

Comparison by herd size

Cost of production per hundredweight

Average Cost per herd size, Wisconsin - 2017



Source: K. Minegishi, S. Lim, and S. Jette-Nantel
Data source: UW-Center for Dairy Profitability

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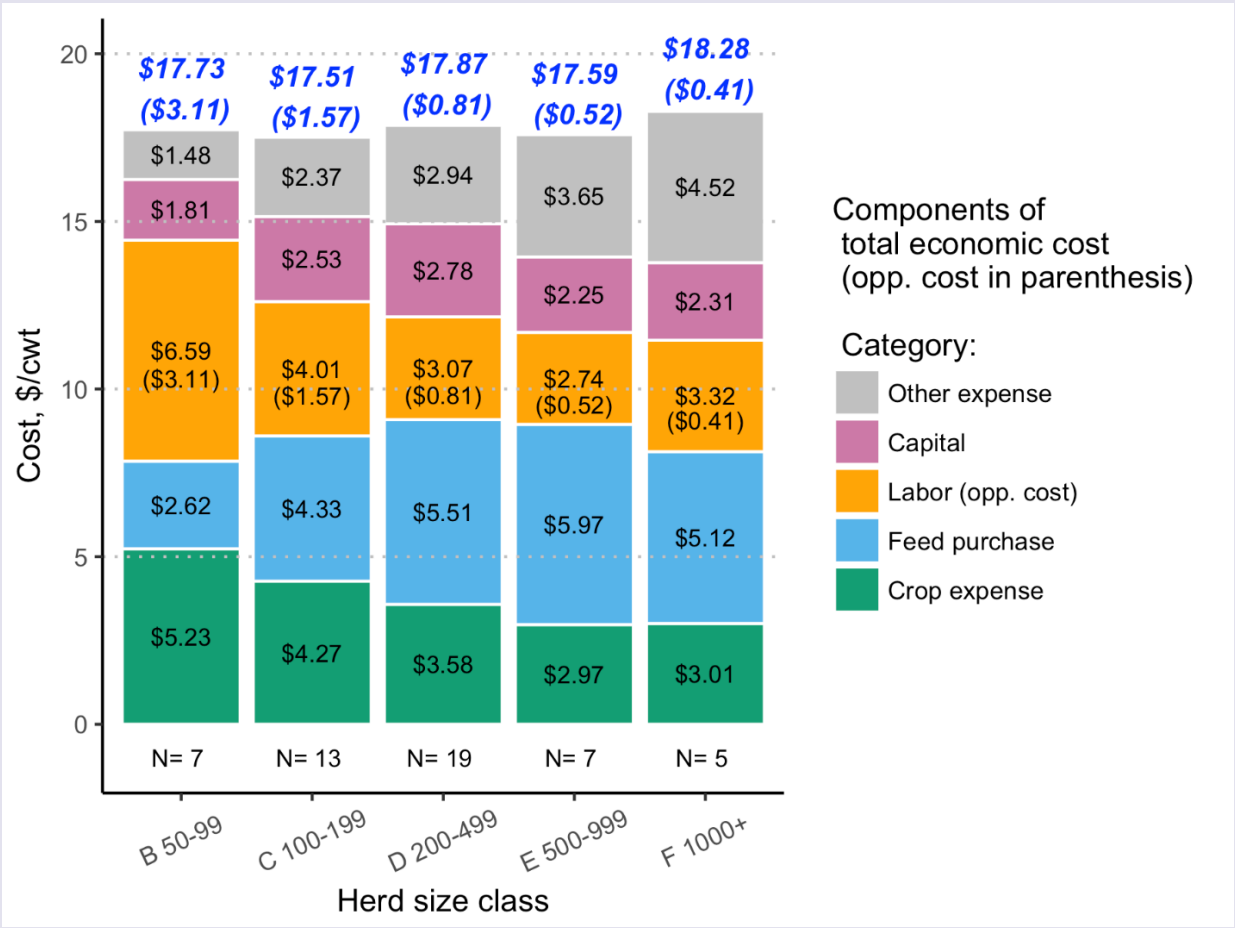
2017 Cost of production per hundredweight, WI

Cost for top producers by herd size, Wisconsin - 2017



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Data source: UW-Center for Dairy Profitability

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Economies of Scale

Possible sources of scale economies

- Technology (e.g. specialized equipment)
- Volume discount on inputs (e.g. feed, supplies)
- Access to capital (credit, land ... etc.)
- Specialization of labor (calf manager, crop manager, HR specialist, accountant, ... etc.)
- Volume premiums on output

Economies of Scale

Limiting factors

- Regulation compliance (e.g. environment, labor)
- Access to nearby land (for feed and manure management)
- Managerial constraint (too many people/things to manage?)

Economies of Scale

Data says: limited evidence of economies of scale

- Best producers with smaller herds have similar cost to those with larger herds
- For example, at 100 to 200 cow

-> average cost is $22.3/cwt

-> top 10% is $17.5/cwt ($4.8/cwt lower)

- At 500 to 1000 cow, top 10% cost is $17.6/cwt

Economies of Scale

Potential explanations

- Many smaller farms either
  - ... may not have managerial capacity
  - ... may not need/want to push for more (retirement, lifestyle)
- Larger farms face
  - ... tightening regulation
  - ... increasingly challenging labor issues
  - ... increasing competition for land

Economies of Scale

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Those with high managerial capacity have incentives to expand

Drivers of profitability

Drivers of profitability

Profitability is the product of ...

A asset efficiency

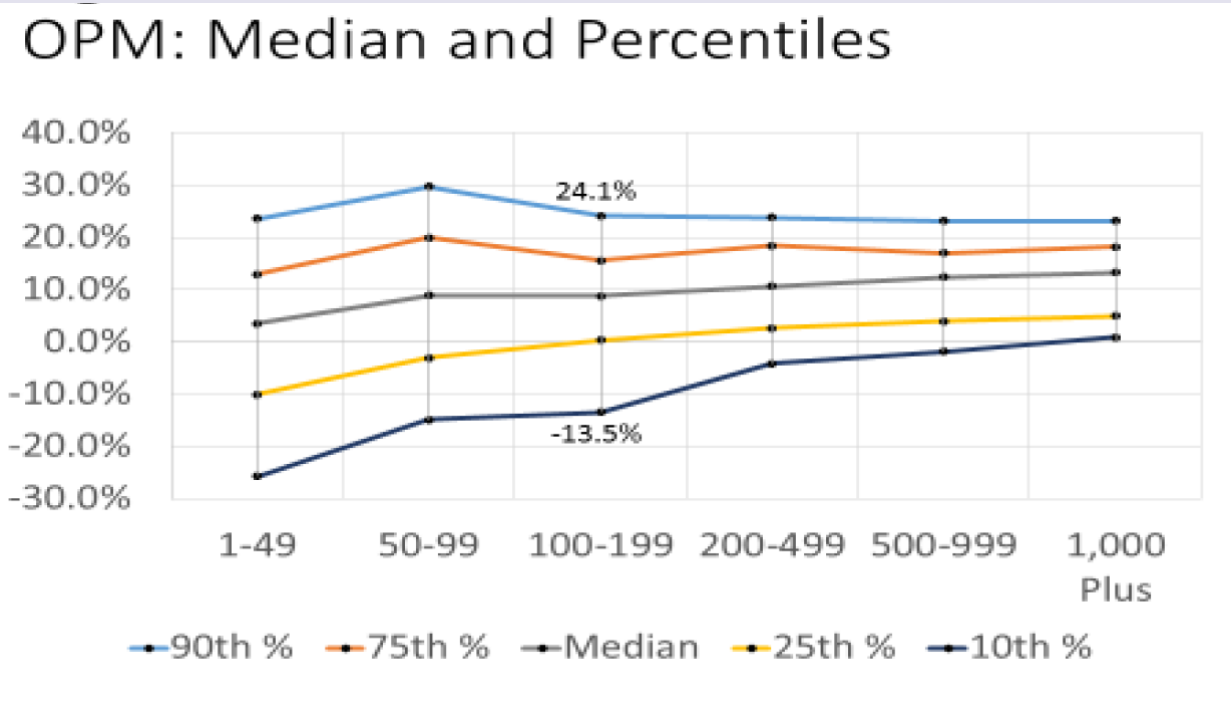
-> Producing more with less assets (invetsment in housing, equipment, etc.)

B cost efficiency

-> Reducing operating cost (feed purchased, supplies, labor) per unit of output sold

Drivers of profitability

Cost efficiency - WI dairy farms, 2014-2016



Source: Kevin Bernhardt
Data source: UW-Center for Dairy Profitability

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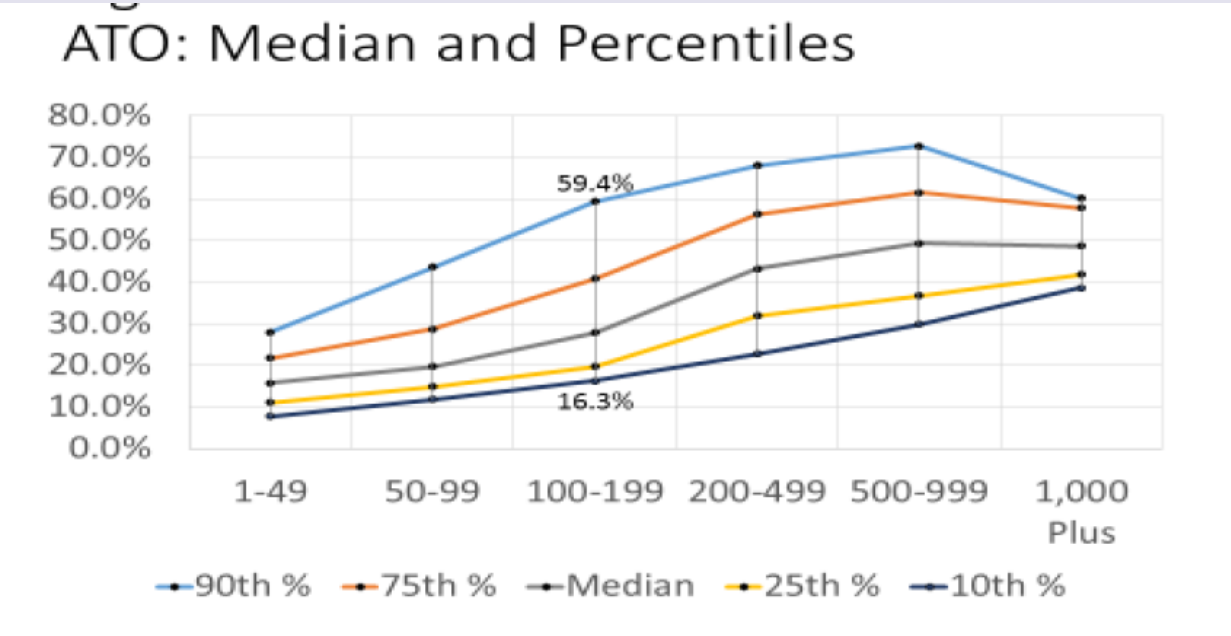
Drivers of profitability

Cost efficiency: optimize input decision (e.g. feed)

- Nutrition/Ration decision often based on milk response
- But it needs to take into account cost of feed and milk price
- Does the last $ of feed given to my cows give me back at least a $ of revenue (either in milk or livestock)?
- Do you need to evaluating your ration to maximize IOFC?

Drivers of profitability

Asset efficiency - WI dairy farms, 2014-2016



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Drivers of profitability

Asset efficiency: optimize current assets

- Getting rid of sparsely used/unnecessary assets
- Maximizing use of other assets
- Some ideas: sharing ownership, renting, custom hire...