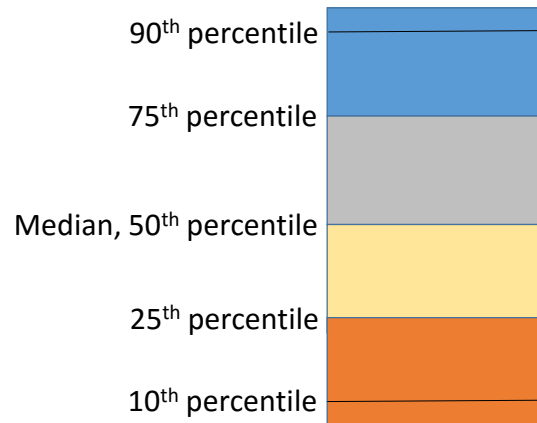


Kevin Bernhardt
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608-342-1365

Table 1: Description of Data

Herd Size (number of milking cows)	Number of Farms	Number of Observations (years)
1-49	34	97
50-99	83	241
100-199	58	172
200-499	43	125
500-999	21	58
1,000 +	12	32

Statistical Measures

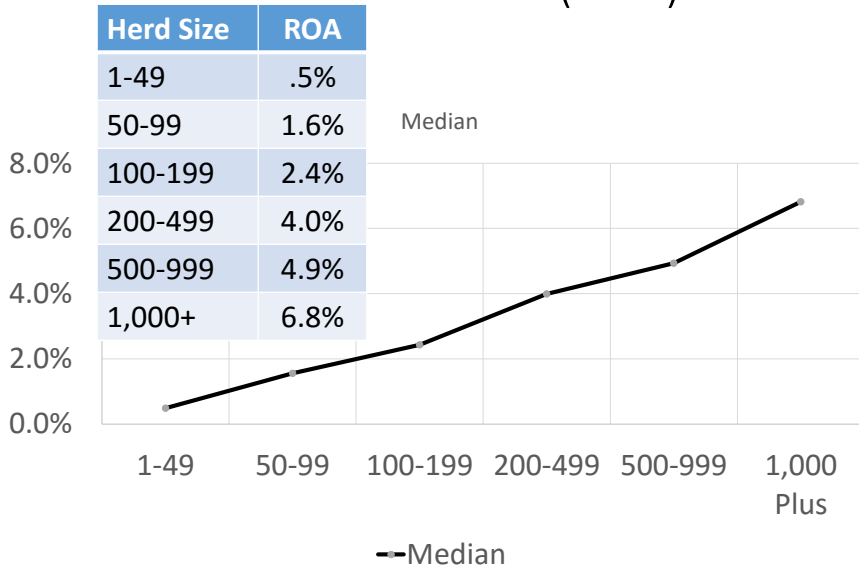


- ROA = Return on Assets
- ATO = Asset Turnover Ratio
 - How well am I working my assets to create gross revenues
- OPM = Operating Profit Margin Ratio
 - How much of the gross revenues am I keeping as profits after expenses are paid

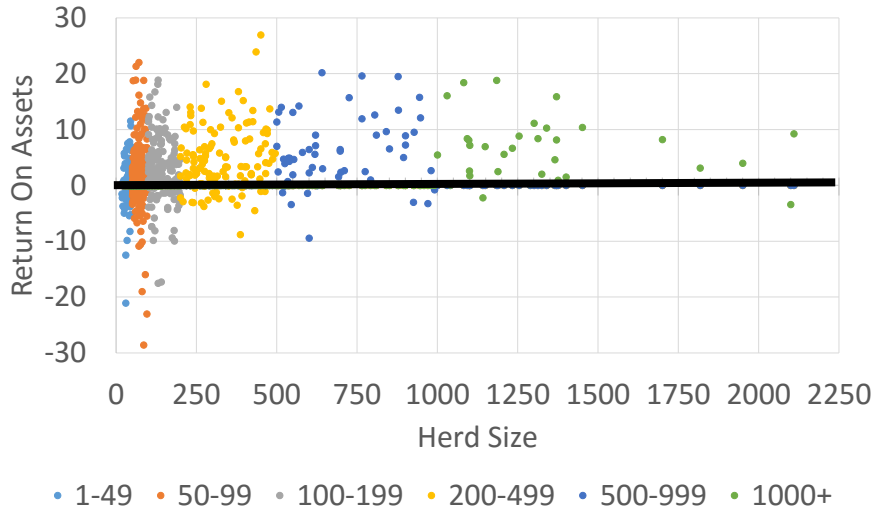
Class III Prices



Median Return on Assets (ROA)



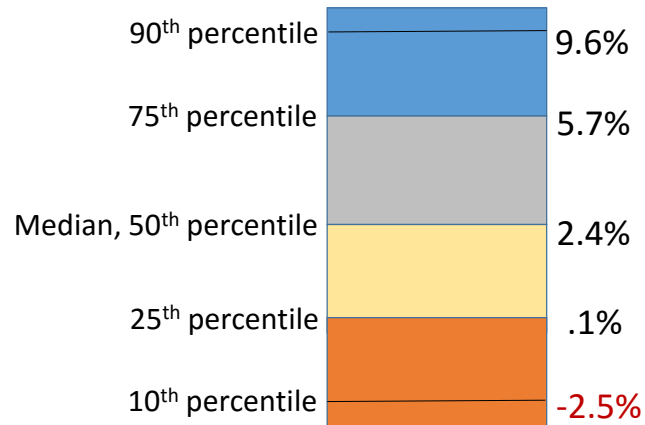
Return on Assets (ROA) by Herd Size, 2014-2016



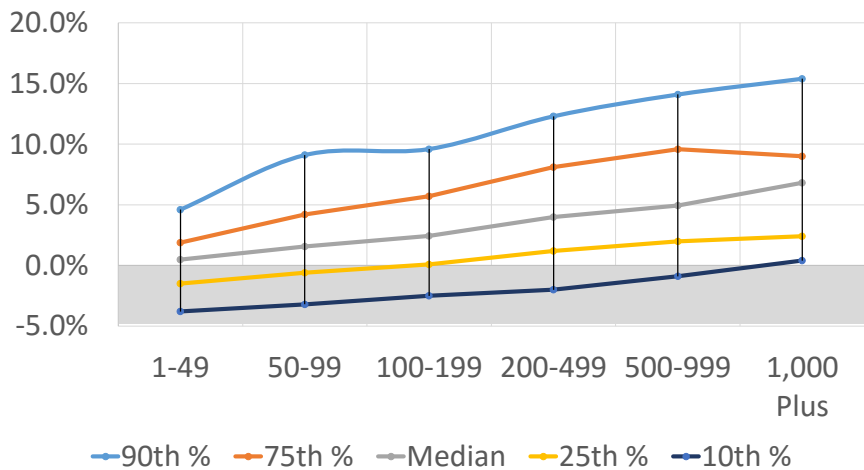
ROA, Median and Percentiles around the Median

Herd Size	10th	25th	Median	75th	90th	Difference 90 th -10 th
1-49	-3.8%	-1.5%	0.5%	1.9%	4.6%	8.4%
50-99	-3.2%	-0.6%	1.6%	4.2%	9.1%	12.3%
100-199	-2.5%	0.1%	2.4%	5.7%	9.6%	12.1%
200-499	-2.0%	1.2%	4.0%	8.1%	12.3%	14.3%
500-999	-0.9%	2.0%	4.9%	9.6%	14.1%	15.0%
1,000 +	0.4%	2.4%	6.8%	9.0%	15.4%	15.0%

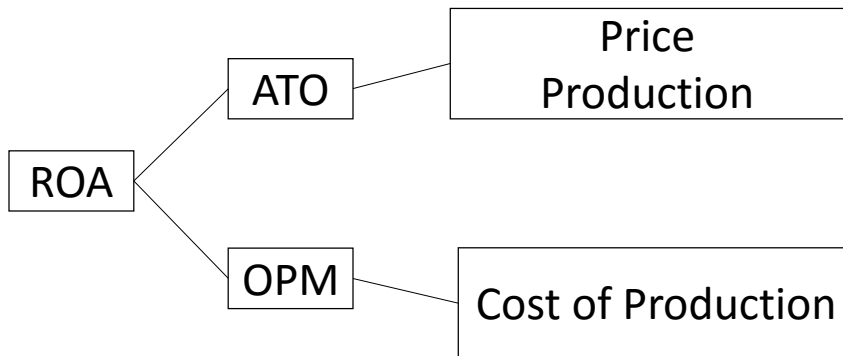
Statistical Measures



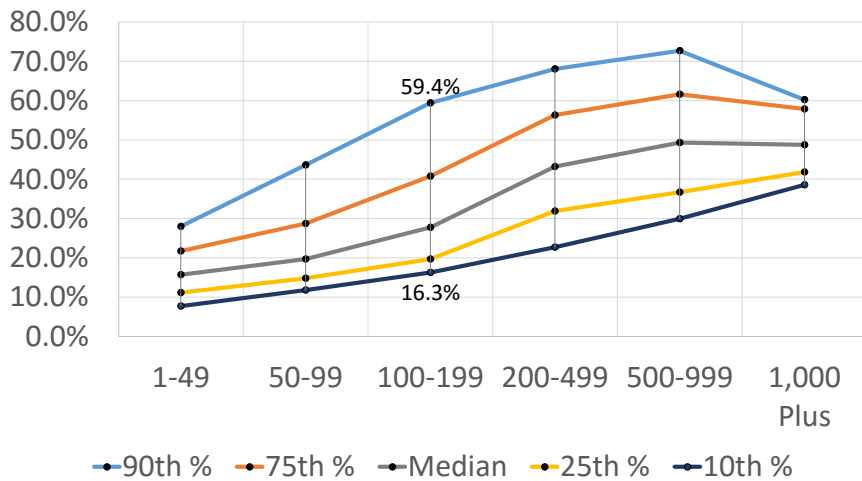
ROA: Median and Percentiles Around the Median



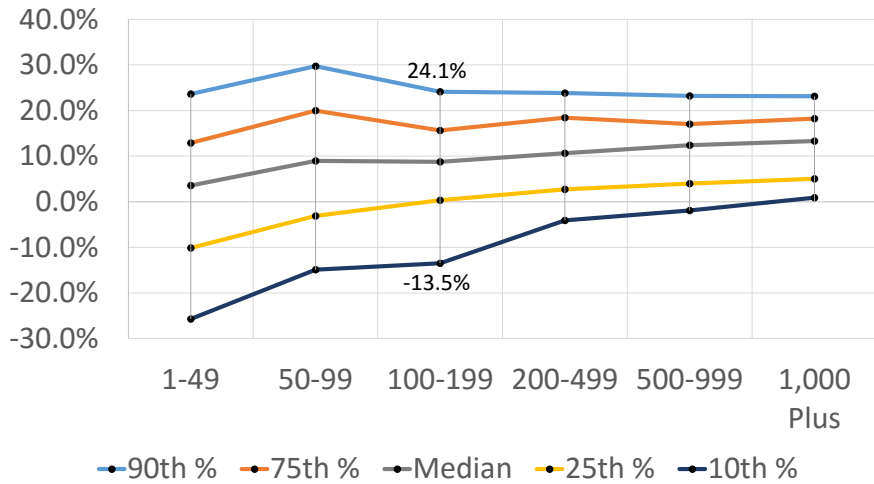
Partial DuPont Map of Profitability



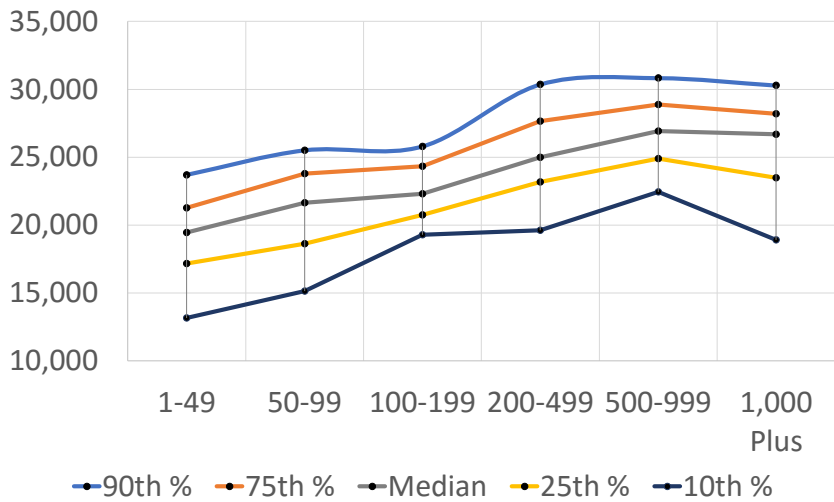
ATO: Median and Percentiles (creating gross revenues from assets)



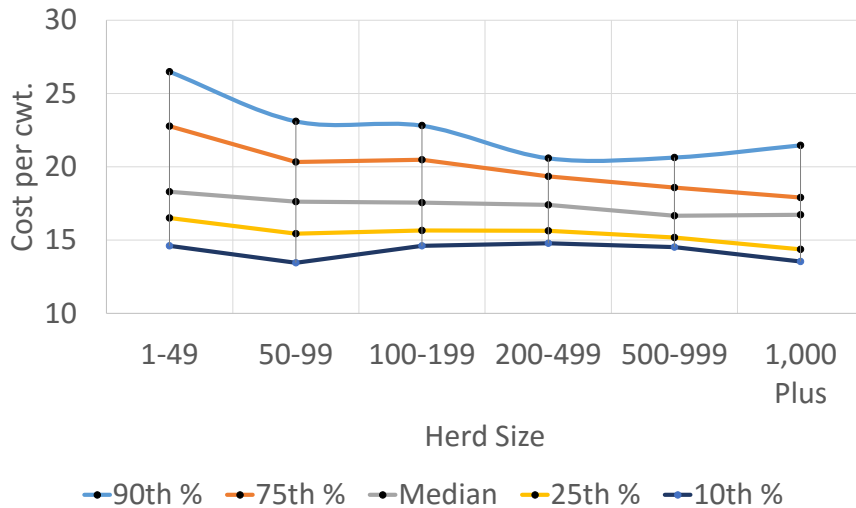
OPM: Median and Percentiles (how much GR is being kept as profits)



Milk per Cow: Median and Percentiles



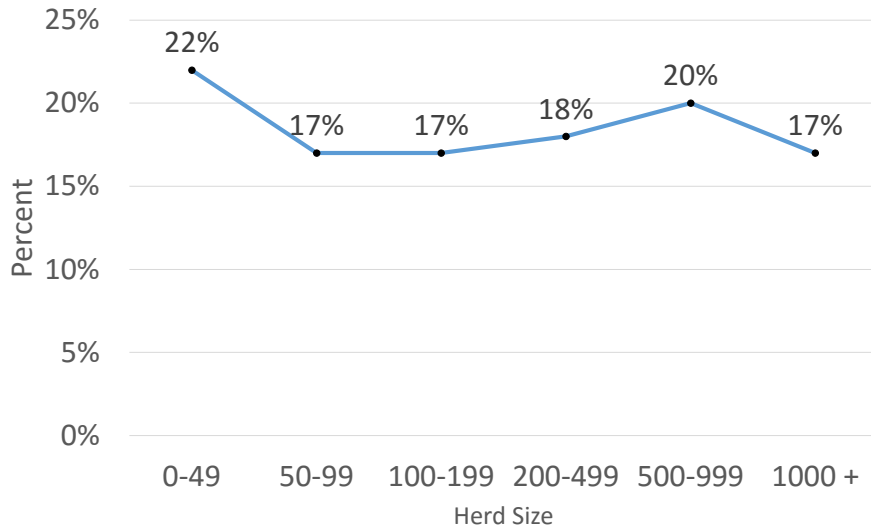
Cost of Production: Median & Percentiles



Median Profitability Results, 2014-2016

Herd Size	ROA	ATO	OPM	% Ownership of Assets
Overall	2.2%	27.3%	9.0%	
1-49	0.5%	15.7%	3.5%	84.4%
50-99	1.6%	19.7%	8.9%	74.5%
100-199	2.4%	27.8%	8.7%	54.4%
200-499	4.0%	43.2%	10.6%	40.9%
500-999	4.9%	49.3%	12.4%	38.0%
1,000 +	6.8%	48.7%	13.3%	37.8%

Percent With Negative Net Farm Income From Operations, 2014-2016

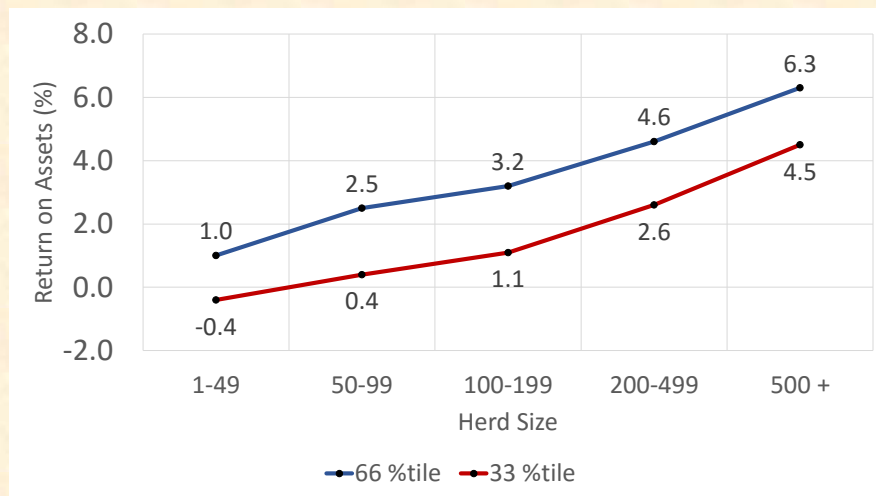


Same Dataset but add
2017 and Sorted a bit
differently

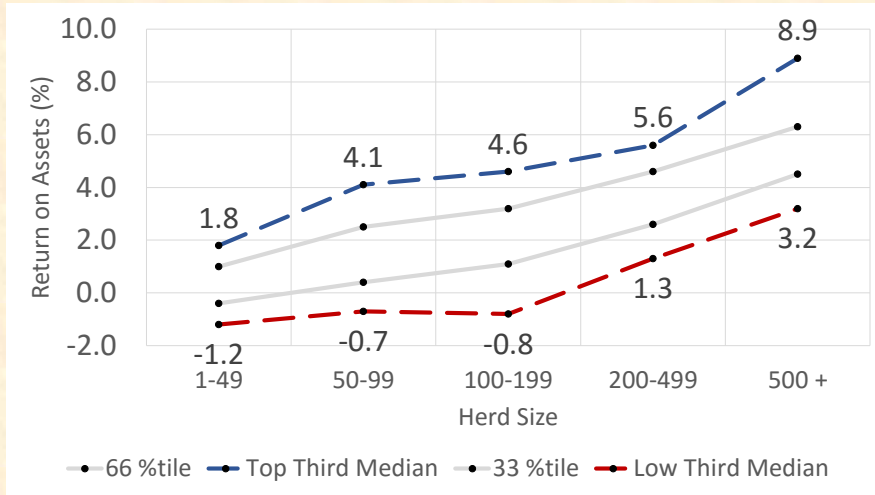
New Data Sort

1. Averaged statistics for the four years 2014-2017
2. Within each size category found the top and bottom third of performing farms as measured by Return on Assets
 - For example: If 30 total farms then top 10 and bottom 10 by ROA
3. Collected median statistics for the top third versus the bottom third

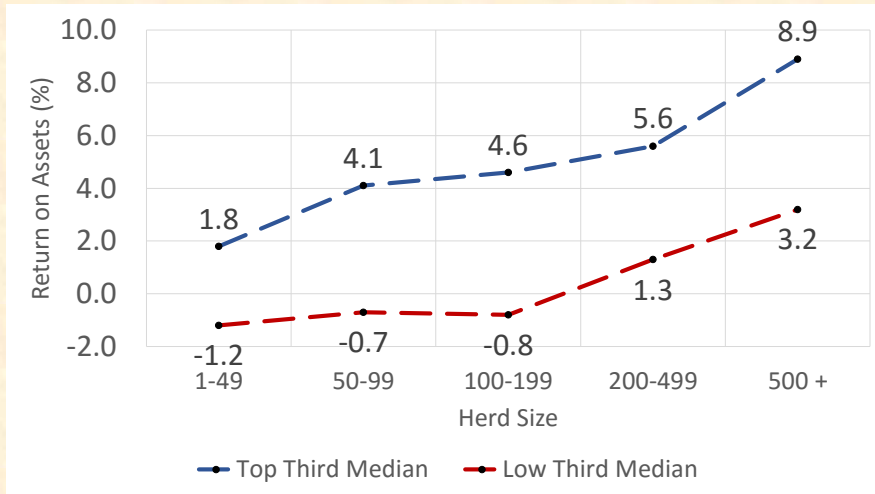
Return on Assets (ROA) Where the 66 %tile and 33 %tile Start



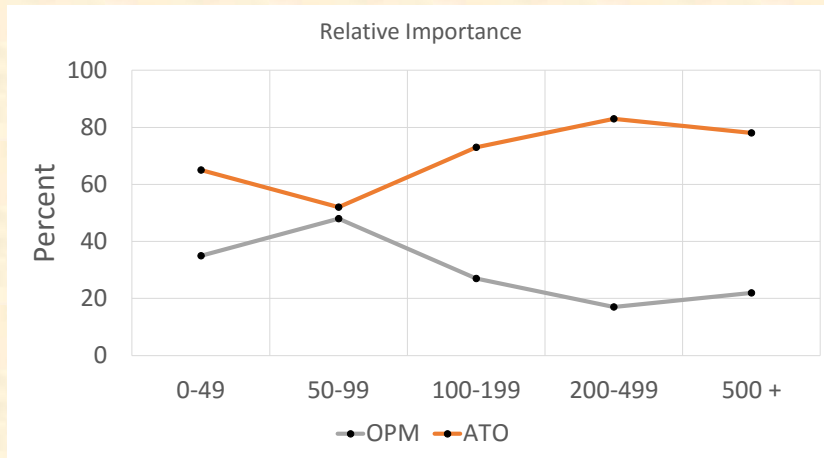
Dashed lines are Median ROA of Top and Bottom third



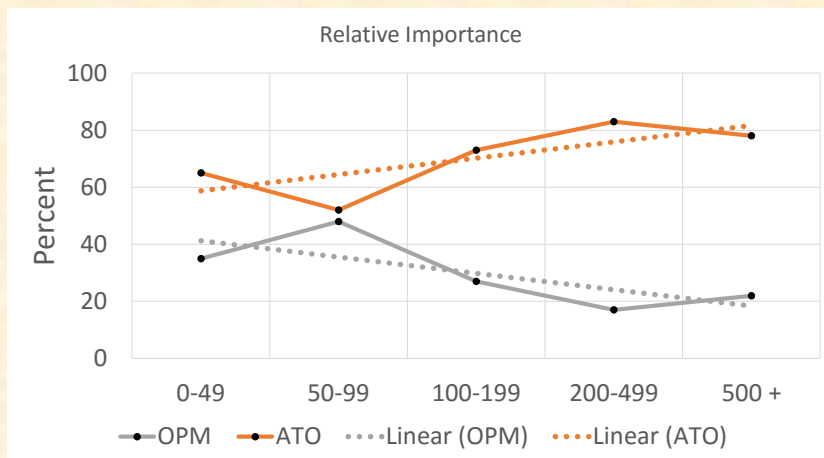
Dashed lines are Median ROA of Top and Bottom third



ROA = ATO x OPM
 Graph: Relative Importance

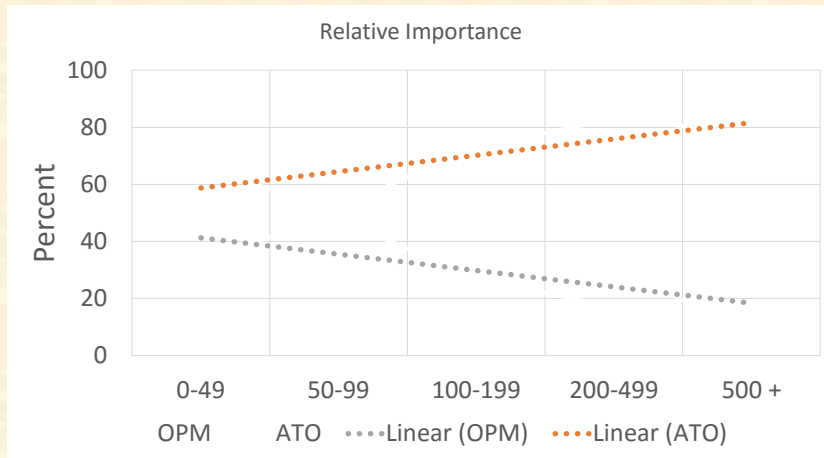


ROA = ATO x OPM
 Graph: Relative Importance

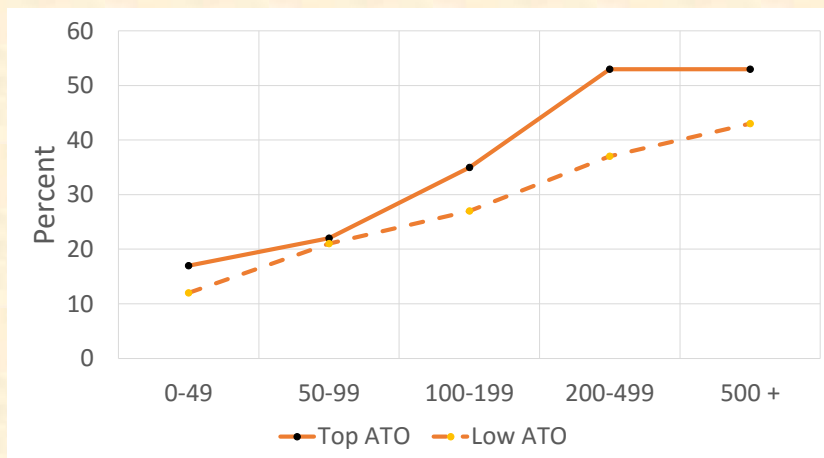


$$\text{ROA} = \text{ATO} \times \text{OPM}$$

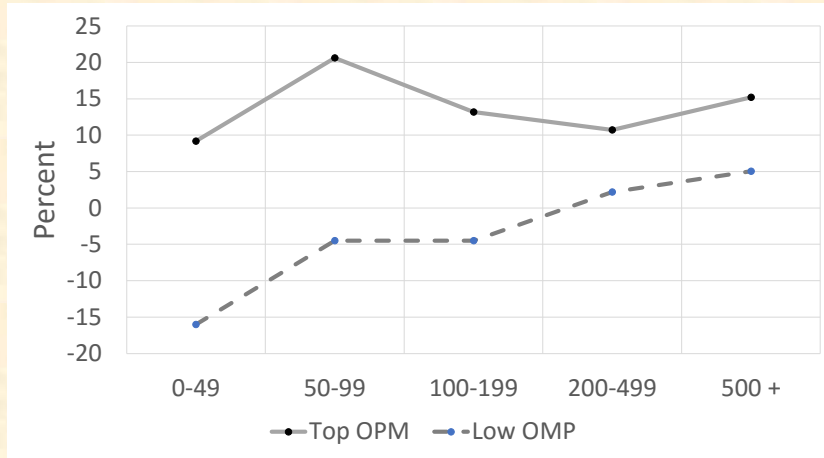
Graph: Relative Importance



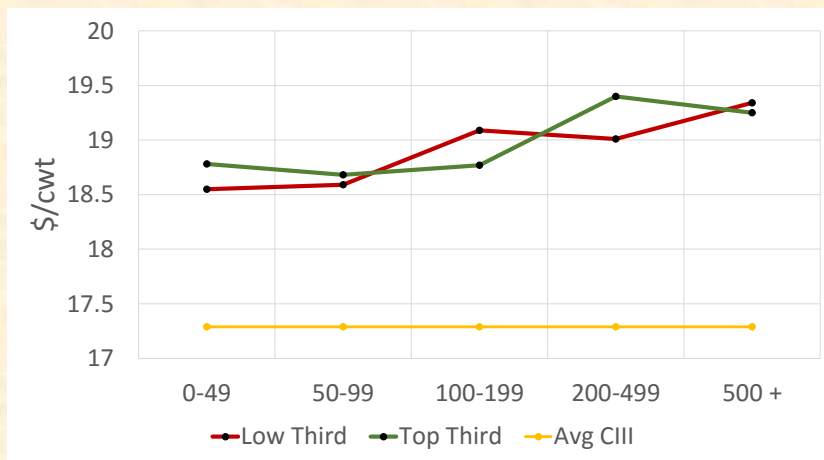
ATO Median of Top and Low Third



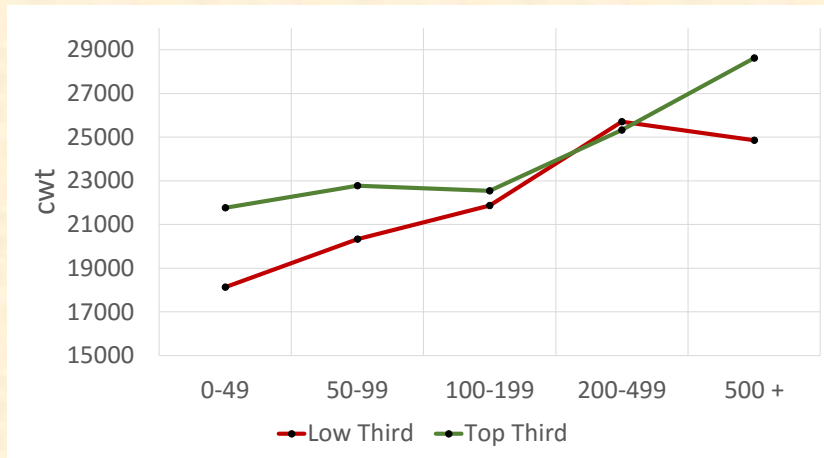
OPM Median of Top and Low Third



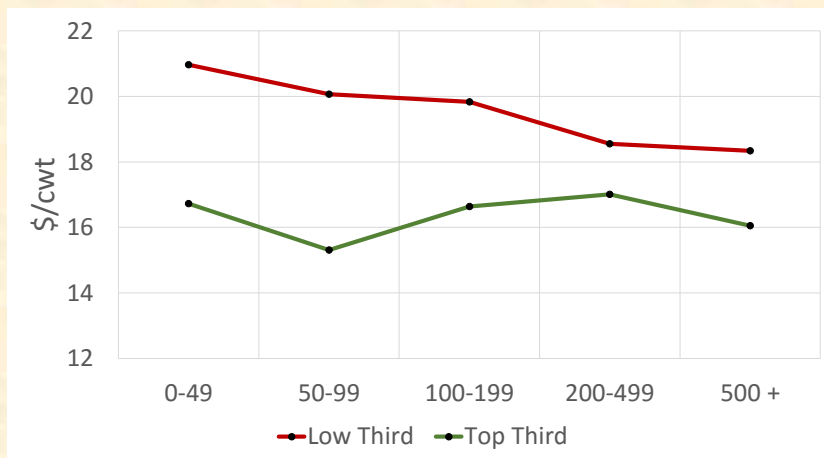
Price (\$/Cwt)



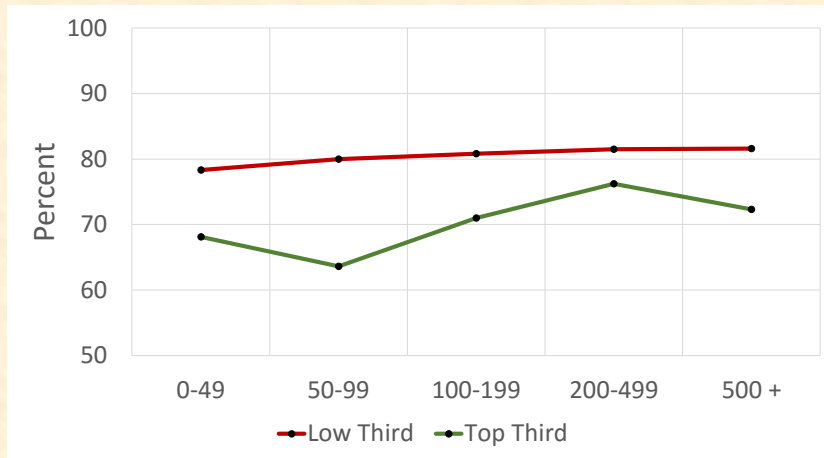
Production (Cwt)



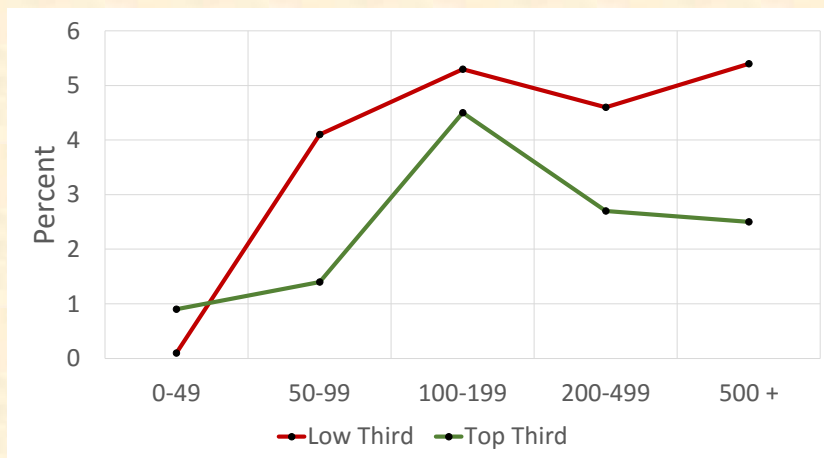
Costs of Production (\$/Cwt)



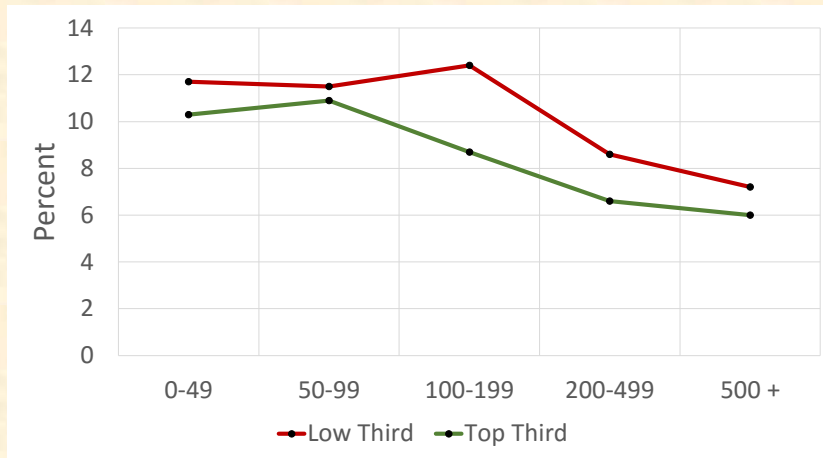
Operating (Percent of Total Revenue)



Interest (Percent of Total Revenue)



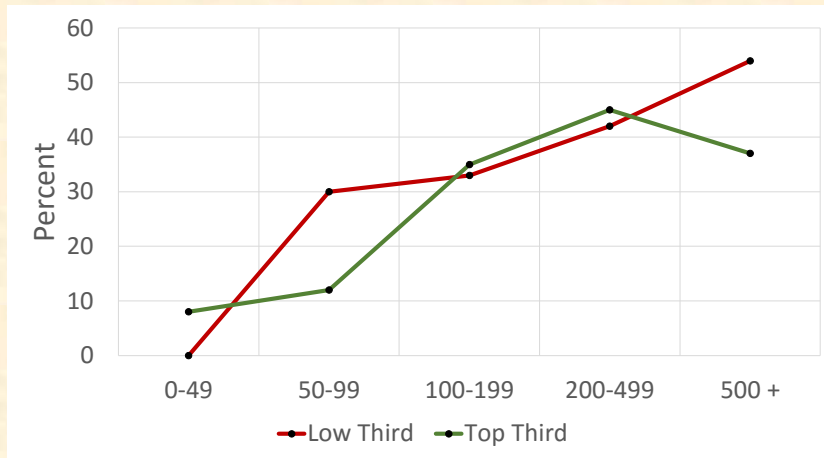
Depreciation (Percent of Total Revenue)



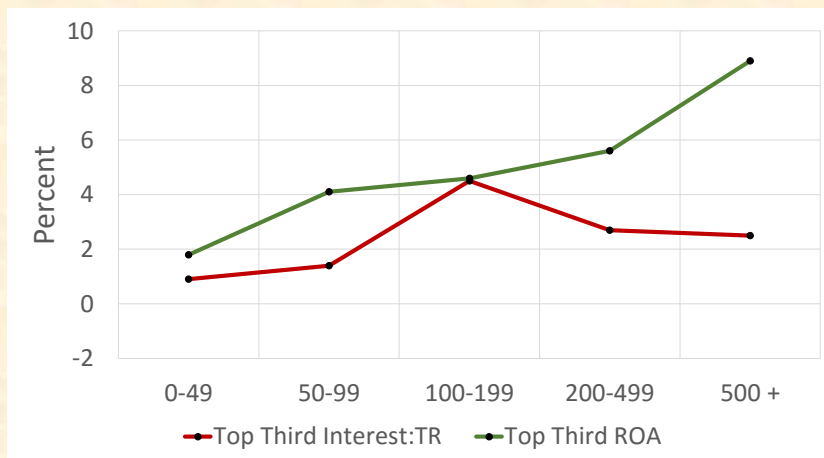
Return On Equity (ROE)

- Return on Equity comes from two parts
 1. Return on Assets
 2. Leverage
- If you are earning more from your debt capital than you are paying for it then leverage works for you and you have used the bank's money to make money for yourself.
- If earning less from debt capital than what you are paying for it then leverage is working against you and you are losing your operating earnings in interest payments.

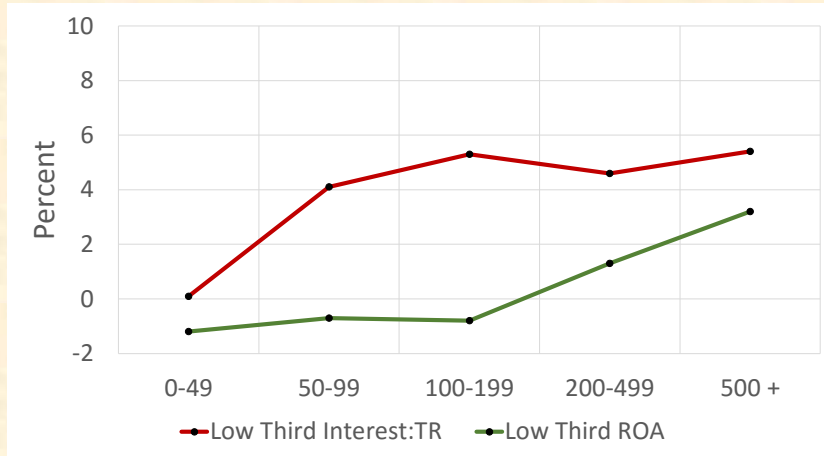
Debt:Asset Ratio



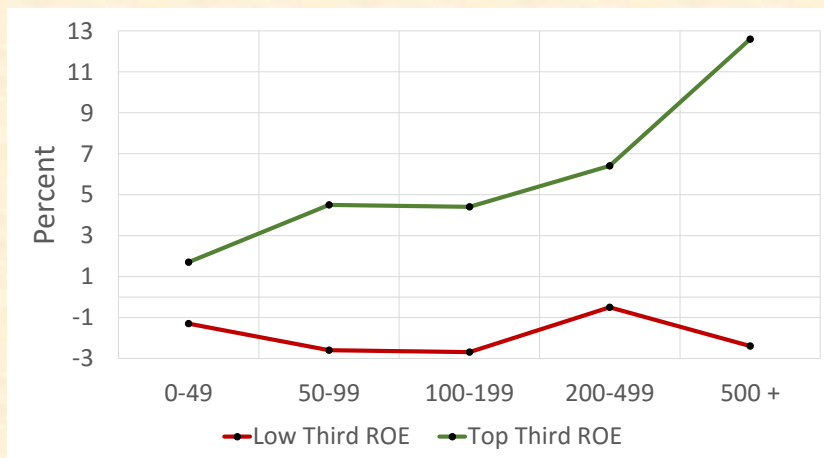
Top Third ROA and Interest:TR



Low Third ROA and Interest:TR



Top and Low Third Return on Equity (ROE)



Cost of Production vs Cost of Production

39

		40
INCOME		
Milk sales		
Calf sales		
Cull cow sales		
TOTAL INCOME		
VARIABLE COSTS		
Feed		
Veterinary/Breeding		
Operating interest		
Variable labor		
TOTAL VARIABLE (OPERATING) COSTS		
FIXED COSTS		
DIRTI		
Fixed Labor		
TOTAL FIXED (OVERHEAD) COSTS		
TOTAL COSTS OF PRODUCTION		
NET RETURN (PROFIT)		

**Finding Costs of
Production**

Milk Cost of Production?

- Total milk sold = 34,768 cwt
- Total Farm Expenses = \$662,214
 - What is the cost of production (\$/cwt)?

$$\$662,214 / 34,768 \text{ cwt} = \$19.05$$



There's Lots of Potholes in the Cost of Production Road!

Pits and Pot Holes

- Method and Math
- Which Cost of Production
- The devil that's in the details

Milk Cost of Production? A Challenge of Method and Math

- Total milk sold = 34,768 cwt
- Total Farm Expenses = \$662,214

What if **\$104,188** of this is SB and beef enterprise expenses?

– What is the cost of production (\$/cwt)?

$$\$662,214 / 34,768 \text{ cwt} = \mathbf{\$19.05}$$

Is This Right?

The Challenge of Calculating Costs of Production - Milk

45

D=Denominator N=Numerator		True Milk COP	Per Unit Sales	Residual Claimant	Unit EQ (CWTEQ)	
Milk Sold, cwt	34,768	D	D	D		
Mailbox Price	16.29				D	
Milk Income	566,371					
Other Income	108,373			-N		
Total Income	674,744				N	
Milk COP	558,026	N				
Other COP	104,188					
Total COP	662,214		N	N		N/EQ
\$/CWT Costs Of Production			19.05			
Unit EQ Production = Total Income/Price:						

Center for Dairy Profitability

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Let's Review the Enterprise Budget

Pits and Pot Holes

- Method and Math
- Which Cost of Production
- The devil that's in the details

Tax Return Method with CWTEQ

With all these challenges, why do
it?

*Because that is where good
managers rise to the top*

Let's Play

Questions

